Chhetri Academy

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GCSE MATHS

Number

Edexcel 1MA1 | Subtopic collection Topic 01

Place value, ordering and order of operations

Foundation tier

Answers and examiner comments

575	2010-2025	Foundation
question groups	available papers	tier

Using this booklet

1. Answer numbers match the companion question booklet.
2. Follow the original question number on marking tables.
3. Examiner comments are included where available.

Name _____ **Date** _____

Some entries use full source marking material in an appendix. Any unavailable mark schemes are identified beside the relevant answer.

2	(a)		Pixar	1	B1 cao
	(b)		Pixar, Tacco	1	B1 cao
	(c)		Crystal	1	B1 cao
	(d)		12.73	4	M1 for 112-100 or 12 seen M1 for $24.5\times'12'$ or sight of digits 294 Do not allow '12' to be 100. M1 (dep on one prior M1) for $9.79+'2.94'$ A1 cao

5MB1F_01

5MB1F_01

Question	Working	Answer	Mark	Notes
3		e.g. 15 12 15 40 4:15pm 19 30 19 55	5	B1 for a correct departure time (one with an associated arrival time at least 30 mins before film start time) B1 for correct associated arrival time in Peterborough from a correct departure time from Bourne or Baston B1 for either 4:15pm or 5:15pm with one correct bus time) B1 for a correct departure time (at least 2hrs 44mins after film start time) B1 for correct associated arrival time in Baston

Question	Working	Answer	Mark	Notes
8 (a)	0.80×20 OR reading from graph at distance = 20 miles	16	1	B1 cao
(b)	$£20 = 25$ miles $25 \times 3 = 75$ OR $60 \div 0.8 = 75$	75	2	M1 for using $£20 = 25$ miles oe and intention to multiply OR M1 for $60 \div 0.8$ OR M1 for reading from the graph and an attempt to scale up. Ie 37x2 or 38x2 or 12x6 or 12.5x6 or 13x6 oe And A1 72-78 inclusive

Question		Working	Answer	Mark	Notes
1	(a)		3109	1	B1 cao
	(b)		6 hundredths	1	B1 for 6 hundredths or 0.06 or $\frac{6}{100}$
	(c)		4300	1	B1 cao

2	(a)	$2\times16.50+13.50$	46.50	2	M1 for 2 × 16.50 + 13.50 A1 cao
	(b)	$3\times20-"46.50"$	13.50	2	M1 for $3\times20-"46.50"$ A1 ft

8	(a)		-1	1	B1 cao
	(b)		14	2	M1 for $5--9$ or – 9 – 5 A1 for 14 or -14
	(c)		No + reason	2	M1 for attempt to find middle of -7 and 3 eg, may see -7 and 3 on number line **or** $(-7-3)\div 2$ **or** $(-3-7)\div 2$ A1 for 'No' and correct reason

5MB2F_01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
9*	$65+110=175$ $65+65=130$ $2\times28+25+21$	£102	4	M1 for some idea of putting lengths together $65+65$ oe or $65+110$ oe seen, or, or finding the total length of wood eg 65×5+220 (=545) or 7 pieces of wood from which those needed can be cut C1 for a combination of lengths of wood that will allow all lengths to be cut, for example, 2 lengths of 1.8m, 1 length of 1.5m, 1 length of 1m C1 ft for clearly showing a combination of allowed prices for their chosen lengths eg $2\times28+25+21$ A1 cao
10*	$25\div5$, $15\div5$, $12\div5$, $5\times3\times2$	No	4	M2 for 5, 3, 2 (could be on the diagram) (M1 for $25\div5$ or $15\div5$ or $12\div5$) C2 QWC: No as only 30 whole bricks will fit oe statement **or** No and dimensions of a possible box given **or** No as only 2 layers of 15 will fit oe (C1 for correct conclusion from candidate's working even if incorrect eg vol: 4500÷125=36 so yes)

5MB2F/01

Original question 9

The full source mark scheme begins on page 743. Use the original paper code, tier and question number shown above.

2	(a)	10 + 60 +5	75	1	B1 (accept 1 hour 15 minutes or 1.25 hours or 1¼ hours with units)
	(b)(i)		3.25 pm	2	B1 for 3.25 pm oe [accept 3.25 only and 03.25 pm but do not accept 3.25 am or 03.25]
	(b)(ii)		21 15		B1 for 21 15 (ignore am or pm written)
	(c)	10.45 – 10.25 OR 10.25 + 5 + 10 + 5	20	2	M1 for an attempt to find the time difference between 10.25 and 10.45 A1 cao

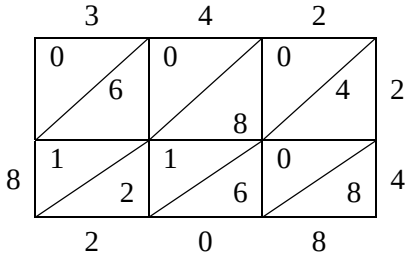
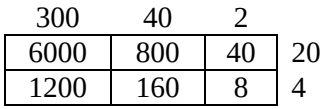
2	(a)		9	1	B1 cao
	(b)		0.6,2.8,4.71,13.4	1	B1 cao
	(c)		0.7	1	B1 cao

8	Ticket sales: 16 × 100 = £1600 Meals: 12 × 100 = 1200 Fixed costs: 230 + 150 + 30 = 410; 410+1200=1610 or 1600-230-150-30=1190; 1190-1200 = -10 Total 410 + 1200 = £1610 (<£1600) OR £1610÷100=£16.10 ticket price (>£16) OR £1600 – 410 – 1200 = - £10 (or £10 needed) OR £1600-1200 = £400 (< £410 costs)	No. £1610 >£1600 £410 >£400	4	M1 for addition of 230, 150, 30 (or + 410) (=422 or 800) M1 for 12 × 100 (= 1200) A1 for £1610 total costs or £16.10 ticket price needed. C1 (dep on at least M1) for correct comparison and statement that "£1610">"£1600" and that costs will not be covered. OR M1 for subtraction of 230, 150, 30 (or - 410) M1 for 12 × 100 (=1200) A1 for £400 left or -£10 C1 (dep on at least M1) for correct comparison and statement that "£410">"£400" and that costs will not be covered.

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	-7 to -9	2	1	B1 Accept -2
	(b)	8 to -7	15	1	B1 cao
10	(a)	$\frac{1}{2} \times \frac{1}{5} =$	$\frac{1}{10}$	1	B1 oe
	(b)	$\frac{1}{2} + \frac{3}{8} = \frac{4}{8} + \frac{3}{8} =$	$\frac{7}{8}$	2	M1 common denominators with at least one numerator correct or an unsimplified answer, or a fraction that is not completely processed eg $\frac{1' \ 8 + 2' \ 3}{2' \ 8}$ OR conversion to correct decimals: 0.5 + 0.375 A1 for $\frac{7}{8}$ or 0.875
11	(a)		12	1	B1 cao
	(b)		200 cm^3	3	M1 for 10 × 4 × 5 A1 cao B1 (indep) for cm^3

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12	London: £15, £34, £26 (£75) → 450, 1020, 780 (2250) KC Prague: 450, 750, 810 KC (2010KC) → £15, £25, £27 (£67) £ to KC is ×30; KC to £ is ÷30.	Yes. Cheaper in Prague (More in London)	5	M1 conversion method (× or ÷ as appropriate) or evidence of use of graph (seen, or implied, by at least lines or evidence of conversion by marks on axes) for at least one figure. M1 (dep) conversion applied to 3 figures or totals (converted figures must be stated, marks on graph insufficient) A1 converted figures shown (all three individual items or totals converted correctly; NB: no tolerance on graph) M1 totalling converted amounts C1 (dep on at least M1) comparison of "**totals"** and correct conclusion Eg "2250KC">"2010KC", "£75">"£67" so cheaper to buy in Prague.
13	Zparts: 150 is 15 boxes; 15 × £35 = £525 CompParts: 150÷11 is 13.6 so 13 offers (150-13)×£4=137×4=£548 OR 13×11=143; 150-143=7 extra (13×10+7)=137; 137×4=£548 OR 150×4=£600 13 offers so 13 free: 13×4=52; 600-52=£548	Zparts £525 CompParts £548 so Zparts cheaper	5	M1 for 15 × £35 (= £525) M1 for attempt to account for 1 free (eg ÷11 or listing with 10 charged and one not) M1 for ×4 (may be shown as ×40) A1 for totals of £548 and £525 OR unit costs of £3.64/£3.63 and £3.50 (oe) C1 (dep on at least M1) for making comparison figures clear and giving correct deduction.

5MB2F_01								
Question	**Working**						**Answer**	**Mark**	**Notes**
14	x	-3	-2	-1	0	1	Line	3	**(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be correct) A1 for correct line between -3 and 1 **(No table of values)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for at least 3 correct points with no more than 2 incorrect points) A1 for correct line between -3 and 1 **(Use of $y=mx+c$)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of 2 OR line drawn with a y intercept of 3 and a positive gradient) A1 for correct line between -3 and 1
	y	-3	-1	1	3	5			

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15	342 ×24 = 6840 + 1368 = 8208 24 ×342 = 7200 + 960 + 48 = 8208   6000+800+40+1200+160+8=8208	8208	3	M1 for a complete method with relative place value correct. Condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation. A1 cao M1 for a complete grid with not more than 1 multiplication error, addition not necessary (inside numbers) M1 (dep) for addition of all the appropriate elements of the calculation (eg outside numbers) A1 cao M1 for sight of a complete partitioning method, condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation. A1 cao

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
16 (a)		21	1	B1 cao
(b)		$4n+1$	2	M1 for $4n + k$ ($k \neq 1$) A1 oe NB $n = 4n + 1$ gets M1 only.
17	$300 \div (2 + 3 + 5) \times 5 =$ $300 \div 10 \times 5 =$	150	2	M1 for $300 \div (2 + 3 + 5)$ or 300×5 or 30 seen or 60:90:150 A1 cao

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
18	LCM (40, 24) = 120 Rolls 120 ÷ 40 = Sausages 120 ÷ 24 = OR Rolls 40 is 2 × 2 × 2 (×5) Sausages 24 is 2 × 2 × 2 (×3) 40, 80, **120**, 160, 200, 240, 280 24, 48, 72, 96, **120**, 144, 168	Rolls (packs) 3 Sausages (trays) 5 Hot dogs 120	5	M1 attempts multiples of either 40 or 24 (at least 3 but condone errors if intention is clear) M1 attempts multiples of both 40 and 24 (at least 3 of each but condone errors if intention is clear) M1 (dep on M1) division by 40 or 24 or counts up multiples. (implied if one answer correct or answers reversed) A1 rolls (packs) 3, sausages (trays) 5 OR any multiple of 3,5 A1 hot dogs 120 or ft on both of their packs or ft 'common multiple' OR M1 expansion of either number into factors M1 demonstrates one of the expansions that includes 8 oe M1 demonstrates a 2nd expansion that includes 8 oe A1 cao for rolls (packs) 3, sausages (trays) 5 A1 hot dogs 120
19	Bottom / top is 5 × 10 = 50; 50 × 2 = 100; 280 – 100 = 180 Other dimensions: 10 + 10 + 5 + 5 = 30; 180 ÷ 30 =	6	4	M1 recognition that the bottom/top is 5 × 10 (= 50), 50 seen M1 for 280 – 2 × "50" (= 180) M1 for "180" ÷ "other dimensions" or valid attempt to find height using these dimensions A1 cao

Original question 9

The full source mark scheme begins on page 759. Use the original paper code, tier and question number shown above.

Original question 10

The full source mark scheme begins on page 759. Use the original paper code, tier and question number shown above.

Original question 13

The full source mark scheme begins on page 759. Use the original paper code, tier and question number shown above.

Original question 15

The full source mark scheme begins on page 759. Use the original paper code, tier and question number shown above.

Original question 18

The full source mark scheme begins on page 759. Use the original paper code, tier and question number shown above.

5	(a)	18 – 10	8	2	M1 for 18 – 10 A1 cao [SC: B1 for 10 to 18, 10 – 18, 18 to 10 oe, if M0 scored]
	(b)		13	1	B1 cao
	(c)	(13+14+12+10+13+16+14+13+18+16) ÷ 10 = 139 ÷ 10	13.9	2	M1 for (13+14+12+10+13+16+14+13+18+16) ÷ 10 allow one error, omission or extra in 10 temperatures, condone missing brackets. A1 cao

Question	Working	Answer	Mark	Notes
7	(15 15 – 15 05 + 15 55 – 15 35)	30	2	M1 for ((15) 15 – (15) 05) and 15 55 – 15 35) OR "10" and "20" seen as durations of CB and J. At least one must be correct and any incorrect value must be associated with correct start and finish times. A1 for 30 cao

10	14 × 3 + 10 × 3 = 72 43 + 14 × 1+ 10 × 1 = 67 43 + 14 × 2 = 71	67	5	B1 for identifying 3 adults, 3 children and 1 infant (may be implied by correct working) M3 for 14 × 3 + 10 × 3 (= 72) or 43 + 14 × 2 (= 71) or 43 + 14 × 1 + 10 × 1 (= 67) (M2 for 3 × 14 (=42) or 3 ×10 (=30) or 2 × 14(=28)) (M1 for 14 or 10 or 43 or 12 seen) A1 for 67 identified as final answer

Question	Working	Answer	Mark	Notes
1 (a)		2, 5, 8, 17, 25	1	B1 cao
(b)		-10, -7, -3, 0, 6	1	B1 cao

2	(a)		1.15 or 13:15 Quarter past one	1	B1 (am/pm optional)
	(b)	Hands on clock	2.30 shown	1	B1 Length of hour hand ≤ length of minute hand. Hour hand points to 2 or to between 2 and 3
	(c)	$4.20 - 3.30$	50 mins	2	M1 for $20 + 30$ or $4.20 - 3.30$ or 3.30 and 4.20 clearly shown on time line. A1 for 50

3	(a)(i)		(-) 2	1	B1 cao
	(ii)		(-) 11	1	B1 cao
	(b)		-17	1	B1 cao

7	(a)	$38 \times 3 = 114$	3	2	M1 38×3 or 114 or $38 + 38 + 38$ or repeated addition to 114 or $120 - 38 - 38 - 38$ or $120 \div 38$ (or equivalent use of 40) A1 cao
	(b)		£6	1	B1 cao

Question	Working	Answer	Mark	Notes
11	8×1.5 $20.90 \div 2$ 1.5×18 $28.95 + 12 + 20.90 + 27$	£12(.00) £10.45 £27(.00) £88.85	4	B1 B1 B1 B1 ft total of four figures: 28.95 + “12” + 20.90 + “27”

13	(a)		49	1	B1 cao
	(b)		5	1	B1 for 5
	(c)		8	1	B1 cao

5MB2F_01

Question	Working	Answer	Mark	Notes
16	Exeter coach after 20, 40, 60, 80, 100… Plymouth coach after 16, 32, 48, 64, 80, 96, … or Timetable schedule for the coaches Exeter coach at 8.00, 8.20, 8.40, 9.00, 9.20… Plymouth coach at 8.00, 8.16, 8.32, 8.48, 9.04, 9.20… or LCM of 16 and 20 is 80	9:20 (am)	3	M1 for attempt to list multiples of 16 and 20 (at least the first 3 of each, condone 1 addition error) M1(dep) for identifying their LCM A1 9:20 oe (do not accept 9.20pm) or M1 for attempt to draw up a timetable showing when the coaches will run (at least 3 extra times for each, condone 1 addition error) M1(dep) for identifying the first time common to both timetables. A1 9:20 oe (do not accept 9.20pm) or M1 attempt to find the LCM M1 for $2 \times 2 \times 2 \times 2 \times 5$ oe seen A1 9:20 oe (do not accept 9.20pm)

5MB2F_01

Question	Working	Answer	Mark	Notes
17	2×4×4+7=32+7=39	39	2	M1 for 2 × 4×4 or 2× 16 A1 cao

6	(a)		0915	1	B1 for 0915 or 9.15am or other times that identify the train: 0930, 0955, 1040
	(b)	0930-0800 = 1h30 or 90 min 1040-0915 = 1h25 or 85 min 1152-1030 = 1h22 or 82 min	82	3	M1 for an intention or attempt to work out the time of one train: eg 0930-0800 (=1h30oe) or 1040-0915 (=1h25oe) or1152-1030 (=1h22oe) M1 for an attempt to work out the time of all three trains; OR finding the difference between time duration s of at least two trains; OR stating the duration of at least one train correctly, with an attempt at another train duration ; OR stating two durations correctly. A1 82 or 1 h 22 min SC: B2 for 1f 22min stated incorrectly eg 1:22, 1.22, 122
	(c)		45	1	B1 cao

5MB1F_01

Original question 10

The full source mark scheme begins on page 774. Use the original paper code, tier and question number shown above.

2	(a)		10 570	1	B1 for 10 570
	(b)		560	1	B1 cao
	(c)		2.17, 3.95, 5.03, 6.84	1	B1 cao
	(d)(i)		49	1	B1 cao
	(ii)		8	1	B1 cao

Question		Working	Answer	Mark	Notes
4		2 × 60 + 3 × 50 = 120 + 150 = 270 7 × (45 + 55) = 700 1500 – 970 **or** 2 × 60 + 3 × 50 + 7 × 45 +7 × 55 120 + 150 + 315 +385 = 970 1500 – 970 = **or for doubling travel costs** 2 × 2 × 60 + 2 × 3 × 50 = 240 + 300 = 540 7 × (45 + 55) = 700 1500 – 1240 = 260	530	4	M1 for 2 × 60 or 3 × 50 or 7 × 45 or 7 × 55 oe M1 for '2 × 60' + '3 × 50' + '7 × 45' + '7 × 55' oe M1 for 1500 – ('2 × 60' + '3 × 50' + '7 × 45' + '7 × 55') oe A1 cao **or** M1 for 2 × 60 or 3 × 50 or 45 + 55 oe M1 for '2 × 60' + '3 × 50' + '(45 + 55)' × 7 M1 for 1500 – ('2 × 60' + '3 × 50' + '(45 + 55) × 7)' oe A1 cao **Or for doubling travel costs** M1for 2 × 2 × 60 or 2 × 3 × 50 or 7 × 45 or 7 × 55 oe M1for '2 × 2 × 60' + '2 × 3 × 50' + '7 × 45'+ '7 × 55' oe M1for 1500 – ('2 × 2 × 60' + '2 × 3 × 50' + '7 × 45' +'7 × 55') oe A1 for 260

5	(a) (b)(i) (ii)		2 Monday 7	1 2	B1 cao B1 for Monday oe B1 ft for their (b)(i) accept positive and negative answers for 7

6	(a)		5.6	1	B1 cao
	(b)		9.58	1	B1 ft from their weight in part (a) may be shown by selecting correct value in the table

Original question 8

The full source mark scheme begins on page 786. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
13	(a)		17	1	B1 cao
	(b)		(5+3)×2+1	1	B1 cao
	(c)		24	1	B1 for 24 or + 24
	(d)	$\frac{7}{10} + \frac{1}{5} = \frac{7}{10} + \frac{2}{10}$ | | 1 | 5 | | 7 | | 35 | | 10 | 10 | 50 |	$\frac{9}{10}$	2	M1 for a suitable common denominator (multiple of 10) with one fraction out of two (not $\frac{7}{10}$) correct or 0.7 + 0.2 or all cells correct if cell method used A1 for $\frac{9}{10}$ oe, accept 0.9
*14		$96 \div 2^2$ $= 96 \div 4$ $= 24$	No + calculations	3	M1 for $96 \div 2^2$ oe A1 for 24 C1 dep on M1for "No" **with** a calculation to support their conclusion **SC B1:** for $96 \div 2$ **and** a correct conclusion seen **NB** To award the marks in this question working **must** be shown

5MB2F_01

4	(a)		Ka	1	B1 cao
	(b)		1	1	B1 cao
	(c)		Fusion	1	B1 cao

5MB1F_01

Question		Working	Answer	Mark	Notes
7		13.68 +2 × 8.10 + 6.99 36.87 ÷ 3 36.87 − 12.29 40 − 24.58 OR (13.68 ÷ 3) × 2 = 9.12 (8.10 ÷ 3) × 2 = 5.40 (6.99 ÷ 3) × 2 = 4.66 9.12 + 5.40 + 5.40 + 4.66 = 24.58 40 − 24.58	15.42	4	M1 for 13.68 + 2 × 8.10 + 6.99 oe (=36.87) M1 for (“36.87” ÷ 3) × 2 oe or ”36.87” – (”36.87”÷3) oe M1 for 40 − “24.58” A1 cao **OR** M1 for (13.68 ÷ 3) × 2 or (8.10 ÷ 3) × 2 or (6.99 ÷ 3) × 2 oe M1 for “9.12” + 2 × “5.40” + “4.66” M1 for 40 − “24.58” A1 cao **OR** M1 for (13.68 ÷ 3) × 2 or (8.10 ÷ 3) × 2 or (6.99 ÷ 3) × 2 M1 for subtracting the special offer cost of at least one of each item from 40 M1 for successively subtracting costs of all 4 items A1 cao

8		Complete answer: time at: leaving home leaving Sudbury arrival at Chelmsford arrival at meeting	Schedule planned	3	B1 for leaves home at 0750 or earlier B1 for catches the 0800 train or earlier train OR the next train is consistent with home departure time B1 ft showing arrival time in Chelmsford at 0844 AND arrival time at meeting at 0904 ft (dep on meeting arrival time by 9.30)

5MB1F_01

Question		Working	Answer	Mark	Notes
1	(a)		8 000 000	1	B1 cao
	(b)		Seven thousand, one hundred and two	1	B1 cao
	(c)		15.5	1	B1 cao
	(d)		420	1	B1 cao

2		4 × 3 + 2 × 5 = 12 + 10	22	2	M1 for 4 × 3 or 2× 5 or 12 or 10 A1 cao

Question		Working	Answer	Mark	Notes
9	(a)	38.5 – 36.8 OR Counting on the scale from '38.5' to 36.8	1.7	2	M1 for 38.5 A1 for 1.7
	(b)		Temp. at 37.3	1	B1 for temp shown at 37.3 ± 0.1

Original question 12

The full source mark scheme begins on page 800. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
13	(a)	20 + 28 10 × 8/5 = 16 60 – 16 OR 60 × 5/8 = 37.5 37.5 – 10	48 44 km or 27.5 miles	1 3	B1 cao B1 for 5 miles = 8 km or equivalent statement or use of conversion factor 8/5 or 5/8 M1 for 10 × '8/5' (= 16) or 60 × '5/8' (= 37.5) A1 for 44 km or 27.5 miles, accept76 km or 47.5 miles (units must be quoted)

Question		Working	Answer	Mark	Notes
1	(a)		380	1	B1 cao
	(b)		6.2	1	B1 cao
	(c)		Arrow at 34	1	B1 cao

Question		Working	Answer	Mark	Notes
4		£1.18 + 94p = £2.12 £5 – £2.12 – 30p = £2.58 £2.58 ÷ 2 =	1.29	3	M2 for (5 – 1.18 – 0.94 – 0.30) ÷ 2 oe **or** digits 129 (M1 for 1.18 + 0.94 **or** 2.12 seen **or** 1.18 + 0.94 + 0.30 oe **or** 2.42 seen **or** 5 – 1.18 – 0.94 oe **or** 2.88 seen **or** (5 – 1.18 – 0.94) ÷ 2 **or** 1.44 seen **or** 5 – 1.18 – 0.94 – 0.30 oe **or** 2.58 seen) A1 cao **NOTE**: Accept working in £ or pence

6	(a)		– 5	1	B1 cao
	(b)		6	1	B1 for 6 or – 6
	(c)		3	1	B1 cao

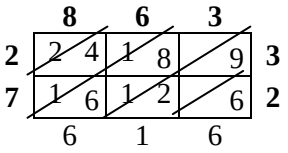
11	(a)		9	1	B1 cao
	(b)		33	2	M1 for 5×5 **or** 25 seen in the working **or** $2 \times 2 \times 2$ **or** 8 seen in the working A1 cao

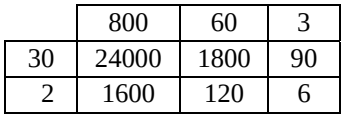
13	(a)(i)		07 29	2	B1 for 07 29
	(ii)		36		B1 for 36 or ft difference between (i) and 06 53
	(b)		07 51	1	B1 cao
	(c)		09 55	1	B1 for 09 55 or 9 55 or five to ten

1MA0_1F

Question		Working	Answer	Mark	Notes
22	(a)	360 ÷ 60 = 6 300 ÷ 60 = 5 6 × 5 =	Yes and 30	3	M1 for dividing side of patio by side of paving slab eg 360 ÷ 60 **or** 300 ÷ 60 **or** 3.6 ÷ 0.6 **or** 3 ÷ 0.6 **or** 6 and 5 seen **or** 6 divisions seen on length of diagram **or** 5 divisions seen on width of diagram M1 for correct method to find number of paving slabs eg (360 ÷ 60) × (300 ÷ 60) oe **or** 6 × 5 **or** 30 squares seen on diagram (units may not be consistent) A1 for Yes **and** 30 (or 2 extra) with correct calculations **OR** M1 for correct method to find area of patio **or** paving slab eg 360 × 300 **or** 108000 seen **or** 60 × 60 **or** 3600 seen **or** 3.6 × 3 **or** 10.8 seen **or** 0.6 × 0.6 **or** 0.36 seen M1 for dividing area of patio by area of a paving slab eg. (3.6 × 3) ÷ (0.6 × 0.6) oe (units may not be consistent) A1 for Yes **and** 30 (or 2 extra) with correct calculations **OR** M1 for method to find area of patio and area of 32 slabs eg. 60 × 60 × 32 **or** 360 × 300 M1 for method to find both areas eg. 60 × 60 × 32 **and** 360 × 300 (units may not be consistent) A1 for Yes **and** 115200 **and** 108000 **OR** Yes **and** 11.52 **and** 10.8 **NB :** Throughout the question, candidates could be working in metres or centimetres

<table>
<tr><th colspan="5">1MA0_1F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>22</td><td>(b)</td><td>1726
25890
27616





24000 + 1800 + 90
+ 1600 + 120 + 6
= 27616</td><td>276.16</td><td>3</td><td>M1 for complete correct method with relative place value correct.
Condone 1 multiplication error, addition not necessary.

OR
M1 for a complete grid.
Condone 1 multiplication error, addition not necessary.

OR
M1 for sight of a complete partitioning method, condone 1 multiplication error. Final addition not necessary.

A1 for digits 27616

A1 ft (dep on M1) for correct placement of decimal point after addition (of appropriate values)

(SC: B1 for attempting to add 32 lots of 8.63)</td></tr>
</table>

Question		Working	Answer	Mark	Notes
24		Acton after 24, 48, 72, 96, .. Barton after 20, 40, 60, 80, .. LCM of 20 and 24 is 120 9:00 am + 120 minutes **OR** Acton after 24, 48, 1h 12 min... Barton after 20, 40, 1 h LCM is 2 hours 9:00 am + 2 hours **OR** Times from 9:00 am when each service leaves the bus station Acton at 9:24, 9:48, 10:12.. Barton at 9:20, 9:40, 10:00.. **OR** 20 = 2 × 2 × 5 24 = 2 × 2 × 2 × 3 2 × 2 × 2 × 3 × 5 = 120	11:00 am	3	M1 for listing multiples of 20 and 24 with at least 3 numbers in each list ; multiples could be given in minutes or in hours and minutes (condone one addition error in total in first 3 numbers in lists) A1 identify 120 (mins) **or** 2 (hours) as LCM A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock **OR** M1 for listing times after 9am when each bus leaves the bus station, with at least 3 times in each list (condone one addition error in total in first 3 times after 9am in lists) A1 for correct times in each list up to and including 11:00 A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock **OR** M1 for correct method to write 20 and 24 in terms of their prime factors 2, 2, 5 and 2, 2, 2, 3 (condone one error) A1 identify 120 as LCM A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock

1MA0_1F

Question		Working	Answer	Mark	Notes
1	(a)		4216	1	B1 cao
	(b)		eight thousand	1	B1 for eight thousand or 8000
	(c)		3570	1	B1 cao

4		10 ÷ 0.79 =12.65… 12×79 = 948 1000 – 948	52p	3	M1 for 1000 ÷ 79 **or** 10 ÷ 0.79 (=12.65…) **or** 12 × 79 **or** 12 × 0.79 A1 for 9.48 or 948 A1 for 52p or £0.52 or £0.52p (SC if M0 then B2 for 0.52, 0.52p or 52 as answer) (SC if M0 then B1 for 12 as answer)

9	(a)		Kanon	1	B1 cao
	(b)		Office, Quikprint	1	B1 cao
	(c)		Smart	1	B1 cao

Question		Working	Answer	Mark	Notes
11	(a)		10 30	1	B1 10 30 **or** 22 30 **or** half past ten or 10.30 etc
	(b)		16 10	1	B1 16 10 Accept 16:10 and 16.10
	(c)		6 50 am	2	M1 for attempt to add 10 mins and 15 mins and 1 hour (= 1 hr 25 min) A1 for 6 50 or 6 50 am oe **OR** M1 for attempt to subtract 10 mins and 15 mins and 1 hour from 8 15 A1 for 6 50 or 6 50 am oe

<table>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>4</td><td></td><td>e.g.
<table><tr><td>Start time</td><td>Finish time</td></tr><tr><td>(A)10 00</td><td>(10 05)</td></tr><tr><td>(B)10 05</td><td>(C)10 48</td></tr><tr><td>(10 48)</td><td>(15 11)</td></tr><tr><td>(D)15 11</td><td>(E)15 53</td></tr><tr><td>(15 53)</td><td>(F)15 58</td></tr></table>
e.g
leave house (before) 8 00
catch 8 05 train
arrive in Middleton at 8 48
leave Middleton 14 42
arrive back 15 26
get home (after) 15 31</td><td>Completed schedule</td><td>5</td><td>M1 (indep) for establishing a start time at least 5 minutes before (B) or the end time, provided the end time is not after (B)

M1 (indep) for establishing a correct start and finish time from the first train timetable using (B) and (C) or their equivalent bracketed values if (B) and/or (C) is missing

M1 (indep) for establishing at least 4 hours in Middleton by using (C) and (D) or their equivalent bracketed values if (C) and/or (D) is missing

M1 (indep) for establishing a correct start and finish time from the second train timetable using (D) and (E) or their equivalent bracketed values if (D) and/or (E) is missing. (E) can be after 16 00.

A1 for a fully correct schedule with (F) before 16 00 and at least 5 minutes after (E) or the start time, provided the start time is not before (E)

(Note: If the candidate writes a schedule without using the table then mark their written schedule.)

(Note: Candidates can use 12hour clocktimes.)</td></tr>
</table>

5MB1F_01

7		(8 = 3 + 3 + 2 =) £9 + £9 + 2×£3.75 = £25.50 £40 - £25.50 = £14.50	14.50	3	M1 for 2×9 + 2×3.75 oe or 18 + 7.5(0) or 25.5(0) seen M1 for 40 – "25.50" A1 cao (SC B1 for £10 or £13 or £12.25)

5MB1F_01

Question		Working	Answer	Mark	Notes
1	(a)		68	1	B1 cao
	(b)		4 000 000	1	B1 cao
	(c)		7 tenths	1	B1 accept $\frac{7}{10}$

Question		Working	Answer	Mark	Notes
4		3 × 45p = £1.35 2 × 75p = £1.50 5 × £1.50p = £7.50 + £10.35 Change = £20 – £10.35	£9.65	4	M1 for 3 × 45 or 135 or 2 × 75 or 5 × 1.50 or 7.5 or 5 × 150 or 750 M1 for attempt to total 3 different items M1 (dep on at least M1 already) for attempt to take their total away from £20 with consistent units A1 for £9.65 cao **Alternative** M1 for 3 × 45 or 135 or 2 × 75 or 5 × 1.50 or 7.5 or 5 × 150 or 750 M1 for attempt to subtract one item from £20 M1 for attempt to subtract three different items from £20 with consistent units A1 for £9.65 cao SC B2 for £17.30

9		07 35 + 1h 35 min + 40 min	09 50	3	M2 for 7 35 + 1 hr 35 + 40 or 710 + 25 + 1 hr 35 + 40 (M1 for 1h 35 + 40 (=135 mins or 2hr 15 mins oe) Or 1hr 35 + 25 + 40 (=160 mins or 2hr 40mins oe) Or 7 35 + 1 hr 35 (=9 10) or 7 10 + 1hr 35 (=8 45) Or 7 35 + 40 (=8 15) or 7 10 + 40 (= 7 50) Accept from addition method using minutes or minutes and hours or by counting on along time line) A1 for 9 50(am)

Question		Working	Answer	Mark	Notes
13	(a)	$\frac{2}{5} \times \frac{3}{8} = \frac{6}{40}$	$\frac{3}{20}$	2	M1 for multiplying the numerators and the denominators A1 for $\frac{3}{20}$ or 0.15 cao
	(b)	$\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$ | | 1 | 4 | | 3 | | 12 | | 8 | 8 | 32 |	$\frac{5}{8}$	2	M1 for a suitable common denominator (multiple of 8) with one fraction out of two (not $\frac{3}{8}$) correct or 0.25 + 0.375 or all cells correct if cell method used A1 for $\frac{5}{8}$ or equivalent fraction, accept 0.625

Question		Working	Answer	Mark	Notes
15		515 35 × 2575 15450 18025 10 × 515 = 5150 10 × 515 = 5150 10 × 515 = 5150 5 × 515 = 2575 18025 5 1 5 1 | 1/5 | 0/3 | 1/5 | 3 8 | 2/5 | 0/5 | 2/5 | 5 0 2 5 500 10 5 30 15 000 300 150 5 2500 50 25 15 000 + 2500 + 300 + 50 + 150 + 25 =18 025	£180.25	4	M1 for 515 × 0.35 or 515 × 35 This may be implied from an incomplete method of multiplication M1 for a complete method with relative place value correct. Condone one multiplication error, addition not necessary Or for a complete grid, condone one multiplication error, addition not necessary Or for sight of a complete partitioning method. Condone one multiplication error final addition not necessary M1 (dep on the previous M1) for addition of appropriate elements of the calculation A1 for £180.25(p) or 18025p (with '£' sign deleted)

5MB2F_01

Question	Working	Answer	Mark	Notes
15	3307 × 35 = 16535 + 99210 = 115745 10 × 3307 = 33070 10 × 3307 = 33070 10 × 3307 = 33070 5 × 3307 = 33070 + 16535 115745 3307 × 35 = 3307 × (30 + 5) 3307 × 30 = 3307 × 3 × 10 3307 × 3 = 9921 9921 × 10 = 99210 3307 × 5 = 16535 99210 + 16535 = 115745 Grid method: 3307 × 35 3307 = 3000 + 300 + 7 35 = 30 + 5 30 × 3000 = 90 000 30 × 300 = 9 000 30 × 7 = 210 5 × 3000 = 15 000 5 × 300 = 1 500 5 × 7 = 35 90 000 + 15 000 + 9 000 + 1 500 + 210 + 35 115 745 Lattice: 3 3 0 7 1: 0/9 0/9 0/0 2/1 → 3 1: 1/5 1/5 0/0 3/5 → 5 5 7 4 5 Grid method: 2792 × 35 2792 = 2000 + 700 + 90 + 2 30 × 2000 = 60 000 30 × 700 = 21 000 30 × 90 = 2 700 30 × 2 = 60 5 × 2000 = 10 000 5 × 700 = 3 500 5 × 90 = 450 5 × 2 = 10 60 000 + 21 000 + 2 700 + 60 + 10 000 + 3 500 + 450 + 10 97 720 Lattice: 2 7 9 2 0/6 2/1 2/7 0/6 → 3 9: 1/0 3/5 4/5 1/0 → 5 7 7 2 0 115 745 – 97 720 = 18 025			OR M1 for 3307 × 0.35 − 2792 × 0.35 or 3307 × 35 − 2792 × 35 M1 for a correct method of multiplication of at least one product, using digits 3307 and 35 or 2792 and 35 Condone one multiplication error, addition not necessary M1 (dep on the previous M1) for addition of appropriate elements of the calculation A1 for £180.25 or 18025p (with '£' sign deleted)

5MB2F_01

2	(a)		July and August	1	B1 (allow incorrect spellings or abbreviations as long as the intention is clear)
	(b)		April	1	B1 (allow incorrect spelling or abbreviation as long as the intention is clear)
	(c)		14	1	B1 cao
	(d)	24–13	11	2	M1 for attempt to read off and subtract (eg 24–13) A1 for 11 (accept – 11)

4	(a)		–2	1	B1 cao
	(b)		–18	1	B1 cao

8		10 × £2.50 = 25.00 11 × 15p = 1.65 7 × 20p = 1.40 25 + 1.65 + 1.4	28.05 Yes	5	B1 calculations involve all three items and all five days M1 any one of "10"×£2.50, "11"×15p, "7"×20p A1 any one of 25.00, 1.65, 1.40 A1 for 28.05 C1 (dep M1) for comparison and correct deduction using their figures eg 28.05 so yes OR B1 calculations involve all three items and all five days M1 any one of 1 × £2.50 + 3 × 15p + 2 ×20p or 4 × 15p or 2 × £2.50 + 2 × 15p or 4 × £2.50 + 3 × 20p or 3 × £2.50 + 2 × 15p + 2 ×20p A1 any one of 3.35, 0.60, 5.30, 10.60, 8.20 A1 for 28.05 C1 (dep M1) for comparison and correct deduction using their figures eg 28.05 so yes

5MB3F_01

Question		Working	Answer	Mark	Notes
9	(a)	13+17+14+22	66	2	M1 for 13+17+14+22 or (13+17+14)×2 A1 for 66 or 88
	(b)	13+17=30 22+14=36 36–30	6	3	M1 for 13+17 (=30) or for 22+14 (=36) M1 (dep M1) for "36" – "30" A1 cao
	(c)	17 + 1 =	18	2	M1 for 17+1 or 1+16+1 or attempt to find by drawing / diagrams or answer of 17 or 19 A1 for 18 OR accept the other way around the diagram M1 for 49+1 or 1+48+1 or attempt to find by drawing / diagrams or answer of 49 or 51 A1 for 50

Question		Working	Answer	Mark	Notes
13		$\frac{2}{5}$of 14 = 5.60 $\frac{7}{20}$of 14 = 4.90 14 – 5.60 – 4.90 OR $\frac{2}{5} + \frac{7}{20} = \frac{8}{20} + \frac{7}{20} = \frac{15}{20}$ oe then $14 \times \frac{15}{20}$=10.50; 14–10.50 or $1 - \frac{15}{20} = \frac{5}{20}$; $\frac{5}{20} \times 14$ OR 40% + 35% = 75% 100% - 75% = 25% $14 \times \frac{25}{100}$	3.50	4	M1 for $\frac{2}{5} \times 14$ or $14 \times 2 \div 5$ (=5.6) M1 for $\frac{7}{20} \times 14$ or $14 \times 7 \div 20$ (= 4.9) M1 (dep M1) for 14 – "5.6(0)" – "4.9(0)" A1 for 3.5(0) OR M1 for $\frac{2}{5} + \frac{7}{20}$ (= $\frac{15}{20}$ oe) M1 for $14 \times \frac{15}{20}$ (=10.5) M1 (dep M1) for 14 – "10.5" A1 for 3.5(0) OR M1 for $\frac{2}{5} + \frac{7}{20}$ (= $\frac{15}{20}$ oe) M1 for $1 - \frac{15}{20}$ (= $\frac{5}{20}$ oe) M1 (dep M1) for $14 \times \frac{5}{20}$ A1 for 3.5(0) OR M1 for 40% + 35% (= 75%) M1 for 100% - 75% (= 25%) M1 (dep M1) for $14 \times \frac{25}{100}$ oe A1 for 3.5(0) NB: accept decimal equivalents throughout

5MB3F_01

15		18 × 6.5 × 5 = 585 585 ÷ 4	146 or 147	4	M3 for 18 × 6.5 × 5 ÷ 4 or sight of 146.25 (M2 for 18 × 6.5 × 5 or 18 × 5 ÷ 4 or 6.5 × 5 ÷ 4 or 18 × 6 5 ÷ 4 or sight of 585 or 22.5 or 8.125 or 29.25) (M1 18 × 6.5 or 6.5 × 5 or 18 × 5 or ÷4 or sight of 117 or 32.5 or 90) A1 for 146 or 147

18	(a)	$x + 2x + x + 5$	$4x + 5 = 33$	3	M1 for sight of $2x$ oe or $x+5$ oe M1 for sight of $2x$ oe and $x+5$ oe A1 for $x + 2x + x + 5 = 33$ leading to $4x + 5 = 33$
	(b)	$4x + 5 = 33$ $4x = 33 - 5$ $4x = 28$	7	2	M1 for an intent to subtract 5 from both sides or to divide each term by 4 or $33 - 5$ or 28 seen or $\frac{28}{4}$ A1 for 7

5MB3F_01

Question		Working	Answer	Mark	Notes
19		$\frac{10}{3} \div \frac{19}{4} = \frac{10}{3} \times \frac{4}{19}$ OR 3.33… ÷ 4.75	$\frac{40}{57}$ or 0.70175(4386…)	2	M1 for $\frac{10}{3}$ oe and $\frac{19}{4}$ oe or 3.33(…) and 4.75 or 40 ÷ 57 or 0.7, 0.70, 0.701, 0.702, 0.7017, 0.7018 A1 for $\frac{40}{57}$ oe or 0.70175(4386…)

2	(a)		507	1	B1 cao
	(b)		40	1	B1 for 40 or forty or 4 tens (do not accept an answer of "tens")
	(c)		6000	1	B1 for 6000 or six (6) thousand

Question		Working	Answer	Mark	Notes
6	(a)		Tuesday	1	B1 for Tuesday (accept 8)
	(b)		– 6	1	B1 cao
	(c)		Wednesday or 8	2	B2 for Wednesday or 8 OR M1 for an attempt to find the difference in at least 3 of: 5 and 4, 8 and 6, 6 and -2, -1 and -4, -3 and -6; ie the answers need not be correct. A1 for Wednesday or 8

10		F + C + S 30 + 7 + 8 = 45 3×20 – 45 = 15	15	4	M2 for 30 + 7 + 8 (= 45) (M1 for 12 × 2 + 7 × 3 + 8 (= 53) or 12 × 2 + 7 × 2 (= 38)) M1 (dep on at least M1) for “20 × 3” – “45” or “20 × 3” – “53” A1 cao [SC: B1 for an answer of 22 if M0 scored]

14	(a)		08 50	1	B1 for 08 50 or 8 50 (am) or 10 to 9
	(b)	13 43 – 13 29	14	1	B1 cao
	(c)*	e.g. HL to SC: 11 02 – 11 41 Visit (at least 3 hours) SC to HL: 15 16 – 15 49 [Note : there are 9 possible solutions]	A fully correct plan showing departure times and arrival times of the two bus journeys	4	B1 for a departure time of 08 02 or 09 04 or 10 12 or 11 02 from HL M1 (indep) for a correct arrival time at SC and a correct departure time from SC (or Cartbridge St) which allows for a stay of at least 3 hours in SC (the differencing does not have to be seen) OR for correctly adding 3 hours to a their arrival time at SC B1 for a departure time from SC of 13 20 (13 11 from CS) or 14 24 (14 14 from CS) or 15 16 (15 07 from CS) C1 (dep on M1) for a complete correct plan which includes the departure and arrival times of the two bus journeys [Note: bus departure times may be identified by their starting times. Eg the 15 07 from Cartbridge Street would be acceptable for the identification of the bus which arrives a HL at 15 49]

1MA0_1F

Question		Working	Answer	Mark	Notes
20		$\frac{1}{2} \times 60 = 30$, $30 \times 5 = 150$ $\frac{1}{3} \times 60 = 20$, $20 \times 4 = £80$ $3 \times 60 = 180$ $180 + 75 - 150 - 80 = £25$ 10 bags (i.e. 60 – 30 – 20) sold for 25 $25 \div 10 = 2.50$ OR $\frac{1}{2} \times 60 = 30$, $30 \times £2 = £60$ profit $\frac{1}{3} \times 60 = 20$, $20 \times £1 = £20$ profit $60 + 20 = £80$ $80 - 75 = 5$ loss on 10 bags (i.e. 60 – 30 – 20) $10 \times £3 = £30$ $30 - 5 = £25$ $£25 \div 10 = £2.50$	2.50	4	M1 for $\frac{1}{2} \times 60 \times 5$ (=150) or $\frac{1}{3} \times 60 \times 4$ (=80) M1 (dep on 1st M1) for $3 \times 60 + 75$ – '150' – '80' oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5) OR M1 for $\frac{1}{2} \times 60 \times 2$ (=60) or $\frac{1}{3} \times 60 \times 1$ (=20) M1 (dep on 1st M1) for (60 – '30' – '20') × 3 – ('60' + '20' – 75) oe (=25) M1 (dep on previous M1) for '25'÷(60 – '30' – '20') A1 for 2.50 (accept 2.5)

1MA0_1F

25		$\frac{9}{2}\times(12+18)=135$ 135 ÷ 20 = 6.75 (=7 bags) 7 × 4.99 OR $18\times9-\frac{1}{2}(6\times9)$ = 135 135 ÷ 20 = 6.75 (=7 bags) 7 × 4.99	34.93	4	M1 for $\frac{9}{2}\times(12+18)$ or $18\times9-\frac{1}{2}(6\times9)$ or $9\times12+\frac{1}{2}\times(18-12)\times9$ or 135 seen M1 (dep) for '135'÷ 20 or 6 or 7 seen M1 (dep on previous M1) for '6' × 4.99 or '7' × 4.99 A1 cao [SC: M1 for (12×9 + 6×9) ÷ 20 (= 162÷20) or 8 or 9 seen M1 (dep) for '8' × 4.99 or '9' × 4.99 OR M1 for (18×9 − 6×9) ÷ 20 (= 108÷20) or 5 or 6 seen M1 (dep) for '5' × 4.99 or '6' × 4.99]

1MA0_1F

Question		Working	Answer	Mark	Notes
1	(a)		3600	1	B1 for 3600
	(b)		1.8	1	B1 for 1.8
	(c)		3.6 shown	1	B1 for 3.6 marked on number line

12		3 ×9.58 + 12.61 + 7.06 + 4.41 (= 52.82)	Yes + working	4	M2 for 3 ×9.58 (=28.74) + 12.61 + 7.06 + 4.41 or 55 − 3 ×9.58 (=28.74) − 12.61 −7.06 − 4.41 (M1 for at least 2 correct costs seen) A1 for 52.82 or 2.18 C1 (dep M1) for comparison and correct deduction using their total cost or amount left

1MA0 2F

14		3 × 4 = 12 12 m^2 = 120000 cm^2 20 × 20 = 400 120000 ÷ 400 = 300 300 ÷ 10 = 30 **OR** 3m = 300cm, 4 m = 400cm 300 ÷ 20 = 15, 400 ÷ 20 = 20 15 × 20 = 300 300 ÷ 10 = 30 30 × 34.99 = 1049.70	No with working	6	B1 for a correct conversion of 3 m or 4 m to cm or 20 cm to m or a correct and appropriate area conversion. M1 for 300 × 400 (=120000) or 3 ×4 (=12) M1 for 20 × 20 or 0.20 × 0.20 M1 for '120000'÷ '400' or '12' ÷ '0.04' A1 for 1049.7(0) C1 (dep M1) for comparison and correct deduction using their total cost with supportive working OR B1 for a correct conversion of 3 m or 4 m to cm or 20 cm to m or a correct and appropriate area conversion. M1 for 300 ÷ 20 or 400 ÷ 20 or 3 ÷ 0.2(0) or 4 ÷0 2(0) M1 for 300 ÷ 20 and 400 ÷ 20 or 3 ÷ 0.2(0) and 4 ÷0 2(0) M1 for '15' × '20' A1 for 1049.7(0) C1 (dep M1) for comparison and correct deduction using their total cost with supportive working

1MA0_2F

Question		Working	Answer	Mark	Notes
21	(a)		56	1	B1 for 56 (accept answer in the range 55 to 57)
	(b)	Barry's Bricks £50 Bricks ArUs £65 65 − 50	15	3	M1 for 50 or 65 (accept 64 – 66) M1 for 65 – 50 (accept 64-66 for 65) A1 for 15 (accept answer in range 14 to 16)

Question		Working	Answer	Mark	Notes
1	(a)		white	1	B1 cao
	(b)		medium	1	B1 cao
	(c)		43	1	B1 cao

3	(a)(i)		7 30	3	B1 for (0)7 30 or 19 30 or half past 7 oe (ignore am or pm)
	(ii)	9.26 – 7.30 or 7 30 to 8 30 min 8 to 9 1 hour 9 to 9 26 <u>26 min</u>	1 hour 56 minutes		M1 for a valid attempt to work out the difference between '7 30' and 9 26 eg. from 9.26 – '7.30' or by splitting the interval and adding A1ft for 1 hour 56 minutes or 116 minutes or 1h 56 m or 1 h 56 or 116 m or 1:56 SC B1 for 1.56
	(b)		8.6	1	B1 for 8.6 oe

Question		Working	Answer	Mark	Notes
5		30 ÷ 3.85 = 7.7922....	7	2	M1 for 30 ÷ 3.85 oe or 7.79(22...) seen or 26.95 seen or 30.8(0) seen A1 cao

Question		Working	Answer	Mark	Notes
1	(a)		14	1	B1 cao
	(b)	72 minutes = 1 hour 12 minutes	23 40	2	M1 for attempt to convert from minutes to hours and minutes or to add 72 minutes on to 22 28 A1 for 23 40 (accept 11.40 pm) SC B1 11:40 (am)

2	(a)		1357, 3517, 5713, 7135	1	B1 cao
	(b)		0.345, 0.35, 0.354, 0.4	1	B1 cao

Question		Working	Answer	Mark	Notes
5	(i)	10 ÷ 1.95	5	4	M1 for 10 ÷ 1.95 or 10 ÷ 2 or attempts repeated addition of 1.95 or attempts repeated subtraction of 1.95 from 10 oe A1 for 5
	(ii)	10 – 5 × 1.95	25p or £0.25		M1 for 10 – '5' × 1.95 or '5'×5 or '5'×0.05 or 10-'9.75' A1 for 25p oe correct units must be included

Original question 10

The full source mark scheme begins on page 814. Use the original paper code, tier and question number shown above.

3	(a)	125 + 16	£141	2	M1 125 + 16 A1 cao SC B1 for 144 (the cost of Coat and Shirt)
	(b)	50 – 3 = 47 28 + 19	Jeans and Shirt	3	M1 50 – 3 M1 for a pair of items with total price < 50 or a pair of item prices with total< 50 A1 Jeans and Shir t

7	(a)	9000 ÷ 45 = 200 200 ÷ 25 OR 9000 ÷ 45 =360 360 ÷ 45 OR 25 x 45 = 1125 9000 ÷ 1125	8	3	M1 9000 ÷ 45 (= 200) M1(dep) for "200" ÷ 25 A1 cao OR M1 for 9000 ÷ 25 (=360) M1 (dep) for "360" ÷ 45 A1 cao OR M1 25 x 45 or 1125 M1 (dep) for 9000 ÷ "1125" A1 cao
	(b)	690 × 25 = 17250 17250 + 260 = 17510 17510 ÷ 1000 17510	17.51	4	M1 690 × 25 or 17250 M1 (dep) for "17250" + 260 (=17510) M1 (dep on first M1) for "17250" ÷ 1000 (=17.25) or "17510" ÷ 1000 A1 cao

5MB3F_01

Question		Working	Answer	Mark	Notes
20	(a)		–1, 0, 1, 2, 3	2	B2 cao (B1 four correct values and none incorrect or –2, –1, 0, 1, 2, 3)
	(b)	$3x > 11$ $x > \frac{11}{3}$ or 3.66.. OR $(16 - 5) \div 3$ $\frac{11}{3}$ or 3.66..	4	3	M1 $3x > 11$ or $3x > 16 - 5$ or $3x + 5 - 5 > 16 - 5$ A1 $\frac{11}{3}$ or 3.6(66..) or 3.7 (Accept = or $\geq$ in place of >) B1 ft OR M1 $(16 - 5) \div 3$ A1 $\frac{11}{3}$ or 3.6(66..) or 3.7 B1 ft

3	(a)		98 145 358 709 835	1	B1 cao
	(b)		–8 –5 –1 4 7	1	B1 cao
	(c)	(0.2, 0.25, 0.4, 0.5, 0.75) $(\frac{4}{20}, \frac{5}{20}, \frac{8}{20}, \frac{10}{20}, \frac{15}{20})$ (20%, 25%, 40%, 50%, 75%)	0.2 $\frac{1}{4}$ 40% 0.5 $\frac{3}{4}$	2	M1 for two correct conversions into the same form A1 cao If no method seen SCB1 for correct numbers in the reverse order

1MA0_1F

Original question 5

The full source mark scheme begins on page 828. Use the original paper code, tier and question number shown above.

Original question 8

The full source mark scheme begins on page 828. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
16			09 36	3	M1 for listing 9, 18, 27, 36, 45, ... (at least 3 correct multiples with at most one incorrect) M1 for listing 12, 24, 36, 48, ... (at least 3 correct multiples with at most one incorrect) A1 for 09 36 or 9 36(am) OR M1 for listing 9.09 9.18 9.27 9.36 ... (at least 3 correct times with at most one incorrect) M1 for listing 9.12 9.24 9.36 ... (at least 3 correct times with at most one incorrect) A1 for 09 36 or 9 36(am) OR M1 for $9 = 3 \times 3$ **or** $12 = 2 \times 2 \times 3$ (could be in a factor tree) M1 for $9 = 3 \times 3$ **and** $12 = 2 \times 2 \times 3$ (could be in a factor tree) A1 for 09 36 or 9 36(am) SC B2 9 36pm or (after) 36 (minutes) on the answer line

Question		Working	Answer	Mark	Notes
19		183 × 47 1281 7320 8601 |	| | 1 | 8 | 3 | × | | | | | 4 | 3 | 2 | 1 | 2 | 4 | | 8 | | 7 | 5 | 6 | 2 | 1 | 7 | | | 6 | 0 | 1 | | | | | | | |---|---|---|---| | 100 | 80 | 3 | | | 4000 | 3200 | 120 | 40 | | 700 | 560 | 21 | 7 | 4000 + 3200 +120 + 700 + 560 + 21 = 8601	86.01	3	M1 for a complete method to multiply 183 by 47 (condone one multiplication error) A1 for digits 8601 given as the answer B1 (dep on M1) for correctly writing their answer to 2 decimal places

1MA0_1F

Original question 8

The full source mark scheme begins on page 849. Use the original paper code, tier and question number shown above.

9	(a)		2.5	1	B1 cao
	(b)		2008	1	B1 cao
	(c)		Correct statement	1	B1 for a correct statement, e.g. profit increased, profit went up by 2 million pounds

Original question 12

The full source mark scheme begins on page 849. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
1	(a)		65	1	B1 cao
	(b)		127	1	B1 cao
	(c)		30	1	B1 cao

2			360	3	M1 for 480 ÷ 4 (=120) oe M1 for 480 – '120' A1 cao OR M1 for 480 ÷ 4 (=120) oe M1 for '120' × 3 (=360) A1 cao

4			700p or £7	3	M1 for 10 × 50 (=500) or 10 ×20 (=200) M1(dep) for '500' + '200' A1 for 700p or £7 or £7.00 OR M1 for 50 + 20 (=70) M1(dep) for 10 × '70' A1 for 700p or £7 or £7.00 OR M1 for 50 + 20 + 50 + 20 (=140) M1(dep) for 5 × '140' A1 for 700p or £7 or £7.00 OR M1 for 3 × 50 + 2 × 20 (=190) or 2 × 50 + 3 × 20 (=160) M1(dep) for 2 × ('190' + '160') A1 for 700p or £7 or £7.00

Question		Working	Answer	Mark	Notes
5			22	2	M1 for 140 – 118 (=22) or 10 + 10 + 2 (=22) or 11 × 2 (=22) A1 cao (SC B1 for 118 seen)

Question		Working	Answer	Mark	Notes
9	(a)		18	1	B1 cao
	(b)		14	1	B1 cao

13			5	3	M1 for correct method to find total number of students M1 for correct method for dealing with adult helpers A1 cao (SC B2 for 5 (coaches) if no working seen)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			85	4	M1 for (angle YXZ =) 360 – 300 (=60) M1 for (angle XYZ =) 180 – 145 (=35) A1 cao C1 (dep on M1) for full reasons and unambiguous notation for angles (may be shown in diagram) (angles around a point sum to 360 and angles on a straight line sum to 180 and angles in a triangle sum to 180)
*15			£10 identified	5	M1 for correct attempt to use two full glasses M1 for correct attempt to work out total volume of drink for all people (one or two full glasses) M1 for correct attempt to use ratio M1 for changing to consistent units C1 (dep on M4) for £10 clearly identified (SC B1 for correct answer of £10 if no working shown)

Original question 15

The full source mark scheme begins on page 861. Use the original paper code, tier and question number shown above.

19		$\frac{3}{8}+\frac{1}{2}=\frac{3}{8}+\frac{1\times4}{2\times4}$ OR $\frac{3}{8}+\frac{1}{2}=\frac{3\times2}{8\times2}+\frac{1\times8}{2\times8}$	$\frac{7}{8}$	2	M1 for converting to two fractions with the same denominator and at least one numerator with the correct expression or number A1 for $\frac{7}{8}$ oe

2	(a)		35.91	1	B1 for 35.91
	(b)		1.2	1	B1 for 1.2
	(c)		6.859	1	B1 for 6.859
	(d)		1.6	1	B1 for 1.6

3	(a)		3	1	B1 for 3
	(b)		5.8	1	B1 for 5.8 oe
	(c)		85	1	B1 for 85

Question		Working	Answer	Mark	Notes
5			No with (£)120 & (£)130 or (£)10 difference	4	M1 for correct method to work out morning sales of the daffodils or of the tulips eg 75 × 0.8 (= 60) eg 50 × 0.9 (= 45) eg 105 M1 for correct method to work out total afternoon sales eg (120 – 75) × 0.2 + (80 – 50) × 0.2 (=15) eg 9 + 6 (=15) M1 (dep on M1) correct method to work out total sales eg total morning sales + total afternoon sales A1 for no (profit) **and** (£)120 & (£)130 or (£)10 difference OR M1 for correct method to work out the morning sales or the afternoon sales of either daffodils or tulips eg 75×0.8 (= 60) eg (120 – 75) × 0.2 (= 9) eg 50 × 0.9 (= 45) eg (80 – 50) × 0.2 (= 6) M1 for correct method to work out profit/loss on tulips or on daffodils eg 60 + 9 (= 69) eg 45 + 6 (= 51) M1 for correct method to work out profit/loss on tulips **and** on daffodils A1 for no (profit) **and** (£)120 & (£)130 or (£)10 difference NOTE: working can be in pence or £

5MB3F_01

Original question 7

The full source mark scheme begins on page 873. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
9			3	3	M1 for 90 × 0.2 (= 18) M1(dep) for (90 × 0.2) ÷ 6 or '18' ÷ 6 A1 cao OR M1 for 6 ÷ 0.2 (= 30) M1(dep) for 90 ÷ (6 ÷ 0.2) or 90 ÷ '30' A1 cao OR M1 for 6 ÷ 90 (= 0.0666… seen) M1(dep) for 0.2 ÷ (6 ÷ 90) A1 cao OR M1 for 6 × (1÷ 0.2) or 6 × 5 or (= 30) M1(dep) for '30'+'30'+'30' A1 cao

10		140÷1000 = 0.14 (litres) OR 1.2×1000 = 1200 (ml)	no and reason	2	M1 for 140 ÷ 1000 C1 for no (oe) and 0.14 seen OR M1 for 1.2 × 1000 C1 for no (oe) and 1200 seen OR M1 $1l = 1000ml$ C1 for no with correct explanation

5MB3F_01

Question		Working	Answer	Mark	Notes
11	(a)		2436	1	B1 for 2436
	(b)		£267.96	3	M1 for '2436' × 11 or '2436' × 0.11 A1 for digits 26796 or f.t. from (a) A1 for £267.96 or 26 796p

Original question 1

The full source mark scheme begins on page 890. Use the original paper code, tier and question number shown above.

Original question 3

The full source mark scheme begins on page 890. Use the original paper code, tier and question number shown above.

Original question 6

The full source mark scheme begins on page 890. Use the original paper code, tier and question number shown above.

Original question 7

The full source mark scheme begins on page 890. Use the original paper code, tier and question number shown above.

Original question 13

The full source mark scheme begins on page 890. Use the original paper code, tier and question number shown above.

Original question 17

The full source mark scheme begins on page 890. Use the original paper code, tier and question number shown above.

3	(a)		2	1	B1 cao
	(b)		Puffin Seal	1	B1 cao
	(c)	579 − 449	£130	2	M1 for identifying 579 **and** 449 (may be indicated in the table) A1 cao
	(d)		3.6m	3	M1 for 30 × 12 **or** digits 36 M1 (dep) for “360” ÷ 100 A1 for 3.6 or 3.60 or 3m 60cm **OR** M1 for 30 ÷100 (=0.3) M1 (dep) for "0.3"× 12 A1 for 3.6 or 3.60 or 3m 60cm

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
4	(a)		8	1	B1 cao
	(b)		- 12	1	B1 cao

5		Eg. 65 − 17 + 29 = 77 80 − "77"	3	3	M1 for 77 **or** a correct start to the process using at least two of the given figures M1 for a complete correct method A1 cao

6	(a)		34	1	B1 cao
	(b)		10 45	1	B1 10 45 accept any correct time notation, ignore am or pm

7			1.83 m or 183 cm	2	M1 for 178 + 5 **or** 1.78 + 0.05 **or** 183 **or** 1.83 A1 for 1.83 m or 183 cm (units must be correct)

Original question 11

The full source mark scheme begins on page 910. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
12	(a)		50	3	M1 for $\frac{6}{8}$ × 80 oe (= 60) **or** $\frac{1}{8}$ × 80 oe (= 10) (may be seen on gauges eg. 10 by $\frac{1}{8}$ position **or** 60 by $\frac{6}{8}$ position on either gauge) M1 (dep) for a complete correct method eg.“60” – “10” **or** 5 × "10" A1 for 50 (accept answers in the range 49 - 51) or M1 for $\frac{6}{8}-\frac{1}{8}$ $(=\frac{5}{8})$ M1 (dep) for “$\frac{5}{8}$”× 80 A1 for 50 (accept answers in the range 49 - 51)
	(b)		12	2	M1 for 180 ÷ 15 oe A1 cao
*13 QWC			No and eg. £4.10, £4 or 10p	3	M1 for adding at least 3 of 1.25, 1.15, 85, 85 A1 for 4.1(0) or 410 C1 ft (dep on M1) for correct statement comparing £4 and their total (units must be given and correct) **or** for correct statement referring to difference eg. 10p short (units must be given and correct) **OR** M1 for finding at least one difference between coins and costs eg 2 – 0.85 – 0.85 or 1.15 – 1 or 1.25 – 1 A1 for 0.10 or 10 C1 ft (dep on M1) for correct statement referring to total difference units (must be given and correct) (SC : B1 for correct figures with no working eg. £4.10 and £4 **or** 10p)

PAPER: 1MA0_1F

19			£1.12	3	M1 for use of 1000 g in 1 kg eg. 1000 ÷ 200(=5) **;** 200 ÷ 1000(=0.2) oe **;** 20% **;** 500g costs £2.80 **;** 100g costs 56p M1(dep) for a fully correct method eg. 5.60 ÷ "5" (= 1.12) **or** 56 × 2 A1 £1.12 or 112p

22	(a)		3	1	B1 cao
	(b)		5	1	B1 cao
	(c)		18	2	M1 for “30” – “12” seen with at least one correct A1 cao (SC : B1 for 25 **and** 12 seen with an answer of 13)

Question		Working	Answer	Mark	Notes
1	(a)		2085	1	B1 for 2085 or 2,085
	(b)		five thousand, one hundred and eight	1	B1 for five thousand, one hundred (and) eight
	(c)		9 tenths		B1 for 9 tenths oe, eg $\frac{9}{10}$ or $\frac{90}{100}$
	(d)		160	1	B1 cao

2			inches grams litres	3	B1 for inch(es) or ins B1 for gram(s) or g B1 for litre(s) or *l* or millilitre(s) or m*l* (accept centilitres or cc or c*l* or cm^3)

Question		Working	Answer	Mark	Notes
7			110	2	M1 for 30 + 70 + 20 (=120) or 50 + 40 + 20 (=110) or 50 + 10 + 60 (=120) A1 cao

17	(a)		720	2	M1 for 6 × 120 or 600 × 120 ÷ 100 oe A1 for 720 oe (accept 720.0)
	(b)		£10 or €12	3	M1 for 540÷1.2 (=450) oe, eg 4×100+50 (=450) M1(dep) for 460 – '450' (=10) A1 for £10 oe (accept £10.0) OR M1 for 460×1.2 (=552) oe, eg 4×120+60+12 (=552) M1 (dep) for '552' – 540 (=12) A1 for €12 oe (accept €12.0)

3	(a)		08 23	1	B1 oe e.g.8 23 am/pm or 20 23 or in words
	(b)	0845 to 09 00 is 15 mins 09 00 to 10 00 is 1 hour 10 00 to 10 20 is 20 mins	1h 35 min	2	M1 for attempt to subtract the two times with evidence of 60 minutes in an hour or for attempt to add on from 8 45 to 10 20 or 1h 35 min incorrectly stated A1 for 1 hour 35 minutes oe

Original question 8

The full source mark scheme begins on page 930. Use the original paper code, tier and question number shown above.

9			£267	2	M1 for selecting one correct item from the table i.e. £122 or £145 (may be circled in the table or written in the workspace) A1 for £267

Question		Working	Answer	Mark	Notes
1	(a)		Three thousand four hundred and sixty	1	B1 oe
	(b)		300	1	B1 cao
	(c)		6.04,6.37,6.48,6.5(0),6.59	1	B1 cao

4	(a)		– 4	1	B1 cao
	(b)		3	1	B1 for 3 or – 3
	(c)		4	1	B1 cao

Question		Working	Answer	Mark	Notes
10	(a)		1008	1	B1 cao
	(b)		28	1	B1 cao
	(c)		1118	1	B1 cao

Question		Working	Answer	Mark	Notes
1	(a)		44.89	1	B1 cao
	(b)		3.7	1	B1 accept -3.7 or ± 3.7

Original question 6

The full source mark scheme begins on page 946. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
9	(a)		175.14	3	M1 for 135.70 + 85 (= 220.70) **or** 135.70 – 45.56 (= 90.14) **or** 85 – 45.56 (= 39.44) **or** 45.56 – 85 (= 39.44) M1 for correct complete method, eg. 135.70 + 85 – 45.56 A1 cao
	(b)		700	1	B1 cao
	(c)		November	1	B1 for Nov oe
	(d)		April , August	1	B1 for April and August oe

11			417	3	M1 for 24 × 18 (= 432) M1 for '432' – 15 A1 cao **or** M1 for 24 – 15 or 24 × 17 (= 408) M1 for '24 – 15' + 24 × 17 A1 cao

PAPER: 5MB3F_01

Question		Working	Answer	Mark	Notes
14	(a)		29	2	M1 for substituting 20 into the word formula e.g. 20 × 1.25 + 4 (= 25 + 4) A1 cao
	(b)		35	3	M1 for 47.75 = x × 1.25 + 4 **or** 47.45 – 4 (= 43.75) M1 for "43.75" ÷ 1.25 A1 cao or M1 for 47.75 – "29" (=18.75) M1 for 20 + '18.75'÷1.25 A1 cao NB. Accept reverse flow chart

Original question 16

The full source mark scheme begins on page 946. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
1			157.50	3	M1 50 × 3 (=150) or 2.5 × 3 (=7.5) or 50 + 2.5 (=52.5) M1 “150” + “7.50” or 3 × “52.5” oe (=157.5) A1 cao SC B1 for final answer of 152.5(0) if M0 awarded

3	(a)(i)		8 40 oe	2	B1 for 8 40 oe
			9 40 oe		B1 for 9 40 oe
	(ii)				
	(b)		15 20	1	B1 cao

4			26	2	M1 for correct substitution into expression $4\times5 + 2\times3$ A1 cao

5	(a)(i)		23	2	B1 cao
	ii)		284		B1 cao
	(b)(i)		71+95 or 91+75	2	B1 for showing addition of 71 and 95 **or** 91 and 75
	(ii)		166		B1ft for the sum of their two numbers given provided they used only the digits 5, 1, 7 and 9 exactly once each

PAPER: 1MA0_1F

8	(a)		10	1	B1 cao
	(b)		16	1	B1 cao
	(c)		-11	1	B1 cao
	(d)		17	1	B1 cao
	(e)		12-2×(3+1)	1	B1 cao
	(f)		Explanation/ reason	1	B1 Correct explanation of equivalence eg: Indication that the same operation needs to be applied to both numerator and denominator. Correct shading on diagrams to demonstrate 1 quarter and 2 eighths Conversion of both fractions to a common format 2 is $\frac{1}{4}$ of 8 oe

PAPER: 1MA0_1F

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
9	(a)		35	1	B1 cao
	(b)		Thursday	1	B1 for Thurs(day)
	*(c)	Jack 25+30+45+30=130 Grahan 40+25+35+40=140	Graham and reason	3	M1 for intention to add either Jack's total or Graham's total (allow one error reading from chart) A1 for 130 and 140 or 2(h) 10 and 2(h) 20 with working C1 (dep on M1 and two totals) for clearly stating Graham as their answer or ft from their 2 totals. **OR** M1 for the intention to find the difference between the times on each of the 4 days A1 for 10 or -10 with working C1 (dep on M1 and a net difference) for clearly stating Graham as their answer or ft from their difference [SC B1 for Graham with 130 and 140 or 10 if M0 scored]

14	(a)		7	1	B1 for 6.8-7.2
	(b)(i)		78	2	B1 cao
	(ii)				B1 for vertically opposite angles are equal **or** clear indication of 2 step process and angles on a straight line add up to 180°

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*15			Yes with reasons	4	M1 for 14×100 (= 1400) or 18×100 (= 1800) or 230 + 50 + 30 (=310) M1 for "1400" + "310" **or** complete correct method to find 2 other comparable amounts A1 for £1710 total **or** £17.1(0) ticket price **or** £90 **or** £310 **and** £400 C1 for a clear statement and conclusion from their two correct comparable figures. **OR** M1 for 230÷100 or 50÷100 or 30÷100 M1 "2.30" + "0.50" + "0.3" + 14 A1 £17.1(0) C1 for a clear statement and conclusion from their two correct comparable figures.

Original question 15

The full source mark scheme begins on page 965. Use the original paper code, tier and question number shown above.

17			0.6, 0.606, 65%, $\frac{2}{3}$	2	M1 for attempt to convert all to the same form for comparison with at least one correct conversion (Accept at least 0.66, 0.67 66%, 67% or better for $\frac{2}{3}$) A1 for a correctly ordered list (in any form) SC B1 for correct numbers in reverse order if no method seen.

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
27	(i)	20, 40, 60 12, 24, 36, 48, 60	3 and 5 or any multiple of 3, 5	4	M1 attempts multiples of both 20 and 12 (at least 3 of each shown but condone errors if intention is clear) or identifies 60 or a multiple of 60 M1 (dep on M1) for a division by 20 or 12 or counts up 'multiples' or identifies a common mulitple (implied if one answer is correct or answers reversed) A1 cheese slices (packets) 3, burgers (boxes) 5 or any multiple of 3, 5
		$20 = 4\times5 = 2\times2\times5$ $12 = 4\times3 = 2\times2\times3$			OR M1 for expansion of either 20 or 12 into factors M1 for demonstration that both expansions include 4 (or 2×2) A1 cao for cheese slices (packets) 3, burgers (boxes) 5
	(ii)		60		B1 for 60 or ft from their correct answer to (i) or ft "common multiple"

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
1	(a)		3502	1	B1 cao
	(b)		Two thousand and nineteen	1	B1cao
	(c)		7 tens	1	B1 for 7 tens or 70 accept in words
	(d)		6700	1	B1 cao

3	(a)		PK 340	1	B1 cao
	(b)		35	1	B1 cao
	(c)		25	2	M1 for 102 – 77 **or** 77 – 102 A1 cao accept – 25

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
5 (a)		1 hour 40 minutes	2	M1 for correct working shown to find the difference between 17 50 and 19 30 e.g. using a carry of 60 minutes in a take away or counting on from 17 50 to 19 30 A1 for 1 hr 40 mins or 100 mins
(b)		7	3	M1 for $2 \times 20 - 8.5$ (= 31.5) **or** $20 - 8.5$ (= 11.5) M1 (dep) for "31.5" ÷ 4.5 **or** (20 + "11.5") ÷ 4.5 **or** $7 \times$ 4.5 oe (eg by addition/subtraction method) A1 cao

9		1.9 km or 1900 m	3	M1 for 1.25 × 1000 (= 1250) **or** 650 ÷ 1000 (= 0.65) M1 for "1250" + 650 or 1.25 +"0.65" A1 for for 1.9 km or 1900 m

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
21		7	4	M1 for 1800 × 36 **or** 1800 × 2.54 **or** 36 × 2.54 M1 for 1800 × 36 × 2.54 (=164 592) M1 (dep on M1) for a complete method e.g. 1800 × 36 × 2.54 ÷ 100 ÷ 245 (= 6.71...) A1 for 7 with correct working **OR** M1 for 245 × 100 (=24 500) M1 for "24500" ÷ 2.54 ÷ 36 (=267.93...) M1 for 1800 ÷ "267.93.." (=6.71...) A1 for 7 with correct working

Original question 3

The full source mark scheme begins on page 983. Use the original paper code, tier and question number shown above.

Original question 4

The full source mark scheme begins on page 983. Use the original paper code, tier and question number shown above.

Original question 6

The full source mark scheme begins on page 983. Use the original paper code, tier and question number shown above.

2			8	2	M1 for 30 ÷ 4 or at least 3 multiples of 4 shown A1 cao SC B1 7 on answer line, no working shown

7	(a)		Warsaw	1	B1 accept –8
	(b)		6	1	B1 accept –6
	(c)		–3	1	B1 cao

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
9	(a)	8×3 + 20	44	2	M1 for 8 × 3 + 20 A1 cao
	(b)		No + reason	2	B2 No + you only pay the £20 once oe OR B1 6×8+20(=68) B1 No + valid comparison

Original question 13

The full source mark scheme begins on page 995. Use the original paper code, tier and question number shown above.

2	(a)		54	2	M1 for 12 + 19 + 23 A1 cao
	(b)		11	2	M1 for 12 + 19 (= 31) or 19 + 23 (= 42) or 23 – 12 or 12 – 23 A1 for 11 (accept – 11) **SC:** Award B2 for 31 **and** 42 seen with no answer. or 23 – 12 (or 12 – 23) with no answer

Question		Working	Answer	Mark	Notes
6			127	3	M1 for 6×24 (= 144) M1 for '144' – 17 A1 cao OR M1 for 5×24 (= 120) M1 for '120' + 7 (= 127) A1 cao

Original question 11

The full source mark scheme begins on page 1008. Use the original paper code, tier and question number shown above.

Original question 16

The full source mark scheme begins on page 1008. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
17			27	4	B1 for correct conversion of units eg 0.76(0) eg 25 000 eg 4300 M1 for taking the weight if 1 empty box into account eg 25 – 4.3 or a complete method to find number of plates, ignoring the box, and rounding down M1 for a complete correct method (before rounding down) eg 27.2(368...) A1 cao

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
1	(a)		25, 52, 55, 102, 120	1	B1 cao
	(b)		–5, –2, 0, 3, 6	1	B1 cao
	(c)		0.06, 0.6, 0.603, 0.63, 0.633	1	B1 cao

3			55	3	M1 for 29 + 17 + 19 (=65) or 34 + 43 + 43 (=120) M1 for “120” – “65” A1 cao OR M1 for 34 – 29 (=5) or 43 – 17 (=26) or 43 – 19 (=24) M1 for “5” + “26” + “24” A1 cao OR M1 for three other consistent differences found M1 adding their differences A1 cao

PAPER: 1MA0_1F

5	(a)		3	1	B1 for 3, accept – 3
	(b)		1	2	M1 for evidence of adding all 7 or all 6 non zero temperatures **and** dividing by 7 A1 cao

6	(a)		0908	1	B1 cao
	(b)		15	1	B1 cao
	(c)		57	1	B1 cao

7	(a)		12	2	M1 for $48 \div 4$ or $48 \times \frac{1}{4}$ oe A1 cao
	(b)		250	3	B1 for 750 M1 for "750" ÷ 3 oe A1 cao

PAPER: 1MA0_1F

10	(a)		2	4	M1 for 20 × 2 + 30 (=70) M1 for 20 × 1.8 + 32 (=68) M1 (dep on M1) for “70” – “68” A1 cao
	(b)		40	3	M1 for 110 – 30 ÷ 2 or 110 = ? × 2 + 30 or 110 – 30 or ÷ 2 seen as second operation M1 for “(110 – 30)” ÷ 2 A1 cao NB accept reverse flowcharts for inverse operations SC if exact rule used: B2 for “(110 – 32)” ÷ 1.8

PAPER: 1MA0_1F

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
13	(a)		Five thousand six hundred	1	B1 cao
	(b)		Rectangle drawn	2	B2 for fully correct diagram (B1 for one line of correct length within a rectangle)
	(c)		13	3	M1 for the length of one side of rectangle, e.g. 44 (mm) or 27 (mm) ±2mm (allow use of cm) M1 for 6.5(0) or size 1 clearly indicated A1 for 13(.00)
	(d)		Working shown and compared to 8 weeks	2	M1 for 13.50 × 8 or 13.50 × 7 oe or repeated subtraction of 13.50 from 100 at least 7 times A1 for arriving at a correct figure they can compare with £100 in one step eg 108, 94.5(0), 5.5(0) or -8 OR M1 for 100 ÷ 8 A1 for 12.5(0) OR M1 100 ÷ 13.50 = 7.4 A1 for 7

PAPER: 1MA0_1F

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
14	(a)		60	2	M1 for 300 ÷ 5 or 3 ÷ 5 oe A1 cao
	(b)		25p or £0.25	3	M1 for 100 ÷ 5 (= 20) M1 for "20" ÷ 80 or "20" × 100 ÷ 80 A1 for 25p or £0.25 OR M1 for 80 × 5 (= 400) M1 for 100 ÷ "400" or 100 × 100 ÷ "400" A1 for 25p or £0.25 OR M1 for 100 ÷ 80 (= 1.25) M1 for "1.25" ÷ 5 or "1.25" × 100 ÷ 5 A1 for 25p or £0.25 SC B2 for answer of 25 or 0.25

19			$\frac{4}{15}$	2	M1 for attempting to use a suitable common denominator with at least one of the two fractions correct A1 for $\frac{4}{15}$ oe

3			3.25	3	M1 for 2 × 9.25 + 9.50 + 10.55 + 4 × 4.55 (= 56.75) or at least one of each item added M1(dep) for 3 × 20 − "56.75" A1 cao (SC B2 for answer 26.15) (SC B1 for answer of 13.85 or 36.75)

4			3.25	1	B1 for 3.25 oe

5	(a)		28 600	1	B1 cao
	(b)		20 000	1	B1 cao
	(c)		22 950	1	B1 cao

PAPER: 1MA0_2F

12	(a)		126, 21	3	B1 for 126 (seats) M1 for method identified to divide number of people by 6, ie "126" ÷ 6 or 84 ÷ 6 (= 14) or 42 ÷ 6 (=7) A1 for 21 (tables)
	(b)		Yes with £483	3	M1 for 84 × 4.5(0) (= 378) or 42 × 2.5(0) (= 105) M1 for 84 × 4.5(0) + 42 × 2.5(0) or "378" + "105" A1 for e.g. yes **and** (£)483 **or** yes **with** (£)17 left

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
25	(a)		Points plotted	1	B1 for points plotted at (12, 6) and (13, 2)
	(b)		Description	1	B1 for description; e.g. as the temperature goes up the number of units of gas used goes down oe accept negative correlation.
	(c)		5 – 7	2	M1 for use of graph e.g. a single straight line segment with negative gradient that could be used as a line of best fit **or** an indication on the diagram from 12 on the *y* axis. A1 for 5 – 7

27			2.064(285714…)	2	M1 for substitution of 0.7 into expression or 2.89 or 2.06 seen A1 for 2.064(285714…) or $\frac{289}{140}$

2	(a)		2	1	B1 cao
	(b)		Red, Grey	1	B1 cao
	(c)		Bowfell	1	B1 cao

3	(a)		23	1	B1 cao
	(b)		25	1	B1 cao
	(c)		Decreasing	1	B1 for decreasing, downward, falling, –3° etc

Paper_5MB1F_01

Question		Working	Answer	Mark	Notes
5			2 ½ hours	4	M1 for an attempt to find the difference between 2.40pm and 6pm eg 3h 20 min M1 (dep) for attempt to subtract 2 × 25min from time difference A1 for 2½ (hours) or 2.30oe C1 for correct units for with their answer OR M1 for an attempt to add 25 min to 2.40pm (= 3.05) or take 25 min from 6pm (= 5.35) M1 (dep) for "5.35" – "3.05" A1 for 2½ (hours) or 2.30 oe C1 for correct units with their answer

Original question 10

The full source mark scheme begins on page 1030. Use the original paper code, tier and question number shown above.

Paper_5MB1F_01

Question		Working	Answer	Mark	Notes
14	(a)		Point plotted	1	B1 for point plotted at (6,35)
	(b)			1	B1 for description of dynamic relationship eg “the lower the temperature, the more hot chocolate sold” or negative correlation
	(c)			1	Single straight line of best fit which could be used to take readings
	(d)		21-26	1	B1 for answer in the range 21-26 or ft from single straight line segment (if previous B0)

4			19	2	M1 for counting up on the diagram (eg shown by marks or arrows) OR 35-16 or 16+19 A1 cao

Paper: 5MB2F_01

Paper: 5MB2F_01

Question		Working	Answer	Mark	Notes
5			4	3	M1 for 450÷30 (=15) or adding up at least ten 30s M1 for 50 ÷ "15" or 3.3 (or better) or 3 with remainder 5 A1 cao If no marks awarded then SC B1 for 50 ÷ 30 (= 1500)

6	(a)		09 23	1	B1 (condone missing 0)
	(b)		35	1	B1 cao
	(c)		07 56 08 17 09 57	3	M1 for attempts to add 13 to 07 43 (= 07 56 oe) M1 for attempts to add 5 mins to either 08 12 or 09 52 (= 08 17 or 09 57 oe) A1 cao

Paper: 5MB2F_01

Paper: 5MB2F_01

Question		Working	Answer	Mark	Notes
7	(a)		Twenty thousand and four hundred	1	B1 cao
	(b)		–21	1	B1 cao
	(c)		27	1	B1 cao
	(d)		16	1	B1 cao
	(e)		5	1	B1 cao
	(f)		1:3	1	B1 cao

Paper: 5MB2F_01

Paper: 5MB2F_01

Question		Working	Answer	Mark	Notes
8	(a)		7	3	M1 for £13.50 ÷50p oe or 1350÷50 oe or adding up (at least 16) 50ps working towards £13.50 M1 for "27" − 20 A1 cao or M1 for 20 ×50 (= 1000) and 1350 – "1000" (=350) oe or 20 ×0.50 (= 10.00) and 13.50 – "10.00" (=3.50) oe M1 for "350" ÷50 or "3.50" ÷0.50 A1 cao
	*(b)		No eg only15p left	4	M1 for £1+£1+3×20p (=£2.60) oe M1 for 3×65p+50p (=£2.45) oe or "£2.60"–3×65p–50p oe A1 for 2.6(0) and 2.45 or 2.6(0) and 15p C1 (dep on M1) for a statement which includes "no" (oe) and a reference to figures such as 15p<50p, needs extra 35p etc. with figures shown using correct money notation and units.

Paper: 5MB2F_01

13			50	4	M1 for 120 ÷ 3 (=40) or 120 ÷ 4 (=30) oe B1 for 30 and 40 M1 for 120 – (40 + 30) A1 cao or M1 for $\frac{1}{3}+\frac{1}{4}$ oe B1 for $\frac{7}{12}$ oe M1 for $1-\frac{7}{12}$ A1 cao

Paper: 5MB2F_01

Paper: 5MB3F_01

Question		Working	Answer	Mark	Notes
1			(Ann=) 23 (Ben=) 17	3	M1 for 20 – 5(=15) **and** 20 + 5(=25) or 20 – 8(=12) **and** 20 +8(=28) or 20 – 5 (=15) **and** 20 – 8 (=12) or 20 + 8 (=28) **and** 20 + 5 (=25) or 20 – 5 + 8 or 20 − 8 + 5 or 8 − 5 (=3) M1 for 20 − 5 + 8 **and** 20 − 8 + 5 or 20 − "3" **and** 20 + "3" or one answer correct or both answers reversed. A1 for 23 and 17 (SC B1 for (Ann =)13, (Ben =) 7

Paper: 5MB3F_01

Question		Working	Answer	Mark	Notes
4			Sarah	2	M1 for 8.8 + 9.0 + 9.3 and 9.0 + 9.0 + 9.0 A1 for Sarah **and** 27.1 **and** 27 OR M1 for 9.0 − 8.8 (=0.2) and 9.3 − 9.0 (=0.3) A1 for Sarah **and** 0.1

7			4	3	M1 for 3 × 35 (=105) or 33 seen M1 for (138 – "105") ÷ 10 (= 3.3) or "33" – 10 – 10 (– 10) oe A1 cao

9			11.45 (am)	3	M1 for 1.5 × 40 + 15 (=75) M1 (dep) for changing '75' to hours and minutes or subtraction of 60 minutes A1 for 11.45(am)

Paper: 5MB3F_01

11	(a)		2	1	B1 for 2 (or +2)
	(b)		−9	1	B1 cao
	(c)		−3	1	B1 cao

17			No with reason	3	B1 for converting units, eg 5000 (cm) or 6.75 (m) M1 for 8 × "675" (=5400) or 8 × 6.75 (=54) A1 for No with comparison of correct figures for thread per dress needed with consistent units eg 54(m) > 50(m) OR B1 for converting units, eg 5000 (cm) or 6.75 (m) M1 for 5000÷8 (=625) or 50 ÷ 8 (=6.25) A1 for No with comparison of correct figures for total thread needed with consistent units eg 625(cm) < 675(cm) OR B1 for converting units eg 5000 (cm) or 6.75 (m) M1 for 5000 ÷ 675 (= 7 or 7.4…) or 50 ÷ 6.75 (= 7 or 7.4…) A1 for No with reason and correct figure for number of dresses eg 7 or 7.4

Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*18			Investment A with working	5	M1 for 8×12(=96) **or** 8×3×12 (=288) M1 for 0.035×2400 (=84) **or** 0.035×2400×3 (=252) M1 for use of the same time period for both calculations eg 8×12(=96) **and** 0.035×2400 (=84) or 8×3×12 (=288) **and** 0.035×2400×3 (=252) A1 for correct answers for same time period eg 96 **and** 84 or 288 **and** 252 C1 (dep on M2) for correct decision based on their figures, supported by working OR M1 for 8×12(=96) **or** 8×3×12 (=288) M1 for $\frac{"96"}{2400} \times 100$ or for $\frac{"288"}{2400} \times 100$ (=12) M1 for use of the same time period for comparison eg $\frac{"96"}{2400} \times 100$ or "12"÷3 compared to 3.5% or $\frac{"288"}{2400} \times 100$ (=12) compared to 3.5 × 3 (=10.5) A1 for 4(%) or 12(%) **and** 10.5(%) C1 (dep on M2) for correct decision based on their figures, supported by working

3		Table: Location column removed	

Original question 4

The full source mark scheme begins on page 1043. Use the original paper code, tier and question number shown above.

5		Table: Friday row removed, Saturday – 17 changed to 12 Grid: Vertical axis – 15 x 2 cm squares, horizontal axis 10 x 2 cm squares Room left for labelling on the left and below.	

6		Table: North Walsham now removed from both tables. 1057 and 1557 removed from Cromer to Norwich 1445 and 1955 removed from Norwich to Cromer	

Original question 8

The full source mark scheme begins on page 1043. Use the original paper code, tier and question number shown above.

Original question 9

The full source mark scheme begins on page 1043. Use the original paper code, tier and question number shown above.

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
1	(a)		Ordered	1	B1 for 399, 3007, 3333, 4011, 4435
	(b)		Ordered	1	B1 for 0.7, 3.7, 5.62, 14.3
	(c)		0.9	1	B1 cao
	(d)		$1\frac{3}{8}$	1	B1 cao

4			28	3	M1 for 38 + 55 + 41 (= 134) or 54 + 43 + 65 (= 162) M1 for “162” – “134” A1 cao OR M1 for 54 – 38 (= 16) or 55 – 43 (= 12) or 65 – 41 (= 24) M1 for “16” – “12” + “24” A1 cao

PAPER: 5MB2F_01

7			11.30	4	B1 for including 4 × 5 min (= 20 min) M1 for using 40 min, 1h 10 min, 1h, 30 min and 50 min M1 for adding at least 4 correct times or subtracting at least 4 correct times from 4 pm A1 for 11.30 (am) oe

14			$\frac{8}{9}$	2	M1 for using a suitable common denominator with at least one of two fractions correct A1 for $\frac{8}{9}$ or equivalent fraction

Question		Working	Answer	Mark	Notes
16	(i)		candles 3 holders 5	5	M1for listing multiples of either 30 or 18 (at least 3 but condone errors if intention is clear) M1 for listing multiples of both 30 and 18 (at least 3 but condone errors if intention is clear) M1 (dep on M1) for division by 30 or 18 or counts up multiples (implied if one answer is correct or answers are reversed) A1 candles (packs) 3, holders (packs) 5 or any same multiple of 3,5 OR M1 expansion of either number in factors M1 demonstrates one of the expansions that includes 6 oe M1 demonstrates second expansion that includes 6 oe A1 candles (packs) 3, holders (packs) 5 or any same multiple of 3,5
	(ii)		90		B1 for 90 or ft on both their packs or ft "common multiple" NB: accept consistent multiples of the given answer
*17			NO figures and comparisons	5	M1 for 100×40×60 (= 240 000) M1 for "240000" ÷ 8000 (= 30) M1 for "30" × 2.50 (= 75) A1 for 240 000 and 75 C1 (dep on M1) for comparing the cost of grit with £70 ft their working OR M1 for 70 ÷ 2.50 (= 28) M1 for "28" × 8000 (= 224 000) M1 for 100 × 40 × 60 (= 240 000) A1 for 240 000 and 224 000 C1 (dep on M1) for comparing values of grit needed with that which can be bought for £70 ft their working

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
2	(a)	6 cm base line given	
	(c)	Model given – MLP also have diagram	
3		Pentagon size x 3	
6		Angle arms 10 cm – angle kept at 125°	(ii) B1 accept 120 - 130
8		Patterns set out vertically For pattern number 4 – pattern number 3 is repeated and candidates are asked to complete.	
9	(c)	x changed to w	M1 for 5*w* or 2*y* A1 for 5*w* + 2*y*
10		Insert 'Two angles are marked as 50° and x°'	

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
12		2 cm grid – right axis labelled	
	(a)	16 kg changed to 15 kg	B1 for answer in range 32.5 – 33.5
	(b)	15 pounds changed to 22.5 pounds	B1 for answer in range 10 – 11
16		No picture	

3			22.5(0)	3	M1 for working out the change for one week eg 15+3.5−2 (=16.5) or 3.5−2 (=1.5) or 6−4 (=2) or 6.5−3.5 (=3) M1 for working out the change for all weeks or differences eg (15+)3.5−2+4−6+5+6.5−3.5 oe or “1.5” + “−2” + “5” + “3” (=7.5) A1 for 22.5(0) OR M1 for working out the totals in or out eg 3.5+4+5+6.5 (=19) or 2+6+3.5 (=11.5) M1 for finding the differences of totals eg “19” – “11.5” (=7.5) A1 for 22.5(0)

PAPER: 5MB3F_01

5	(a)		393	2	M1 for attempt to find the total mileage eg 178+215 or 207+186 A1 cao
	(b)		29	2	M1 for attempt to find the difference between the signs eg 207−178 or 215−186 or "393" – (178 + 186) or [(215+207)−(178+186)]÷2 oe A1 cao

Original question 9

The full source mark scheme begins on page 1056. Use the original paper code, tier and question number shown above.

12			18	3	M1 for a correct method to find the number of cartons of one size that can be bought, target £11.50 M1 for a correct method to find a combination of two or more cartons of different sizes that can be bought, target £11.50 A1 cao OR M1 for a correct method to find the carton size that gives the best value for money M1 for finding the maximum number of cartons of their best value carton size, target £11.50 A1 cao

PAPER: 5MB3F_01

PAPER: 5MB3F_01

Question		Working	Answer	Mark	Notes
13			Bloomsbury	3	M1 for a correct method to find total points from Felton or Bloomsbury eg 4×5 + 2×2 + 1×3 (=27) or 2×5 + 2×2 + 5×3 (=29) oe M1 for a correct method to find total points from Felton and Bloomsbury eg 4×5 + 2×2 + 1×3 (=27) and 2×5 + 2×2 + 5×3 (=29) oe A1 for Bloomsbury identified and 27 and 29 oe OR M1 for a correct method to find one difference in points eg (4–2)×5 (=10) or (5–-1)×3 (=12) oe M1 for a correct method to find both differences in points eg (4–2)×5 (=10) and (5–-1)×3 (=12) oe A1 for Bloomsbury and 10 and 12 oe

14	(a)		9	2	M1 for 100÷20+4 oe A1 cao
	(b)		1120	3	M1 for $x \div 20 + 4 = 60$ or $60 - 4$ (=56) or for $60 -$ "9" (=51) M1 for "56"×20 or for $100 +$ "51"×20 A1 cao or ft part (a)

Original question 1

The full source mark scheme begins on page 1072. Use the original paper code, tier and question number shown above.

Original question 3

The full source mark scheme begins on page 1072. Use the original paper code, tier and question number shown above.

Original question 4

The full source mark scheme begins on page 1072. Use the original paper code, tier and question number shown above.

Original question 11

The full source mark scheme begins on page 1072. Use the original paper code, tier and question number shown above.

Original question 12

The full source mark scheme begins on page 1072. Use the original paper code, tier and question number shown above.

Original question 19

The full source mark scheme begins on page 1072. Use the original paper code, tier and question number shown above.

6	(a)		85.50	2	M1 for 2×12.75 + 3×20 or 12.75+3×20 (=72.75) A1 for 85.5(0)
	(b)		16	3	M1 (ft from (a)) for subtracting cost of 1 or 2 or 5 lessons from 305.50 305.50 – "2×12.75" (= 280) or 305.50 – "85.50" (=220) or 305.50 – 12.75 (=292.75) M1 for "280" ÷ 20 (= 14) or "220 ÷ 20 (= 11) or 292.75 ÷ 20 A1 cao OR M1 for adding 20s to cost of 1 or 2 or 5 lessons eg 12.75 or "2×12.75" or "85.50" and intention to add on 20s or 14×20 or 11×20 M1 for "2×12.75" or "85.50" and adding 20s to within 20 of 305.50 A1 cao

PAPER: 1MA0_2F

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
7	(a)		Newcastle	1	B1 cao
	(b)		3	1	B1 cao
	(c)		–1	2	M1 for intention to find middle of –5 and 3 eg, may see –5 and 3 identified on a correct number line **or** (–5 + 3) ÷ 2 **or** –5 + (3 – –5) ÷ 2 **or** 3 – (3 – –5) ÷ 2 A1 cao

9	(a)		14 cm or 0.14 m	3	M1 for 3 × 32 + 2 × 45 (=186) oe M1 (indep) for subtraction of "wood needed" from 2 m using consistent units eg 200 – "186" (=14) or 2 – "1.86" (=0.14) A1 for 14 cm, 0.14 m or 140 mm
	(b)		44	3	M1 for 320 ÷ 14 (= 22.8... or 23) or 2 × 320 ÷ 14 (= 45.7... or 46) M1 (dep) for evidence of truncating "total DVDs" **down** to integer value, e.g. 22.8... to 22 or 45.7... to 45 A1 cao

PAPER: 1MA0_2F

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
16			89.3855	2	M1 for 3.8 or 23.5225 or 18.43 or 36.86 or 89.3855 seen only rounded or truncated to at least 3 sig figs A1 cao

3	(a)		37.4	1	B1 cao
	(b)		6500	2	M1 for sight of 3500 or attempt to count up from 3500 on scale or count down from 10000 on scale or 10000 – "3500" ["3500" in the range 3000 – 4000] or an answer which includes the digits 65 A1 cao

7	(a)		08 12	1	B1 cao
	(b)		6	2	M1 for evidence of counting on 15 minutes from 09 20, could be shown with table A1 cao
	(c)		17 35	1	B1 cao

Question		Working	Answer	Mark	Notes
9	(a)		4.40	3	M1 for a method to find the cost for one delivery method eg 19 + 7 × 0.7(0) (= 23.9(0)) or 16 + 7 × 0.5(0) (= 19.5(0)) M1 for a method to find the cost for **both** delivery methods **and** attempting to subtract eg 23.90 – 19.50 A1 cao Accept 4.4 **OR** M1 for method to find the difference between the two delivery costs eg 19−16 (=3) and 70-50 (=20) M1 for a method to find the "cost" using the differences eg "3" + 7 × "20" A1 cao Accept 4.4
	(b)		23	3	M1 for 25 – 16 (= 9) M1 for a method to divide "9" by 0.50 (= 18) A1 cao **OR** M1 for starting with 16 and a method to add on 0.50s M1 for starting with 16 and adding on 0.50s to within 0.50 of 25 A1 cao

12			13 −1 13 26	4	B1 cao B1 cao B1 cao B1 cao SC: If B0 scored award M1 for appropriate working shown

17	(a)		–7	2	M1 for 2 × 4 + 3 × –5 or 8 – 15 oe A1 cao
	(b)		36	1	B1 cao
*18			x =115° with complete reasons	3	M1 for angle CEB = 180 – 25 – 90 (= 65) or angle ABE = 90 – 25 (= 65) or for x = 25 + 90 A1 for 115 C1 (dep on M1) for full reasons, appropriate to their given method e.g. angles in a triangle add up to 180° **and** angles on a straight line add up to 180° e.g. the exterior angle of a triangle is equal to the sum of the interior opposite angles e.g. angles in a quadrilateral add up to 360° e.g. alternate angles are equal

PAPER: 1MA0_1F

20			18	3	M1 for $\frac{1}{10} \times 60$ (= 6) or $\frac{1}{10} + \frac{3}{5}$ or "$\frac{7}{10}$" oe M1 for $\frac{3}{5} \times 60$ (= 36) or 1 – "$\frac{7}{10}$" (= $\frac{3}{10}$) or "$\frac{7}{10}$" × 60 (= 42) A1 cao

Original question 26

The full source mark scheme begins on page 1088. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
1	(a)		17.1	1	B1 cao
	(b)		1.3	1	B1 cao
	(c)		10.24	1	B1 cao

3		4 × 17 + 3	71	2	M1 for a complete method seen or 68 given as the answer A1 cao
*4			D C F S R 7 5 3 1 4 Suitable chart or diagram	3	M1 bar chart or other suitable chart with sections for at least 2 pets M1 sections for each pet and vertical axis correctly scaled / 2 correct frequencies C1 fully correct chart or diagram, including correct frequencies and all labels

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
6			9	3	M1 for two correct operations seen or implied M1 for a complete method A1 cao OR M1 for 13 + 5 (= 18) and 4 + 7 (= 11) M1 for a complete method A1

8	(a)		15 minutes	2	B1 15 B1 (indep) minutes
	(b)		3 05	2	M1 for intention to add 10 minutes and 55 minutes to 2 o'clock A1 3 05 oe
	*(c)		No with reason	2	M1 for a method to add 75 minutes to '3 05' or to work out the difference between '3 05' and 4 pm or to subtract 75 minutes from 4 pm C1(dep M1) for conclusion based on appropriate working and correct time calculations, ft from (b)

PAPER: 1MA0_2F

Original question 12

The full source mark scheme begins on page 1110. Use the original paper code, tier and question number shown above.

Original question 15

The full source mark scheme begins on page 1110. Use the original paper code, tier and question number shown above.

21			45	4	M1 for finding the price of 1 kg or 0.5 kg of oranges M1 for using their value to find the price of 4.5 kg of oranges M1 (dep M2) for a complete method to find the price of 1 kg of apples A1 oe

PAPER: 1MA0_2F

Original question 23

The full source mark scheme begins on page 1110. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
1 (a)		Saplom	1	B1 cao
(b)		Yellow	1	B1 cao
(c)		35.20	1	B1 cao

Question	Working	Answer	Mark	Notes
5		Yes with reasons	4	M1 for complete method to calculate the total number of lengths swum in one week (150) or the distance swum in one session (30 × 25 or 60 × 25) or the number of lengths swum on 4 of the same days e.g. 4 × 30 or 4 × 60 M1 for complete method to calculate the total distance swum in 4 weeks (15 0000 **or** complete method to calculate swimming distance and swimming plan lengths for one week oe A1 for 15 000 m or 15 km **or** 600 and 560 **or** 3.75 km and 3.5 km C1 for Yes (dep on M1) with 15 km given for the total distance swum **or** given for the 560 lengths in 14 km and 600 lengths swum **or** for the correct distance swum in one week 3.75 km and the 3.5 km swimming plan

Question		Working	Answer	Mark	Notes
1	(a)		43	1	B1 cao
	(b)		15	1	B1 cao
	(c)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ or 3 tenths oe

4		7	2	M1 for 40 ÷ 6 (=6.66…) OR 6 × 6 (=36) oe or 6 × 7 (=42) oe OR 40, 34, 28… oe A1 cao

Original question 6

The full source mark scheme begins on page 1126. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
9		11(am)	4	M1 for 2 ÷ 0.5 oe (=4) or 80 (minutes) M1 for '4' × 20 + 10 oe (=90 minutes) M1 for 12 30 – '90 (minutes)' oe A1 for 11(am) oe SC B2 for 10 30(am)

Question	Working	Answer	Mark	Notes
18		270	3	M1 for 9 ÷ 0.1 (=90) or 4.5 ÷ 1.5 (=3) oe M1 for '3'× '90' oe (=270) A1 cao **OR** M1 for 4.5 ÷ 0.1 (=45) or 9 ÷ 1.5 (=6) oe M1 for '6'× '45'oe (=270) A1 cao **OR** M1 for 9 × 4.5 (=40.5) or 1.5 × 0.1(=0.15) oe M1 for '40.5' ÷ '0.15' (=270) A1 cao

Question		Working	Answer	Mark	Notes
1	(a)		4.42	1	B1 cao
	(b)		70	1	B1 cao
	(c)		2.5	1	B1
	(d)		3.375	1	B1 cao

4	(a)		3.10	2	M1 for 50(p) + (£)1.40 + (£)1.20 (=3.1(0) oe or 310) A1 for 3.10 cao
	(b)		Coffee and (baked) potato	2	M1 for 3 – 0.8 (=2.2) or 300 – 80 (=220) or for a pair of items, a snack and a drink, with total cost A1 for Coffee and (Baked) potato

5MB3F/01 June 2015

Question	Working	Answer	Mark	Notes
7		34	4	M1 for 116 − (12×8) (=20) M1 for "20" + 86 (=106) M1 "106" − (9 × 8) A1 cao OR M1 for 116 − (12 × 8) (=20) M1 for 86 − (9 × 8) (=14) M1 for "20" + "14" A1 cao OR M1 for 116 + 86 (=202) M1 for (9 + 12) × 8 (=168) M1 for "202" – "168" A1 cao OR M1 for 116 ÷8 (=14.5) and 86 ÷ 8 (=10.75) M1 for "14.5"+ "10.75" –12–9 (=3.75)oe M1 for "3.75" × 8 oe A1 cao

8		31	3	M1 for 6 × 2 (=12) or 5 × 3 (=15) M1 for 4 + “12” + “15” A1 cao OR M1 for method to find total number of drivers 4+ 6 + 5 (=15) or total number of passengers (0 +) 6 + 5×2 (=16) M1 for method for total people eg “15” + 6 + 5 + 5 A1 cao

5MB3F/01 June 2015

Question	Working	Answer	Mark	Notes
9		No (supported)	4	M1 for conversion of times to a common format M1 for method to add all required times A1 for 3.5 hours oe or a figure to compare with 180 minutes in one step C1 (dep on M1) for correct conclusion from and supported by their figures

14		Greenway (supported)	4	M1 for 60 ÷ 6 (= 10) and 60 ÷ 15 (= 4) M1 (dep) for "10"÷2 × 2.95 (= 14.75) M1 (dep) for "4" × 3.90 (= 15.6) C1 for Greenway and with comparison of two correct figures for total cost eg 14.75 < 15.6(0)

15		95	3	M1 for method to find amount left to pay 820 - 250(=570) M1 for completing method for monthly payments “570” ÷ 6 A1 cao

5MB3F/01 June 2015

2	(a)		26	3	M1 for 25−13+20 (=32) or 20−13 (=7) M1 for 58−"32" or 58−25−"7" A1 cao
	(b)		6	3	M1 for adding week 1 or week 2, eg 12+ … +13 (=64) or 16+ … +9 (=70) M1 for "70" – "64" (=6) A1 cao **OR** M1 for finding differences for each day, eg 16−12 (=±4), 20−12 (=±8), etc oe M1 for adding differences using consistent signs, eg 4+8−4+2−4 (=6) oe or −4−8+4−2+4 (=−6) oe A1 cao

1MA0 1F November 2015

1MA0 1F November 2015

Question		Working	Answer	Mark	Notes
3	(a)		7400	1	B1 cao
	(b)		6402 in words	1	B1 for eg six thousand four hundred and two
	(c)		54 000	1	B1 cao
	(d)		7	1	B1 cao
	(e)		13	1	B1 cao

2	(a)		2 hours 20 minutes	2	M1 for a full method to find the difference between the two times or 2.2 hours A1 2 hours and 20 minutes or 140 minutes
	*(b)		No with supporting calculations	3	M1 for adding 18 and 24 to 20 50 A1 21 32 C1 (dep M1) correct conclusion from the comparison of their figure with 21 30 Or M1 for subtracting 18 and 24 from 21 30 A1 20 48 C1 (dep M1) correct conclusion from the comparison of their figure with 20 50 Or M1 for finding the time differences A1 for 40 minutes and 42 minutes C1 (dep M1) correct conclusion from the comparison of their time durations

PAPER: 1MA0_2F

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
3	(a)		£1.11 and £2.68	3	B1 for (£)1.11 or 111(p) B1 for (£)2.68 or 268(p) or ft from "£1.11" B1 for correct units
	(b)		No (from correct calculations)	3	M1 for finding the value of the coins M1 for a complete method to find the total value of the voucher and coins A1 correct conclusion from correct calculations, eg No, she only has £5.30 Or M1 for finding the difference between the price of the book and the voucher or the price of the book and the coins M1 for a complete method to find the difference between the book and the voucher AND the coins A1 correct conclusion from correct calculations, eg No, she is 20p short

10	(a)		−11	2	M1 for −5 + 12 − 18 oe A1cao
	(b)		24	2	M1 for a method to find the difference eg 18 – −6 or 18 + 6 or use of a number line A1 for 24 accept −24

11			14	2	M1 for 10 – 6 and “4” + 10 or for 10 – 6 and “4”× 2 + 6 A1 for 14 or 10 adults and 4 children

19	(a)		3.5	1	B1 cao
	(b)		8	2	B2 cao (B1 for 17.68 or 2.21)

23			32 64 29	4	M1 for $2y$ or $y - 3$ M1 for adding their three expressions and setting equal to 125 M1 for correct method to solve $ay + b = 125$ A1 Ali 32, Bhavara 64 and Ceris 29

Original question 4

The full source mark scheme begins on page 1146. Use the original paper code, tier and question number shown above.

Original question 11

The full source mark scheme begins on page 1146. Use the original paper code, tier and question number shown above.

5MB2F_01 November 2015

Question		Working	Answer	Mark	Notes
1	(a)		37	1	B1 cao
	(b)		23 079	1	B1 cao
	(c)		8 hundred	1	B1 for 8 hundreds or 800

2			117 cm	2	M1 for 123−6 or 1.23−0.06 or 117 or 1.17 A1 for 117 cm or 1.17 m

4			80	3	M1 for 120 ÷ 3 (=40) M1 for 120 − "40" A1 cao OR M1 for 120 ÷ 3 (=40) M1 for "40" × 2 A1 cao

5MB2F_01 November 2015

6			3	2	M1 for correct method to find both total scores A1 cao OR M1 for correct method to find differences for each judge A1 cao

Original question 8

The full source mark scheme begins on page 1160. Use the original paper code, tier and question number shown above.

9	(a)		0.37, 0.401, 0.439, 0.46	1	B1 cao
	(b)	$\frac{1}{4}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{7}{8}$ 0.75, 0.875, 0.25, 0.5, 0.66	0.25, $\frac{1}{2}, \frac{2}{3}$, 75%, $\frac{7}{8}$	2	M1 for attempt to convert all to same form or one error in ordered listing A1 for correct order (Accept 0.67 or 0.66 for $\frac{2}{3}$) (**SC**: B1 for order reversed)

10			3.15	4	M1 for correct first step eg 8.2 + 6.1 + 6.1 (= 20.4) eg 30 − one ticket price M1 for finding money left over eg 30 – "20.4" (= 9.6) or finding the cost of 3 drinks of one size eg 3.15 × 3 M1 for a complete method to work out the price of each drink eg "9.6" ÷ 3 (= 3.2) eg 30 – "20.4" **and** cost of 3 drinks of all sizes A1 for 3.15 from correct calculations

5MB2F_01 November 2015

5MB2F_01 November 2015

Question		Working	Answer	Mark	Notes
11	(i)		11	3	B1 cao
	(ii)		50		B1 cao
	(iii)		31		B1 cao

12			27	2	M1 for $6 \times 2 + 5 \times 3$ oe A1 cao

5MB2F_01 November 2015

Question		Working	Answer	Mark	Notes
18			68	5	B1 for correct conversion of units M1 for 250 ÷ 25 (= 10) or 300 ÷ 20 (= 15) M1 for "10" × "15" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68 OR B1 for correct conversion of units M1 for 250 ÷ 20 (= 12.5) or 300 ÷ 25 (= 12) M1 for "12.5" × "12" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68 OR B1 for correct conversion of units M1 for 3 × 2.5 (= 7 .5) or 20 × 25 (= 500) M1 for "3 × 2.5" ÷ "0.2 × 0.25" or "300 × 250" ÷ "20 × 25" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68
*19		1, 4, 7, 10, 13 8, 6, 4, 2, 0	Explanation	2	M1 for listing at least 3 terms of both sequences C1 for Yes and explanation from fully correct working that 4 is in both sequences; numbers in A are increasing; numbers in B are decreasing

5MB2F_01 November 2015

5MB2F_01 November 2015

Question		Working	Answer	Mark	Notes
20			7.21 (am)	3	M1 for listing multiples 9,18,27,36 and 12,24,36 (condone 1 arithmetic error) or method to find LCM M1 for identifying 36 as LCM A1 cao OR M1 for listing times 6.54, 7.03, 7.12, 7.21 or for listing times 6.57, 7.09, 7.21 (condone one arithmetic error) M1 for listing times 6.54, 7.03, 7.12, 7.21 **and** 6.57, 7.09, 7.21 (condone one arithmetic error) A1 cao

5MB2F_01 November 2015

3			70	2	M1 for 20+25+25 (=70) or 15+35+25 (=75) or 20+60 (=80) A1 cao

4	(a)		300	1	B1 cao
	(b)		4	1	B1 cao
	(c)		0.7	1	B1 cao

5MB3F_01 November 2015

Question		Working	Answer	Mark	Notes
5			3	3	M1 for 4200÷25 (=168) M1 for "168" ÷ 60 (=2.8) or "160" – 60 – 60 (=40) A1 cao OR M1 for 25 × 60 (=1500) M1 for 4200 ÷ "1500" (=2.8) or 4200 – "1500" – "1500" (=1200) A1 cao

7			41.50	3	M1 for (7=) 3+3+1 or $n \times 8.3$, where $1 < n < 7$ oe M1 for complete method to find total cost using both vouchers eg 8.3(0) × 5 A1 for 41.5(0)

Original question 9

The full source mark scheme begins on page 1174. Use the original paper code, tier and question number shown above.

11			1.08	3	M1 for 3×1 + 4×2 + 2×5 (=21) or 4×1 + 3×2 + 2×10 (=30) or 1×2 + 3×5 + 4×10 (=57) M1 for "21"+"30"+"57" (=108) A1 cao OR M1 (3+4) ×1 (=7) or (4+3+1) ×2 (=16) or (2+3) ×5 (=25) or (2+4) ×10 (=60) M1 for "7"+"16"+"25"+"60" (=108) A1 cao

Question		Working	Answer	Mark	Notes
13			4.35	2	M1 for 1.85 + 1.25 + 1.25 A1 cao (SC B1 for 3.1(0))

14	(a)		29	2	M1 for 7.25 × 4 A1 cao
	(b)		7	2	M1 for 50.75 ÷ 7.25 A1 cao

Original question 17

The full source mark scheme begins on page 1174. Use the original paper code, tier and question number shown above.

Original question 4

The full source mark scheme begins on page 1190. Use the original paper code, tier and question number shown above.

12			40 m*l* or 0.04 *l*	3	M1 for 12 × 330 (= 3960) M1 for 4 × 1000 – (12 × 330) (= 40) A1 for 40 m*l* OR M1 for $12 \times \frac{330}{1000}$ (= 3.96) or digits 396 M1 for $4 - (12 \times \frac{330}{1000})$ (= 0.04) A1 0.04 *l*

PAPER: 1MA0/1F

PAPER: 1MA0/1F

Question		Working	Answer	Mark	Notes
13	(a)		42	5	M1 for 300 × 3 (= 900) or 150 ÷ 3 (= 50) M1 (dep) for "900" ÷ 150 (= 6 jars) or 300 ÷ "50" (= 6 jars) M1 for 500 ÷ 160 (= 4 boxes) M1 for "6" × 4.00 (=24) + "4" × 4.50 (18) A1 cao
	(b)		168	3	M1 for 6 × 30 M1 (dep) for "180" – 12 A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14	(a)		4.5	1	B1 cao
	(b)		Comparison (supported)	3	M1 for correct use of graph to convert 0°F into °C A1 for –17.5 to –18 C1 (dep M1) for correct comparison of relative temperatures with units correct. eg freezer is warmer with –18°C or ft using their converted temperature with correct units. OR M1 for correct use of graph to convert −10°C into °F A1 for 14 C1 (dep M1) for correct comparison of relative temperatures with units correct. eg freezer is warmer with 14°F or ft using their converted temperature with correct units.

Original question 14

The full source mark scheme begins on page 1190. Use the original paper code, tier and question number shown above.

Original question 24

The full source mark scheme begins on page 1190. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
1	(a)		4726 in words	1	B1 accept 4 thousand 7 hundred and twenty six
	(b)		5 000 000	1	B1 cao
	(c)		3600	1	B1 cao
	(d)	7.04, 7.47, 7.58, 7.6 7.69	ordered	1	B1 cao

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
6 (a)		35	1	B1 cao
(b)		30	1	B1 cao
(c)		50	2	M1 for 35 – 10 (= 25) or 40 – 15 (= 25) or 35 + "30" – 15 oe A1 for 50 or f.t. from (b) + 20

7	(a)		24	3	M1 for using 1 kg = 1000 g M1 for dividing "5.4kg" by 450g or 10 × 450 + 900 = 5400 or 10 + 2 = 12 oe A1 cao NB: Candidates can work in kg and/or g
	*(b)		No and explanation	4	M1 for a correct first step eg 90 + 30 (= 120) eg 5.4 × 20 (= 108 or 1h 48 m) M1(dep) for a complete method to get 6 18 pm or 2 12 pm or 228 or 3h 48m A1 for 6 18 pm or 2 12 pm or 228 **and** 210 or 18 or 3h 48m **and** 3h 30m C1 ft (dep on M2) for correct decision based on their figures

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
26		42.28	5	M1 for method to find weekly mileage eg. 18 × 2 × 5 (= 180) or weekly car park charge, eg. 3.50 × 5 (= 17.50) M1 for method to find fuel used in a relevant journey eg. 180 ÷ 45.2 (= 3.9823 gallons) or 18 ÷ 45.2 (= 0.39823 gallons) M1 for a correct use of the conversion factor to convert between gallons and litres eg. "3.9823"× 4.546 (= 18.1 … litres) or "0.39823" × 4.546 (= 1.81 …. litres) or 1.369 × 4.546 (= 6.22...£/gallon) or 45.2 ÷ 4.546 (= 9.942 miles/litre) M1 for a method to find the cost of a relevant journey eg. "18.1…" × 1.369 (= 24.78 …) or "1.81…" × 1.369 (= 2.478 …) or "3.9823" × "6.22.." (= 24.78...) A1 for answer in the range 42.26 to 42.3(0) NB candidates could work in litres or in gallons and/or could work in £ or p

Table for use in Question 26

Journeys in miles	Fuel used in gallons; miles ÷ 45.2	Fuel used in litres, gallons × 4.546	Cost of journey in £, litres × 1.369 or gallons × 6.22...
18	0.398...	1.81...	2.478...
36	0.796...	3.62...	4.956...
90	1.991...	9.05...	12.39...
180	3.98...	18.1...	24.78...
252	5.57...	25.3...	34.69...

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2		Diagram enlarged. Shading changed to dotty shading	Standard mark scheme
3	(a)	Diagram enlarged.	Standard mark scheme
	(b)	Diagram enlarged. Four shapes changed to convex kites	
5	(a)	Grid enlarged. Shading changed to dotty shading.	Standard mark scheme
	(b)	Grid enlarged	
6		Grid enlarged. Small squares removed.	Standard mark scheme
8		Grid enlarged. Crosses changed to filled in circles. Arrows changed to open headed arrows.	Standard mark scheme
11		The 3 patterns are placed vertically. Pattern number 3 is repeated below and labelled 'pattern number 4 (not completed).' Wording changed 'Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram.' Wording 'grey' changed to 'shaded'. Grey shading changed to dotty shading.	Standard mark scheme

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
12		Diagram enlarged and straightened up. Spike removed and replaced with a filled in circle at the centre.	Standard mark scheme
13	(a) (b) (c)	Model provided for all candidates. Diagram enlarged and also provided for MLP. Diagrams placed on one page under each other. Diagram enlarged to 5 cm diameter. Diagram enlarged. *AB* line is 7.5 cm and placed under the sketch of the nest box. Braille only: Dimensions of diagram given in text.	Standard mark scheme
14	(c)	MLP only - *x* changed to *e*. *y* changed to *f*.	Standard mark scheme
15		Diagram enlarged. Wording added 'Angle *ADC* = 58°. Angle *ABC* = 37°. Angle *DCB* is marked *x*.'	Standard mark scheme
16		Diagram removed. Wording added 'There are two bags, labelled bag **A** and bag **B**. In bag **A** there are 3 black balls and 4 white balls. In bag **B** there are 5 black balls and 7 white balls.'	Standard mark scheme

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
17		Wording added 'There are nine spaces to fill.' Braille only: Two way table – Roman numerals put into spaces. (iii) (vi) (viii) (vii) (iv) (ix) (v) (ii) (i)	Standard mark scheme
18		Question changed. Two shapes are given on the grid, labelled shape P and shape Q. Question text has been changed to 'It shows shape P and shape Q on a grid. Describe fully the single transformation that maps shape P onto shape Q.'	Mark scheme changed to: B1 for enlargement B1 (indep) for scale factor 2
19	(a)	Diagrams labelled 'Diagram (i)' and 'Diagram (ii)'. Candidates are also referred to the diagram through the text. Diagrams enlarged. Wording added 'They show Diagram (i) and Diagram (ii).	Standard mark scheme
	(b)	Diagrams enlarged and placed on the same page one under each other. Wording added 'They show Diagram (iii) and Diagram (iv).' Candidates are also referred to the diagram through the text. Diagrams labelled 'Diagram (iii) and Diagram (iv).'	Standard mark scheme
20		Diagram enlarged. Base line added below '4'.	Standard mark scheme

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
21		Diagram enlarged. MLP only – x changed to y.	Standard mark scheme
22		Diagram removed. Information given in the text.	Standard mark scheme
24		The frequency values in the table have been changed to 10, 20, 10, 5 and 5. Grid enlarged. Right axis labelled.	Standard mark scheme
25		Diagram enlarged. Wording added 'Angle *FBC* is marked *x*.'	Standard mark scheme

4			21 58	2	M1 for a method using a relevant time calculation, eg 22 15 – 8 mins or 22 05 + 8 mins A1 for 21 58 oe

5	*(a)		Diagram or chart	4	B1 for key or suitable labels to identify Paris and Nice B1 for diagram(s) or chart(s) set up for comparison showing data for at least three days, eg dual bar chart, composite bar chart B1 for correct heights for Paris or Nice C1 for fully correct diagram or chart with axes correctly scaled and labelled
	(b)		Statement	1	C1 for statement of comparison

PAPER: 5MB1F/01

7			4.77 m 477 cm	4	M1 for intention to subtract the 3 lengths from 10 m M1 for 1000 – (41 + 112 + 370) oe or 10 – (0.41 + 1.12 + 3.7) oe A1 for 4.77 or 477 oe B1 for correct units with final answer

13			68 (supported)	4	M1 for 20 × 8.25 + 6 × 3 (= 183) M1 for 20 × 5.50 + 2 × 2.50 (= 115) M1 (dep on at least M1) for finding the difference between their two totals A1 cao OR M1 for 8.25 – 5.50 (= 2.75) M1 for 6 × 3 – 2 × 2.50 (= 13) M1 (dep on at least M1) for finding the total saving for their differences A1 cao

PAPER: 5MB1F/01

PAPER: 5MB2F/01

Question		Working	Answer	Mark	Notes
1	(a)		6037	1	B1 cao
	(b)		8380	1	B1 cao
	(c)		19,21,26,37,43	1	B1 cao

3	(a)		London	1	B1 cao
	(b)(i)		5	2	B1 for 5 (accept −5)
	(ii)		6		B1 for 6 (accept −6)

Original question 5

The full source mark scheme begins on page 1209. Use the original paper code, tier and question number shown above.

Original question 12

The full source mark scheme begins on page 1209. Use the original paper code, tier and question number shown above.

17		24, 48, 72, 96, 120, 144, 168, 192, 216, 240, 264, **288** 36, 72, 108, 144, 180, 216, 252, **288**	12 boxes of book marks 8 packs of dust covers	4	M1 attempts multiples of either 24 or 36 (at least 3 but condone errors if intention is clear) M1 attempts multiples of both 24 and 36 (at least 3 but condone errors if intention is clear) M1 (dep on M2) for a division of 250 or 288 by 24 or 36, or counts up "multiples" (implied if answers reversed) A1 for 12 boxes of book marks, 8 packs of dust covers. Accept (15b, 10p), (18b, 12p) etc (SCB1 for (11b, 7p))

PAPER: 5MB2F/01

PAPER: 5MB3F/01

Question		Working	Answer	Mark	Notes
4	(a)		32, 12, 88.92	3	B1 for 32 B1 for 12 B1 ft "32" for 88.92
	(b)		509.98	3	M1 for a correct step 452.25 + 120 (= 572.25) or 452.25 + 2.56 (= 454.81) or 452.25 – 64.83 (= 387.42) or 120 + 2.56 (= 122.56) or 120 – 64.83 (=55.17) or 64.83 – 2.56 (= 62.27) M1 for a complete method A1 cao

7			20	3	M1 for 5 × 60 (=300)or 8 × 35 (=280) M1 for 5 × 60 − 8 × 35 A1 cao

PAPER: 5MB3F/01

Original question 11

The full source mark scheme begins on page 1225. Use the original paper code, tier and question number shown above.

PAPER: 5MB3F/01

Question		Working	Answer	Mark	Notes
12	(a)		83	1	B1 for 82 – 84
	(b)		0.3 – 0.7	3	M 1 for reading off graph at 80°, 70° or 60° with at least one reading in 0.5 – 0.6 oe, or 2.5 – 2.6 oe, or 5.0 – 5.1oe or one correct interval (1.9 - 2.1 or 2.4 - 2.6) oe M 1 for reading off graph at 80°, 70° and 60° with all 3 readings in 0.5 – 0.6 oe and 2.5 – 2.6 oe and 5.0 – 5.1 oe or both correct intervals (1.9 - 2.1 and 2.4 - 2.6) oe A1 for 0.3 – 0.7
*13			Farm B has the greater area	3	M1 for 80 ÷ 2.47 or 35 × 2.47 A1 for 32.(3….) (hectares) or for 86.(4..)(acres) C1 for correct conclusion, eg “Farm B has the greater area”

16	(a)		56.25	1	B1 for 56.25 or $\frac{225}{4}$
	(b)		3.2	1	B1 for 3.2 or $\frac{16}{5}$

PAPER: 5MB3F/01

Original question 18

The full source mark scheme begins on page 1225. Use the original paper code, tier and question number shown above.

6	(a)		8	1	B1 for 8 or – 8
	(b)		14 30	1	B1 for 14 30 or 2 30 pm
	(c)		18 00	2	M1 for intent to add 9 h to 1400 **and** subtract 5 h in any acceptable order A1 for 18 00 or 6 pm

8	(a)		300	2	M1 for using 1000 g = 1 kg or 1.7 or 0.3 seen (maybe on scale) A1 cao
	(b)		21	3	M1 for sight of 18 or 3 (maybe on scale) M1 for complete process of ("18" – 15) × 7 A1 cao

PAPER: 1MA0/1F

Original question 10

The full source mark scheme begins on page 1244. Use the original paper code, tier and question number shown above.

14	$0.25, \frac{3}{10}, 0.32, 35\%, \frac{2}{5}$	Correct order	2	M1 for conversion to decimals with one error **or** conversion to percentages with one error **or** conversion to fractions with a common denominator with one error **or** correct order with one error **or** correct in reverse order A1 for correct order in any format

Question	Working	Answer	Mark	Notes
1 (a)		5906	1	B1 cao
(b)		7200	1	B1 cao
(c)		28	1	B1 cao
(d)		3.67, 5.08, 5.45, 6.03	1	B1 cao

3		531	2	M1 for 565 − 143 (= 422) or 565 + 109 (= 674) or for 143 − 109 (= 34) A1 cao

Question	Working	Answer	Mark	Notes
5 (a)		2	1	B1 cao
(b)		14	1	B1 Accept −14

7		76p	3	M1 for 1000 ÷ 84 or 10 ÷ 0.84 (= 11.90…) or 11 × 84 (=924) or 11 × 0.84 (=9.24) or 11 given as the answer. M1 for complete method to find the change (showing figures in compatible units) or 76 as the answer no/incorrect units. A1 for 76p or £0.76 or £0.76p

Original question 10

The full source mark scheme begins on page 1263. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
14 (a)		61	2	M1 for a complete method eg $7 \times 8 + 5$ A1 cao
(b)		3	3	M1 for $29 - 5$ (=24) or for $8x + 5 = 29$ M1 for "24" $\div 8$ or for $8x = 24$ A1 cao

5		Eg 1045 – 1120 Penguin feeding time 1200 – 1245 Jeep safari 1300 – 1340 Dolphin show 1400 – 1425 Steam train	Correct time plan	3	B3 for 4 activities between 1020 and 1430 with correct start times and correct finish times (B2 for 2 or 3 activities between 1020 and 1430 with correct start times and correct finish times B1 for 1 activity between 1020 and 1430 with correct start time and correct finish time)

PAPER: 5MB1F_01					
Question		Working	Answer	Mark	Notes
*6			Diagram or chart	4	B1 for a key or suitable labels to identify Trudy and Phil B1 for horizontal or vertical axis labelled B1 for at least 3 correct plots C1 for fully correct diagram(s) or chart(s)

Question		Working	Answer	Mark	Notes
12	(a)		315	2	M1 for taking a reading from graph A1 for 310 – 320
	(b)		0.45	2	M1 for amount paid ÷ distance travelled, eg 45 ÷ 100 A1 for 0.425 – 0.475 or 42.5p – 47.5p OR M1 for 'part (a)' ÷ 700 A1 ft for 0.425 – 0.475 or 42.5p – 47.5p

3	(a)		6	1	B1 cao	C
	(b)		−9	1	B1 cao	C

4	(a)		6.90	3	M1 for 13.60 + 13.60 (=27.20) M1 for "27.20" – 20.30 or 6.9 A1 for 6.90	E
	(b)		26	1	B1 cao	C
	(c)		5.23 pm	1	B1	C

5		2.9 kg or 2900g	2	M1 for 3.4 – 0.5 or 3400 – 500 or 2.9 or 2900 A1 for 2.9 kg or 2900 g (units must be correct)	G

5MB2F November 2016

7	(a) (b)	965 596	1 1	B1 cao B1 cao	C C
*8	23 Norwich 27 Ipswich	3	M1 for 30 – 12 and 20+7 **or** 20 – 5 and 30+7 **or** 30 – 12 and 20 + 12 **or** 20 – 5 and 30 + 5 **or** 30 – 12 and 20 – 5 **or** 30 + 5 and 20 + 12 **or** 30 – 12 + 5 **or** 20 – 5 + 12 **or** 12 – 5 (= 7) M1 for 30 – 12 + 5 **and** 20 – 5 + 12 C1 for Norwich 23 and Ipswich 27	E

Original question 8

The full source mark scheme begins on page 1279. Use the original paper code, tier and question number shown above.

13	(a)		9	1	B1 cao	C
	(b)		12	1	B1 cao	C

5MB2F November 2016

2			4.50 1.40 3.90	3	B1 cao B1 cao B1 ft sum of stated profit figures
*3			Belinda with working	3	M1 adding the scores for Ami (=59.2) and for Belinda (=59.7) A1 for 59.2 and 59.7 C1 ft (dep on M1) for conclusion OR M1 for method to find four differences A1 for final difference of 0.5 C1 ft (dep on M1) for conclusion

Original question 3

The full source mark scheme begins on page 1289. Use the original paper code, tier and question number shown above.

6	(a)		174	2	M1 for substitution eg 36×4+30 A1 cao
	(b)		4.5	3	M1 for algebraic statement eg 192=36*x*+30 oe or one inverse operation shown or 192 – "174" = 18 extra units M1 for correct inverse statement or rearrangement of equation eg (192−30) ÷ 36 or "18" ÷ 36 as an extra ½ kg A1 cao

Original question 10

The full source mark scheme begins on page 1289. Use the original paper code, tier and question number shown above.

11			1.64	4	M1 for 3 × 48 (=144) M1 for totalling the amounts eg 1.79+1.20+3.53+"1.44" (=7.96) M1 subtraction from 9.60 eg 9.60 – "7.96" A1 cao

Question		Working	Answer	Mark	Notes
13			42	3	M1 for any attempt to find how many 46s make 180 or 180÷46 (=3.9….) M1 for complete method eg 180 – (46×no.of tickets) A1 cao

14	(i)		−11	4	B1 cao
	(ii)		1.69		B1 cao
	(iii)		3.5		B1 cao
	(iv)		512		B1 cao

20	(a)		3.5	1	B1 cao
	(b)		3000	1	B1 cao
	(c)		30000	2	M1 for 3 × 100 × 100 oe A1 cao

PAPER: 5MB3F_01

Original question 22

The full source mark scheme begins on page 1289. Use the original paper code, tier and question number shown above.

Original question 4

The full source mark scheme begins on page 1301. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
7		15000 m or 15 km	3	M1 for 4 × 1500 (= 6000) **or** 3 × 3 (= 9) M1 correct method to change to consistent units e.g 3 × 1000 (= 3000) **or** 1500 ÷ 1000 (= 1.5) A1 for 15 000 m or 15 km
*8		4 35 pm	4	M1 for 4 × 25 (= 100 (min)) M1 for "100" + 15 (= 115) (min) M1 for 6 30 – "1hr 55 min" C1 for correct time with pm e.g.4 35 pm or16 35(oe) **or** M1 takes off 15 min e.g. 6 30 − 15 (= 6 15) M1 takes off 25 min 4 times e.g "6 15"→5 50→5 25→ 5 00→ 4 35 **or** 6 30 →6 05 →5 40 → 5 15 → 4 50 M1 takes off 15 min **and** takes off 25 min 4 times C1 for correct time with pm e.g 4 35 pm or 16 35(oe)

Original question 8

The full source mark scheme begins on page 1301. Use the original paper code, tier and question number shown above.

11	(a)		Newcastle	1	B1 cao
	(b)		6	1	B1 accept −6
	(c)		−4	1	B1 cao
	(d)		1	2	M1 for (4 −2 + 3 − 4 + 4) ÷ 5 A1 cao

3		54	3	M1 for 200 ÷ 3.85 (= 51.94.. or 51) or 200 ÷ 3.65 (= 54.79.. or 54) or 200 ÷ 3.49 (= 57.31.. or 57) M1 for working out all of the above, or an answer of 54.79... A1 cao

Question	Working	Answer	Mark	Notes
9		Yes with correct calculations	3	M1 for 768 ÷ 56 (= 13.71...or 14) OR 13 × 56 (=728) or 14 × 56 (=784) M1 for (768 – 19) ÷ 56 (= 13.375) OR for [13 × 56 (=728) or 14 × 56 (=784)] **and** 768 – 19 (= 749) A1 for correct conclusion from correct calculations, eg Yes, he still needs 14 buses.
*10		Diagram or chart	4	M1 for a key, or suitable labels, to identify Year 7 and Year 8 M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least 3 days, e.g. dual bar chart, line graph M1 for correct heights, dependent on a linear scale (condone up to 2 errors) C1 for a fully correct diagram or chart to include labels for days of the week and vertical axis correctly scaled and labelled.

11	(a)		0927	1	B1 cao
	(b)		12	2	M1 for method to add 50 minutes to 0935 (= 1025) or method to find the difference between 0935 and 1013 (= 38) A1 cao

Original question 16

The full source mark scheme begins on page 1322. Use the original paper code, tier and question number shown above.

17		6.29	3	M1 for using 1kg = 1000 g, eg 650 ÷ 1000 (= 0.65) M1 complete method, eg "0.65" × 9.68 or 9.68 ÷ 1000 × 650 or for 6.292 A1 for 6.29, accept 6.3(0) SC: B1 for 62.92

18	(a)		10	1	B1 cao
	(b)		7	2	M1 for 11 20 – 11 00 (= 20) or 11 57 – 11 30 (= 27) or 57 – 20 (=37) or 57 – 27 (=30) A1 cao
	(c)		12	1	B1 cao

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Vans for hire and correct calculations	5	M1 for method to find $\frac{1}{3}$ of 87 (= 29) or $\frac{2}{3}$ of 87 (= 58) oe M1 for complete method to find cost for Best vans, eg (87 – "29") × 2 (=116) M1 for method to find the cost of the extra miles, eg (400 – 250) × 0.15 (= 22.50) or (400 – 250) × 15 (= 2250) M1 for complete method to find cost for Vans for hire, eg 44 × 2 + "22.50" (=110.5(0)) with consistent units C1 for Vans for hire and 116 and 110.5(0)

20	$\frac{2}{5}$, 0.405, 41%, $\frac{3}{7}$, 0.45	Ordered numbers	2	M1 for conversion to decimals or conversion to percentages or correct order with one error or correct order but reversed. A1 for correct order

28		72	4	M1 for "x" + 24 or "x" – 24 or for "g" and 5"g" M1 for forming an appropriate equation eg $x + 24 = 5(x – 24)$ or for $(5g – g) \div 2 = 24$ or $g = 12$ M1 for correct operations to isolate x terms and non-x terms in an equation of the form $ax + b = cx + d$ or $ax + b = c(x + d)$ or $x = 36$ or for $6 \times$ "12" oe A1 cao

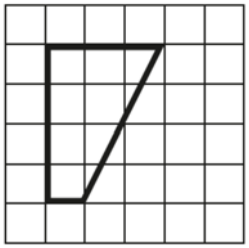
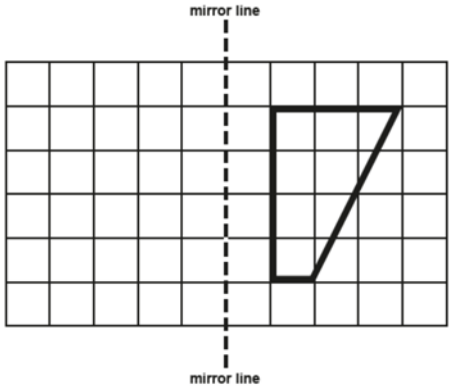
Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*29		No (supported)	5	M1 for π × 9 ÷ 2 (=14.137…) or π × 5 ÷ 2 (=7.85…) or for π × 9 (=28.27…) or π × 5 (=15.7…) M1 for complete method to work out perimeter: 2 + 2 + (π × 9 ÷ 2) + (π × 5 ÷ 2) (= 25.99...) M1 (dep M1) for method to find number of rolls required for their perimeter, eg "their total perimeter" ÷ 2.4 eg 25.99..÷2.4 (=10.8), "47.98.."÷2.4 (=19.9) or "43.98.." ÷2.4 (=18.3) M1 for method to work out cost eg 3×10 + 2×3.99 (= 37.98), or 11 × 3.99 (=43.89); 20 →67.98, 19→63.99 or for method to find how many rolls can be bought for £35 (= 10) C1 for a conclusion supported by fully correct answers eg 37.98 (for comparing with 35) or 10 and 10.8 OR M1 for π × 9 ÷ 2 (=14.137…) or π × 5 ÷ 2 (=7.85…) or for π × 9 (=28.27…) or π × 5 (=15.7…) M1 for complete method to work out perimeter eg 2 + 2 + (π × 9 ÷ 2) + (π × 5 ÷ 2) (= 25.99...) M1 for a method to find how many rolls can be bought for £35 (=10) M1 for a method to work out the coverage of 10 rolls e.g. 10 × 2.4 (=24) C1 for a conclusion supported by fully correct answers eg 25.9(...) and 24

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Mark scheme notes**
1	(b)	Diagram enlarged. Arrow head changed to an open headed arrow.	Standard mark scheme
1	(c)	Diagram enlarged. Wording 'with an arrow' removed.	Standard mark scheme
2		Grid enlarged. Crosses changed to solid dots.	Standard mark scheme
2	(d)	Wording 'with a cross (x)' removed.	Standard mark scheme
4	(a)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
4	(b)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
4	(c)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
5	(a)	Diagram made 7.5 cm diameter. Dot made bigger.	B1 for 7.1 to 7.9
5	(b)	Diagram made 7.5 cm diameter. Dot made bigger. Wording 'Shade' replaced with 'Mark'.	Standard mark scheme
5	(c)	Diagram made 7.5 cm diameter. Dot made bigger.	Standard mark scheme
8	(a)	Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
8	(b)	Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
10		Table turned to vertical format and left aligned. Wednesday's numbers in the table changed from 17 and 11 to 18 and 10. Thursday's numbers in the table changed from 21 and 13 to 20 and 12. Grid enlarged.	Apply standard mark scheme for: Mon Tue Wed Thu Fri Y7 16 14 18 20 26 Y8 16 18 10 12 20

PAPER: 1MA0_2F			
Question		**Modification**	**Mark scheme notes**
11		First column of timetable has been removed from the table. Horizontal lines have been added to the information.	Standard mark scheme
13		Diagrams enlarged. 11 cm measurement on the rectangle moved above the rectangle.	Standard mark scheme
15	(a),(b)	Diagram enlarged. Shape changed. Wording 'centimetre' removed. Wording added 'Each square on the grid represents a one centimetre square'. 	Standard mark scheme for this shape; answers remain the same.
15	(c)	Diagram enlarged. Shape changed. Mirror line added to the top of the line as well. 	Standard mark scheme applied to this shape.
15	(d)	Question reversed. Shape changed. The quadrilateral which is labelled 'Shape P' has been enlarged by a scale factor 3 and labelled 'Shape Q'. Question wording changed to 'It shows Shape P and Shape Q given on a grid. Describe the single transformation that maps Shape P onto Shape Q.' 3 answer lines have been provided. 3 rows have been cut off the side and 2 rows have been removed from the top of the grid and one from the bottom.	B1 for enlargement B1 for scale factor 3

PAPER: 1MA0_2F			
Question		**Modification**	**Mark scheme notes**
18		Diagram enlarged. Axes labels moved to the left of the horizontal axis and above the vertical axis. Right axis has been labelled. Graph line moved so it finishes at 11.55.	Amended mark scheme: M1 for 11 20 – 11 00 (= 20) or 11 55 – 11 30 (= 25) or or 55 – 20 – "10" A1 for 5
20		Wording 'five' added.	Standard mark scheme
21	(a)	Table has been turned to vertical format and left aligned. Wording added 'There are four spaces to fill.' Braille only: will label the spaces to fill (i) to (iv).	Standard mark scheme
21	(b)	Diagram enlarged.	Standard mark scheme
25		Diagram enlarged. Axes labels moved to the left of the horizontal axis and above the vertical axis. Right axis has been labelled. Crosses have been changed to solid dots. In (b) the number 21 cm has been changed to 20 cm.	Standard mark scheme but in (b) the range used should be 20 - 24
27		Diagram enlarged. Braille only: will add information about the diagram into the question wording.	Standard mark scheme
29		Diagram enlarged. Arrows removed from 2 m. Open headed arrows for 5 m. Dot has been made bigger. Information removed from the box and written as a sentence in the question wording.	Standard mark scheme

Original question 29

The full source mark scheme begins on page 1322. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
1		16	B1	cao

7		No (supported)	P1 P1 C1	process to work with either cost of 3 sausages e.g. 3 × 2.30 (=6.9(0)) **or** division of a cost by 3 process to work with costs of at least 3 of bread rolls, bread rolls, ketchup, change, sausages e.g. 2 × 1.50 + 1.60 **or** 1.50 + 1.60 + 0.30, **or** 10 – 1.50 – 1.60 − 0.30 **or** 10 – 1.50 – 1.50 – 1.60 E.g. No **and** (£)5.10 and (£)6.90 No **and** (£)5.40 and (£)6.90 No **and** (£)1.70 No **and** (£)11.50 **or** (£)11.80 **or** shows cost of sausages at £2.30 and cost of any 2 other items is greater than (or equal to) £10 NB can work in £ or p throughout. Condone 5.1 etc

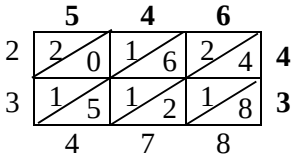
Paper: 1MA1/1F

Question	Working	Answer	Mark	Notes
8 (a)		$\frac{15}{32}$	B1	oe
(b)		$\frac{5}{12}$	M1	uses a correct common denominator with at least one correct matching numerator e.g. $\frac{8}{12}$, $\frac{3}{12}$
			A1	

17		1110	M1 M1 M1 A1	method to find the weight of 1 tin of soup e.g. 1750 ÷ 5 (=350) method to find the weight of 3 packets of soup e.g. 1490 – (4 × “350”) (=90) method to find the weight of 3 tins and 2 packets e.g. 3 × “350” + “90” ÷ 3 × 2 cao

Paper: 1MA1/1F

Question	Working	Answer	Mark	Notes
21 (a)		10,19	B1	cao
(b)		Positive	C1	positive (correlation)
(c)		12 to 13	M1	for an appropriate line of best fit drawn, or a point marked at (x, 16.4) or a horizontal line drawn from 16.4 across to (x, 16.4) where x is in the range 12 to 13
			A1	hours given in the range 12 to 13
(d)		explanation	C1	(yes) e.g. as the majority of points for high temperature appear when there are more hours of sunshine (positive correlation)

Question	Working	Answer	Mark	Notes
23	21840 1638 23478  20000 + 1600 + 240 + 1500 + 120 + 18 = 23478	234.78	M1 <

Question	Working	Answer	Mark	Notes
25		70.5	P1	starts process of Pythagoras e.g. $5^2 + 12^2$
			P1	complete process for Pythagoras e.g. $\sqrt{5^2+12^2}$ or $\sqrt{25+144}$ or $\sqrt{169}$ (=13)
			P1	(dep P1 for Pythagoras) process of adding all the lengths e.g. 5 + 5 + 12 + 12 + "13" (=47)
			P1	(indep) process of multiplying at least 2 lengths by 1.5
			A1	cao SC: any evidence of working with Pythagoras award the P1 or P2

4		$\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$	M1 A1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order correct order

Paper 1MA1: 2F

6		268.20	P1	for a process to work out the value of the £1 coins, eg. 495 ÷ 3 (= 165) or 495 × 0.33...or of the 50p coins, eg. 124 ÷ 2 (= 62)
			P1	for process to find the number of 20p coins, eg. (495 – 124 – (“165”) (= 206)
			P1	for complete process to find total value using consistent units., eg. (“165”) + (124 ÷ 2) + (“206” × 0.2) or 165 + 62 + 41.2
			A1	cao (accept 268.2)

Original question 10

The full source mark scheme begins on page 1339. Use the original paper code, tier and question number shown above.

Original question 12

The full source mark scheme begins on page 1339. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
1 (a)		Don, Mersey, Trent, Thames, Severn	B1	accept 112, 113, 297, 346, 354
(b)		Shown	C1	shown with correct values eg (112 × 3 =) 336 (and 346) or 112 + 112 + 112 + 10 = 346 or 346 ÷ 3 = 115(.3..) (and 112) or 346 ÷ 112 = 3.089.. oe

3	(i)		15	B1	cao
	(ii)		196	B1	cao

8		84	M1 A1	for $(372 - 36) \div 4$ cao

9		No (supported)	P1 P1 C1	for finding a time difference e.g. length of day (=7 h or 420 min) or adding at least two of the five times on to 9 am or adding all the room times given (= 5 h 55 min or 355 min) or adding all five times given (=7 h 10 min or 430 min) for a complete process to inform final decision eg finds length of day (= 7 h) and total of all five times (=7 h 10 min) **or** starts at 9am and adds on all five times to find finishing time (= 4.10 pm) NO supported by correct values eg 4.10 pm **or** 7 h and 7 h 10 min **or** 420 min and 430 min

Paper: 1MA1/3F

2		72	B1	cao

4		−9 , 2	B1	cao accept either order.

9		Identifies error in method	C1	Explanation of error eg she should have multiplied 348 by 2 not divided

20		Ami	M2	for an approximate calculation eg $\frac{600}{16+5}$ **or** $\frac{600}{21}$ **or** $\frac{600}{20}$ **or** $\frac{600}{20+5}$ **or** $\frac{600}{25}$ **or** $\frac{600}{25+5}$ **or** $\frac{600}{30}$ **or** $\frac{595}{20}$
		with estimate	(M1	for using 600 **or** 5 **or** 4)
			C1	Ami's answer /27.1115 is closest with accurately calculated figure from approximation

Question	Working	Answer	Mark	Notes
22 (a)	$\frac{8}{20} + \frac{5}{20}$	$\frac{13}{20}$	M1	for suitable common denominator with one fraction out of two correct **or** 0.4 + 0.25
			A1	for $\frac{13}{20}$ **or** 0.65 oe
(b)		$\frac{1}{8}$	B1	Accept 0.125

5		13	M1 M1 A1	for the start of a method, eg. 2 × 1000 (= 2000) or 150 ÷ 1000 (= 0.15) or 1000 ÷ 150 (= 6.66…) for a fully correct method, eg. 2000 ÷ 150 or 2 ÷ 0.150 or 13.3(...) cao

Paper: 1MA1/3F

12	Complete methods $3.60 \div 2.5 \times 3.5$ or $3.60 \div 5 \times 7$ or $3.5 \div (2.5 \div 3.6)$ or $\frac{3.5}{2.5} \times 3.6$ or $3.6 \div \frac{2.5}{3.5}$	5.04	M1 A1	for a correct first step to find the cost of a unit of weight (eg. 1 kg or 0.5 kg) eg $3.60 \div 2.5$ (= 1.44) or $3.60 \div 5$ (= 0.72) or a complete alternative method for 5.04 (accept £5.04p)

23	(a)		0.625	B1	cao
	(b)		$9.75 \leq x < 9.85$	B2 [B1	$9.75 \leq x < 9.85$ for 9.75 **or** 9.85 (or $9.84\dot{9}$)]

Paper: 1MA1/3F

25		0.000 745 2	M1 A1	for digits 7452 seen cao

2	(a)	−6,−5,0,6,12	B1	for −6,−5,0,6,12 accept 12, 6, 0, −5,−6	
	(b)	0.078,0.708, 0.78,0.87	B1	for 0.078, 0.708, 0.78, 0.87 accept 0.87, 0.78, 0.708, 0.078	Accept any additional ‘0’s at the end of a decimal, eg 0.780 or 0.870

8	36	M1 A1	for method to find cost of 1 kg, eg 54 ÷ 3 (= 18) or 54 ÷ 3 × 2 oe cao	

9	(a)	Radius	B1	cao	Accept spelling mistakes
	(b)	Tangent	B1	cao	Accept spelling mistakes

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
10	535	P1	for a start to the process eg 1280+640+220 (=2140) **or** 1280÷4 (=320) **or** 640÷4 (=160) **or** 220÷4 (=55)	
		P1	for a full process to find cost per adult eg “2140” ÷ 4 **or** “320” + “160” + “55”	Can have arithmetical error as long as the complete processes, in the correct order, are present.
		A1	cao SC: B1 for answer of 1495 if P0 scored	

Question	Answer	Mark	Mark scheme	Additional guidance
13	3	P1	for a start to the process eg 240 − (2 × 45) (= 150) oe **or** (2 × 45) + 40 (= 130) oe	
		P1	for complete process eg “150” ÷ 40 (= 3.75) – can be implied by 40 + 40 + 40 = 120 **or** “130” + 40 + 40 (= 210)	Considering just one piece of 45 cm is not a misread but (240 – 45) ÷ 40 (= 4.875) oe should be awarded P1 only
		A1	cao	

3		243	B1	cao	

4		Suitable number eg. 564 000	B1	for a suitable 6 digit number with 4 as thousands digit	Can be a decimal eg 4652.99, 4625.90

Question		Answer	Mark	Mark scheme	Additional guidance
8		19.85	P1	for a start to the process eg 30 ÷ 6 (=5) **or** 30 ÷ 15 (=2) **or** 30 ÷ 10 (=3) **OR** 30 × 37 (=1110) **OR** 82 ÷ 6 (=13.6 to 13.7) **or** 45 ÷ 15 (=3) **or** 1.25 ÷ 10 (=0.125)	
			P1	for process to find cost of 30 pens **or** 30 pencils **or** 30 rulers eg "5" × 82 (= 410) **or "**2" × 45 (= 90) **or** "3" × 1.25 (= 3.75) **OR "**13.6.." × 30 (=409.8 to 410) **or** "3" × 30 (=90) **or** "0.125" × 30 (=3.75)	Work may be in pence or in pounds
			P1	for a process to find cost of 2 of 30 pens **or** 30 pencils **or** 30 rulers eg any 2 of "5" × 82 (= 410) **,** **"**2" × 45 (= 90) **,** "3" × 1.25 (= 3.75)	Intention to add not necessary eg 410, 3.75 is sufficient, or working leading to these figures Any two correct methods will imply P1P1P1
			P1	for adding at least 3 different costs (units may not be consistent) eg "410" + "90" + "3.75" **or** "410" + "90" + "11.10"	Correct working for 3 of pens, pencils, rulers and pencil cases with an intention to add, may be in a mixture of money units
			A1	cao	

Question		Answer	Mark	Mark scheme	Additional guidance
16		5	P1	for start to process eg 7 × 20 (= 140) **and** 3 × 21 (= 63) **or** (7 × 20) + (3 × 21) + 22 (= 225)	May be written near table 7 × 20 (= 140) **and** 3 × 21 (= 63) minimum requirement for P1
			P1	for a complete process to find the missing frequency eg (320 – "225") ÷ 19 **or** 320 – "225" = (95) **and** "95" ÷ 19	May be seen as two calculations
			A1	cao	Please check the table. Correct answer in the table without working award 3 marks

19		4378.2(0)	P1	for a process to find the circumference of the circle **or** the semi circle, eg π × 50 (= 157.0796327) **or** 0.5 × π × 50 (= 78.53981634)	Figures may be truncated or rounded
			P1	for a complete process to find the perimeter of the field, eg (0.5 × π × 50) + 50 (= 128.5...) **OR** for working with one cost eg "157.07…" × 29.86 (= 4690.11..) **or** "78.5…" × 29.86 (= 2345.198…) **or** 50 × 29.86 (=1493) **or** 3 × 180 (= 540)	May use circle at this point, figures imply method One cost is 1 length or labour Figures may be truncated or rounded
			P1	For finding the costs of two different aspects eg 2 of "78.5…" × 29.86 (= 2345.1..) **or** 50 × 29.86 (= 1493) **or** 3 × 180 (= 540)	Two different aspects means arc and straight edge or arc and labour or straight edge and labour Condone circle and labour or circle and straight edge.
			P1	for a adding at least 2 costs eg "2345.1.." + "540" (=2885.1..) **or** "1493" + "540" (=2033) **or** "128.5…" × 29.86 (= 3838.2..)	Finding the cost of the perimeter is two costs added and so implies the previous P1 The circle is not allowed to be counted as one of the two costs for this mark
			A1	for answer in the range 4377 – 4392	

Paper: 1MA1/2F

5	(a)	974	B1	cao	
	(b)	16,28 or 18,26	B1	for fully correct pair of numbers	

7	24	M1 A1	for a complete method eg 6 × 2 × 2 or sight of 6, 2, 2 ready for calculation, or with the wrong operation cao	Could be seen as two separate calculations SC:B1 for a answer of 1.5 oe

8	(a)	2.28	B1	cao	
	(b)	2.5604	B2 (B1	cao for 6.6564 seen, or for 2.56 or for digits 25604)	If the correct answer is shown and then rounded, award full marks.

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	40	B1	cao	
(b)	Yes (supported)	P1	for process shown to add a time to departure time eg 8.45 + 0.17 or 8.45 + 0.15 or 8.45 + 0.15 + 0.17 **OR** for process to work out time at work after arrival at Manchester bus stop eg "9.35" + 15 **OR** finds accumulated additional time eg 17 + 15 (= 32) **OR** start to work backwards eg 10.00 − 0.15	There must be some attempt to add but not necessarily complete or correct (eg 8.62). "9.35" must be a given time ie from 0905, 0935, 0955, 1010, 1025, or 1048. Process must be shown.
		P1	for process to use a bus time from Whitefield to Manchester with other times eg 0904 to 0935 with use of 17 or 15	Do not award in cases of ambiguity.
		C1	for conclusion of "Yes" supported by correct figures eg states 9.50 **or** comparable figures eg 9.35 and 25 (spare)	There needs to be a conclusion eg Yes or equivalent words supported by correct figures; if C mark fully evidenced award 3 marks.
			Alternative scheme	
		P1	for process shown to find a duration of time using given figures eg 8.45 to 10.00, 8.34 to 9.05, 10.14 to 10.48	There must be some attempt to find a duration of time but not necessarily complete or correct. Process must be shown.
		P1	for process to find the total travelling time eg 17 + 31 + 15 or 17 + 2 + 31 + 15	31 can come from any bus apart from the last bus which is 34
		C1	for conclusion of "Yes" supported by correct figures eg comparable figures eg 65 < 75 **or** 75 – 65 (= 10)	There needs to be a conclusion eg Yes or equivalent words supported by correct figures; if C mark fully evidenced award 3 marks.

Paper: 1MA1/3F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
1	0.02, 0.152, 0.2, 0.37, 0.4	B1	for correct order	Accept reverse order

5	(a)	22	B1	cao	
	(b)	8	B1	cao	
	(c)	$7 \times (2 + 3) = 35$	B1	for correct placement of brackets	Allow alternative correct statements, eg $[7 \times (2 + 3)] = 35$

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
6	Yes (supported)	P1	starts process to find the number of tins or meals needed, eg $2 \times \frac{1}{4} (= \frac{2}{4} = \frac{1}{2})$ or $14 \times \frac{1}{4} (= \frac{14}{4}$ oe) or $2 \times 14 (= 28)$ or $8 \div 2$ **or** to find the number of meals from 8 tins, eg $8 \div \frac{1}{4} (= 32)$	Numbers may be expressed in decimal form
		P1	a complete process to find the number of tins needed, eg $14 \times \frac{2}{4} (= 7)$ **or** $8 \div 2$ and "$\frac{14}{4}$" **OR** to find the numbers of meals $8 \div \frac{1}{4} (= 32)$ and $2 \times 14 (= 28)$ **or** $8 \div \frac{2}{4} (= 16)$	
		C1	'Yes' from a comparison of correct values, eg 7 (and 8) **or** 32 and 28 **or** 16 (and 14) **or** $\frac{14}{4}$ and 4	Correct working needs to be accompanied by a statement confirming enough food has been bought.

9	30	M1 A1	$2 \times 9 + 3 \times 4$ cao	May be shown in stages but an intention to add 2×9 and 3×4 must be clear

20	9	M1 A1	for a correct first step, using the laws of indices to simplify eg 3^2 or. 3^{7+-2} or 3^{7-3} or 3^{-2-3} OR for using exact values, eg. $2187 \times \frac{1}{9}$ (= 243) or $2187 \div 27$ (= 81) or $\frac{1}{27\times9}$ $(=\frac{1}{243})$ cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	200	M1	for 120 × 5 ÷ 3 oe	
		A1	cao	
(b)	statement	C1	Statement that each tap fills at the same rate or that the rate does not change over time Examples **Acceptable responses:** Taps are running at the same speed They (clearly referring to taps) all fill the pool with the same volume of water The amount of water is the same in the same time (again referring to taps) Each tap is doing a fifth of the filling That all taps take equal time to fill the pool All taps produce the same amount of water That the water flow stays at the same rate over the whole time. **Non acceptable responses** It will take more time because there are less taps The less taps used the longer it takes to fill the pool That 1 tap can take up to 24 mins each 3 taps will take longer to fill the pool	Any statement referring to the same amount of water flowing from each tap is acceptable.

Question	Answer	Mark	Mark scheme	Additional guidance
1	40 or tens	B1	cao	Accept trailing zeros, eg 40.0 Accept forty

3	(a)	4.56	B1	cao	Accept trailing zeros, eg 4.560
	(b)	7300	B1	cao	Accept trailing zeros, eg 7300.0

6	$\frac{5}{7}, \frac{11}{15}, \frac{3}{4}, \frac{19}{25}$	M1 A1	conversion into decimals or percentages or other equivalent form, at least two conversions correct, **or** any three fractions in correct order cao	0.71(...), 0.73(...), 0.75, 0.76 Accept list in reverse order for this mark Accept expressed in equivalent decimals or percentages or any other appropriate form

17	2 bags of stone	P2 (P1 C1	for a complete process to work out how many bags of each material is required eg 180 ÷ 25 (= 7.2 or 8), 375 ÷ 22.5 (= 16.6.. or 17), 1080 ÷ 50 (= 21.6 or 22) **or** a complete process to work out the total weight of each element that he has eg 25 × 10 (= 250), 20 × 22.5 (= 450), 50 × 20 (= 1000) for a correct start to the process, eg for at least one correct calculation correct conclusion eg 2 bags of stone, with no incorrect working	The correct figures do not need to be seen to award the process marks

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
1 (i)	43.7	B1	cao	
(ii)	$\frac{5}{7}$	B1	$\frac{5}{7}$ oe	Accept any other equivalent fraction to $\frac{5}{7}$

4	90	B1	cao	

7	1.94 m or 194 cm	M1 A1	for 188 **or** 0.06 **or** 194 **or** 1.94 1.94 m **or** 194 cm	 Do not accept numerical answers without the correct unit shown.

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
8	Yes with correct figures	P1	begins to work with proportion eg 20 ÷ 2 (=10) **or** 20 ÷ 5 (=4) **or** 2.38 ÷ 2(=1.19) **or** 5.60 ÷ 5 (=1.12)	Throughout monetary units not required; trailing zeros not needed. Can work in pence throughout
		P1	full process to find the cost of 20 pens **or** 20 folders eg. 20 ÷ 2 × 2.38 (=23.8) **or** 20 ÷ 5 × 5.60 (=22.4) **or** 2.38 ÷ 2 × 20 (=23.8) **or** 5.60 ÷ 5 × 20 (=22.4)	
		P1	full process to find total price **or** amount remaining eg “23.8” + “22.4” (=46.2) **or** 50 − “23.8” − “22.4” (=3.8)	
		C1	Yes with correct figures eg 46.2 **or** 3.8 (left)	‘Yes’ might be implied from working eg 46.2<50 or a statement that 3.8 is left, but 46.2 alone must also show an answer such as ‘Yes’ (may be written elsewhere). Working leading to 46.2 must be shown for this mark.

13	50	P1 P1 P1 A1	for 45 × 1.2 (= 54) **or** 34 × 1.5 (=51) for 150 – “54” – “51” (= 45) for “45”÷ 0.9 (=50) cao	

Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	7360	B1	cao	
(b)	0.1077981356	B2	for 0.1077(981…)	Answer must be given to at least 4 decimal places rounded or truncated
		(B1	for 5.74(45626…) **or** 53.29 **or** 0.11 **or** 0.107 **or** 0.108)	Accept a clear indication of the decimal point. Check first four decimal places only

Answer 406 | Mark scheme

Question	Answer	Mark	Mark scheme	Additional guidance
1	3	B1	cao	

3	80	B1	cao	

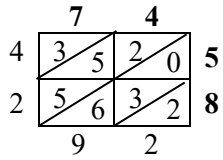
5	11	B1	cao	

6	3000	P1 P1 P1 A1	for a correct step for travel or/and spending money eg 4 × 150 (=600) or 4 × 250 (=1000) or 150 + 250 (=400) for an appropriate step with the hotel price eg 7× 50 (=350) or 4 × 50 (=200) for combining at least two "costs" for 4 people for 7 nights eg 4 × 150 + 4 × 250 (=1600) or 4 × 150 + 7 × 4 × 50 (=2000) cao	Can be embedded eg 4×7×150 Can be 4×7×50 Must be correct process for two costs eg not 4 × 150 ×7 but may be 2 correct costs and one incorrect

Paper: 1MA1/1F

8	$\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{7}{12}, \frac{3}{4}$	M1 A1	converts fractions to a common equivalent form, at least two conversions correct eg fractions with a denominator of 12, decimals or percentages, **or** any 4 fractions in correct order cao	0.25, 0.33(…), 0.5, 0.58(…), 0.75 Accept list in reverse order for this mark Accept expressed in equivalent decimals or percentages or any other appropriate from or mixed forms

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
11	4292	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation	Working 592 3700 4292  70 4 50 3500 200 8 560 32 3500 + 560 + 200 + 32 = 4292
		A1	cao	

Paper: 1MA1/1F

15	(a)	8	B1	cao	
	(b)	125	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
18	Accurate figures with supportive working	M1	for a correct first step eg 600 ÷ 30 (= 20) **or** 120 ÷ 30 (=4) **or** 600 × 120 (=72 000) **or** 30 × 30 (=900)	Could work in m or cm
		M1	for finding an appropriate cost 2.5 × "20" (=50) **or** 2.5 × "4" (=10) **OR** number of tiles required "72 000" ÷ "900" (=80) **or** "4" × "20" (=80) **OR** number they can afford 220 ÷ 2.5 (=88)	Units must be consistent
		M1	for full **method** to get figures to compare eg cost to tile whole area eg "80" × 2.5 **OR** number of tiles they need and number they can afford eg "72 000" ÷ "900" and 220 ÷ 2.5	
		A1	for 200 **OR** 80 and 88 **OR** 72 000 and 79 200 **OR** 132 (cm) **OR** 660 (cm) SC B2 for answer of 60	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	600	P1	for starting process to calculate amount of flour eg $60 \div 15$ (= 4) **or** 3×50 (= 150)	4 implied by 200g of sugar
		P1	for complete process eg $\frac{60}{15} \times$ "150"	
		A1	cao	
(b)	2	P1	for process to calculate amount of butter eg $\frac{60}{15} \times 2 \times 50$ (= 400)	
			OR for process to calculate the number of packs of butter needed eg [butter] ÷ 250	[butter] must be clearly stated or calculated, may be seen in part (a)
		A1	cao	2 must not come from incorrect working

2	−3, −1, 0, 2, 4	B1	for −3, −1, 0, 2, 4	Accept reverse order

5	2 000 000	B1	for 2 000 000 or 2×10^6	

6	Yes and statement	P1 P1 C1	for a first step towards solution, eg. 2 × 2.75 (= 5.5) or 2.75 + 2.9 (= 5.65) **OR** 10 − 1.5 (= 8.5) or 10 – 2.9 (= 7.1) or 10 – 2.75 (= 7.25) for a complete process to find figures to compare eg. 2 × 2.75 + 2.9 + 1.5 (= 9.90) or 10 − (2 × 2.75 + 2.9) (=1.60) **OR** 2 × 2.75 + 2.9 (=8.40) **and** 10 − 1.5 (= 8.5) for correct conclusion with accurate figure(s) eg. Yes and (£)1.6(0) **or** Yes and (£)9.9(0) **or** Yes and (£)8.4(0) **and** (£)8.5(0)	

10	$14 < 21$ $4+7 = 103 - 92$ $2^2 = 2 \times 2$ $-3 > -5$	B2 (B1	for all 4 correct for 2 or 3 correct)	

Paper: 1MA1/2F

12	(a)	7	B1	cao	
	(b)	1 hr 38 mins	M1	for a complete method to find the time difference eg. 9 00 – 7 22 **OR** a calculation on a number line, may be seen in any time format **OR** work in parts eg hours and minutes, may work in any units, eg. 60 – 22 (= 38) + 1 hour **OR** a clear build up method from 07 22 to 09 00 **OR** for correct values seen in an incorrect format, eg. 1.38 or 1:38 or 98 without units	
			A1	1 hr 38 (mins) or 98 minutes or $1.6\dot{3}$ hrs	

Question	Answer	Mark	Mark scheme	Additional guidance
17	180.9	P1	for starting to work with proportion eg. 60 ÷ 100 (= 0.6) or 150 ÷ 100 (= 1.5) **OR** 100 ÷ 60 (= 1.66..) or 100 ÷ 150 (= 0.66..) **OR** 84 ÷ 100 (= 0.84) or 87 ÷ 100 (= 0.87) or 84 ÷ 10 (= 8.4) or 87 ÷ 10 (= 8.7) or 84 ÷ 2 (= 42) or 87 ÷ 2 (= 43.5) **OR** 100 ÷ 84 (= 1.19..) or 100 ÷ 87 (= 1.14..)	
		P1	for a complete process to work out the calories in either item eg. “0.6” × 84 (= 50.4) or “1.5” × 87 (= 130.5) **OR** 84 ÷ “1.66..” (= 50.4) or 87 ÷ “0.66..” (= 130.5) **OR** “0.84” × 60 (= 50.4) or “0.87” × 150 (= 130.5) or “8.4” × 6 (= 50.4) or “8.7” × 15 (= 130.5) or “42” × 6 ÷ 5 (= 50.4) or “43.5” × 3 (= 130.5) **OR** 60 ÷ “1.19..” (= 50.4) or 150 ÷ “1.14..” (= 130.5)	
		P1	(dep on P2) for a complete process to find total number of calories in the breakfast, eg. “50.4” + “130.5”	
		A1	for 180.9 or 181	

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
18	952	P1	for starting to work with parts, eg. 6 × 60 ÷ 10 (= 36) or 10 ÷ 6 (= 1.66..) or 6 ÷ 10 (= 0.6) or 13 × 60 ÷ 15 (= 52) or 15 ÷ 13 (= 1.15..) or 13 ÷ 15 (= 0.866..) **OR** for 60 ÷ 10 × 12 (= 72) or 10 × 60 ÷ 15 (= 40)	
		P1	for a full process to find the number of parts made by machine A eg "36" × 12 (= 432) or 12 × 60 ÷ "1.66.." (= 432) or 12 × 60 × "0.6" (= 432) **OR** "72" × 6 (= 432)	
		P1	for a full process to find the number of parts made by machine B eg "52" × 10 (= 520) or 10 × 60 ÷ "1.15.." (= 520) or 10 × 60 × "0.866.." (= 520) **OR** "40" × 13 (= 520)	
		A1	for 952 or 432 **and** 520	

4	9, 27	B1	cao	Do not award the mark if other numbers are shown.

8	39	M1 M1 A1	for finding one quarter of 52, eg $52 \div 4$ (= 13) **OR** for finding the fraction to be filled, eg $1-\frac{1}{4}$ $\left(=\frac{3}{4}\right)$ oe for a complete method eg $52 - $ "13" or "13" $\times 3$ **OR** for $"\frac{3}{4}" \times 52$ cao	Accept equivalent decimals or percentages

Paper: 1MA1/3F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
1	70 or 7 tens	B1	for 70 (or seventy) or 7 tens (or seven tens)	Condone any incorrect spelling provided the intention is clear

3	3170	B1	cao	

7	10	M1	for converting $1\frac{1}{4}$ hours or $\frac{1}{4}$ hour to minutes eg. $1\frac{1}{4}$ hours = 60 + 15 (= 75) or $\frac{1}{4}$ hour = 15 minutes or for converting 1 hour 25 minutes to minutes eg 60 + 25 (= 85)	Condone absence of units in the working
		A1	cao	

Paper: 1MA1/1F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
8	400	P1	for finding the total weight of 4 blocks, eg 650 × 4 (= 2600) or 0.65 × 4 (= 2.6) **or** for using 1 kg = 1000g eg 650 ÷ 1000 (= 0.65) or 3 × 1000 (= 3000)	Writing 1 kg as 1000g is insufficient without it being used in a calculation
		P1	for subtraction, eg. 3 × 1000 – "2600" or 3 – "2.6" (= 0.4)	
		A1	cao SC B1 for 2350	

14	345	M1	for complete method with relative place value correct including addition of all the appropriate elements of the calculation. 2 3 0 1 1 5 3 4 5 **2** **3** 0 2 | 0 3 **1** 3 1 0 | 1 5 **5** 4 5 | | 20 | 3 | | 10 | 200 | 30 | | 5 | 100 | 15 | **200 + 30 + 100 + 15 = 345** 23 + 23 + 23 + 23 + 23 = 115; 115 + 115 + 115 = 345	Accept all equivalent methods if complete. Partitioning methods may show a complete method which has been broken down into multiple stages. Multiple addition of 23 (or 15) acceptable if the correct number added is shown, and an attempt at addition is clear.
		A1	cao	

Paper: 1MA1/1F

17	18	P1 P1 A1	for process to solve $x - 1 = 2$, eg. $x = 2 + 1$ (= 3) or for $2x = 6$ for 2×9 cao	Can award mark for $3 - 1 = 2$

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
1	–7, –4, –2, 1, 8	B1	for –7, –4, –2, 1, 8	Accept reverse order 8, 1 –2, –4, –7

6	14	P1 P1 A1	for making a start to the process eg 14 × 15 (= 210) **or** 14 × 15 × 6.50 (= 1365) **or** 1274 ÷ 6.50 (= 196) **or** 14 × 15 × 6.50 – 1274 (= 91) for a complete process eg (14 × 15 × 6.50 – 1274) ÷ 6.50 **or** 14 × 15 – (1274 ÷ 6.50) cao	

10	16 35	P1 P1 A1	for process to find length of time in car park eg 8.40 ÷ 0.024 (= 350) **or** 0.024 × 60 (= 1.44) **and** 8.40 ÷ "1.44" (= 5.833...) for process to add "350" minutes to 10 45 eg 10 45 + 60 + 60 + 60 + 60 + 60 + 50 **or** 10 45 + "5 hours 50 minutes" **OR** for 4 35 for 16 35 **or** 435 pm	 Do not accept incorrect interpretation of time, eg 5.83 = 5 hours 83 minutes Accept 16 35 pm

Paper: 1MA1/2F

11	(a)	2.5(0)	P1	for 13 × 7.5(0) (=97.5(0)) **or** 5 × 20 (=100)	
			P1	for "100" – "97.5(0)"	
			A1	cao	
	(b)	96	M1	for $\frac{1}{5}$ × 120 (= 24) oe **or** $\frac{4}{5}$ × 120 oe	
			A1	cao	

12	6	P1 P1 A1	process to find the weight of small boxes eg 3 × 450 (=1350) complete process to find the number of large boxes, eg (5850 – "1350") ÷ 750 **or** 5850 – "1350" (=4500) **and** 6 × 750 (=4500) cao	 Cannot award this mark if 6 comes from a rounded value due to error in calculating

23	(a)	157.668(255)	M1	for 836.4 **or** 5.304(809139) **or** 28.141 **or** a truncated or rounded version of 157.668255 to no less than 3 sf	
			A1	for 157.668(255)	Answer must be given to at least 3 decimal places rounded or truncated Accept a clear indication of the decimal point. Check first 3 decimal places only
	(b)	157.7	B1	ft from part (a) provided answer to (a) has at least 5 sf	

Question	Answer	Mark	Mark scheme	Additional guidance
1	0.309, 0.32, 0.35, 0.4	B1	for 0.309, 0.32, 0.35, 0.4	Accept written in reverse order: 0.4, 0.35, 0.32, 0.309

5	700	B1	for 700 Accept 7 hundreds	

10	660	P1 P1 P1 A1	for a process to work out the **number** of large marbles eg 12 ÷ 4 (=3) **or** the **number** of small marbles eg 12 – [number of large marbles] **or** 12 × (1− ¼) (=9) (dep) for a process to work out the **weight** of large marbles eg "3" × 70 (=210) **or** to work out the **weight** of small marbles eg "9" × 50 (=450) for a complete process eg (12÷4) × 70 + 12 × (1− ¼) × 50 oe cao	[number of large marbles] could come from an incorrect method for finding $\frac{1}{4}$ of 12

15	7	P1	for 750 × 9 (=6750)	
			or 1 + 9 (=10)	
			or 750 ÷ 1000 (= 0.75)	
		P1	(dep) for “6750” + 750 (=7500)	
			or for “10” × 750 (=7500)	
			or “0.75” × “1 + 9” (= 7.5)	
		A1	cao	
			Alternative	
		P1	for 100 + 900 (= 1000)	This can be implied by (1 litre of drink =) 100 (m*l*) of squash and 900 (m*l* of water)
		P1	(dep) for 750 ÷ 100 (= 7.5)	
		A1	cao	

Paper: 1MA1/1F

28	0.000 672, 67.2×10^{-4} 6.72×10^{5} 672×10^{4}	B2 (B1	cao for correct conversions to same format, condoning one error. **or** for 3 numbers in the correct order (ignoring one) **or** for all 4 numbers listed in reverse order)	Accept correct numbers in any form

Paper: 1MA1/1F

6	Yes with supporting calculations	M1	for ONE correct time conversion seen or used eg 105 (mins) is 1 (hr) 45 (mins) **or** 16 45 – 14 30 = 2 hr 15 mins **or** 14 30 + 1 (hr) + 45(mins)	May be implied by a correct calculation 1 hr = 60 mins is not enough for this mark
		M1	for a full method to make a comparison eg for adding 20 and 105 to 14 30 (=16 35) **or** for subtracting 20 and 105 from 16 45 (=14 40) **or** for finding the time differences eg 16 45 – 14 30 (= 2 hr 15 mins) and 105 + 20 (=125 mins) **or** adding 105 to 14:30 (= 16 15) **and** 1645 – "16 15" (=30)	Intention to do the correct calculation or calculations is enough for this mark Accept any sensible time notation throughout (pm is not required)
		C1	correct conclusion from the comparison of accurate figure(s) eg Yes and 16 35 or 4.35(pm) 14 40 or 2.40(pm) **or** for 2 hours 5 minutes and 2 hours 15 minutes oe **or** for 10 minutes spare **or** 30 (minutes to get to the bus stop)	Yes may be implied by a statement

Paper: 1MA1/2F

13	19	P1 P1 A1	for 4275 ÷ 28 (= 152(.678..)) **or** 153 **or** a build up to at least 150 × 28 (=4200) for “152” × 28 (= 4256) **or** “153” × 28 (=4284) **or** (“152.678..” – 152) (=0.678..) **or** 4275 ÷ “152” – 28(= 0.125) **or** 4275 – “4200” (=75) oe cao	Division may be seen as a build up method Use of 150× 28 or better for “4200”

2	8	B1	cao	

4	6.25	B1	for 6.25 oe	

5	–6,–4,–3, 0,1, 2,7	B1	for –6, –4, –3, 0, 1, 2, 7	accept reverse order

8	78	P1 P1 A1	for process to find the number of boxes, eg 200 ÷ 25 (=8) or to find the cost of each tile, eg 9.75 ÷ 25 (=0.39) for complete process, eg “8” × 9.75, “0.39” × 200 cao	Could work in £ or in pence for P marks

Paper: 1MA1/3F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	30	B1	cao	
(b)	42	B1	cao	
(c)	$\frac{1}{20}$	B1	for $\frac{\mathbf{1}}{\mathbf{20}}$ or any equivalent fraction or 0.05	

10	(a)	80	B1	cao	
	(b)	8	B1	cao	
	(c)	Yes and reason	C1	for yes and reason **Acceptable examples** Yes, because 27 is greater than 7 Yes, because the drop is 20 more Yes, the gradient is steeper (in the first 3 mins) and is then less steep (in the last 3 mins) Yes, because the drop is 20 less in the last 3 mins Yes, because the drop is more **Not acceptable examples** No …. Yes, because the drop is 20 less	"Yes" may be implied from wording Ignore any references to actual readings from the graph

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	shop A from correct figures	P1	for start of process to find the number of packs needed from at least one shop, eg 30 ÷ 4 (= 7.5 or 8) **or** 30 ÷ 6 (= 5)	
		P1	for process to find cost of batteries from at least one shop, eg (30 ÷ 4) × 1.6 (= 12.8 or 12) **or** (30 ÷ 6) × 2.7 (= 13.5)	
		P1	for a complete process to find the cost of batteries from both shops using whole packs eg "8" × 1.6 (= 12.8) **and** "5" × 2.7 (= 13.5)	"8" must come from "7.5" rounded up
		C1	for shop A with both 12.8(0) and 13.5(0)	
(b)	No effect (supported)	C1	(ft) for "has no effect" with reason **Acceptable examples** No, since A is 12 and B is 13.5(0) No, since A is just 80(p) less and B is the same. No, since A is less and B has not changed. No, since A is 1.5(0) less No, since 40(p) is less than 45(p) No, as batteries in B are 5p more **Not acceptable examples** Yes …. There is no change (unsupported) No, since A is less (incomplete)	If figures are given as part of the answer they must be correct

Paper: 1MA1/3F

2	–10, –7, –2, 0, 1, 8	B1	Accept the reverse order, eg 8, 1, 0, –2, –7, –10	

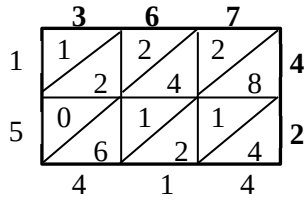
5	49	B1	cao	

7	14	M1 A1	for 42 ÷ 3 cao	

Question	Answer	Mark	Mark scheme	Additional guidance
9	No with correct figures	P1	for 1.20 + 0.70 + 2.30 + 2.30 (= 6.5(0)) **or** for adding 3 correct costs **or** for 2 correct costs plus change **or** for 10 – 2 correct costs	Could work in £ or p for P marks Accept 2.30 + 2.30 (= 4.60) as 2 costs
		P1	for a complete correct method, eg 10 – "6.50" **or** 10 – 1.20 – 0.70 – 2.30 – 2.30 (=3.50) **or** 1.20 + 0.70 + 2.30 + 2.30 + 3.30 (=9.80)	Accept absence of "0" in pence column
		A1	for No with correct figures, eg 3.5(0) **or** 9.8(0)	

10	7	P1 A1	for process to find temperature on Wednesday, eg 5 – 10 + 3 (= –2) **or** –10 + 3 **or** 10 – 3 for 7, accept –7	Be aware of correct use of a number line

Question	Answer	Mark	Mark scheme	Additional guidance
14	3.3(0)	P1	for a process to find cost of 1 kg of carrots, eg 1.80 ÷ 3 (= 0.60)	Could work in £ or p for P marks Condone incorrect money notation
		P1	for a start to a process to find cost of 1kg of potatoes, eg 3.45 – 2 × "0.60" (= 2.25) **or** (1.80 + 3.45) ÷ 5 (= 1.05) **OR** for a process to find the cost of 4 kg of carrots, eg "0.60" × 4 (= 2.40)	1 kg of potatoes = (£)0.45 or 45p
		P1	(dep on P2) for a complete process to find the cost of 4 kg of carrots **and** the cost of 2 kg of potatoes, eg "0.60" × 4 (= 2.40) **and** ("2.25" ÷ 5) × 2 (= 0.90) **or** "0.60" × 4 (= 2.40) **and** ("1.05 – "0.60") × 2 (= 0.90)	
		A1	cao	Award 0 marks for a correct answer with no supportive working.

Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	15.414	M1	for a complete method with relative place value correct including an intention to add all the appropriate elements of the calculation eg, 2 lines of the 1st method, internal numbers of grids, or complete structure shown of partitioning methods.	14680 734 15414  | | 300 | 60 | 7 | | --- | --- | --- | --- | | 40 | 12000 | 2400 | 280 | | 2 | 600 | 120 | 14 | 12000 + 2400 + 280 + 600 + 120 + 14 = 15414
		A1	for digits 15414	
		A1	(ft) dep on M1 for correct placement of the decimal point into their final answer	
(b)	37.4	M1	for a start to a method, eg 598.4 ÷ 16 (or 59.84 ÷ 1.6) = 3 (as a first digit)	A start to a repeated subtraction method or build-up method is acceptable if a correct first digit of 3 is found
		A1	for digits 374	
		A1	(ft) dep on M1 for correct placement of the decimal point into their final answer	

Paper: 1MA1/1F

3	0.12, 0.21, 1.02, 1.20	B1	accept 1.20, 1.02, 0.21, 0.12	

7	780	P1 P1 A1	for 2500 – 940 (= 1560) **or** 2500 ÷ 2 (=1250) and 940 ÷ 2 (=470) for “1560” ÷ 2 **or** “1250” – “470” cao	

Paper: 1MA1/2F

9	Explanation	C1	for explanation, **Acceptable examples** Answer should be 14 Should work out 3 × 4 first Alec should times first instead of adding Not used BIDMAS/BODMAS BIDMAS/BODMAS He has done it in the wrong order Alec needs to use brackets so 2 + (3 × 4) Because you always do multiplication or division first **Not acceptable examples** Because the answer is wrong It is 2 + (3×4) = 15 It needs brackets Because working out should only be one sum	

15	$\frac{4}{9}, \frac{3}{5}, \frac{5}{8}, \frac{2}{3}$	M1 A1	converts into decimals or percentages or equivalent fractions, at least 2 conversions correct **or** for any 3 fractions in correct order for $\frac{4}{9}, \frac{3}{5}, \frac{5}{8}, \frac{2}{3}$	0.44(...), 0.6, 0.625, 0.66(...) Accept in reverse order for this mark Accept expressed in equivalent decimals or percentages or fractions or in mixed numerical form

Paper: 1MA1/2F

18	13	P1 P1 A1	for at least two of 3×5 (=15) or 2.5×8 (=20) or 1.5×14 (=21) or 1×10 (=10) **or** for 3×5 + 2.5×8 + 1.5×14 + 1×10 (=66) for process to find length of all 2m planks, eg. 92 – (3×5 + 2.5×8 + 1.5×14 + 1×10) (= 26) or 92 – “15” – “20” – “21” – “10” (= 26) cao	Note 66 on its own will score this mark If no calculations are seen for products allow one error in “15”, “20”, “21”, “10” 13 in the correct place in the table should be accepted as the final answer

19	No (supported)	P1 P1 P1 C1	for a process to find Rachel's share, eg 600 ÷ 5 × 2 (= 240) for process to find Samina's share eg (600 – "240") ÷ 4 (= 90) for a process to find either of Tom's share, eg 600 – "240" – "90" (= 270) **or** 3 × "90" (=270) **or** 600 ÷ 3 (= 200) for comparison purposes for "No" and accurate figures eg 270 and 200 **or** 270 and 70 (difference)	 Note This mark, if awarded for 200, may be the only mark awarded "No" may be implied by a statement Answer only with no working, no marks

Paper: 1MA1/2F

3	10 45	B1	for 10 45	Accept any time notation

4	11	B1	cao	

8	2540 shown	M1 M1 A1	for finding the cost of one item eg 2 × 600 (=1200) or 7 × 120 (=840) or 2 × 250 (=500) full process eg “1200” + “840” + “500” (=2540) **or** 2500 − “1200” − “840” − “500” (= ±40) for 2540 or ±40	Ignore written statements as long as the correct figures are shown

Paper: 1MA1/3F

10	61	P1 A1 A1	for 300 ÷ 4.85 (= 61.8...) for 61.8... **or** 62 61	This mark may be awarded for build-up methods that get to figures that are before or after 300 Embedded answers get −1 mark.

14	80	P1 P1 A1	for $1-\frac{13}{15}\left(=\frac{2}{15}\right)$ **or** $\frac{13}{15}\times 600$ (million) (= 520 (million)) for $"\frac{2}{15}"\times 600$ (million) (= 80 (million)) **or** 600 − "520" (=80) oe Accept 80 000 000	Condone no million or may see 000 000 used* *In this case condone up to two missing 0s for the award of the P marks. For P marks accept $\frac{13}{15}$, $\frac{2}{15}$ rounded or truncated to no less than 2dp.

18	10 000	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
22	12.85 or 12.86 or 13.5(0)	P1	for 9 + 2 + 1 (=12)	Award this mark for sight of 4500, 1000 or 500
		P1	for working out how many lots of 175g are needed eg 6000 ÷ "12"× 2 ÷ 175 (=5.71..)	Process may lead to 5 or 6 instead of 5.71
		P1	for a complete process eg "5.71…" × 2.25 (=12.857..)	"5.71…" (ft) or a figure rounded or truncated eg "6"
		A1	for 12.85 or 12.86 or 13.5(0)	

4	6000	B1	for 6000 oe	Accept six (6) thousand(s) or just thousand(s)

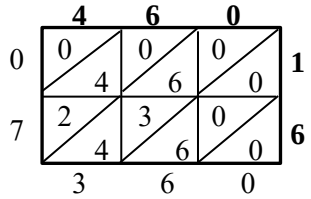
5	45%, $\frac{1}{2}$, 0.55	B1	Accept equivalent notation eg $\frac{45}{100}$, $\frac{50}{100}$, $\frac{55}{100}$ or 45%, 50%, 55% or 0.45, 0.5, 0.55 or a combination of notation	Do NOT accept reverse order

7	7	P1 P1 A1	for $20 - 6$ (= 14) **or** $20 \div 2$ (=10) **and** $6 \div 2$ (=3) for "14" ÷ 2 (= 7) **or** "10" − "3" (= 7) cao	May be seen as a build-up method or by a method of repeated subtraction, listing multiples of 2

Paper: 1MA1/1F

10	27	M1 A1	for –15 + 42 (=27) oe cao	SC: B1 for answer of 26 if M0 scored

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
11	£73.60 or 7360p	M1	for 89198 – 88738 (= 460) OR for showing 89198 × 16 **or** 88738 × 16 OR for showing (89198 + 88738) × 16	May see 0.16 used 89198 × 16 = 1427168 88738 × 16 = 1419808 (89198 + 88738) × 16 = 2846976
		M1	for showing "460" × 16 OR for showing 89198 × 16 – 88738 × 16	
		M1	(dep on M1) for a complete method of multiplication with relative place value correct including an intention to add all the appropriate elements of the calculation eg, 2 lines of the 1st method, internal numbers of grids, or complete structure shown of partitioning methods.	Accept in any units, correct figures would imply previous mark 4600 2760 7360  400 60 10 4000 600 6 2400 360 4000+2400+600+360
		A1	for £73.6(0) or 7360p SC B3 for an answer with digits 736 with incorrect or missing units	

Paper: 1MA1/1F

6	−11, −7, −2, 3, 8, 10	B1	for −11, −7, −2, 3, 8, 10	Accept reverse order

10	213	P1 P1 A1	for beginning to work with costs eg 1428 – 150 (= 1278) **or** 1428 ÷ 6 (= 238) **and** 150 ÷ 6 (= 25) for complete process to find monthly payment eg "1278" ÷ 6 or "238" – "25" cao	

14	(i)	>	B1	cao	
	(ii)	=	B1	cao	

2	7	B1	cao	

7	29	P1	for a start to a process, eg. (total apples =) 86 + 75 + 92 (= 253) or (total oranges =) 68 + 80 + 76 (= 224) **or** differences each week, eg. (week 1) 86 – 68 (= 18) or (week 2) 75 – 80 (= – 5) or (week 3) 92 – 76 (= 16)	
		P1	for complete process, eg "253" – "224" **or** "18" + "– 5" + "16"	
		A1	cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
11	Yes (supported)	M1	for 48 × 3 (=144) or 35 × 4 (= 140) or 48 ÷ 4 (=12)	
		M1	for 48 × 3 (=144) **and** 35 × 4 (= 140) or "140" ÷ 48 (=2.9…) or "140" ÷ 3 (=46.6…) or "12" × 3 (=36) or "144" ÷ 4 (=36) or "144" ÷ 35 (=4.1…)	
		C1	for Yes with 144 **and** 140 **OR** 36 **OR** 2.9… **OR** 4 (spare) **OR** 4.1… (each frame) **OR** 46.6… (in each box)	

15	5	M1 A1	for 40.15 or 8.03 seen in working cao	

2	9	B1	cao	

3	4	B1	cao	

6	60	P3	for complete process to find the total costings eg 23 + 33 + 24.5(0) + 24.5(0) + 15 + 10 + 10 (= 140) **or** for a complete process to find the total money left, eg. 200 – 23 – 33 – 24.5(0) – 24.5(0) – 15 – 10 – 10 (= 60), condone one error, eg one omission or one additional cost	All processes may be seen as part of subtractions to find money left
		(P2	for process to find the total cost of all theme park tickets, eg 33 + 2 × 24.5(0) (= 33 + 49 = 82) **or** for process to find the total cost of all meals, eg 15 + 2 × 10 (= 15 + 20 = 35) **or** for process to find the total cost for the children, eg 2 × 24.5(0) + 2 × 10 (= 49 + 20 = 69) **or** for process to find total costs with just **one** child, eg 23 + 33 + 24.5(0) + 15 + 10 (= 105.5(0)))	Additions may include other elements for process marks, eg. 23 + 33 + 2 × 24.5(0)
		(P1	for a start to a correct process, considering at least 2 costs eg 33 + 24.5(0) (= 57.5(0)) or 2 × 24.5(0) (= 49) **or** for start to a process to find money left, eg 200 – 23 (= 177) or 200 – 33 (= 167))	May be any start to a correct process
		A1	cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
10 (a)	5	P1	for correct process, eg 23 ÷ 4 (= 5.75) **or** adds 4s up to at least 20 **or** repeatedly subtracts 4 up to a remainder of less than 4	
		A1	cao	
(b)	No (supported)	C1	for No with reason **Acceptable examples** Can buy 11 jars Can buy an extra jar (for the £3 extra) Can buy 10 jars for £20 He will have £3 left Because he can buy more than twice the number of jars Because 23 ÷ 2 = 11.5 **Not acceptable examples** Yes ….. Can buy 10 / Can buy 12	

Question	Answer	Mark	Mark scheme	Additional guidance
22	0.00128	M1	for digits 128 **or** for correct placement of the decimal point following one arithmetical error, eg. $32 \times 4 = 138$ with an answer of 0.00138	
		A1	for 0.00128 **or** 1.28×10^{-3}	

Question	Answer	Mark	Mark scheme	Additional guidance
1	−7, −2, −1, 0, 7	B1	cao	Accept reverse order

3	13	B1	cao	

5	3476	B1	cao	

8	315	M1 A1	for 45 × 7 cao	

Paper: 1MA1/2F

10	(a)	49	M1	for attempt to find the difference between 07 20 and 08 09	May be seen in stages eg 10+30+9
			A1	cao	
	(b)	Yes with correct working	P1	for a process shown to add a time to a departure time, eg 0800 + 7 or 0800 + 15 or 0800 + 7 + 15 **or** process for time at work after Bolton bus stop arrival, eg "0858" + 15 **or** find accumulated additional time, eg 7 + 15 (= 22) **or** starts to work backwards, eg 0920 − 15	
			P1	for a process to select correct bus time from Blackrod to Bolton eg 0809 to 0858	8 09 stated as bus start time or 7 40 (from Wigan) is enough for this mark
			C1	for conclusion of "yes" supported by correct comparable figures, eg states 0913 **or** 0858 and 22 (spare)	NOTE other comparisons may be seen

Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	82.5	M1	for a complete method, eg $132 \div 8 \times 5$	$132 - 82.5$ (= 49.5) M1 implied
		A1	cao	
(b)	$\frac{1}{4}, \frac{9}{32}, \frac{21}{64}, \frac{3}{8}$	M1	converts into decimals or percentages or equivalent fractions, at least 2 conversions correct **or** for any 3 fractions in correct order	0.25, 0.28(125), 0.32(8125), 0.37(5)
		A1	cao	Accept in reverse order for this mark Accept expressed in equivalent decimals or percentages or fractions or in mixed numerical form

Question	Answer	Mark	Mark scheme	Additional guidance
16	2	P1	for a calculation from within the list $4 \times 12 \div 4 \div 6$ eg 4×12 (= 48) or $12 \div 4$ (= 3) or $6 \div 4$ (=1.5) or $4 \div 6$ (= 0.66..)	
		P1	for a complete process, eg ("48" ÷ 6) ÷ 4 **or** for "$0.\dot{6}$" × 12 ÷ 4	Accept 12 ÷ 6 as a full process
		A1	cao	

25	(a)	1.25	B1	for 1.25 or $\frac{5}{4}$ or $1\frac{1}{4}$	
	(b)	4650 and 4750	B1	for 4650 in the correct position	
			B1	for 4750 in the correct position	Accept $4749.\dot{9}$ or 4749.99(…)

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
1	0.408, 0.41, 0.46, 0.5	B1	for 0.408, 0.41, 0.46, 0.5	Accept written in reverse order

2	2000	B1	cao	Accept two (2) thousand(s) or just thousand(s)

6	(a)	6	B1	cao	
	(b)	May, October	B1	cao	

7	145.60	P1 P1 A1	for a process to work out the value of the large bars eg 208 ÷ 4 (=52 or 5200) for a process to work out the value of the small bars eg (208 – "52") × 60 or $(1 - \frac{1}{4}) \times 208 \times 60$ (=9360 or 93.6(0)) **or** for 145.6 for 145.60 cao (must be correct money notation)	units may be ignored for the process marks work could be in pence or £

Question	Answer	Mark	Mark scheme		Additional guidance
15	Yes (supported)	P1	for finding the cost of 1 kg of carrots eg 1.74 ÷ 3 (= 0.58)	for finding the cost of 1 kg onions eg 2.(00) ÷ 4 (= 0.5)	for all P marks can work in pence or in £
		P1	for isolating the cost of 2.5 kg of onions eg 2.36 – (2 × "0.58") (= 1.2(0))	for finding the cost of 2.5 kg of onions eg 2.5 × "0.5" (= 1.25)	
		P1	for the cost of 1 kg of onions **or** 0.5 kg of onions, eg "1.20" ÷ 2.5 (= 0.48) **or** "1.20" ÷ 5 (= 0.24) **or** for 4 ÷ 2.5 (= 1.6)	for finding the cost of 2 kg of carrots eg 2.36 – "1.25" (= 1.11)	
		P1	for the cost of 4 kg of onions, eg 4 × "0.48" **or** 8 × "0.24" (= 1.92) **or** for "1.6" × "1.2(0)"	for finding the cost of 3 kg of carrots eg "1.11" ÷ 2 × 3 (= 1.665) *for comparison with 1.74*	
		C1	Yes with correct figures shown eg 192 **or** 1.92 **or** "has 8p left" **or** 166.5		Allow comparison of mixed units eg 192 with £2

Paper: 1MA1/3F

3	0.5	B1	cao	

4	−4	B1	cao	

10	Yes (supported)	P1	for an initial process, eg 6 × 2 (=12) **or** 80 ÷ 2 (=40 = 0.40) oe **or** 6 × 0.8 (= 4.80) oe **or** 6 ÷ 2 (= 3)	May work in pounds or pence
		P1	for a process using the special offer eg 6 × "40" (= 240 or 2.40) oe **or** "4.80" ÷ 2 (= 2.40) oe **or** 2 + "0.40" (= 2.40) oe **or** "3" × 0.8 (= 2.40)	Allow use of inconsistent units for the first 2 marks
		P1	for a complete process to find figures to compare, eg 6 × 2 + 6 × "0.40" (= 14.40) oe **or** 15 – "12" – "2.40" (= 0.60 or 60p)	
		C1	for Yes with correct comparable figures, eg Yes **and** (£)14.4(0) **or** Yes **and** (£)0.6(0) or 60p change	Award 0 marks for a correct answer with no supportive working. Answer of 'No' gets C0 irrespective of working, correct or not. Ignore incorrect value for change, if (£) 14.4(0) seen

Paper: 1MA1/1F

20	56.4	M1 A1 A1	for a start to a method, eg 846 ÷ 15 or 8.46 ÷ 0.15 or 8.46 ÷ 3 × 20 or 282 ÷ 5 that leads to 5 as the first digit. **or** for a complete method with no more than one arithmetic error. for digits 564 identified (ft) dep on M1 for correct placement of the decimal point into their final answer	A start to a repeated subtraction method or a build-up method is acceptable if a correct first digit of 5 is found An answer of $56\frac{2}{5}$ gets 3 marks

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
29	16	M1	for simplifying using a correct rule of indices as a first step eg $4^{9-6}(=4^3$ oe) or 4^{-6-1} $(=4^{-7}$ oe) or 4^{9-1} $(=4^8$ oe) **or** $\frac{4\times4\times4\times4\times4\times4\times4\times4\times4}{4\times4\times4\times4\times4\times4\times4}$ **or** 4^2	
		A1	cao	

11	Shown	M1	for at least three of 40×1 (= 40), 50×2 (= 100), 60×4 (= 240), 70×5 (= 350), 80×3 (= 240), 90×1 (= 90) oe	Intention to multiply is enough for award of M1 May be seen as repeated addition
		M1	(dep M1) for a complete method to find comparable figures (allow up to 2 errors in their products), eg $40 \times 1 + 50 \times 2 + 60 \times 4 + 70 \times 5 + 80 \times 3 + 90 \times 1$ oe or for $1200 - 40 \times 1 - 50 \times 2 - 60 \times 4 - 70 \times 5 - 80 \times 3 - 90 \times 1$ oe	
		A1	for accurate comparable figures, eg 1060 or 140	Condone incorrect difference if 1060 is clearly seen

Paper: 1MA1/2F

13	800	M1 A1	for method to work with fraction and 50, eg 16×50 **or** $50 \div \frac{1}{16}$ **or** $16 \times 50 + 50$ oe or $16 \times 50 - 50$ oe cao	$\frac{1}{16} = 0.0625$ 750 or 850 without working scores no marks

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	1.765(2...)	M1	for fully evaluating the numerator or denominator, eg 18.3... or 10.4(1) **or** answer of 1.76 or 1.77 **or** digits 1765(2...)	
		A1	for 1.765(2.....)	Answer must be given to at least 3 decimal places rounded or truncated. Check first 4 significant figures only.
(b)	1.6	B1	for 1.6 oe	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
1	3107	B1	cao	

5	–5, –2, 3, 7, 9	B1	cao	Accept in reverse order

10	Yes (supported)	P1 P1 P1 C1	for starting a process of working with time eg for undertaking some time conversion eg 85 mins is 1 hr 25 mins, 1 hr 45 min is 105 mins **or** for recognition that 1 h = 60 min (eg 85 = 60 + 25) for a correct addition of at least two times eg 15 + 85 =100 **or** a correct duration eg 8 30 + 1 h 45 m = 10 15 **or** a correct subtraction eg 12 (noon) – 15 = 11 45 for a complete process to justify the decision eg 8 30 + 1 hr 45 min + 85 + 15 (= 11 55) **or** 105 + 15 + 85 (=205 min) **and** 12 (noon) − 8 30 (= 210 min) Yes **and** accurate figures eg 11 55 **or** 205 **and** 210	Time conversion may be implied by a correct addition over the hour eg 8.30 + 1h 45m = 10.15, 10.30 + 85 = 11.55 Can be shown at any stage. A correct duration can be shown using their times for any of the stages. Subtraction of any of the time durations Accept their figures for 1 hr 45 min, 85 etc as long as it is clear they are related.

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
15	175	M1 A1	for a complete method eg 35 × (4 + 1) oe cao	

23	17.5	P1 A1	for a first step, eg 5 × 14 (= 70) or 14 ÷ 4 (= 3.5) or 5 ÷ 4 (= 1.25) or 4 ÷ 5 (= 0.8) oe	Could be done algebraically. 11.2 as answer scores no marks.

Paper: 1MA1/3F

28 (a)	1 : 50	M1	for an equivalent ratio eg 9 : 450 **or** 9 : 4.5×10^2 **or** 90000 : 4500000 oe **or** for 4500000 ÷ 90000 or $\frac{4500000}{90000}$ (=50)	
		A1	For 1 : 50, accept $n = 50$	
(b)	56250×10^{-3} 0.005625×10^5 5625 5.625×10^4	M1	for writing numbers correctly in a common format eg 56250, 56.25, 562.5 **or** a correct list with one error **or** correct list but in reverse order	Count an omission as one error.
		A1	for correct list	Accept alternative indications of the correct order.

Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 3F

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme. Notes apply to both MLP papers and Braille papers unless otherwise stated.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
6		Wording added 'Look at the diagram for Question 6 in the Diagram Booklet. It shows a shape on a square grid. Each square on the grid represents a 1 cm square.' Wording removed 'The diagram shows a shape on a centimetre grid.' Shading changed. Diagram enlarged with fewer squares around the shape. Wording added 'Remember each square on the grid represents a 1 cm square.'	Standard mark scheme
7		Wording added 'Look at the diagram for Question 7 in the Diagram Booklet. It shows'. Wording removed 'Here is'. Diagram enlarged and straightened. Spike removed. Centre dot added. In (a) and (b) wording added 'from the list below'. Braille: in (a) and (b) frame removed; add (i) impossible, (ii) unlikely, (iii) evens, (iv) likely, and (v) certain	Standard mark scheme
8	(b)	Wording added 'Look at the diagram for Question 8(b) in the Diagram Booklet. You may be provided with a model. They are NOT accurate. They show'. Wording removed 'The diagram shows'. Diagram enlarged. Dashed lines made longer and thicker.	Standard mark scheme
9		Wording added 'below'. Table enlarged. Wording added to the table '(X)', '(M)', '(K)', and '(T)'. In part (c) wording added 'Look at the diagram for Question 9(c) in the Diagram Booklet. It shows a blank grid.'; Grid enlarged.	Standard mark scheme
12		Wording added 'Look at the diagram for Question 12 in the Diagram Booklet. It shows a pie chart.' Diagram enlarged. Angle arcs removed. Segment labels rearranged.	Standard mark scheme
13		Wording added 'Look at the diagram for Question 13 in the Diagram Booklet. It shows a graph.' Wording 'Here is a' removed and replaced with 'A'. Wording added 'is shown in the Diagram Booklet.' Diagram enlarged. Axes labels moved to above the vertical axes and left of the horizontal axes. Right axis labelled. Open headed arrows.	Standard mark scheme
16		Wording added 'Look at the diagram for Question 16 in the Diagram Booklet. It shows shape A and shape B on a grid. A cut out shape may be available if you wish to use it.' Shading changed. Diagram enlarged. Grid cut. Shapes labelled 'shape A' and 'shape B'. One unlabelled cut out shape provided.	Standard mark scheme

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
17		Wording added 'Look at the diagram for Question 17 in the Diagram Booklet. It'. Wording removed 'The diagram'. North line made 9 cm to allow for specialist equipment. Open headed arrows. Wording 'with a cross (x).' removed and replaced with 'on the diagram.' Value '55 km' changed to '75 km'.	B1 if the distance of point R from T is in the range 7 to 8 cm B1 if the bearing of point R from T is in the range 60º to 70º
20	(b)	Letter '*x*' changed to '*y*'.	Standard mark scheme but note change of letter.
21	(a)	Letter '*g*' at end of answer line changed to 'grams'	Standard mark scheme
22		Wording added 'Look at the diagram for Question 22 in the Diagram Booklet. It shows triangle AGF and two straight lines ACF and ADG.' Wording removed 'ACF and ADG are straight lines.' Wording added 'Angle CDG = 110°; Angle EFC = 125°' Diagram enlarged. Angles moved outside of angle arcs. Angle arcs made smaller.	Standard mark scheme
24	(b)	Wording added 'Remember: A = $2^2 \times 3^4 \times 7$ B = $3^2 \times 7^2$'	Standard mark scheme
26		Wording added 'Look at the diagram for Question 26 in the Diagram Booklet. It shows'. Wording 'Here is' removed. Diagram enlarged. Axes labels moved to above the vertical axes and right of the horizontal axes.	Standard mark scheme
27		Letter '*g*' at end of answer line changed to 'grams'	Standard mark scheme

2	31	B1	cao	

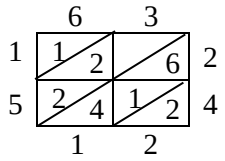
5	60	B1	cao	

6	2300	P1 P1 A1	for converting to millilitres or litres eg 3 × 1000 (= 3000) **or** 700 ÷ 1000 (= 0.7) for finding the difference eg [3000] – 700 **or** 3 – [0.7] (= 2.3) accept 2.3 litres	Process marks may be awarded in either order [3000] comes from 3 × 1000 or can be 30 or 300 or 30000 [0.7] comes from 700 ÷ 1000 or can be 7 or 70

13	23	P1 P1 P1 A1	for finding the number of scrunchies possible eg 100 ÷ 5 (= 20) **or** the cost of 1 g of wool eg 300 ÷ 100 (= 3) for working out the cost of wool per scrunchie eg 3 ÷ "20" (= 0.15) **or** 300 ÷ "20" (= 15) **or** "3" × 5 (= 15) **or** the cost of all hair bands eg "20" × 8 (= 160) **or** "20" × 0.08 (= 1.6(0)) for complete process eg ("0.15" + 0.08) × 100 **or** "15" + 8 **or** (300 + "160") ÷ "20" **or** (3 + "1.6(0)") ÷ "20" × 100 accept £0.23	Award of this mark implies the previous mark 460 implies P2

Paper: 1MA1/1F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
18	15.12	M1	for a complete method with relative place value correct including an intention to add all the appropriate elements of the calculation	252 1260 1512  60 3 20 1200 60 4 240 12 1200 + 60 + 240 + 12 = 1512
		A1	for digits 1512	
		A1	(dep on M1) for correct placement of the decimal point into their final answer	

19	(a)(i)	1	B1	cao	
	(ii)	$\frac{1}{25}$	B1	oe	
	(b)	2^6	M1	for a correct first step using a rule of indices, eg 2^{5+4} (= 2^9) or 2^{5-3} (= 2^2) or 2^{4-3} (= 2^1) **or** for $2 \times 2 \times 2 \times 2 \times 2 \times 2$ or 64	
			A1	for 2^6	Accept $n = 6$

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
8	Shown	M1	for a method to find the total cost for footballs, hockey sticks or cricket bats, eg 9.5 × 5 (= 47.5) **or** (6 ÷2) × 30 (= 90) **or** 23 × 2 (= 46) **OR** begins to work with budget, eg 200 – 5 (= 195)	Can be done with addition or subtraction, or combination
		M1	for a method to find the total cost for two of footballs, hockey sticks or cricket bats, eg two from 9.5 × 5 (= 47.5) **or** (6 ÷2) × 30 (= 90) **or** 23 × 2 (= 46) **OR** works with budget **and** total cost for one of footballs, hockey sticks or cricket bats, eg 200 – "47.5"	
		M1	for a complete method to find comparable figures, eg 9.5 × 5 + (6 ÷2) × 30 + 23 × 2 + 5 or "47.5" + "90" + "46" + 5 or 200 – (9.5 × 5 + (6 ÷2) × 30 + 23 × 2 + 5) or 200 – "188.5"	
		C1	shows correct figures for a conclusion eg (£)188.5(0) **or** (£)11.5(0)	Figures need not be supported by words but must not be contradicted.

Question	Answer	Mark	Mark scheme	Additional guidance
14	6.95 **or** (2kg flour =) 2.70 **and** (5 kg sugar =) 4.25	P1	for process to find the cost of 1kg of flour, eg 4.05 ÷ 3 (= 1.35)	May be implied by (2 kg =) 2.70
		P1	for process to work with cost of sugar, eg 11.85 – 5 × "1.35" (= 5.10)	May be implied by (1 kg =) 0.85 oe
		P1	for process to find cost for 5kg of sugar, eg "5.10" ÷ 6 × 5(= 4.25)	
		A1	for 6.95 **or** (2kg flour =) 2.70 **and** (5 kg sugar =) 4.25	

3	valid number	B1	for a valid number, eg −6, −7, −7.5	

5	tenths or $\frac{9}{10}$	B1	for (9) tenths or $\frac{9}{10}$ or 0.9	Condone incorrect spellings provided the intention is clear. Accept .9

Question	Answer	Mark	Mark scheme	Additional guidance
7	144	P1	for process to begin to work with length, eg 8050 ÷ 25 (= 322) **or** 178 × 25 (= 4450)	
		P1	for full process to find number of lengths remaining, eg "322" – 178 **or** (8050 – "4450") ÷ 25 **or** 3600 ÷ 25	3600 implies the first P1 mark
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
9	5	P1	for process to work in consistent units, eg 12 × 1000 (= 12000) **or** 105 ÷ 1000 (= 0.105)	May be seen in subsequent calculations
		P1	for process to work with portion size, eg 105 × 3 (= 315) **OR** 12 ÷ [0.105] (= 114.285…)	For [0.105] allow use of 0.105, 1.05 or 10.5
		P1	for process to work with weight of food per week or number of days, eg "315" × 7 (= 2205) **or** "315" × 5 (= 1575) **or** "315" × 6 (= 1890) [12000] ÷ "315" (=38(.095…)) **OR** [114.285…] ÷ 3 (= 38(.095…)) or [114.285…] ÷ 7 (= 16.3…)	For [12000] accept use of 12000, 1200 or 120 For [114.285] allow continued use of incorrectly converted figure from previous mark.
		P1	(dep P2) for process to find number of weeks, eg "12000" ÷ "2205" (= 5.4…) **OR** "38.095…" ÷ 7 (= 5.4…) **OR** "16.3…" ÷ 3 (= 5.4…) **OR** "2205" × 5 (= 11025) **or** "2205" × 6 (= 13230) **OR** 975 **or** -1230	
		A1	cao	If a correct answer is given without supportive working award 0 marks.

Question	Answer	Mark	Mark scheme	Additional guidance
12	10 55	M1	for starting a process of working with time eg for undertaking some time conversion eg 1 h = 60 min eg 3¼ hrs is 195 mins or ¼ hr = 15 mins or 3 h = 180 min **or** for an answer of 10 45 (am) or 10 40 (am) or 10 50 (am) **or** for an answer of 10 55 pm	
		A1	for 10 55 (am)	

14	$\frac{6}{11}$, 0.558, 0.56, 57%, $\frac{7}{12}$	M1	Converts numbers to common equivalent form, eg 0.58(33..), (0.56), 0.57(0), 0.54(54..), (0.558) **or** any 4 in correct order **or** all 5 in correct reverse order	Decimals converted to at least 2 d.p.
		A1	for correctly ordered list	May be given in converted format.

<table>
<tr>
<td>22 (a)</td>
<td>24.6</td>
<td>M1

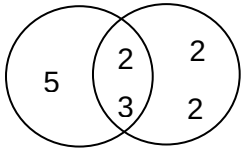
M1

A1</td>
<td>for finding 5 products within intervals (including end points) with not more than one error, may be seen near table.
eg 2 × 12.5 (= 25), 8 × 17.5 (= 140), 13 × 22.5 (=292.5),
21 × 27.5 (= 577.5), 6 × 32.5 (= 195)
or for 1230

for $\Sigma fx \div \Sigma f$
eg (“25” + “140” + “292.5” + “577.5” + “195”) ÷ “50”
or “1230” ÷ “50”

for 24.6 oe</td>
<td>
<table>
<tr><th>Min fx</th><th>Max fx</th></tr>
<tr><td>20</td><td>30</td></tr>
<tr><td>120</td><td>160</td></tr>
<tr><td>260</td><td>325</td></tr>
<tr><td>525</td><td>630</td></tr>
<tr><td>180</td><td>210</td></tr>
</table>
Σfx must come from 5 products,
fx within intervals (including end points)
</td>
</tr>
</table>

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
22 (b)	No, with reason	C1	for No **and** reason **Acceptable** No, the median is in the interval $25 < T \leq 30$ No, the median is in the group containing the 25(.5)th temperature No, she did not take into account frequency No, the frequencies are not the same for each group. **Not acceptable** No, the median is 27.5 No, the median is higher than 22.5 $25 < T \leq 30$ Yes, …	Any incorrect statement as part of a correct response can be ignored unless it contradicts the statement,

24	4 packs and 5 boxes,	P1	for start of a process to find common multiples of 30 and 24, eg writes down at least 3 multiples of 30 and at least 3 multiples of 24 **or** draws factor trees for both 30 and 24 with no more than 1 error in total **or** draws a correct Venn diagram	30, 60, 90, 120, 150, 180, 210, 240 … 24, 48, 72, 96, 120, 144, 168, 192, 216, 240, … Condone the inclusion of 1 in factor tress or Venn diagrams for this mark 
	or any multiple	P1 A1	for identifying a common multiple eg 120 or 240 or 5 × 3 × 2 ×2 × 2 oe for 4 packs and 5 boxes or any multiple of this pairing eg 8, 10	May use any common multiple, 120, 240, 360... Award 0 marks for a correct answer without correct supportive working.

25	20	M1 A1	for 30 × 4 ÷ 6 oe cao	

Paper: 1MA1/3F

4	0.03, 0.1, 0.16, 0.2, 0.21	B1	for 0.03, 0.1, 0.16, 0.2, 0.21	accept 0.21, 0.2, 0.16, 0.1, 0.03

6	1.5(0)	P1	for 4 × 1.30 (= 5.2(0)) **or** 10 – 1.80 (= 8.2(0))	Working could be in pence
		P1	for 10 – 1.80 – "5.20" (= 3) oe	
		P1	for "3" ÷ 2	
		A1	cao	Condone answer £1.5(0)p
			SCB2 for answer (£)2.4(0)	

Paper: 1MA1/1F

11	(a)	3	B1	cao	
	(b)	32	B1	cao	
	(c)	$30 \div (3 + 2) - 4$	B1	for brackets correctly placed	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
14	14742	M1	for complete correct method with relative place value correct eg two lines of 1st method, internal numbers of grids, or complete structure shown of partitioning methods	13650 1092 14742 2 7 3 1 | 1 0 | 3 5 | 1 5 | **5** 4 | 0 8 | 2 8 | 1 2 | **4** 7 4 2 | | 200 | 70 | 3 | | 50 | 10000 | 3500 | 150 | | 4 | 800 | 280 | 12 | 10000 + 3500 + 150 + 800 + 280 + 12 = 14742
		M1	(dep on M1) for addition of all the appropriate elements of the calculation	
		A1	cao	

Paper: 1MA1/1F

18	1	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
21 (a)	$2\frac{2}{15}$	M1	for a method to subtract using a common denominator with at least one fraction correct (suitable common denominator for original fractions with at least one correct numerator) eg $\frac{57}{15}-\frac{25}{15}$ **or** (3) $\frac{12}{15}$ – (1) $\frac{10}{15}$	Use of decimals gets no credit unless it leads to a correct fraction
		A1	for $2\frac{2}{15}$ oe eg $\frac{32}{15}$	ISW incorrect conversion from improper fraction to mixed number or incorrect simplification of improper fraction.
(b)	Mistake identified	C1	for explaining that Kevin did not convert to the correct mixed number **Acceptable examples** In his answer $\frac{9}{24}$ should have been $\frac{11}{24}$ The 9 should be 11 He has not got the numerator right in his final answer He simplified into the mixed number incorrectly He has not put the remainder as the numerator $1\frac{9}{24}$ would give you $\frac{33}{24}$ rather than $\frac{35}{24}$ $\frac{35}{24}=1\frac{11}{24}$ **Not acceptable examples** He should have used a common denominator He has not simplified his answer He should have done keep, flip, change He converted the fraction wrongly The answer should be $1\frac{10}{24}$	Figures may be seen in the question space.

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	Yes (supported)	P1	for a process to find the area of one shape, eg 10×8 (= 80) **or** 10×5 (= 50) **or** 8×6 (= 48) **or** $(10 - 6) \times 5$ (= 20) **or** $(10 - 6) \times (8 - 5)$ (= 12) **or** $6 \times (8 - 5)$ (= 18) **or** 5×6 (= 30)	Do not award this mark if they go on to multiply by a third length
		P1	for a complete process to find the total area, eg "80" – "12" (= 68) or "50" + "18" (= 68) or "48" + "20" (= 68)	
		P1	for a complete process to find the area covered by 3 tins eg $3 \times 2.5 \times 10$ (= 75) **or** for a complete process to find the number of litres needed eg "68" ÷ 10 (= 6.8) or [area] ÷ 10 **or** for a complete process to find the number of tins needed eg "68" ÷ 10 ÷ 2.5 (= 2.72) or [area] ÷ 10 ÷ 2.5	[area] is what they believe to be the area
		A1	for 'Yes' supported by correct figures eg 68 (m^2) **and** 75 (m^2) **or** 6.8 (litres) **and** 7.5 (litres) **or** 68 (m^2) **and** 2.72 (tins needed)	Ignore incorrect amount of paint left over if correct figures seen.
(b)	No effect (supported)	C1	ft from (a) for "has no effect" with reason **Acceptable examples** No effect, she will need less paint It won't change, she will still have enough No, she will have more paint left over No, as this will cover 82.5m^2 **Not acceptable examples** Petra will need less paint She will have more paint left over She won't have enough paint She will need more paint	Must have a decision in (a). Must include a decision eg yes / no / no effect. If figures included in the statement they must be correct for their [area] in (a).

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
1	–3 –1 2 4 7	B1	for –3 –1 2 4 7	Allow correct reverse order: 7 4 2 –1 –3

9	379.86	P1 P1 B1 A1	for process to work with number of miles or cost, eg 47879 – 47241 (= 638) **or** 47879 × 47 (= 2250313) or 47241 × 47 (= 2220327) **or** [mileage] × 47 for process to work with miles and cost, eg “638” × 47 (= 29986) or “638” × 0.47 (= 299.86) **or** “2250313” – “2220327” (= 29986) (indep) for converting between pence and pounds, eg “29986” ÷ 100 **or** 47 ÷ 100 (= 0.47) **or** 80 × 100 **OR** miles divided by 100, eg “638” ÷ 100 (= 6.38) **or** 47879 ÷ 100 (= 478.79) **and** 47241 ÷ 100 (= 472.41) for 379.86	working may be seen in £ or pence throughout [mileage] is any value they consider to be mileage

12	280	P1 P1 A1	for process to find the number of bars of white chocolate or milk chocolate, eg 24 ÷ 3 × 2 oe (= 16) or 24 ÷ 3 (= 8) **or** for process to work with total weight of chocolate, eg 24 × 35 (= 840) for complete process, eg (24 – "16") × 35 or "8" × 35 **or** "840" ÷ 3 cao	Allow use of 0.66.. or better **or** 0.33.. or better for both process marks Award P2 for an answer of 560

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
19 (a)	0.517(0189759)	M1	for any correct partial calculation, eg 40.113 or 6.333(482454) or 12.25 **or** answer of 0.51 or 0.52 **or** digits 517…	
		A1	for 0.517(…)	Answer must be given to at least 3 decimal places rounded or truncated. Check first 3 significant figures only.
(b)	0.52	B1	for 0.52 **or** ft their answer to part (a) correctly rounded to 2 sf, provided part (a) has at least 3 sf	Do not accept trailing 0, eg 0.520

22	4	M1 A1	for method to use formula, eg $72 \div 6$ (= 12) or $72 \div 9$ (= 8) cao	Can be implied by $\frac{72}{6}$ or $\frac{72}{9}$

Paper: 1MA1/2F

3	tens or 30	B1	for (3) tens **or** 30 **or** thirty	Condone incorrect spelling provided the intention is clear

5	$\frac{1}{4}$ $\frac{1}{2}$ $\frac{2}{3}$	B1	for correct order	Accept any form Accept 0.6 or 0.66 or 0.67 or 0.7 or 60% or 66% or 67% or 70% or better for $\frac{2}{3}$

Question	Answer	Mark	Mark scheme	Additional guidance
8	No from correct figures	P1	for process to find year of Aisha's 18th birthday, eg 1993 + 18 (= 2011) **or** for process to find Aisha's age in 2030, eg 2030 – 1993 (= 37)	
		P1	for process to find years of future elections, eg writes down 2011, 2016, 2021, 2026, 2031 **or** for 2011 + 4 × 5 (= 2031) oe **or** for process to find Aisha's age in years when there is an election, eg writes down 18 in 2011, 23 in 2016, 28 in 2021, 33 in 2026 and 38 in 2031 **or** for process to find years between 18th birthday and election eg 2030 – 2011 (= 19)	At least 3 correct values needed At least 3 correct values needed, condone years missing eg 18, 23, 28,… without 2011, 2016, 2021…
		A1	for No with correct figures eg 2011 **and** 2026 or 2031 **or** for No with eg 37 **and** 33 or 38 **or** for No with 2011 (2016, 2021, ...) **and** explanation that election years end in 1 or 6, not 0 **or** for No with 2011 **and** explanation that 19 is not divisible by 5	

Paper: 1MA1/3F

10	(a)	radius drawn	B1	for radius drawn	May be drawn freehand provided intention is clear
	(b)	chord	B1	cao	

11	6	M1 A1	for start to method, eg 45 × 8 (= 360) or (45 mins =) 0.75 oe (hours) cao	

5	645	B1	cao	

6	20	P1 P1 A1	for $30 + 45 \times 10$ (= 480) or $50 \times 10 - 45 \times 10$ (= 50) or $50 \times 10 - 30$ (= 470) for 50×10 – "480" cao SCB1 for answer 250 or -250 if P0 scored.	P1P1 for $500 - 450 - 30$ may be seen in stages

12	explanation	C1	for explanation **Acceptable examples** he should have multiplied first multiplication should be done before subtraction he should have done 3×4 first he didn't use BIDMAS/BODMAS/PEMDAS $5 - 12 = -7$ **Not acceptable examples** he was correct the answer is – 7 Olly's method gives the wrong answer BIDMAS/BODMAS/PEMDAS he should multiply first so $3 \times 4 = 12$ then $12 - 5 = 7$ he should have done $3 \times 4 = 12$ then $12 - 5 = 7$ he should have done 2×4 first	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
16	15.5(0)	P1	for a correct process to find the cost of some teas only **or** some coffees only eg (2 teas =) 8.50 – 4.50 (= 4) **or** (2 coffees =) $3 \times 4.50 - 8.50$ (= 5)	Use of simultaneous equations – marks awarded at the stages shown in the scheme.
		P1	for a process to find the cost of one tea or four teas, eg (1 tea =) "4" ÷ 2 (= 2) **or** (4 teas =) "4" × 2 (= 8)	
		P1	for a process to find cost of one coffee or three coffees, eg (1 coffee =) 4.50 – "2" (= 2.50) **or** 8.50 – "2" × 3 (= 2.50) **or** $1.5 \times$ "5" (= 7.50)	
		P1	for a complete process, eg "2" × 4 + "2.50" × 3	
		A1	cao	

Paper: 1MA1/1F

18	682	M1 A1 A1	for a start to a method, eg. 8184 ÷ 12 (or 818.4 ÷ 1.2) that leads to 6 as the first digit **or** for a complete method with no more than one arithmetic error for digits 682 (ft) (dep M1) for correct placement of the decimal point into their final answer	A start to a repeated subtraction method or build-up method is acceptable if a correct first digit of 6 is found

Paper: 1MA1/1F

2	2 hours 20 minutes	B1	cao	

3	0.05, 0.5, 0.507, 0.57	B1	for 0.05, 0.5, 0.507, 0.57	Accept reverse order

5	3	B1	cao	

6	10	P1 P1 A1	for process to find greatest number of bracelets for one colour, eg 52 ÷ 5 (= 10(.4)) **or** 80 ÷ 7 (= 11(.4..)) for process to find greatest number of bracelets for both colours, eg 52 ÷ 5 (= 10(.4)) **and** 80 ÷ 7 (= 11(.4..)) cao	May be seen as a repeated addition or subtraction but must be complete for one colour, eg 50 or 70 May be implied by eg 50:70 or 50:77 Must see working with both colours for this mark.

Question	Answer	Mark	Mark scheme	Additional guidance
20	4.643(069317)	M1	for 192.6 **or** 8.934 **or** 21.558(09268) **or** answer of 4.64 **or** digits 4643…	
		A1	for 4.643(069317)	Answer must be given to at least 3 decimal places rounded or truncated Check first 3 decimal places only If given to 3 dp or better ignore subsequent rounding

Question	Answer	Mark	Mark scheme	Additional guidance
1	700	B1		Accept 7 hundreds

2	16	B1	cao	

4	−7, −3, 0, 4, 6	B1	accept in reverse order eg 6, 4, 0, −3, −7	

Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)	49.9(0)	B1	for 49.9(0)	
	30	B1	for 30	
	417.31	B1	for 417.31, ft allow 367.41 + [their 49.9(0)] for this mark	To award B1ft, the total for tin of paint must not be blank or 0
(b)	771.45	M1	for a correct first step, eg 892.48 + 4.47 (= 896.95) **or** 892.48 + 240 (= 1132.48) **or** 892.48 – 365.5(0) (= 526.98) **or** 4.47 + 240 (= 244.47)	May be seen embedded in other calculations eg 4.47 + 240 – 365.5(0)
		M1	for a complete method, eg 892.48 + 4.47 + 240 – 365.5(0)	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
10 (a)	19	B1	cao	
(b)(i)	08 11	P1	for a correct first step, eg 09 00 – 8 (= 08 52) **or** for recognising which train he needs to get eg 08 17 or 08 45	
		P1	for a complete process to find the latest time he can leave his house, eg 08 17 – 6	
		A1	allow 8:11(am) Award SCB2 for an answer of 08 08 or 08 09 if P0 or P1 scored	
(b)(ii)	No effect	C1	ft, for 'no effect' oe eg 'the next train would make it too late to the meeting', allow 'he can leave later' oe if an earlier train was selected in (i)	Reason not required but if a reason is given and it contradicts the answer, award 0 marks

Paper: 1MA1/3F

11	(a)	$\frac{3}{8}$	M1	for method to subtract using a correct common denominator, with at least one correct numerator, eg. $\frac{5}{8} - \frac{2}{8}$ or $\frac{10}{16} - \frac{4}{16}$ or $\frac{20}{32} - \frac{8}{32}$ or for correct method to convert both fractions to decimals and subtract, eg $0.625 - 0.25$	Do not condone working with fractions with decimal numerators unless it leads to a fraction or fractions where both numerator and denominator are integers.
			A1	for $\frac{3}{8}$ oe, eg $\frac{6}{16}$, $\frac{9}{24}$, $\frac{12}{32}$, 0.375	Ignore errors in cancelling after sight of an equivalent fraction to $\frac{3}{8}$
	(b)	16	M1	for dividing by 5 and multiplying by 2, in any order or for 0.4×40 oe	Accept $\frac{2}{5} \times 40$ or $\frac{2}{5} \times \frac{40}{1}$
			A1	cao	

Paper: 1MA1/1F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	08 47 supported	M1	for a method to find the time of one train from L to C, eg 08 53 – 08 07 (= 46) **or** 09 22 – 08 47 (= 35) **or** 09 55 – 09 07 (= 48)	Subtraction must be written in the correct order or correctly evaluated for M marks. Do not allow misread of timetable.
		M1	for a complete method to find the time of all three trains from L to C eg 08 53 – 08 07 (= 46) **and** 09 22 – 08 47 (= 35) **and** 09 55 – 09 07 (= 48)	
		C1	for 08 47 train with correct supporting journey times eg 08 47 train with 46, 35, 48 seen	Accept any clear identification of the 08 47 train, eg the second one or the middle one or indicated on the table
(b)	40	P1	for a complete process to find the number of minutes to wait for the train eg 35 (mins) + (09 30 – 09 25) or 09 30 + 35 (= 10 05) and "10 05" – 09 25	
		A1	cao	Embedded answer 09 25 + 40 = 10 05 scores P1A0

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
15	64.8(0)	M1	for a complete method with relative place value correct including an intention to add all the appropriate elements of the calculation or for a complete method to find 35% of 48 or 0.48 and add this on eg 48 ÷ 10 (= 4.8) and “4.8” ÷ 2 (= 2.4) and 48 + 3 × "4.8" + "2.4"	1080 240 5400 1440 6480 4800 6480 1 3 5 0 | 0/4 1/2 2/0 | 4 6 | 0/8 2/4 4/0 | 8 4 8 0 | | 100 | 30 | 5 | | 40 | 4000 | 1200 | 200 | | 8 | 800 | 240 | 40 |
		A1	for digits 648	
		A1	ft (dep on M1) for correct placement of the decimal point into their final answer	4000+800+1200+240+200+40 Incorrect answer scores maximum 2 marks.

Paper: 1MA1/1F

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
1	21	B1	cao	

4	–6, –3, 2, 5, 7	B1	for –6, –3, 2, 5, 7	Accept in correct reverse order

5	(i)	metres	C1	for metres or kilometres	Allow any unambiguous abbreviation
	(ii)	grams	C1	for grams or milligrams or newtons	Allow any unambiguous abbreviation

6	21	P1 P1 A1	for a beginning process, eg 76 – 13 (= 63) **or** $3x + 13 = 76$ oe for "63" ÷ 3 **or** (76 – 13) ÷ 3 (= x) cao	May be implied by $a + b + c = 63$ **or** $a + b + c + 13 = 76$ a, b and c may be seen in a list 13+21+21+21=76, 76, 63 or 13 on answer line scores P1P1A0 21, 21, 21 (13) on the answer line will score P1P1A1

7	6	M1 A1	for 330 ÷ 55 cao	Build up methods are allowed Condone one error in build up method 55 × 6 = 330, 330 or 55 on answer line scores M1A0 ignore use of £ eg £6

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
24	10 000	M1	for recognising 8000 is $\frac{4}{5}$, eg 8000 ÷ 4 (= 2000) **or** $\frac{4}{5} = 8000$ **or** 8000 = 80% or 8000 ÷ 80 (= 100) **or** $x \times 0.8 = 8000$ oe	
		M1	for a complete method, eg "2000" × 5 **or** $8000 \times \frac{5}{4}$ **or** "100" × 100 **or** $\frac{8000}{0.8}$	
		A1	cao	

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
1	tenths or $\frac{7}{10}$	B1	for (7) tenths **or** $\frac{7}{10}$ **or** 0.7	Condone incorrect spelling provided the intention is clear

6	28	P1 P1 A1	for a process to work out the value of the £20 notes, eg 6 × 20 (= 120) oe for a process to work out the value of the £10 notes, eg 400 – "120" (= 280) oe allow £28	Build up processes are allowed. Condone one error in the build-up process. If 28 seen but 10 or 280 on answer line award P2A0 eg '28 notes of £10' then 10 or 280 on answer line

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
			Yes…	
11	16	M1	for converting, eg 1.2 × 100 (= 120) **or** 136 ÷ 100 (= 1.36) **or** for an answer of 0.16 **or** for [Elena's height] – 1.2 **or** for 136 – [George's height]	[Elena's height] = 13 600 or 1360 or 13.6 or 1.36 [George's height] = 120 or 12 or 0.12 or 0.012
		A1	cao	

16	15	P1	for process to find the number of games won, eg $48 \div 8 \times 3$ (= 18) oe **or** 48 – [games won] **or** for process to find the fraction of games drawn and lost **or** lost only, eg $1-\frac{3}{8}\left(=\frac{5}{8}\right)$ oe eg 1 – 0.375 (= 0.625) **or** $\left(1-\frac{3}{8}\right)\div 2\left(=\frac{5}{16}\right)$ oe eg $\frac{2.5}{8}$ **or** for representing the games in a ratio eg 3 : 2.5 : 2.5 oe	[games won] needs to be clearly stated and must be an integer less than 48 and not $48 \div 8 \times 3$ (= 18) oe
		P1	for a correct next step, eg 48 – "18" (= 30) **or** $"\frac{5}{8}" \times 48$ (= 30) oe eg "0.625" × 48 (= 30) **or** $"\frac{2.5}{8}" \times 48$ **or** $48 \div 8 \times 2.5$ oe **or** 18 : 15 : 15	
		A1	cao	

Paper: 1MA1/3F

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Mark Scheme (Results)

November 2010

GCSE

GCSE Mathematics (Modular) 5MB2F
Unit 2 - Foundation

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GCSE MATHEMATICS 2MB01

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PMT

GCSE MATHEMATICS 2MB01

5MB2F_01
1011

6

GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		3109	1	B1 cao
	(b)		6 hundredths	1	B1 for 6 hundredths or 0.06 or $\frac{6}{100}$
	(c)		4300	1	B1 cao
2	(a)	$2\times16.50+13.50$	46.50	2	M1 for 2 × 16.50 + 13.50 A1 cao
	(b)	$3\times20-"46.50"$	13.50	2	M1 for $3\times20-"46.50"$ A1 ft
3	(a)		C	1	B1 cao
	(b)		D	1	B1 cao
	(c)		2	1	B1 cao
4	(a)		0.25	1	B1 cao
	(b)		$\frac{3}{4}$	1	B1 cao
	(c)		9 squares shaded	1	B1 for any 9 squares shaded

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GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		Pattern drawn	1	B1 for correct pattern
	(b)		37	2	M1 for continuation or diagrams A1 cao **OR** M1 for sequence of numbers seen 4, 7, 10, 13, 16 etc A1 cao **OR** M1 for use of formula $3n+1$ with $n=12$ A1 cao
	(c)		No	2	M1 for attempt to divide 69 by 3 A1 for 'No' and comment on the fact that this is the number needed for pattern 23 **OR** M1 for Starts at 3 and builds up to 61 A1 for 'No' and comment on fact that 61 sticks are needed for pattern 20 NB: 0 for an answer that is an incorrect mathematical statement, or an answer that has an incorrect conclusion (eg "yes")

GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(i)		4 or 5	1	B1 for 4 or 5
	(ii)		30 or 40	1	B1 for 30 or 40
	(iii)		29	1	B1 cao
7	(a)		Pair of parallel lines	1	B1 for any pair of parallel lines marked.
	(b)		Acute	1	B1 cao
	(c)		Correct angle marked	1	B1 cao
8	(a)		-1	1	B1 cao
	(b)		14	2	M1 for $5--9$ or – 9 – 5 A1 for 14 or -14
	(c)		No + reason	2	M1 for attempt to find middle of -7 and 3 eg, may see -7 and 3 on number line **or** $(-7-3)\div 2$ **or** $(-3-7)\div 2$ A1 for 'No' and correct reason

GCSE MATHEMATICS 2MB01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
9*	$65+110=175$ $65+65=130$ $2\times28+25+21$	£102	4	M1 for some idea of putting lengths together $65+65$ oe or $65+110$ oe seen, or, or finding the total length of wood eg 65×5+220 (=545) or 7 pieces of wood from which those needed can be cut C1 for a combination of lengths of wood that will allow all lengths to be cut, for example, 2 lengths of 1.8m, 1 length of 1.5m, 1 length of 1m C1 ft for clearly showing a combination of allowed prices for their chosen lengths eg $2\times28+25+21$ A1 cao
10*	$25\div5$, $15\div5$, $12\div5$, $5\times3\times2$	No	4	M2 for 5, 3, 2 (could be on the diagram) (M1 for $25\div5$ or $15\div5$ or $12\div5$) C2 QWC: No as only 30 whole bricks will fit oe statement **or** No and dimensions of a possible box given **or** No as only 2 layers of 15 will fit oe (C1 for correct conclusion from candidate's working even if incorrect eg vol: 4500÷125=36 so yes)

GCSE MATHEMATICS 2MB01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		-2, (1), 4, 7, 10, (13)	2	B2 for 4 values correct (B1 for 2 or 3 values correct)
(b)		Single line from (-2, -2) to (3, 13)	2	M1 for plotting at least 5 of their points correctly **OR** single straight line with positive gradient passing thro' (0,4) from $x = -2$ to $x = 3$ **OR** single straight line of gradient 3 from $x = -2$ to $x = 3$ **OR** correct straight line that passes through 3 correct points A1 cao for correct straight line from at least (-2,-2) to (3,13)

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GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)	$10+45+20+25=10$ 1 hour 40 minutes	07 10	3	M1 for $10+45+20+25$ or 100 seen M1 for correct attempt to convert to hours and minutes A1 cao **OR** M2 for clear attempt to subtract all times from 08 50 (may be seen as working backwards) (M1 for clear attempt to take at least one time away from 08 50) A1 cao
	(b)		11 20	1	B1 for 11 20 **or** twenty past eleven oe
	(c)		12	1	B1 cao
	(d)		Straight line from $(12\ 20, 12)$ to $(13\ 50, 12)$ and from $(13\ 50, 12)$ to $(14\ 30, 0)$	3	M1 for straight line segment on graph M1 for straight line with negative segment A1 for correct graph **or** M1 for straight line segment on graph M1 for $12 \div 18$ oe or 40 minutes seen A1 for correct graph SC: B2 for the correct straight line translated to left or right

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GCSE MATHEMATICS 2MB01

5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13		$BFD = 42°$ *GFB* = 110° $110 - 42$	68	3	M1 for *EDC*=42 or *DHF*= 180–110 (=70) M1 for $180 - 42 - 70$ A1 cao **OR** M1 for *BFD* = 42° or *BFH* = 110° M1 for $110 - 42$ A1 cao **OR** M1 for *AFH* = 180 – 110 (=70°) M1 for $180 - 70 - 42$ A1 cao
14	(a)		$6m$	1	B1 cao
	(b)		x^{12}	1	B1 for x^{12} or x^{7+5}
	(c)		$y(3y + 2)$	1	B1 cao

GCSE MATHEMATICS 2MB01

5MB2F/01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15	$3600 \times 4 = 14400$ $\frac{2}{5} = 40\%$ $\frac{1}{4} = 25\%$ $30 + 40 + 25 = 95\%$ Saved 5% 10% of 14400 = 1440 5% of $1440 = 1440 \div 2$	£720	5	M1 3600 × 4 (=14400) B1 for $\frac{2}{5} = 40\%$ **or** $\frac{1}{4} = 25\%$ M1 for 30% + 40% + 50% (=95%) M1 for complete method to find 5% of 14400 A1 cao **OR** M1 for 3600 × 4 (=14400) B1 for 30% = $^{3}/_{10}$ M1 for $\frac{3}{10}+\frac{2}{5}+\frac{1}{4}$ $\left(=\frac{19}{10}\right)$ oe M1 for complete method to find $\frac{1}{20}$ of 14400 A1 cao **OR** M1 3600 × 4 (=14400) M1 for 0.3×14400 oe $(=4320)$ M1 for $\frac{2}{5}\times14400$ oe $(=5760)$ M1 $14400-3600-4320-5760$ A1 cao SC if no other marks award M1 for 0.3 x 3600 (=1080) M1 for $\frac{2}{5}$ ×3600 (=1440)

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5MB2F_01
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Mark Scheme (Results)

March 2011

GCSE

GCSE Mathematics (Modular) – 5MB2F
Paper 01

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5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		Kite drawn	1	B1 Accept a rhombus, square, etc.
(b)		Parallelogram	1	B1
2 (a)		9	1	B1 cao
(b)		0.6,2.8,4.71,13.4	1	B1 cao
(c)		0.7	1	B1 cao
3 (a)		5	1	B1 cao
(b)		Line of symmetry	1	B1 for line of symmetry
4 (i)		Acute	2	B1 cao
(ii)		53°		B1 for an angle 51°-55°
5 (i)		130	2	B1 for 130 cao
(ii)		Reason		B1 for reason eg "angles on a (straight) line (sum to) 180° NB: those underlined are the essential elements of an answer.

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5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		3*c*	1	B1 cao
(b)		2*x* + 6*y*	2	B2 for 2*x* + 6*y* (B1 for 2*x* or 6*y*)
7 (a)		Pattern	1	B1
(b)	7,10,13,16,19,22,25,28,31,34,37,40 43,46,49; or 3*n*+4	49	2	M1 for method eg counting up in 3s (to at least pattern number 6; allow errors if intention is clear), diagram extension (ft), use of 3*n*+4 (could be shown as part of a valid calculation eg 15×3) A1 49
8	Ticket sales: 16 × 100 = £1600 Meals: 12 × 100 = 1200 Fixed costs: 230 + 150 + 30 = 410; 410+1200=1610 or 1600-230-150-30=1190; 1190-1200 = -10 Total 410 + 1200 = £1610 (<£1600) OR £1610÷100=£16.10 ticket price (>£16) OR £1600 – 410 – 1200 = - £10 (or £10 needed) OR £1600-1200 = £400 (< £410 costs)	No. £1610 >£1600 £410 >£400	4	M1 for addition of 230, 150, 30 (or + 410) (=422 or 800) M1 for 12 × 100 (= 1200) A1 for £1610 total costs or £16.10 ticket price needed. C1 (dep on at least M1) for correct comparison and statement that “£1610”>”£1600” and that costs will not be covered. OR M1 for subtraction of 230, 150, 30 (or - 410) M1 for 12 × 100 (=1200) A1 for £400 left or -£10 C1 (dep on at least M1) for correct comparison and statement that “£410”>”£400” and that costs will not be covered.

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	-7 to -9	2	1	B1 Accept -2
	(b)	8 to -7	15	1	B1 cao
10	(a)	$\frac{1}{2}\times\frac{1}{5}=$	$\frac{1}{10}$	1	B1 oe
	(b)	$\frac{1}{2}+\frac{3}{8}=\frac{4}{8}+\frac{3}{8}=$	$\frac{7}{8}$	2	M1 common denominators with at least one numerator correct or an unsimplified answer, or a fraction that is not completely processed eg $\frac{1\times 8+2\times 3}{2\times 8}$ OR conversion to correct decimals: 0.5 + 0.375 A1 for $\frac{7}{8}$ or 0.875
11	(a)		12	1	B1 cao
	(b)		200 cm^3	3	M1 for 10 × 4 × 5 A1 cao B1 (indep) for cm^3

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12	London: £15, £34, £26 (£75) → 450, 1020, 780 (2250) KC Prague: 450, 750, 810 KC (2010KC) → £15, £25, £27 (£67) £ to KC is ×30; KC to £ is ÷30.	Yes. Cheaper in Prague (More in London)	5	M1 conversion method (× or ÷ as appropriate) or evidence of use of graph (seen, or implied, by at least lines or evidence of conversion by marks on axes) for at least one figure. M1 (dep) conversion applied to 3 figures or totals (converted figures must be stated, marks on graph insufficient) A1 converted figures shown (all three individual items or totals converted correctly; NB: no tolerance on graph) M1 totalling converted amounts C1 (dep on at least M1) comparison of "**totals"** and correct conclusion Eg "2250KC">"2010KC", "£75">"£67" so cheaper to buy in Prague.
13	Zparts: 150 is 15 boxes; 15 × £35 = £525 CompParts: 150÷11 is 13.6 so 13 offers (150-13)×£4=137×4=£548 OR 13×11=143; 150-143=7 extra (13×10+7)=137; 137×4=£548 OR 150×4=£600 13 offers so 13 free: 13×4=52; 600-52=£548	Zparts £525 CompParts £548 so Zparts cheaper	5	M1 for 15 × £35 (= £525) M1 for attempt to account for 1 free (eg ÷11 or listing with 10 charged and one not) M1 for ×4 (may be shown as ×40) A1 for totals of £548 and £525 OR unit costs of £3.64/£3.63 and £3.50 (oe) C1 (dep on at least M1) for making comparison figures clear and giving correct deduction.

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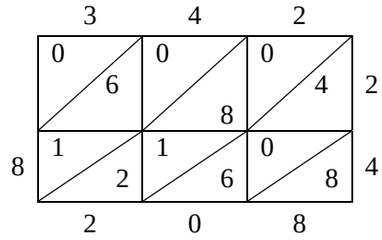
5MB2F_01								
Question	**Working**						**Answer**	**Mark**	**Notes**
14	x	-3	-2	-1	0	1	Line	3	**(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be correct) A1 for correct line between -3 and 1 **(No table of values)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for at least 3 correct points with no more than 2 incorrect points) A1 for correct line between -3 and 1 **(Use of $y=mx+c$)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $2x+3$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient of 2 OR line drawn with a y intercept of 3 and a positive gradient) A1 for correct line between -3 and 1
	y	-3	-1	1	3	5			

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15	342 ×24 = 6840 + 1368 = 8208 24 ×342 = 7200 + 960 + 48 = 8208  300 40 2 6000 800 40 20 1200 160 8 4 6000+800+40+1200+160+8=8208	8208	3	M1 for a complete method with relative place value correct. Condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation. A1 cao M1 for a complete grid with not more than 1 multiplication error, addition not necessary (inside numbers) M1 (dep) for addition of all the appropriate elements of the calculation (eg outside numbers) A1 cao M1 for sight of a complete partitioning method, condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation. A1 cao

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5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
16 (a)		21	1	B1 cao
(b)		$4n+1$	2	M1 for $4n$ + k ($k \neq 1$) A1 oe NB $n = 4n + 1$ gets M1 only.
17	300 ÷ (2 + 3 + 5) × 5 = 300 ÷ 10 × 5 =	150	2	M1 for 300 ÷ (2 + 3 + 5) or 300 ×5 or 30 seen or 60:90:150 A1 cao

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5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
18	LCM (40, 24) = 120 Rolls 120 ÷ 40 = Sausages 120 ÷ 24 = OR Rolls 40 is 2 × 2 × 2 (×5) Sausages 24 is 2 × 2 × 2 (×3) 40, 80, **120**, 160, 200, 240, 280 24, 48, 72, 96, **120**, 144, 168	Rolls (packs) 3 Sausages (trays) 5 Hot dogs 120	5	M1 attempts multiples of either 40 or 24 (at least 3 but condone errors if intention is clear) M1 attempts multiples of both 40 and 24 (at least 3 of each but condone errors if intention is clear) M1 (dep on M1) division by 40 or 24 or counts up multiples. (implied if one answer correct or answers reversed) A1 rolls (packs) 3, sausages (trays) 5 OR any multiple of 3,5 A1 hot dogs 120 or ft on both of their packs or ft 'common multiple' OR M1 expansion of either number into factors M1 demonstrates one of the expansions that includes 8 oe M1 demonstrates a 2nd expansion that includes 8 oe A1 cao for rolls (packs) 3, sausages (trays) 5 A1 hot dogs 120
19	Bottom / top is 5 × 10 = 50; 50 × 2 = 100; 280 – 100 = 180 Other dimensions: 10 + 10 + 5 + 5 = 30; 180 ÷ 30 =	6	4	M1 recognition that the bottom/top is 5 × 10 (= 50), 50 seen M1 for 280 – 2 × "50" (= 180) M1 for "180" ÷ "other dimensions" or valid attempt to find height using these dimensions A1 cao

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Mark Scheme (Results)

November 2011

Modular Mathematics (GCSE)
Unit 1: 5MB1F_01 (Foundation)

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5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		4, 6, 8, 2	2	B2 all frequencies correct (B1 2 frequencies correct OR 2 tallies correct OR 1 tally with its frequency correct)
	(b)		silver	1	B1 for silver or ft from table
2	(a)		18	1	B1 cao
	(b)		¼ box 3 full size boxes	2	B1 cao B1 cao
3	(a)		cross at ½	1	B1 at ½ with tolerance of ±2mm
	(b)		cross at 1	1	B1 at 1 with tolerance of ±2mm
	(c)		cross approx at ¼	1	B1 from cross between 1/8 and 3/8 from end.
4		(S,I), (S,F), (S,D), (P,I), (P,F), (P,D), (C,I), (C,F), (C,D)	combinations	2	B2 for listing all 8 extra combinations (B1 listing 4 or more extra combinations ignoring repeats)

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		7	1	B1 cao
	(b)		Wednesday	1	B1 cao
	(c)	Andrew: 8 + 10 + 17 + 10 (=45) Rachel: 16 + 8 + 12 + 7 (=43) Then 45 – 43 = 2 OR Differences: -8, 2, 5, 3 -8 + 2 + 5 + 3 = 2	2	3	M1 for Andrew: 8 + 10 + 17 + 10 (at least 3 correct) (=45) or: Rachel: 16 + 8 + 12 + 7 (at least 3 correct) (=43) M1 (dep) for "45" – "43" = 2 A1 cao OR M1 for Differences: at least 3 from 2, 5, 3, 8 M1 (dep) for "2" + "5" + "3" – "8" (at least 3) A1 cao
6	(a)		0915	1	B1 for 0915 or 9.15am or other times that identify the train: 0930, 0955, 1040
	(b)	0930-0800 = 1h30 or 90 min 1040-0915 = 1h25 or 85 min 1152-1030 = 1h22 or 82 min	82	3	M1 for an intention or attempt to work out the time of one train: eg 0930-0800 (=1h30oe) or 1040-0915 (=1h25oe) or1152-1030 (=1h22oe) M1 for an attempt to work out the time of all three trains; OR finding the difference between time duration s of at least two trains; OR stating the duration of at least one train correctly, with an attempt at another train duration ; OR stating two durations correctly. A1 82 or 1 h 22 min SC: B2 for 1f 22min stated incorrectly eg 1:22, 1.22, 122
	(c)		45	1	B1 cao

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7			Diagram or chart	4	B1 labeling or key to identify boys / girls B1 5 correct sports labels to identify the sports B1 diagram or chart (combined or separate) enabling comparison eg dual bar chart, bar chart, pie chart, composite bar chart, line graphs C1 (dependent on at least B1) fully correct diagram or chart with all labels correct and clear
8	(a)		2	1	B1 cao
	(b)		11	2	M1 for 12 – a or b – 12 or 12 – 1 or -11 A1 for 11
	(c)		4	2	M1 for attempted ordering with or without the 9th number (5), or clear evidence of selecting the middle number from an unordered list. A1 cao
9	(a)		Data collection sheet	3	B1 labels (eg transport) B1 tallies B1 frequency (or total, etc.)
	(b)		Reason	1	B1 biased; not everyone uses the road and comes by car, she will only get people who travel by car, etc.; more times are needed other than just one afternoon

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*10		(2×625)+200+350=1800 (2×725)+150+275=1875 (2×640)+(2×170)=1620	Sunswift at £1620	5	M1 for correctly choosing a table column (11-20 June) M1 for use of 2 adults and 2 correctly aged children (eg 4 corresponding figures for at least one hotel) M1 for using costings consistently for at least two hotels (eg two of 625,200,350; 725,150,275; 640,170, 170 or ft their choice of table column) A1 for showing correct totals: 1800, 1875 and 1620. C1 (dep on at least M1 awarded) for using three comparable figures identified with each hotel, correctly deduces the cheapest hotel, and clearly names it.
11	(a)	construction = 120° hairdressing = 168° tourism = 72°	120° 168° 72°	3	M1 for correct working to find an angle (could be implied by one angle drawn correctly on the pie chart. A1 all three angles drawn ±2° B1 (dep on M1) correct labels NB: stating the angles is not labels
	(b)		explanation	1	B1 ft reason given eg NO and “we don’t know the actual figures”, “there could be less Y10 students”, or refers to the fact that the totals for the pie charts (or the sample groups) could be different NB: YES could also be justified.
12	(a)	1-(0.4+0.25+0.15) 1-0.8	0.2	2	M1 for 1 – “(0.4+0.25+0.15)” or 1 – 0.8 or sight of 0.92 A1 for 0.2 oe
	(b)	0.4 × 60	24	2	M1 for 0.4 × 60 A1 for 24 or “24 out of 60” SC B1 for $\frac{24}{60}$ or 24 in 60

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Reasons	2	1st aspect: no time frame 2nd aspect: overlapping boxes 3rd aspect: not exhaustive ie no <1, no "other", no >30 B2 for two aspects (B1 for 1 aspect)
	(b)		Question and responses	2	1st aspect: question including time frame (or question and time frame in response boxes) 2nd aspect: at least 3 non overlapping response boxes, with discrete values or a range; need not be inclusive of all; OR a set of at least 3 boxes which are exhaustive (but which may overlap). B2 for two aspects (B1 for 1 aspect)
14	(a)		Points plotted	1	B1 points plotted (180,72) and (170,65) ±2mm
	(b)		Positive	1	B1 positive (correlation) cao
	(c)		Line of best fit	1	B1 line passing between (140,40)(140,55) and between (185,60)(185,75) with a positive gradient
	(d)		52-60	1	B1 within the range 52-60 or ft a single straight line segment with positive gradient.

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15		60 ÷ 12 = 5 2×5=10; 3×5=15; 7×5=35	10 15 35	3	M1 for 60 ÷ (2+3+7) or ×5 or multiple build-up (at least 4 correct) eg 2:3:7, 4:6:14 ,6:12:28, 8:12:28 M1 for 60÷(2+3+7) ×2 or 60÷(2+3+7) ×3 or 60÷(2+3+7) ×7 or sight of the numbers 10,15,35 together or 2×5 or 3×5 or 7×5 A1 cao SC: B1 for 2 correct numbers out of 3 in a ratio
16		$(x + x + 3 + 2x) \div 3$ $= (4x + 3) \div 3$	$\frac{x + x + 3 + 2x}{3}$ oe	2	M1 $x + x + 3 + 2x$ (=4x+3) oe or $4x + 3 \div 3$ oe A1 $\frac{x + x + 3 + 2x}{3}$ oe

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Modular Mathematics (GCSE)
Unit 2: 5MB2F_01 (Foundation)

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5MB2F_01					
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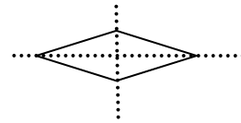
1	(a)		rhombus	1	B1 cao
	(b)			1	B1 for both lines seen do not accept any extras but accept freehand Lines.
2	(a)		10 570	1	B1 for 10 570
	(b)		560	1	B1 cao
	(c)		2.17, 3.95, 5.03, 6.84	1	B1 cao
	(d)(i)		49	1	B1 cao
	(ii)		8	1	B1 cao
3	(a)		8.6	1	B1 for 8.6 ± 0.2 cm
	(b)		correct ×	1	B1 for × 5 cm from Q ± 0.2 cm use overlay provided
	(c)(i)		obtuse	2	B1 ignore spelling
	(ii)		120		B1 for 120 ± 2°

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		2 × 60 + 3 × 50 = 120 + 150 = 270 7 × (45 + 55) = 700 1500 – 970 **or** 2 × 60 + 3 × 50 + 7 × 45 +7 × 55 120 + 150 + 315 +385 = 970 1500 – 970 = **or for doubling travel costs** 2 × 2 × 60 + 2 × 3 × 50 = 240 + 300 = 540 7 × (45 + 55) = 700 1500 – 1240 = 260	530	4	M1 for 2 × 60 or 3 × 50 or 7 × 45 or 7 × 55 oe M1 for '2 × 60' + '3 × 50' + '7 × 45' + '7 × 55' oe M1 for 1500 – ('2 × 60' + '3 × 50' + '7 × 45' + '7 × 55') oe A1 cao **or** M1 for 2 × 60 or 3 × 50 or 45 + 55 oe M1 for '2 × 60' + '3 × 50' + '(45 + 55)' × 7 M1 for 1500 – ('2 × 60' + '3 × 50' + '(45 + 55) × 7)' oe A1 cao **Or for doubling travel costs** M1for 2 × 2 × 60 or 2 × 3 × 50 or 7 × 45 or 7 × 55 oe M1for '2 × 2 × 60' + '2 × 3 × 50' + '7 × 45'+ '7 × 55' oe M1for 1500 – ('2 × 2 × 60' + '2 × 3 × 50' + '7 × 45' +'7 × 55') oe A1 for 260
5	(a) (b)(i) (ii)		2 Monday 7	1 2	B1 cao B1 for Monday oe B1 ft for their (b)(i) accept positive and negative answers for 7
6	(a) (b)		5.6 9.58	1 1	B1 cao B1 ft from their weight in part (a) may be shown by selecting correct value in the table
7	(i) (ii)		70 reason	2	B1 for 70 look for answer on diagram C1 for angles (on a) straight line (add up to) 180°

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		28 = (4+1) + (4+1) + (4+1) + (4+1) + (4+1) + 3 Buy 4 + 4 + 4 + 4 + 4 + 3 23 × 6 = 138 or 140 ÷ 6 (= 23 rem 2) 23 ÷ 4 = 5 free 23 + 5 = 28	Yes + reason	3	M1 for attempt to account for 1 free e.g. (4+1) + (4+1) ... with at least 2 seen e.g. 140÷24 = 5 so 5 free eg every £24 get 1 free e.g. 23lots of £6 so 5 free M1 for using £140 in a calculation that could lead to the correct conclusion (need not be explicit) or for a method that leads to a total cost of 138 C1 (dep on M1) for 'Yes' **and** reason eg "138" is less than 140 oe or "Yes" **and** "23 with 5 free gives £2" left over oe **NB** Needs a statement to this effect
9	(a)	$\frac{15}{100} \times 240$	36	2	M1 for 15 ÷ 100 or 10% + 5% attempted with correct values of 24 and 12 seen or 24 and 12 seen or 0.15 seen A1 cao
	(b)	240 ÷ 3	80	1	B1 cao
	(c)	80 : 60 = 8 : 6	4 : 3	2	M1 for any correct ratio eg 80:60, 40 : 30, 8 : 6 or 4 gap 3 seen without ratio sign or 4 dot 3 A1 for 4 : 3 or 4 to 3 **SC** B1 for an answer of 3:4 or 3 to 4 if M1 not scored

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		16	1	B1for answer in range 15.5 to 16.5
	(b)		2.4	1	B1for answer in range 2.3 to 2.5
	(c)(i)		Debbie	1	B1 for Debbie
	(c)(ii)		Correct reason	1	C1for Debbie in Part (i) with a valid explanation e.g. It is higher **or** with a correct conversion ± 1 sq or Stefan in part (i) with an incorrect conversion but valid explanation Note: 6 mph = 9.6 km/h (accept 9-10) 10.5 km/h = 6.5625 mph (accept 6.4 – 6.8)
11	(a)		6	2	M1for any valid method e.g. drawing diagrams, counting in 2s which may be on the diagram or table of values A1cao
	(b)	*n*th term is $2n + 2$ so 50th term is $50 \times 2 + 2$	102	2	M1for $50 + 50 + 2$ or any other valid method A1cao
12			$4x + 9y$	2	B2for $4x + 9y$ (B1for $4x$ or $9y$ seen)

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		17	1	B1 cao
	(b)		(5+3)×2+1	1	B1 cao
	(c)		24	1	B1 for 24 or + 24
	(d)	$\frac{7}{10} + \frac{1}{5} = \frac{7}{10} + \frac{2}{10}$ | | 1 | 5 | | 7 | | 35 | | 10 | 10 | 50 |	$\frac{9}{10}$	2	M1 for a suitable common denominator (multiple of 10) with one fraction out of two (not $\frac{7}{10}$) correct or 0.7 + 0.2 or all cells correct if cell method used A1 for $\frac{9}{10}$ oe, accept 0.9
*14		$96 \div 2^2$ = 96 ÷ 4 = 24	No + calculations	3	M1 for $96 \div 2^2$ oe A1 for 24 C1 dep on M1for "No" **with** a calculation to support their conclusion **SC B1:** for 96 ÷ 2 **and** a correct conclusion seen **NB** To award the marks in this question working **must** be shown

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)	Missing sides are $2x + 1$ and $3x + 3$ Perimeter = $5x + 1 + x + 3x + 2x + 3 + 2x + 1 + 3x + 3$ OR $2(5x + 1) + 2(2x + 3 + x)$	$16x + 8$	3	M1 for $5x + 1 - 3x$ or $2x + 3 + x$ or identifying a missing side as $2x + 1$ or $3x + 3$(maybe on the diagram) M1 for adding 5 or 6 sides from x, $5x + 1$, $3x$, $2x + 3$, '$2x + 1$', '$3x + 3$' where the missing sides are in the form $ax \pm b$ (a and $b \neq 0$) or $2(5x + 1) + 2(2x + 3 + x)$ oe A1 for $16x + 8$ oe for unsimplified expression
	(b)		$4x + 2$	1	B1 ft for ['$2(5x + 1) + 2(2x + 3 + x)$'] ÷ 4 or ("$16x + 8$") ÷ 4 oe where the answer is an algebraic expression in x

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16		Big area = 144 Small area = 64 Area frame = 144 – 64 = 80 80 ÷ 4 **or** Area one piece is a trapezium ½ (12+8) × (12– 8)÷2 ½ × 20 × 2 = 20 **or** Area of rectangle + 2 triangles 8 × 2 + 2× (½ × 2 × 2) 16 + 4 **or** Area of rectangle – 2 triangles 12×2 – 2× (½ × 2 × 2) 24 – 4	20	4	M1 for 12 × 12 or 8 × 8 or 144 seen or 64 seen as area M1 for 12 × 12 – 8 × 8 or '144' – '64' or 80 seen as area M1 for (12 × 12 – 8 × 8) ÷ 4 or '(144 – 64)' ÷ 4 or '80' ÷ 4 seen as area A1 for 20 cao **or** M1 for 12 – 8 or 4 seen as difference in lengths M1 for height of trapezium = (12 – 8) ÷ 2 or '4' ÷ 2 or 2 M1 for area trapezium = ½ (12 + 8) × '2' oe A1 for 20 cao **or** M1 for ½ × (12 – 8) or 2 for width of frame M1 for 8 × 2 = 16 for rectangle M1 for 2× (½ × 2 × 2) or 4 for 2 triangles A1 for 20 cao **or** M1 for ½ × (12 – 8) or 2 for width of frame M1 for 12 × 2 = 24 for rectangle M1 for 2× (½ × 2 × 2) or 4 for 2 triangles A1 for 20 cao **NB** marks can be awarded for correct measurements indicated on the diagram **Note:**-If 80 seen on the answer line following a correct calculation of one piece of card, full marks can be earned

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*17		Angle *ACB* = 35° (base angles of an isosceles triangle are equal) (angles in a triangle add up to 180) Angle *CAE* = 35° (alternate angles are equal) *x* = 360 – (100 + 90 + 35) = 135 (angles in a quadrilateral add up to 360°)	135	4	M1 for angle *ACB* = (180 – 110) ÷ 2 or 35 seen M1 for angle *CAE* = angle *ACB* or "35" (this could be marked on diagram) A1 *x* = 135 cao C1 (dep on M1) for alternate angles are equal or allied angles (co-interior angles) are supplementary (add to 180º) AND any one of • (base) or 2 angles of an isosceles triangle are equal oe • angles in a triangle (add up to) 180 • angles in a quadrilateral (add up to) 360° • angles in a pentagon (add up to)540º

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Mark Scheme (Results)

March 2012

GCSE Mathematics (2MB01) Foundation
5MB2F (Non-Calculator) Paper 01

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Comprehension and meaning is clear by using correct notation and labeling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

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Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8 000 000	1	B1 cao
	(b)		Seven thousand, one hundred and two	1	B1 cao
	(c)		15.5	1	B1 cao
	(d)		420	1	B1 cao
2		$4 \times 3 + 2 \times 5$ $= 12 + 10$	22	2	M1 for 4×3 or 2×5 or 12 or 10 A1 cao
3	(a)	$\frac{12}{20}$	3/5	2	M1 for a fraction equivalent to $\frac{12}{20}$, unsimplified A1 cao [SC: B1 for $\frac{2}{5}$ if M0 scored]
	(b)		6 cells shaded	1	B1 for any 6 cells shaded
4	(a)		64	1	B1 cao
	(b)		1000	1	B1 for 1000 or one thousand
	(c)		4 < answer < 5	1	B1 for 4 < "answer for $\sqrt{20}$" < 5 [accept answer in words, eg. "greater than 4 and less than 5"]

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		$5g$	1	B1 or $g5$
	(b)		$4m$	1	B1 or $m4$
	(c)		$20ef$	1	B1 or equivalent simplified form
6	(i)		8.8 to 9.2 cm	3	B1 for answer in the range 8.8 to 9.2 cm inclusive
	(ii)		Midpoint within guidelines		B1 for midpoint shown within guidelines
	(iii)		Perpendicular (overlay)		B1 for perpendicular drawn anywhere on the line PQ so that the angle is between 88 and 92 degrees
7	(i)		64	2	B1 cao
	(ii)		Vertically opposite angles		B1 for 'vertically **opposite angles**' or '**vertically opposite** angles'
8	(a)		1, 2, 3, 6, 9, 18	2	B2 for all 6 factors and no extra ones, ignore repeats [B1 for 4 correct factors in a list containing no more than 6 numbers or all 6 correct factors with one extra incorrect factor]
	(b)		21, 28	1	B1 cao

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	38.5 – 36.8 OR Counting on the scale from '38.5' to 36.8	1.7	2	M1 for 38.5 A1 for 1.7
	(b)		Temp. at 37.3	1	B1 for temp shown at 37.3 ± 0.1
10	(a)(i)		A symmetrical diagram	3	M1 for at least two tiles placed so that they are symmtrical with the given black tiles or with each other. A1 for a correct positioning of the 4 tiles.
	(ii)	44 – 10	34		B1 cao
	(b)	6.20 × 5	31.00	2	M1 for 6.20 × 5 oe A1 for 31.00 (accept 31)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		**0**, 1.20, 6, **12, 18**, 24, 30, **36**	2	B2 for a fully correct table [B1 for 2 correct entries]
	(b)		Single line from (0, 0) to (30, 36)	2	B2 for a fully correct graph [B1 for at least 4 points plotted correctly or for a single line from (0,0) or for a short straight line segment joinning any two correct points]
	(c)	250 × 1.2 OR 30 × 10 from table Or for values read from the graph and used	300	2	M1 for correct use of any point the table or any point on the graph, eg 250 × 1.2 or 30 × 10 oe A1 **ft** for 300
*12		630 ÷ 3 = 210 630 – 210 = 420 100 + 30 × 12 = 100 + 360 = 460	Arnold's Computers (since it is £40 cheaper there)	4	M1 for 630 – 630 ÷ 3 oe or 420 seen M1 for 100 + 30 × 12 oe or 460 seen A1 for 420 and 460 C1 (dep on m1) for drawing a correct conclusion from their two computer prices

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)	20 + 28 10 × 8/5 = 16 60 – 16 OR 60 × 5/8 = 37.5 37.5 – 10	48 44 km or 27.5 miles	1 3	B1 cao B1 for 5 miles = 8 km or equivalent statement or use of conversion factor 8/5 or 5/8 M1 for 10 × '8/5' (= 16) or 60 × '5/8' (= 37.5) A1 for 44 km or 27.5 miles, accept76 km or 47.5 miles (units must be quoted)
14	(a)(i) (ii) (b)		27 Add 5 $5n - 3$	2 2	B1 cao B1 for 'add 5' oe B2 for $5n - 3$ (oe, including unsimplified) (B1 for $5n + k$, $k \neq -3$ or k is absent, or $n = 5n - 3$)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*15		500 × 1000 × 400 = 200 000 000 20 × 50 × 40 = 40 000 200 000 000 ÷ 40 000 = 5000 OR (500 ÷ 20) × (1000 ÷ 50) × (400 ÷ 40) = 25 × 20 × 10 = 5000	Proof	4	B1 for a correct unit conversion, could be seen on the diagram or in working M1 for 500 × 1000 × 400 or 200 000 000 or 20 × 50 × 40 or 40 000 or 5 × 10 × 4 or 200 or 0.2 × 0.5 × 0.4 or 0.04 M1(dep) for '200 000 000' ÷ '40 000' C1 for fully correct working leading to final answer of 5000 OR B1 for a correct unit conversion, could be seen on the diagram or in working M1 for (500 ÷ 20) or (1000 ÷ 50) or (400 ÷ 40) or at least two of 25, 20, 10 seen M1(dep) for '25' × '20' × '10' C1 for fully correct working leading to final answer of 5000

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16		30 ÷ 12 = 2.5 220 × 2.5 40 × 2.5 150 × 2.5 2 × 2.5	550 100 375 5	3	M2 for any one of 220 + 220 + 110 or 40 + 40 + 20 or 150 + 150 + 75 or 2 + 2 + 1 or 550 or 100 or 375 or 5 A1 for all 4 correct values OR M1 for 30 ÷ 12 oe or sight of 2.5 M1(dep) for 220 × '2.5' or 40 × '2.5' or 150 × '2.5' or 2 × '2.5' oe or 550 or 100 or 375 or 5 A1 for all 4 correct values OR M1 for 220 ÷ 12 or 40 ÷ 12 or 150 ÷ 12 or 2 ÷ 12 or $18\frac{1}{3}$ or $3\frac{1}{3}$ or 12.5 or $\frac{1}{6}$ seen M1(dep) for '$18\frac{1}{3}$' × 30 or '$3\frac{1}{3}$' × 30 or '12.5' × 30 or '$\frac{1}{6}$' × 30 or 550 or 100 or 375 or 5 A1 for all 4 correct values **Continued on next page**

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
					OR M1 for M1 for 220 ÷ 2 or 40 ÷ 2 or 150 ÷ 2 or 2 ÷ 2 or 110 or 20 or 75 or 1 seen M1(dep) for '110' × 5 or '20' × 5 or '75' × 5 or '1' × 5 or 550 or 100 or 375 or 5 seen A1 for all 4 correct values (SC: B2 for 275, 50, 187.5 and 2.5 or B1 for 275 or 50 or 187.5 or 2.5, if M0 scored)
*17		$x+2 + 2x+3 + 2x + x + 3 + 2$ $= 6x + 10$ $=2(3x + 5)$ OR Half way round × 2 = $(x+2 + 2x+3) \times 2$ $= 3x + 5$ Perimeter = $2(3x + 5)$	Proof	4	B1 for $x + 2$ or $2x + 3$ seen M1 for perimeter = "$x+2$" + "$2x+3$" + $2x + x + 3 + 2$ oe A1 for $6x + 10$ C1 (dep) for factorising $6x + 10$ to give $2(3x + 5)$ OR B1 for $x + 2$ or $2x + 3$ seen M1 for $2 \times$ ("$x+2$" + "$2x+3$") A1 for $6x + 10$ C1 (dep) for doubling $3x + 5$ to give perimeter = $2(3x + 5)$

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November 2012

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13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		14	1	B1 cao
	(b)	72 minutes = 1 hour 12 minutes	23 40	2	M1 for attempt to convert from minutes to hours and minutes or to add 72 minutes on to 22 28 A1 for 23 40 (accept 11.40 pm) SC B1 11:40 (am)
2	(a)		1357, 3517, 5713, 7135	1	B1 cao
	(b)		0.345, 0.35, 0.354, 0.4	1	B1 cao
3	(a)		1	1	B1 cao
	(b)(i)		Rhombus	2	B1 for rhombus (accept parallelogram, trapezium or kite)
	(ii)		2		B1 cao
4	(a)		5600	1	B1 cao
	(b)		198 000	1	B1 cao

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(i)	10 ÷ 1.95	5	4	M1 for 10 ÷ 1.95 or 10 ÷ 2 or attempts repeated addition of 1.95 or attempts repeated subtraction of 1.95 from 10 oe A1 for 5
	(ii)	10 – 5 × 1.95	25p or £0.25		M1 for 10 – '5' × 1.95 or '5'×5 or '5'×0.05 or 10-'9.75' A1 for 25p oe correct units must be included
6	(a)		3 sectors shaded	1	B1 for 3 sectors shaded oe
	(b)		60	1	B1 cao
	(c)		4	1	B1 cao
	(d)	40 ÷ 8 × 3	15	2	M1 for 40 ÷ 8 × 3 oe A1 cao
	(e)		13 or 17	1	B1 13 or 17
7	(a)		(4, 5)	1	B1 cao
	(b)		*D* marked on diagram	1	B1 for *D* marked at (2, − 1) (± 2 mm)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		29	1	B1 cao
	(b)(i)		45	2	B1 ft from (a)
	(ii)		Explanation		B1 for a complete method to generate the eleventh term.
9	(a)		$3t$	1	B1 for $3t$ or $t3$
	(b)		$6w$	1	B1 for $6w$ or $w6$
	(c)		$2mn$	1	B1 for $2mn$ or $2nm$ or $nm2$ or $mn2$ or $n2m$ or $m2n$

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10*		6 small packs, 6 × 7 = 42 2 medium packs, 2 × 18 = 36 1 large and 2 small packs, 25 + 2 × 7 = 39 1 medium and 3 small packs, 18 + 3 × 7 = 39 **OR** cost per envelope Medium 1800 750 = 2.4p 2.4p x 1500 = 36 Cost per envelope Small 700 250 = 2.8p 2.8 x 1500 = 42	Two medium + supportive evidence	5	M2 work out at least two possible combinations for 1500 envelopes (M1 for an attempt to work out one possible combination of envelopes) A1 for one correct costing for 1500 envelopes. A1 for 3 or 4 correct costings for 1500 envelopes including £36 C1 Dep M2 for conclusion and clear evidence from their costs **OR** M2 work out the cost of the same number of envelopes (eg 1 or 250) in at least two pack sizes. (must see at least 2 calculations) (M1 for attempt to work out the cost of a fixed number of envelopes (eg 1 or 250) in 1 pack size (must see a calculation)) A1 for one correct costing for their quantity resulting from their calculations. A1 for all 3 correct costings C1 Dep M2 for conclusion and clear evidence from their costs

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		1.5 - 2	1	B1 estimate of man as 1.5 to 2.0 m
	(b)		50 - 70	3	M1 comparison of the heights ie sight of $\frac{1}{3}$ (accept 0.3 to 0.4 or 2.5 to 3.5) indication can be on diagram and can be in measurements if in correct ratio M1 for correct conversion from metres to centimetres or × by 100 A1 for 50 to 70 OR SC B2 ft 'a'÷3x100
12	(a)	5 × 4 – 2 × 3	14	2	M1 for 5 × 4 – 2 × 3 oe A1 cao
	(b)	– 5 × – 5	25	1	B1 cao
13	(a)	5 ÷ 2 2.5 × 4 10 × 28	280	3	M2 for 4 × 28 × 5 ÷ 2 oe (M1 for 5 ÷ 2 × 4 (=10) or 4 × 28 (=112) or 4÷2×28 (=56) oe or 560 seen) A1 cao
	(b)	140 ÷ 28 5 × 2	10	2	M1 for 140 ÷ 28 × 2 or 140 ÷ 14 oe A1 cao

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)	$\frac{1}{2} \times 9 \times 12$ 54×4	216	3	M1 for 9×12 or 108 seen or better M1 (dep) for "108" $\div 2 \times 4$ oe A1 cao OR SC B1 for 432 seen
	(b)	Work with whole shape: $12 - 9$ $4 \times (3 + 15)$ Work with 4 triangles: $15 + 12 + 9 = 36$ $4 \times 36 = 144$ $144 - (9 \times 8) =$ Work with single triangles: $15 + 12 + 9 = 36$ $4 \times (36 - 18) =$	72	3	M1 $12 - 9$ (=3) M1 for $4 \times$ ("3" + 15) oe A1 cao OR M1 for $4 \times (15 + 12 + 9)$ (=144) M1 for '144'-9×8 oe A1 cao OR M1 $(15 + 12 + 9) - (2 \times 9)$ (=18) oe M1 for $4 \times$ "18" oe A1 cao

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15*		180 − 30 150 ÷ 2 180 − 75 **OR** 180 − 30 150 ÷ 2 75 + 30	105° + reasons	4	M1 for (180 – 30) ÷ 2 (=75) oe can be seen on the diagram M1 (dep) for 180 – "75" C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1 (dep on M1) for for one reason from: angles on a straight line add up to 180; angles in a triangle add up to 180; base angles of an isosceles triangle are equal) SC award B2 for 105° **OR** M1 for (180–30) ÷ 2 (=75) oe M1 (dep) for "75" + 30 C2 (dep on M1) for complete reasons as below and correct answer identified with no redundant reasons (C1(dep on M1) for one reason from: angles in a triangle add up to 180; base angles of an isosceles triangle are equal; the exterior angle of a triangle is equal to the sum of the interior opposite angles. SC award B2 for 105°
16			39.00	3	M1 for 240 ÷ 8 or 30 seen, or 240 × 1.3(0) or 312 seen, or 1.3 ÷ 8 or 0.1625 seen M1 (dep) for 240 × 1.3 ÷ 8 or "30" × 1.3(0) or "312"÷ 8 or "0.1625"×240 A1 for 39.00 or 39 NB: M marks for use of 130 in place of 1.30
17			$7x(1 - 4xy)$	2	B2 Cao (B1 for $x(7 - 28xy)$ or $7(x - 4x^2y)$ or $7x(a - bxy)$ where a and b are integers $\neq 0$)

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Mark Scheme (Results)

March 2013

GCSE Mathematics (Linear) 1MA0
Foundation (Non-Calculator) Paper 1F

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

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10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

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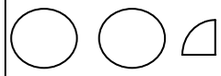
1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8	1	B1 cao
	(b)		11	1	B1 cao
	(c)		$2\frac{1}{4}$ circles	1	B1 for $2\frac{1}{4}$ circles oe
2	(a)		Arrows on correct lines	1	B1 Arrows on correct lines with no extras marked
	(b)		8	1	B1 for 8 ± 0.2
	(c)		acute	1	B1 cao
	(d)		124	1	B1 for 124 ± 2
3	(a)		98 145 358 709 835	1	B1 cao
	(b)		–8 –5 –1 4 7	1	B1 cao
	(c)	(0.2, 0.25, 0.4, 0.5, 0.75) $(\frac{4}{20}, \frac{5}{20}, \frac{8}{20}, \frac{10}{20}, \frac{15}{20})$ (20%, 25%, 40%, 50%, 75%)	0.2 $\frac{1}{4}$ 40% 0.5 $\frac{3}{4}$	2	M1 for two correct conversions into the same form A1 cao If no method seen SCB1 for correct numbers in the reverse order

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Cross at $\frac{1}{2}$	1	B1 for cross (×) within overlay
	(b)		Cross at 0	1	B1 for cross (×)within overlay
	(c)(i)		H1 H2 H3 H4 H5 H6 T1 T2 T3 T4 T5 T6		M1 for evidence of attempting combinations eg at least 5 correct A1 for all 12, no extras or repeats (Can repeat H1)
	(ii)		$\frac{3}{12}$	4	M1 ft for evidence of correct numerator or denominator In a fraction less than 1 A1 ft from (i) Note probability must written as a percentage, decimal or fraction

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*5			20p	5	M1 for a method to find the price of the apples M1 for a method to find or use the price of 3 oranges ie 3×30 OR -30-30-30 M1 for a method to combine the costs of 'their fruit' **or** for a method to total the coins M1 (dep on at least M1 from the first M2 scored) for a method to find the difference between 'their total of the coins' and the price of both 'their fruits'. Could be 'total'-'total' or coins –'total' or coins – individual prices. It must be physically possible. C1 (dep on M1) for £0.20 or 20p and valid working OR M1 for a method to find the price of the apples M1 for a method to find or use the price of 3 oranges ie 3×30 OR -30-30-30 M1 for a method to select coins that equate to 'their total' for one fruit M1 (dep on at least M1 from the first M2 scored) for a method to select coins that equate to 'their total' for both fruits C1 (dep on M1) for £0.20 or 20p and valid working SC B1 £0.20 or 20p as the answer , no working shown

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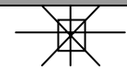
1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)			2	M1 for any 1 correct line of symmetry allow extras A1 for all 4 lines and no extras
	(b)		2	1	B1 cao
	(c)		70	2	M1 for 7×10 A1 for 70
7	(a)		4	1	B1 cao
	(b)		13	1	B1 cao
	(c)		11 and 14	1	B1 cao
	(d)		4	2	M1 for $14-10$ or $10-14$ or -4 or 10 to 14 or 14 to 10 A1 cao
	(e)	$4 + 3 + 2 + 5 + 3$	17	2	M1 for adding at least 4 correct heights out of 4 or 5 heights A1 cao

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1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8	(a)		20 45	1	B1
	(b)	Example of figures for comparison 7min 30 sec with 7 min 28 secs 3 mins 43 secs with 3mins 45 secs 224 secs with 225 secs 3mins 44 secs with 3 mins 45 secs	No	3	M1 for doubling Seeta's time or halving Ninal's time or finding the difference between the two times Eg 3 min 45 sec × 2 or (7m 28s) ÷ 2 or 7m 28s-3min 45 secs M1 for a complete method to convert their time(s) to common units with the units stated C1 for No and **correct** figures compared (could be in secs or mins and secs)
9	(a)		$4a$	1	B1 for $4a$ oe as a single term
	(b)		$3cd$	1	B1 for $3cd$ oe as a single term
	(c)		$7ef$	1	B1 for $7ef$ oe as a single term
	(d)		3	1	B1 cao
	(e)		2	2	M1 for intention to subtract 7 from each side or divide each term by 5 or embedded method A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		parallelogram	1	B1 Allow trapezium
	(b)		isosceles	1	B1
	(c)		6	2	M1 for a complete method to find the area A1 cao Note: For dots to be a valid method candidates must give an answer in the range 5 to 7
11	(a)(i)		(4, 3)	2	B1 cao
	(ii)		(–4, –1)		B1 cao
	(b)		(0, 1)	2	M1 for (0, 1) marked on the graph or (0, y) or (x, 1) A1 cao
12	(a)		reflection	2	B2 for correct reflection in correct position (B1 for at least 2 vertices in the correct position)
	(b)		enlargement	2	B2 for correct enlargement scale factor 3 (B1 for at least 2 lines correctly enlarged or any enlargement using an incorrect scale factor, sf $\neq 1$)
	(c)		105	2	M1 for 360 – (90 + 128 + 37) oe or x + 90 + 128 + 37 = 360 A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		32	2	M1 for 4 × 5 + 12 oe A1 cao
	(b)		7	3	M1 for 40 – 12 or 28 seen M1 (dep) for '28' ÷ 4 A1 cao OR M1 for 12 + 4 + 4 + ... M1 for 12 + 7 × 4 oe A1 cao OR M1 for 12 + 4x = 40 oe M1 for 4x = 40 – 12 oe A1 cao NOTE: A correct embedded answer scores M2 A0 OR M1 ft for '32' + 4... or 40–'32' M1 ft for 5 + 1 ... oe A1 ft Note: Do not follow through from part a an answer of 40

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		8	1	B1 for 8 (.00)
	(b)		550	4	M1 for 600 – 200 (= 400) M1 for correct method to convert '$400' to £ M1 (dep on the previous M1) for 800 – '$400' in £s A1 for value in the range 540 –560 OR M1 for correct method to convert $600 **and** $200 to pounds M1 for '375'–'125' M1 (dep on the previous M1) 800 –'250' A1 for a value in the range 540-560 OR M1 for correct method to convert £800 to dollars M1 for '1280' + 200 – 600 M1 (dep on the previous M1) for attempt to convert '$880' back to £ A1 for value in the range 540 – 560
15			3 primes that total 20	3	M1 for identifying at least 2 different prime numbers from the list, could indicate on the list (not more than one incorrect) M1 for any 3 numbers from the list that total 20 A1 for 2, 7, 11 or 2, 5, 13 or both (in any order)

<table>
<tr><th colspan="5">1MA0_1F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>16</td><td></td><td></td><td>09 36</td><td>3</td><td>M1 for listing 9, 18, 27, 36, 45, ... (at least 3 correct multiples with at most one incorrect)
M1 for listing 12, 24, 36, 48, ... (at least 3 correct multiples with at most one incorrect)
A1 for 09 36 or 9 36(am)

OR
M1 for listing 9.09 9.18 9.27 9.36 ... (at least 3 correct times with at most one incorrect)
M1 for listing 9.12 9.24 9.36 ... (at least 3 correct times with at most one incorrect)
A1 for 09 36 or 9 36(am)

OR
M1 for 9 = 3 × 3 or 12 = 2 × 2 × 3 (could be in a factor tree)
M1 for 9 = 3 × 3 and 12 = 2 × 2 × 3 (could be in a factor tree)
A1 for 09 36 or 9 36(am)

SC B2 9 36pm or (after) 36 (minutes) on the answer line</td></tr>
<tr><td>17</td><td></td><td><table><tr><th>Colour</th><th>Tally</th><th>Frequency</th></tr><tr><td>Red</td><td></td><td></td></tr><tr><td>Blue</td><td></td><td></td></tr><tr><td>Green</td><td></td><td></td></tr><tr><td>Silver</td><td></td><td></td></tr></table></td><td>Data collection table</td><td>3</td><td>B3 for correct table with all three aspects without repeats

Aspect 1: colour (of car) or for at least 3 of red, blue, green, other etc.
Aspect 2: ‘tally’ or tally marks or ‘frequency’ or ‘number of cars’
Aspect 3: ‘frequency’ or ‘total(s)’ or ‘number of cars’

(B2 for two aspects)
(B1 for one aspect)</td></tr>
</table>

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*18			35° with reasons	4	M1 for correct method to find one angle eg 70 or 110 (angles could be on the diagram) M1 for a complete correct method to work out x A1 (dep on M1) for 35° C1 for complete geometric reasons for their chosen method without extras eg exterior angle = sum of interior opposite angles **and** base angles of an isosceles triangle are equal OR angles in a triangle add up to 180 **and** angles on a straight line add up to 180 **and** base angles of an isosceles triangle are equal OR M1 $x + x + 20 + 90 = 180$ M1 for a complete correct method to work out x A1 (dep on M1) for 35° C1 for complete geometric reasons for their chosen method without extras eg angles in a triangle add up to 180 **and** base angles of an isosceles triangle are equal

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1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19		183 × 47 1281 7320 8601 (grid method) 1 8 3 × 4: 3 2, 1 2 8: 5 6, 2 1 6 0 1 100 80 3 4000 3200 120 40 700 560 21 7 4000 + 3200 +120 + 700 + 560 + 21 = 8601	86.01	3	M1 for a complete method to multiply 183 by 47 (condone one multiplication error) A1 for digits 8601 given as the answer B1 (dep on M1) for correctly writing their answer to 2 decimal places

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1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)		2 reasons	2	B2 for 2 different reasons from given examples (B1 for 1 reason from given examples) eg No time frame eg No box for less than £10 accept no box for zero or none or £0 eg Overlapping intervals or boxes or £30 and/ or £50 in two boxes
	(b)		1 reason	1	C1 for reason why the sample is biased eg • they are **only** in the CD store • the people in the store are more likely to buy CDs • she needs to ask people outside the CD store oe
21			required region	4	M1 arc radius 5 cm centre *C* M1 bisector of angle *BAD* M1 line 3 cm from *DC* A1 for correct region identified (see overlay)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			730	5	M1 for $\frac{5}{100}\times 200$ (= 10) oe M1 for $\frac{10}{100}\times 350$ (= 35) oe M1 for 6 × '10' **or** 4 × '35' M1 (dep on M1 earned for a correct method for a percentage calculation) for '60' + '140'+ 530 A1 cao **Or** M1 for 6 × 200(= 1200) **or** 4 × 350(= 1400) M1 for $\frac{5}{100}\times "1200"(=60)$ oe M1 for $\frac{10}{100}\times "1400"(=140)$ oe M1(dep on M1 earned for a correct method for a percentage calculation) for '60' + '140'+ 530 A1 cao

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1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
23			240	4	M1 for 16 × 2 (= 32 girls) M1 for 16 + '16 × 2' (= 48) M1 (dep on the previous M1) for (16 + '32') × 5 **or** (16 + '32') × (4 + 1) A1 cao OR M1 for 1 : 2 = 3 parts M1 for 5 schools × 3 parts (= 15 parts) M1 (dep on the previous M1) for '15' parts × 16 A1 cao **SC B2** for 176 given on the answer line

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Mark Scheme (Results)

March 2013

GCSE Mathematics (2MB01) Foundation
5MB1F (Calculator) Paper 01

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NOTES ON MARKING PRINCIPLES

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6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
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If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

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Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

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It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
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Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
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11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

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Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

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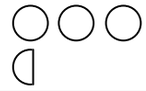
5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		6, 7, 4, 3	2	M1 for at least 2 correct frequencies or 2 correct tallies A1 for all frequencies correct (with or without the tally column completed or incorrectly completed)
	(b)		Bus	1	B1 ft from frequency column or from tally column if different to frequency
2	(a)		3	2	M1 for ordering at least 8 of the numbers or indicating the middle value of the unordered numbers A1 cao
	(b)		8	2	M1 for 9 – 1 (accept 1 – 9 or 9 to 1 or 1 to 9) A1 cao
3	(a)		grams or kilograms	1	B1 for grams or kilograms
	(b)		litres	1	B1 for litres, accept any cubic unit
	(c)		metres	1	B1 for metres, accept millimetres

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		4	1	B1 cao
	(b)		5	1	B1 cao
	(c)			2	B1 cao for Match 6 B1 cao for Match 7
5	(a)		1.45	1	B1 cao
	(b)	1.15 + 2.49	3.64	2	M1 for 1.15 + 2.49 A1 cao
	(c)		B and D	2	M1 for adding two of the prices or 3.94 – 'any price' A1 for B and D in any order SC B1 for answer of 1.45 and 2.49 if M0 scored
6			$\frac{1}{8}$	1	B1 for $\frac{1}{8}$ oe
7	(a)		$\frac{1}{2}$	1	B1 for mark at $\frac{1}{2}$ within overlay
	(b)		$\frac{1}{6}$	1	B1 for mark at $\frac{1}{6}$ within overlay
	(c)		1	1	B1 for mark at 1 within overlay

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Question		**Working**	**Answer**	**Mark**	**Notes**
*8			Comparison leading to £4.32	3	M1 for a method to work out the cost of 36 pencils M1 for a process that leads to a comparison C1 dep on a previous M1 for a clear statement/indication that Oliver spends £4.32 or that it is cheaper to buy the pencils singly with £4.32 seen NB Working can be in pounds or pence
9	(a)		2.5	1	B1 cao
	(b)		2008	1	B1 cao
	(c)		Correct statement	1	B1 for a correct statement, e.g. profit increased, profit went up by 2 million pounds
10			7	3	M1 for 4×6 (= 24) or 4 + 6 + 7 (= 17) M1 (dep) for "24" – "17" A1 cao
11			C,H C,A C,S P,H P,A P,S F,H F,A F,S	2	B2 for all 9 correct combinations with no incorrect combinations or duplicates (B1 for at least 4 correct combinations, i.e. (C, H) and 3 more)

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Question		**Working**	**Answer**	**Mark**	**Notes**
*12			Diagram or chart	4	B1 for a key, or suitable labels, to identify minimum and maximum temperatures. B1 for diagram(s) or chart(s) set up for comparison, showing data for at least 4 months, e.g. dual bar chart, line graph, etc B1 for correct heights for minimum temperatures or maximum temperatures, dependent on a linear scale C1 for a fully correct diagram or chart to include 5 months labelled and temperature axis correctly scaled and labelled
13			490	4	M1 for $\frac{1}{10} \times 700$ (= 70) M1 for $\frac{1}{5} \times 700$ (= 140) M1 (dep on M1) for 700 – ("70" + "140") A1 cao OR M1 for $\frac{1}{10} + \frac{1}{5}$ or $\frac{3}{10}$ oe M1 for $1 - \frac{3}{10}$ or $\frac{7}{10}$ or $\frac{3}{10} \times 700$ or 210 M1 (dep on M1) for "$\frac{7}{10}$"$\times 700$ or 700 – "210" A1 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
14		$2x$ $x+3$ $x+2x+x+3$	$x+2x+x+3$	2	M1 $2x$ or $x+3$ A1 $x+2x+x+3$ oe
*15			Yes	6	B1 283 or 285 M1 for working out the total cost of 2 adults one way or 1 adult both ways M1 for a correct method for calculating a child fare as 75% of an adult fare for one or both journeys M1 for working out the total cost for 2 adults and 1 child A1 for 1562 or 38 C1 dep on a previous M1 for correct conclusion ft for their total cost (identified) provided it is written with a £ sign.

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16		<table><tr><td></td><td>TT</td><td>D</td><td>S</td><td></td></tr><tr><td>B</td><td><u>7</u></td><td>12</td><td>4</td><td><u>23</u></td></tr><tr><td>G</td><td>4</td><td><u>8</u></td><td><u>5</u></td><td>17</td></tr><tr><td></td><td>11</td><td>20</td><td><u>9</u></td><td><u>40</u></td></tr></table>	11	4	M1 for a 2-way table or diagram showing at least 3 pieces of information correctly placed M1 17 girls or 4 boys with slalom skis M1 12 boys with downhill skis or 4 girls with twin tips A1 cao OR M1 for 40 – 23 (= 17) M1 for one part subtraction ie "17" – 8 or "17" – 5 M1 for ("17" – 8) – 5 or ("17" – 5) – 8 A1 cao
17	(a)		Two different reasons	2	B2 for TWO aspects from No time frame given Non-exhaustive responses Responses not specific (B1 ONE correct aspect)
	(b)		Question	2	B1 for a question with a time frame for frequency of use B1 for at least 3 correctly labelled response boxes (non-overlapping, need not be exhaustive) OR for a set of response boxes that are exhaustive (could be overlapping) [Do not allow inequalities in response boxes]
	(c)		Two different reasons	2	B2 for TWO different aspects (B1 for ONE aspect) Too small a sample, time of day, specific day, place, same type of people, not random

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		65	1	B1 cao
	(b)		127	1	B1 cao
	(c)		30	1	B1 cao
2			360	3	M1 for 480 ÷ 4 (=120) oe M1 for 480 – '120' A1 cao OR M1 for 480 ÷ 4 (=120) oe M1 for '120' × 3 (=360) A1 cao
3	(a)(i) (a)(ii)		Square based pyramid Cylinder	2	B1 for square based pyramid (accept pyramid) B1 for cylinder (accept circular prism)
	(b)		8	1	B1 cao
4			700p or £7	3	M1 for 10 × 50 (=500) or 10 ×20 (=200) M1(dep) for '500' + '200' A1 for 700p or £7 or £7.00 OR M1 for 50 + 20 (=70) M1(dep) for 10 × '70' A1 for 700p or £7 or £7.00 OR M1 for 50 + 20 + 50 + 20 (=140) M1(dep) for 5 × '140' A1 for 700p or £7 or £7.00 OR M1 for 3 × 50 + 2 × 20 (=190) or 2 × 50 + 3 × 20 (=160) M1(dep) for 2 × ('190' + '160') A1 for 700p or £7 or £7.00

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			22	2	M1 for 140 – 118 (=22) or 10 + 10 + 2 (=22) or 11 × 2 (=22) A1 cao (SC B1 for 118 seen)
6	(a)		(2,3)	1	B1 cao
	(b)		(−3, 3) plotted	1	B1 cao
7	(a)		$\frac{41}{100}$	1	B1 cao
	(b)		16	2	M1 for 20 ÷ 100×80 oe or 80 ÷ 5 or 8 + 8 (=16) A1 cao
8	(a)		46 − 49	1	B1 for 46 − 49
	(b)		43 − 46	1	B1 for 43 − 46
	*(c)		Comparative statement	3	M1 for 54 – 58 or 90×5÷8 (=56.25) M1 for '56' × 3 (=168) C1 (dep on M1) for No and eg only 162 − 174 miles OR M1 for 3×90 (=270) M1 for changing '270' to miles (=162 – 174) C1 (dep on M1) for No and eg only 162 – 174 miles OR M1 for 180÷ 3 (=60) M1 for changing '60' to kph (=94 – 98) or 54 – 58 C1 (dep on M1) for No and eg 94 − 98 kph which is above speed limit or No and eg can't go faster than 54 – 58 mph OR M1 for changing 180 miles to km (=284 – 292) M1 for '288'÷90 (=3.2 hours) or 3 × 90 (=270) C1 (dep on M1) for No and eg more than 3 hours

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5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		18	1	B1 cao
	(b)		14	1	B1 cao
10	(a)		A, E	1	B1 cao
	(b)		6cm	2	B1 for 6 or 60 B1 (indep) for cm (or mm if consistent)
11			Two correct lines	2	B2 for two correct lines and no others (B1 for two correct lines and diagonal(s) or one correct line and no other lines)
12	(a)		$5y$	1	B1 cao
	(b)		$10k$	1	B1 cao
13			5	3	M1 for correct method to find total number of students M1 for correct method for dealing with adult helpers A1 cao (SC B2 for 5 (coaches) if no working seen)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			85	4	M1 for (angle YXZ =) 360 – 300 (=60) M1 for (angle XYZ =) 180 – 145 (=35) A1 cao C1 (dep on M1) for full reasons and unambiguous notation for angles (may be shown in diagram) (angles around a point sum to 360 and angles on a straight line sum to 180 and angles in a triangle sum to 180)
*15			£10 identified	5	M1 for correct attempt to use two full glasses M1 for correct attempt to work out total volume of drink for all people (one or two full glasses) M1 for correct attempt to use ratio M1 for changing to consistent units C1 (dep on M4) for £10 clearly identified (SC B1 for correct answer of £10 if no working shown)
16	(a)		square , rhombus	1	B1 cao
	(b)		trapezium	1	B1 cao
	(c)		rhombus	1	B1 cao
17			150	3	M1 for 300 ÷ 20 (=15) or 200 ÷ 20 (=10) or 3 ÷ 0.2 (=15) or 2 ÷ 0.2 (=10) M1(dep) for '10' × '15' A1 cao OR M1 for 300 × 200 (=60 000) or 20 × 20 (=400) or 3 × 2 (=6) or 0.2 × 0.2 (=0.04) M1 (dep) for '60 000' ÷ '400' or '6' ÷ '0.04' A1 cao

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Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		x: −2, −1, 0, 1, 2, 3, 4 y: −2, **0**, **2**, **4**, 6, **8**, **10**	2	B2 cao (B1 for any 2 correct values)
	(b)		Correct graph	2	B2 for a correct line through at least two correct points (B1 for correct points plotted ft their table if at least B1 earned in part a)
19		$\frac{3}{8}+\frac{1}{2}=\frac{3}{8}+\frac{1\times4}{2\times4}$ OR $\frac{3}{8}+\frac{1}{2}=\frac{3\times2}{8\times2}+\frac{1\times8}{2\times8}$	$\frac{7}{8}$	2	M1 for converting to two fractions with the same denominator and at least one numerator with the correct expression or number A1 for $\frac{7}{8}$ oe
20	(a)		$3(t + 4)$	1	B1 for $3(t + 4)$ or $3 \times (t + 4)$ oe
	(b)	$14x + 7 + 6x + 18$	$20x + 25$	2	M1 for $7 \times 2x + 7 \times 1$ or $14x + 7$ or $6 \times x + 6 \times 3$ or $6x + 18$ A1 for $20x + 25$ (accept $5(4x + 5)$)

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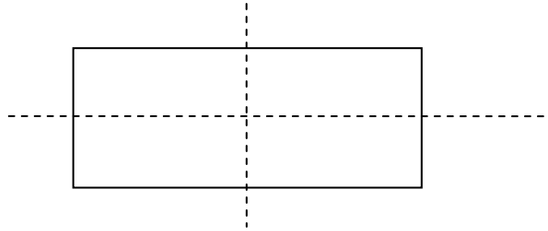

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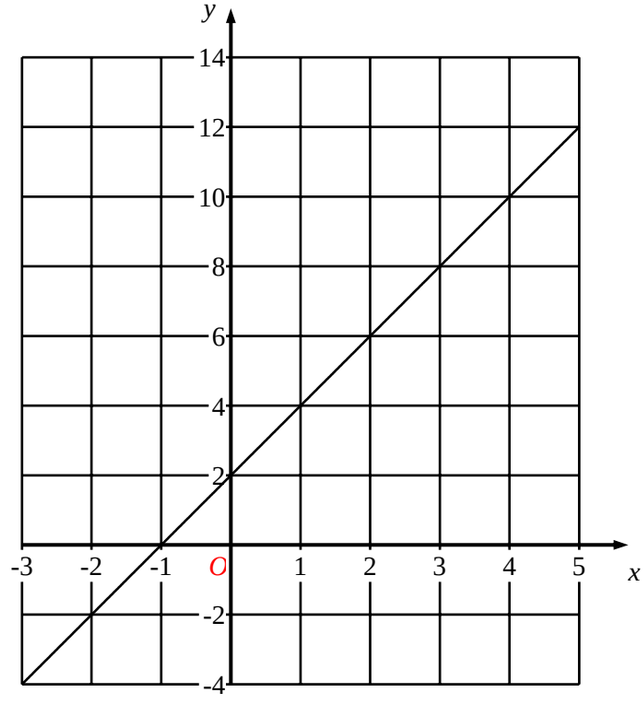

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If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

PMT

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		$\frac{1}{10}$	1	B1 for $\frac{1}{10}$ or equivalent fraction
	(b)		0.25	1	B1 for 0.25
2	(a)		35.91	1	B1 for 35.91
	(b)		1.2	1	B1 for 1.2
	(c)		6.859	1	B1 for 6.859
	(d)		1.6	1	B1 for 1.6
3	(a)		3	1	B1 for 3
	(b)		5.8	1	B1 for 5.8 oe
	(c)		85	1	B1 for 85
4	(a)		hexagon	1	B1 for hexagon
	(b)		5	1	B1 cao

PMT

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			No with (£)120 & (£)130 or (£)10 difference	4	M1 for correct method to work out morning sales of the daffodils or of the tulips eg 75 × 0.8 (= 60) eg 50 × 0.9 (= 45) eg 105 M1 for correct method to work out total afternoon sales eg (120 – 75) × 0.2 + (80 – 50) × 0.2 (=15) eg 9 + 6 (=15) M1 (dep on M1) correct method to work out total sales eg total morning sales + total afternoon sales A1 for no (profit) **and** (£)120 & (£)130 or (£)10 difference OR M1 for correct method to work out the morning sales or the afternoon sales of either daffodils or tulips eg 75×0.8 (= 60) eg (120 – 75) × 0.2 (= 9) eg 50 × 0.9 (= 45) eg (80 – 50) × 0.2 (= 6) M1 for correct method to work out profit/loss on tulips or on daffodils eg 60 + 9 (= 69) eg 45 + 6 (= 51) M1 for correct method to work out profit/loss on tulips **and** on daffodils A1 for no (profit) **and** (£)120 & (£)130 or (£)10 difference NOTE: working can be in pence or £

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		reflection	1	B1 for correct reflection
	(b)		2	1	B1 for 2
	(c)		parallel lines	1	B1 for two parallel lines drawn
	(d)		A and F or B and D	1	B1 for A and F or B and D
*7			no and reason	3	M1 adding 6.25 km, 4 km 750 m and 8½ km M1 addition with consistent and correct use of units C1 for no and a correct comparison eg no and 19.5 (km) oe eg no and 0.5 (km) oe
8			B and F	2	B2 for B and F and no extras (B1 for B or F)

PMT

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9			3	3	M1 for 90 × 0.2 (= 18) M1(dep) for (90 × 0.2) ÷ 6 or '18' ÷ 6 A1 cao OR M1 for 6 ÷ 0.2 (= 30) M1(dep) for 90 ÷ (6 ÷ 0.2) or 90 ÷ '30' A1 cao OR M1 for 6 ÷ 90 (= 0.0666… seen) M1(dep) for 0.2 ÷ (6 ÷ 90) A1 cao OR M1 for 6 × (1÷ 0.2) or 6 × 5 or (= 30) M1(dep) for '30'+'30'+'30' A1 cao
10		140÷1000 = 0.14 (litres) OR 1.2×1000 = 1200 (ml)	no and reason	2	M1 for 140 ÷ 1000 C1 for no (oe) and 0.14 seen OR M1 for 1.2 × 1000 C1 for no (oe) and 1200 seen OR M1 1*l* = 1000m*l* C1 for no with correct explanation

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		2436	1	B1 for 2436
	(b)		£267.96	3	M1 for '2436' × 11 or '2436' × 0.11 A1 for digits 26796 or f.t. from (a) A1 for £267.96 or 26 796p
12	(a)		9	1	B1 cao
	(b)		12	1	B1 cao
	(c)		4	1	B1 cao
	(d)		22	2	M1 for 2 × 5 (= 10) and 3 × 4 (= 12) A1 cao
13			68	4	M1 for 112 ÷ 8 (= 14) M1 for combining litres to get a target of '14' eg 5+5+3+1 eg 3+3+3+3+... M1 for correct method to find at least two different costs for tins of paint totalling 14 or 15 OR for correct method to find the cost of 14 litres of paint using at least two different sizes of tin A1 for (£) 68 OR M1 for 5 × 8 (= 40) or 3 × 8 (= 24) M1 for combining the coverage areas to get a target of 112 eg 40+40+24+8 eg 24+24+24+24+ ... M1 for correct method to find at least two different costs for tins of paint totalling 14 or 15 OR for correct method to find the cost of 14 litres of paint using at least two different sizes of tin A1 for (£) 68

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14			accurate drawing	3	B3 for complete triangle with all three aspects: 8 cm line (± 2mm) 30° angle (± 2°) 50° angle (± 2°) (B2 for all 3 aspects but incomplete triangle, or complete triangle with 2 aspects only) (B1 for one aspect)
*15			Scheme B gives most	4	M1 for correct method to find 3% of 2500 M1 for correct method to compare Scheme A and Scheme B for the same length of time A1 for correct answers for both schemes C1 f.t. (dep on a comparison for the same length of time) for Scheme B gives the most OR M1 for correct method to convert £5.35 into a % of 2500 M1 for for correct method to compare Scheme A and Scheme B for the same length of time A1 for 2.5(68)(%) C1 f.t. (dep on a comparison for the same length of time) for Scheme B gives the most

PMT

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			correct tessellation	2	B2 for 6 or more additional shapes tessellating (B1 for 4 or 5 shapes tessellating correctly)
17	(i)		30	1	B1 cao
	(ii)		40	1	B1 cao
18	(a)		$4x + 1 = 19$	2	M1 for $x + x + 1 + 2x$ (= 19) A1 for $4x + 1 = 19$ following working
	(b)		4.5	2	M1 for subtracting 1 from both sides or for dividing each term by 4 A1 for 4.5 or 4½
	(c)		14.5	2	M1 for ('4.5' + 1) + 2 × '4.5' or 19 – '4.5' or 3 × '4.5' + 1 A1 for 14.5 or 14½ or ft '4.5'
19			correct shaded region	2	B1 for arc of circle, centre oak tree, radius 4cm (± 2mm) B1 for shaded region where the tree can be planted, bounded by sides of garden and arc of circle centre oak tree

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20			144	3	M1 for exterior angle = 360 ÷ 5 (= 72) M1 (dep) for '72' + '72' or 2 × '72' A1 cao **OR** M1 for interior angle = $\frac{3\times180}{5}$ (= 108) M1 (dep) for 360 – 2 × '108' A1 cao **OR** M1 for interior angle = $\frac{3\times180}{5}$ (= 108) or exterior angle = 360 ÷ 5 (= 72) M1 (dep) for $180-\left(\frac{3\times180}{5}-\frac{360}{5}\right)$ or 180 – ('108' – '72') A1 cao

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*21		Cost of wages, rent and other expenses last year 92 000+10 800+7000 =109 800 Cost of wages, rent and other expenses this year 1.075× 92 000 + $\frac{7}{9}$ × 10 800 + 7000÷2 = 98 900+8400+3500 = 110 800 Costs are more this year, so she cannot increase the amount she spends on goods	no, with working and reason	4	M1 for an attempt to calculate using 7.5% and 92000 (eg 7.5% of 92000 or increase of 7.5%) eg 92000+6900 or 98900 M1 for an attempt to find a fractional amount of 10800 eg $\frac{7}{9}\times 10800$ or 8400 or $\frac{2}{9}\times 10800$ or 2400 M1 for complete method of increasing 92000 by 7.5%, finding $\frac{7}{9}$ of 10800 and halving 7000 with at least all of these three added together. C1 for statement eg "no" with both 110800 & 109800 seen OR "no" with "1000 more" OR "no" and compares 181800 with 182800 oe

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		−3, −2, −1, 0, 1	2	B2 for all 5 values and no others (B1 for 4 correct values and no others or −4, −3, −2, −1, 0, 1 or −3, −2, −1, 0, 1, 2)
	(b)		$-2 \leq x < 4$	2	B2 for $-2 \leq x < 4$ (B1 for $-2 \leq x$ or $x < 4$ or $-2 < x \leq 4$) [Note: accept the use of any letter other than x throughout and ignore any attempt to list integer values]
23			6.87	4	M1 for $\pi \times 4 \times 4$ or $\pi \times 4^2$ or $\pi \times 16$ or $\pi r^2 = 50.26...$ M1 for 'πr^2' ÷ 2 M1 for $8 \times 4 -$ '$\pi r^2 \div 2$' A1 for 6.86 – 6.88
24	(a)		5, −4, −3	2	B2 for 5, −4 and −3 (B1 for 5 or −4 or −3)
	(b)		correct curve	2	B2 for fully correct curve (B1 ft for at least 5 points plotted correctly)

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
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If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
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It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

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Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
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11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		7025	1	B1 cao
	(b)		Nine thousand four hundred (and) fifty	1	B1 for Nine thousand four hundred (and) fifty Accept 'nine thousand' written as '9 thousand', 'four hundred' written as '4 hundred' and 'fifty' written as '5 tens' or any mixture of these. Do not penalise poor spelling.
	(c)		29	1	B1 for 29 or twenty nine or 29.0
	(d)		7000	1	B1 for 7000 or 7 thousand or seven thousand
2	(a)		8, 10	1	B1 cao
	(b)		24	1	B1 cao
	(c)		reason	1	B1 for a valid reason that demonstrates the understanding that the number of triangles is twice the pattern number
3	(a)		240	1	B1 for 240
	(b)		arrow at 125°C	1	B1 for arrow (or line) pointing within a range of 122.5 to 127.5 (ie nearer to 125 than either 120 or 130) Use professional judgement.
	(c)		6.05 (pm)	1	B1 for 6.05 (pm) oe

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Thursday	1	B1 cao
	(b)		7	1	B1 cao
	*(c)		Nick	3	M1 for the intention to add Dave's 4 times or Nick's 4 times A1 for 58 and 64 C1 (dep on M1 and two totals) for clearly stating Nick as their answer or ft from their two totals OR M1 for the intention to find the difference between the times on each of the 4 days A1 for 6 or −6 C1 (dep on M1 and a net difference) for clearly stating Nick as their answer or ft from their difference [SC: B1 for "Nick spent 6 minutes more than Dave on his phone" if M0 scored.]
5			9 squares shaded	1	B1 for any 9 squares shaded oe
6			66	2	M1 for a correct method to find the number of people on the bus if the 15 get off first. (= 57) A1 cao OR M1 for a correct method to find the number of people on the bus if the 9 get on first. (= 81) A1 cao OR M1 for a correct method to find the net change in the number of people on the bus (= 6 or −6) A1 cao

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7		20 − 6.65 13.35 ÷ 3	4.45	3	M1 for a correct method to find the amount shared by B, R and T M1 (dep) for a correct method of dividing this amount by 3 A1 cao [SC: B1 for an answer of 17.78 (20 – 6.65 ÷ 3), if M0 scored, with or without working]
8	(a)		3, 6, 9, 3	3	B3 for a table showing all 4 correct frequencies in the correct place. (condone the absence of or any incorrect tallies) [(B2 for 2 or 3 correct tallies or 2 or 3 correct frequencies even in the wrong columns) (B1 for 1 correct tally or 1 correct frequency even in the wrong column)] [SC: B2 for 3/21 and 6/21 and 9/21 and 3/21 shown in the frequency column]
	(b)		3	1	B1 for 3 or ft table in (a)
9			Circle radius 5 cm drawn	1	B1 for a circle of radius 5 cm drawn (condone an alternative centre)

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(i)		5,15 or 5,125 or 15,125 or 30,50 or 30,60 or 30,90 or 30,100 or 50,60 or 50,90 or 50,100 or 60,90 or 60,100 or 90,100	4	B1 for 2 numbers, from the list, whose sum is an even number.
	(ii)		60 or 100		B1 for 60 or 100 or both
	(iii)		5 or 15		B1 for 5 or 15 or both
	(iv)		125		B1 cao
11		9.39 × 10 24.30 × 3 + 9.39 93.90 − 82.29	£11.61	5	M1 for a correct method to find the most expensive way to buy the 10 cartridges (= 93.90) M1 for a correct method to find the least expensive way to buy the 10 cartridges (= 82.29) M1 (dep on M1 scored) for a correct method to find the difference between their least and their most expensive way, provided that both totals are for the cost of exactly 10 cartridges A1 for 11.61 B1 (indep) for correct units

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)(i)		B and D	2	B1 cao
	(ii)		G and E		B1 for G and E (allow B and D if not in (i))
	(b)	3 + 3 + 3 + 2 + 2 +1 + 1 + 1	16	1	B1 cao
13	(a)		6am	1	B1 for 6am (accept −4) Do not accept 6 alone.
	(b)		3	1	B1 for 3 (allow − 3)
	(c)	−1−5	−6	2	M1 for −1 − 5 or intention to subtract 5 from -1 (may be shown on a diagram) A1 cao

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14			Yes + supporting work	4	M1 for adding the weights of all the ingredients (= 96) M1 (dep) for '96' × 8 A1 cao for 768 C1 (dep on M2), ft for a correct conclusion (yes or no) from a comparison of 750 (pots) with their '768' pots; units must be quoted [SC: B1 for 768 seen without working if M0M0 scored] **OR** M1 for adding the weights of all the ingredients (= 96) M1 for 750 ÷ 8 A1 cao for 93.75 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their weight of ingredients in one tank full '93.75' kg with '96' kg; units must be quoted [SC: B1 for 93.75 seen without working if M0M0 scored]] **OR** M1 for adding the weights of all the ingredients (= 96) M1 (dep) for 750 ÷ '96' A1 cao for 7.8125 C1(dep on M2), ft for a correct conclusion (yes or no) from a comparison of their number of pots, '7.8125' pots with 8 (pots); units must be quoted [SC: B1 for 7.8125 seen without working if M0M0 scored]]
15			85 29 54 **168** **93** 31 47 171 13 5 **9** **27** 191 **65** **110** 366	3	B3 for fully correct table (B2 for 3 or 4 or 5 correct entries, B1 for 1 or 2 correct entries)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)(i)		5	3	B1 cao
	(ii)		8		B1 cao
	(iii)		5		B1 cao
	(b)		correct sketch	2	B2 for fully correct sketch [B1 for a square (or rectangle) drawn with 2 or 3 connecting triangles on the outside of the square]
17	(a)(i)		12.978(61279…)	2	B1 for 12.978(…..)
	(ii)		13		B1 for 13 or ft from a(i) [Note: An answer of 13.0 gets B0]
	(b)		100000	1	B1 cao
18	(a)	$2 \times 8 = 16$ $16 + 7$	23	2	M1 for correct substitution of 8 into the expression $2f$ A1 cao
	(b)	$3 \times -2 + 5 \times 4$	14	2	M1 for correct substitution into the formula A1 cao

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		$\frac{40}{360}$	1	B1 for $\frac{40}{360}$ oe (ignore any incorrect simplification) Accept 0.11…. if no fraction shown
	(b)		4	3	M1 for a correct method to find the angle of the 'weeding' sector If measured, accept an angle between 138 and 142 inc. M1 (dep) for a correct method to find the number of degrees per hour (= 20) or the number of hours ($\frac{1}{20}$ (3 mins) per degree A1 cao for 4
20	(a)		2.5	2	M1 for 10 (cm) or "10" ÷ 4 A1 for 2.45 – 2.55
	(b)		A marked on diagram	2	M1 for a point marked (or line drawn) on a bearing of 038° from either point B or point W, OR for a point marked (or arc drawn) 6 cm from B A1 for the position of Avebury marked (accept without label if not ambiguous)

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		30	1	B1 for 30 minutes oe
	(b)		20	1	B1 cao
	(c)		graph completed	2	B1 for horizontal line from (5, 20) to (5.30, 20) B1 for a single straight line with the correct gradient from '(5.30, 20)' to the time axis
22	(a)		$x = 3$ drawn	1	B1 for $x = 3$ drawn [Note: each line drawn must be a single line segment satisfying $x = 3$]
	(b)		$y = x$ drawn	1	B1 for $y = x$ drawn [Note: each line drawn must be a single line segment satisfying $y = x$]
	(c)	Gradient = $\frac{3-0}{0--2}$	1.5	2	M1 for a method to find the gradient of the given line A1 for 1.5 oe
23	(a)		n^8	1	B1 for n^8 (accept n^{5+3})
	(b)		n^5	1	B1 for n^5 (accept n^{7-2})

PMT

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)	15 ÷ 6	2.5	2	M1 for 15 ÷ 6 oe A1 for 2.5 or $2\frac{1}{2}$
	*(b)		Yes + evidence	2	M1 for a correct method to change 15 miles into kilometres C1(dep on M1) for 24 km **and** statement with correct conclusion [SC: B1 for "Yes" oe and 24 km shown if M0 scored] **OR** M1 for a correct method to change 20 kilometres into miles C1(dep on M1) for 12.5 miles **and** statement with correct conclusion [SC: B1 for "Yes" oe and 12.5 miles shown if M0 scored]

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25			414.96	5	M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the cost of oil required before the discount M1 for a correct method of finding 5% of their calculated cost M1 (dep on previous M1) for a correct method to find the discounted cost A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method of finding 5% of the cost of 1 litre of oil M1 (dep on previous M1) for a correct method to find the discounted cost of 1 litre of oil M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method to find the discounted cost of the oil required A1 for correct answer of 414.96 or 41496p **OR** M1 for a correct method to work out the amount of oil required to fill the tank M1 for a correct method of finding 5% of their calculated amount of oil M1 (dep on previous M1) for a correct method to find the reduced amount of oil M1 for a correct method to find the cost of the reduced amount of oil A1 for correct answer of 414.96 or 41496p

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	$1 - 0.2 - 0.1$ $0.7 \div 2$	0.35	3	M1 for correctly using total probability 1 or 100% if percentages used M1 (dep) for complete correct method to complete the solution A1 for 0.35 or 35% or $\frac{35}{100}$ oe
	(b)	0.1×200	20	2	M1 for 0.1×200 A1 cao [SC: B1 for an answer of $\frac{20}{200}$ if M0 scored]
27	(a)		$3x + 12$	1	B1 for $3x + 12$ or $12 + 3x$
	(b)		$x^3 + 2x$	2	M1 for the intention to multiply both terms in the bracket by x A1 for $x^3 + 2x$ OR B2 for $x^3 + 2x$ [B1 for x^3 or $2x$ seen]
	(c)		$x(x - 6)$	1	B1 for $x(x - 6)$ or $(x - 6)x$

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
28			1180	3	M1 for a correct method to find the area of the cross section M1 (dep) for a complete correct method for the volume of the prism A1 cao OR M1 for a correct method to find the volume of one cuboid M1 (dep) for a complete correct method for the volume of the prism A1 cao

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7 With working

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Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

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PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
1	(a)		B	1	B1 cao
	(b)		118°	1	B1 Accept 116 – 120
	(c)		10.5 cm	1	B1 Accept 10.3 – 10.7 (or 103 – 107 if cm crossed out and replaced by mm)
2	(a)		12	1	B1 cao
	(b)		9	2	M1 for complete method to find total number of white bread sandwiches **or** 28 **or** total number of brown bread sandwiches **or** 19 A1 cao **OR** M1 for method to find difference between white and brown ham **or** ±1 **or** white and brown egg **or** ±8 (may result in positive or negative number) A1 cao
3	(a)		2	1	B1 cao
	(b)		Puffin Seal	1	B1 cao
	(c)	579 − 449	£130	2	M1 for identifying 579 **and** 449 (may be indicated in the table) A1 cao
	(d)		3.6m	3	M1 for 30 × 12 **or** digits 36 M1 (dep) for “360” ÷ 100 A1 for 3.6 or 3.60 or 3m 60cm **OR** M1 for 30 ÷100 (=0.3) M1 (dep) for "0.3"× 12 A1 for 3.6 or 3.60 or 3m 60cm

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		8	1	B1 cao
	(b)		- 12	1	B1 cao
5		Eg. 65 − 17 + 29 = 77 80 − "77"	3	3	M1 for 77 **or** a correct start to the process using at least two of the given figures M1 for a complete correct method A1 cao
6	(a)		34	1	B1 cao
	(b)		10 45	1	B1 10 45 accept any correct time notation, ignore am or pm
7			1.83 m or 183 cm	2	M1 for 178 + 5 **or** 1.78 + 0.05 **or** 183 **or** 1.83 A1 for 1.83 m or 183 cm (units must be correct)
8	(a)		14 cm	2	B1 for 14 cao B1 (indep) for cm
	(b)		3 by 3 square	1	B1 cao
9	(a)(i)		(-2, -3)	2	B1 cao
	(a)(ii)		Cross at (5, 2)		B1 professional judgement
	(b)		y = 3	1	B1 for correct line (at least 2cm spanning the *y* axis) with professional judgement
10			BA, BP, BO, AP, AO, PO	2	M1 for at least 3 correct pairs A1 for all 6 pairs, no extras or repeats

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PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
*11 QWC			Shop B with working	4	**Considering cost of all pens** M1 for a correct start eg. 30 ÷ 3 or 10 **or** 3×10 **or** 30 ÷ 5 **or** 5×6 **or** 6 **or** list of at least six multiples of 3 or 5 M1 for complete correct method to find total cost for shop A **or** complete correct method to find total cost for shop B eg. for A : 30÷3×2 **or** 10×2 **or** list of multiples of 3 to 30 with (£)20 **or** 3×10 with (£)20 eg. for B : 30÷5×3 **or** 6×3 **or** list of multiples of 5 to 30 with (£)18 **or** 5×6 with (£)18 A1 for (£)20 and (£)18 C1 (dep on M1) ft for statement giving "Shop B" with two comparable figures [SC : B1 for (£)18 and (£)20 without working] **OR** **Considering cost of one pen (or could be for 15 pens)** M1 for correct method to find cost of one pen in shop A **or** correct method to find cost of one pen in shop B M1 for correct method to find cost of one pen in shop A **and** correct method to find cost of one pen in shop B A1 for 66.6...p rounded or truncated to at least 2 sig figs eg. 66(p) or 67(p) **and** 60(p) C1 (dep on M1) ft for statement giving "shop B" with two comparable figures [SC : B1 for 66.6...p rounded or truncated to at least 2 sig figs eg. 66(p) or 67(p) **and** 60(p) without working]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		50	3	M1 for $\frac{6}{8}$ × 80 oe (= 60) **or** $\frac{1}{8}$ × 80 oe (= 10) (may be seen on gauges eg. 10 by $\frac{1}{8}$ position **or** 60 by $\frac{6}{8}$ position on either gauge) M1 (dep) for a complete correct method eg.“60” – “10” **or** 5 × "10" A1 for 50 (accept answers in the range 49 - 51) or M1 for $\frac{6}{8}-\frac{1}{8}$ $(=\frac{5}{8})$ M1 (dep) for “$\frac{5}{8}$”× 80 A1 for 50 (accept answers in the range 49 - 51)
	(b)		12	2	M1 for 180 ÷ 15 oe A1 cao
*13 QWC			No and eg. £4.10, £4 or 10p	3	M1 for adding at least 3 of 1.25, 1.15, 85, 85 A1 for 4.1(0) or 410 C1 ft (dep on M1) for correct statement comparing £4 and their total (units must be given and correct) **or** for correct statement referring to difference eg. 10p short (units must be given and correct) **OR** M1 for finding at least one difference between coins and costs eg 2 – 0.85 – 0.85 or 1.15 – 1 or 1.25 – 1 A1 for 0.10 or 10 C1 ft (dep on M1) for correct statement referring to total difference units (must be given and correct) (SC : B1 for correct figures with no working eg. £4.10 and £4 **or** 10p)

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PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
14	(a)(i)		27	2	B1 cao
	(a)(ii)		Add 5		B1 add 5 or states rule is 5n - 3 (may be exemplified on diagram)
	(b)		Reason	1	B1 for correct reason Eg all numbers in sequence end in 2 or 7 **or** continuation of sequence to beyond 45 with statement **or** 42, 47 with statement
15	(a)		6	1	B1 cao
	(b)		21	1	B1 cao
	(c)		5	1	B1 cao
16	(a)		10	1	B1 cao
	(b)	9 + 4 × 5 = 9 + 20	29	2	M1 for evidence of correct start to order of evaluation, 3 × 3 **or** 9 **or** 20 A1 cao
	(c)		125	1	B1 cao
	(d)		4	1	B1 accept - 4 or ±4
17			2400	3	B1 for one of 20, 40, 3 or 300 M1 for “20”×“40”×“3” **or** “20”×“40”×"300") (values do not need to be rounded) A1 for answer in range 2280 − 2520 SC : Award B3 for an answer of 2400 if no working seen NB. An answer of 2416.05 implies B0 M1 A1

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)(i)		$\frac{1}{6}$	2	B1 for $\frac{1}{6}$ or any equivalent fraction, percentage or decimal (rounded or truncated to 2 or more significant figures)
	(a)(ii)		0		B1 accept $\frac{0}{6}$, 0%, zero
	(b)		20	2	M1 for $\frac{1}{6} \times 120$ oe A1 cao (NB: An answer of $\frac{20}{120}$ scores M1 A0)
19			£1.12	3	M1 for use of 1000 g in 1 kg eg. 1000 ÷ 200(=5) **;** 200 ÷ 1000(=0.2) oe **;** 20% **;** 500g costs £2.80 **;** 100g costs 56p M1(dep) for a fully correct method eg. 5.60 ÷ "5" (= 1.12) **or** 56 × 2 A1 £1.12 or 112p
20			7	3	M1 for 4 × 10 **or** 40 **or** $\frac{12+6+15+x}{4}$ **or** a correct equation M1 for a complete correct method A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		A	1	B1 cao
	(b)		2	1	B1 cao
	(c)		Tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating with at least 2 points where 3 tiles meet and no incorrectly drawn tiles or gaps. (B1 for at least 4 correct shapes, including initial shape, correctly tessellating with at least one point where 3 tiles meet; ignore any additional sections attempted, gaps or incorrect shaped tiles)
22	(a)		3	1	B1 cao
	(b)		5	1	B1 cao
	(c)		18	2	M1 for "30" – "12" seen with at least one correct A1 cao (SC : B1 for 25 **and** 12 seen with an answer of 13)
23	(a)		10	1	B1 cao
	(b)		8.5	1	B1 accept $\frac{17}{2}$ or $8\frac{1}{2}$
	(c)		32	1	B1 cao
	(d)		$6 + 3t$	1	B1 for $6 + 3t$

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24		<table><tr><td></td><td>M</td><td>F</td><td>T</td></tr><tr><td>Train</td><td>5</td><td><u>10</u></td><td>15</td></tr><tr><td>Car</td><td><u>8</u></td><td>17</td><td>25</td></tr><tr><td>Total</td><td><u>13</u></td><td>27</td><td><u>40</u></td></tr></table>	25	3	**NB : There is often a choice of methods seen in responses to this question. When this occurs, the guidance given in point 7 of the marking principles must be followed - mark the method that leads to the answer** M1 for 40 – 13 **or** 27 female **or** 40 – (13+10) **or** 13 – 8 **or** 5 males and train M1 for a complete correct method eg. "27" – 10 + 8 **or** 40 – (10 + "5") A1 for 25 **OR** M1 for a 2-way table or diagram, with clear labeling showing at least 3 pieces of the given information correctly placed. M1 for 27 female or 5 male and train A1 cao (Note for award of the final A1, the 25 in the diagram must be highlighted in some way to indicate it is the final answer (or placed on the answer line))
*25 QWC			$x = 50^o$ with complete reasons	3	M1 for 180 – (65 + 65) A1 for $x = 50$ cao C1 (dep on M1) Base <u>angles</u> of an <u>isosceles</u> triangle are <u>equal</u> **and** <u>angles</u> in a <u>triangle</u> add up to <u>180</u>

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	(4,0) (3, 0) (3, -1) (2, -1) (2, 2) (4, 2)	Correct position	2	B2 for correct shape in correct position (B1 for any incorrect translation of correct shape)
	(b)		Rotation 180° (0,1)	3	B1 for rotation B1 for 180° (ignore direction) B1 for (0, 1) **OR** B1 for enlargement B1 for scale factor −1 B1 for (0, 1) (NB: a combination of transformations gets B0)

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
27			24	4	M1 for 0.15 × 240 oe (= 36) M1 for $\frac{3}{4}$ × 240 oe (= 180) M1 (dep on both prev M1) for 240 – "180" – "36" A1 cao **OR** M1 for 15(%) + 75(%) (= 90(%)) M1 for 100(%) – "90"(%) (= 10(%)) M1 (dep on both prev M1) for "$\frac{10}{100}$" × 240 oe A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for "0.9" × 240 oe (= 216) M1 (dep on both prev M1) for 240 – "216" A1 cao **OR** M1 for 0.15 + 0.75 oe(= 0.9) M1 for 1 – "0.9" oe (= 0.1) M1 (dep on both prev M1) for "0.1" × 240 = 24 A1 cao

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PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
28			1.5	4	M1 for correct expression for perimeter eg. $4 + 3x + x + 6 + 4 + 3x + x + 6$ oe M1 for forming correct equation eg. $4 + 3x + x + 6 + 4 + 3x + x + 6 = 32$ oe M1 for $8x = 12$ **or** $12 \div 8$ A1 for 1.5 oe **OR** M1 for correct expression for semi-perimeter eg. $4 + 3x + x + 6$ oe M1 for forming correct equation eg. $4 + 3x + x + 6 = 16$ M1 for $4x = 6$ **or** $6 \div 4$ A1 for 1.5 oe

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
29		x –2 -1 0 1 2 3 4 y 4 4.5 5 5.5 6 6.5 7	$y = ½ x + 5$ drawn	3	**(Table of values / calculation of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for correct line between $x = −2$ and $x = 4$ **(No table of values)** M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted **OR** line segment of $y = ½ x + 5$ drawn A1 for correct line between $x = −2$ and $x = 4$ **(Use of y=mx+c)** M1 for line drawn with gradient of 0.5 **OR** line drawn with a y intercept of 5 M1 for line drawn with gradient of 0.5 **AND** with a y intercept of 5 A1 for correct line between $x = −2$ and $x = 4$ SC : B2 for the correct line from $x = 0$ to $x = 4$

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Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1	(b)	Angle x = 115 degrees.	Angle x is 115° ±5°
	(c)		10.5 ±5 mm
3		6 caravans changed to 5	Standard mark scheme
6		Hampton in Arden row has been removed.	Standard mark scheme
8	(a)	2cm grid – wording changed to "a grid of squares". Each square represents a one centimetre square."	Standard mark scheme
	(b)	2cm grid – wording added "Each square represents a one centimetre square."	Standard mark scheme
9	(ii)	(X) removed.	Standard mark scheme
11		Boxes removed. Information given instead.	Standard mark scheme
13		Pictures of coins was removed.	Standard mark scheme

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
15		Braille only – roman numerals (i) to (iii) given as 0.5 (i) 2 15 3 (ii) (iii) 33	Standard mark scheme
21	(c)	Size of diagram ×2 – grey tiles changed to dotty shaded. One shape given for MLP and six shapes given for Braille and TLP	Standard mark scheme Standard mark scheme
22	(c)	Grid – *y* axis- 3cm for 1; *x* axis 3cm for 5. Tuesday graph goes from (0,0) to (20,3).	Tuesday graph altered. Answer now 10 minutes M1 for '30' – '20' seen with at least one correct (SC : B1 for 25 **and** 20 seen with an answer of 5)
23	(a)	MLP – *x* changed to *y*	Standard mark scheme
25		Braille – diagram labelled A B C and additional information was given about the diagram.	Standard mark scheme
26	(a)	2cm grid – shape P moved up two squares.	**P** is in a different starting position - mark scheme remains the same B2 for correct shape in correct position (B1 for any incorrect translation of correct shape)
	(b)	No shading of shapes – *x* axis -2 and -4 removed as they would obscure shape.	Standard mark scheme
28		MLP and Braille – *x* changed to *y*	Standard mark scheme
29		1.5 cm grid	Standard mark scheme

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If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

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Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

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It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

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Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

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Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

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PMT

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		2	1	B1 cao
	(b)		8	1	B1 cao
2	(a)		3.5	1	B1 oe
	(b)		2400	1	B1 cao
3	(a)		08 23	1	B1 oe e.g.8 23 am/pm or 20 23 or in words
	(b)	0845 to 09 00 is 15 mins 09 00 to 10 00 is 1 hour 10 00 to 10 20 is 20 mins	1h 35 min	2	M1 for attempt to subtract the two times with evidence of 60 minutes in an hour or for attempt to add on from 8 45 to 10 20 or 1h 35 min incorrectly stated A1 for 1 hour 35 minutes oe
4	(a)(i)		20	2	B1 cao
	(ii)		45		B1 cao
	(b)	10+20+40+45+75+80+40 **Or** 14 × 20 + 10 +5 + 15	310	2	M1 for attempt to find the total by adding individual days ft from (a) or 14 × 20 A1 ft from their readings in (a)

PMT

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		33	2	M1 for 45 – 12 or 12 to 45 or 24 – 20 A1 cao
	(b)	12, 15, 15, 18, 20, 20, 22, 24, 25, 32, 36, 45	21	2	M1 for arranging the numbers in order or stating 28.5 A1 for 21 cao
	(c)	(12+15+15+18+20+20+22 +24+25+32+40+45) ÷ 12	24	2	M1 for attempt to add and divide by 12
6		1r, 1b, 1g, 2r, 2b,2g,3r,3b,3g 4r, 4b, 4g, 5r, 5b, 5g **or** r1, r2, r,3 r4, r5 g1, g2, g3, g4, g5 b1, b2, b3, b4, b5	List outcomes	2	B2 for all 15 outcomes, ignore duplicates (B1 for at least 6 outcomes ignoring duplicates or omissions)
*7			Appropriate diagram or chart	4	B1 for a key or suitable labels to identify boys and girls. The key may be ignored if unclear provided the graph is clear, i.e if different colours or shading is used on the graph. B1 for five correct labels for days clearly shown in appropriate places B1 for diagram(s) or chart(s) (combined or separate) set up for comparison, showing data for at least three days e.g. dual bar chart, back to back stem and leaf, pie charts, pictograms etc. C1 for fully correct diagram or chart to include all axes labelled (or appropriate keys)

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		3546 – 3298 = 248 248 × 12 = 2976 **Or** 3546 × 12 = 42552 3298 × 12 = 39576 42552 – 39576 = 2976	£29.76 or 2976 p	4	M1 for subtracting to find units used M1 for "248" × 12 A1 for digits 2976 seen C1ft (dep on at least M1) for £29.76 or 2976p **Or** M1 for 3546 × 12 or 3298 × 12 M1 for "42552" – "39576" A1 for digits 2976 seen C1ft (dep on at least M1) for £29.76 or 2976p NB: ×0.12 acceptable in place of ×12
9			£267	2	M1 for selecting one correct item from the table i.e. £122 or £145 (may be circled in the table or written in the workspace) A1 for £267
10	(a) (b)		$4d$ $4x + 12y$	1 2	B1 oe B2 for $4x + 12y$ oe (B1 for $4x$ oe or $12y$ oe seen as part of an expression in terms of x and/or y

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11			Suitable data collection sheet	3	B1 for data grouped in intervals that are not overlapping B1 for tally column or frequency columns labelled B1 for suitable data collection sheet appropriate to the task e.g. with exactly 3 columns and which are correctly labelled NB do not accept questionnaires or graphs
12	(a)(i)		46-50	2	B1 for 46 – 50
	(ii)		$\frac{48}{360}$		B1 ft from their part (i) for their $\frac{48}{360}$, $\frac{8}{60}$, $\frac{2}{15}$ oe; do not accept decimals.
	(b)		23	3	M1 ft for 360 – (90 + "48" +" 84") [=136-140] M1 ft for 360 ÷ 60 = 6º or "138" ÷ 6 A1 cao **Or** M1 ft for 360 – (90 + "48" + "84") [=136-140] M1ft for using their 138 in $\frac{138}{360}\times 60$ (=22.5 – 23.5) A1 cao
13	(a)		$\frac{15}{100}$	5	M1 for fraction with 15 as the numerator or 100 as the denominator A1 for $\frac{15}{100}$ oe or 0.15 or 15%
	(b)		0	1	B1 oe Accept $\frac{0}{100}$, 0%, 0 out of 100 but not 0:100
	(c)		$\frac{1}{10}$		M1 for 100 – (50 + 25 + 15) A1 oe

PMT

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		68	1	B1 cao
	(b)		37	1	B1 cao
	(c)		41	2	M1 for an attempt to find the middle number or circling the 1 in the diagram or writing 1 or 4|1 A1 cao
15	(a)		Two reasons	2	B1 for no time scale e.g. day, week etc B1 for vague times e.g don't know how long a little is, no units
	(b)		Better question	2	B1 for stem which must include a time scale B1 for at least 3 non overlapping response boxes (not necessarily exhaustive) or at least 3 boxes that are exhaustive (but could be overlapping) **NB** Units must be included in either stem or response boxes to score full marks
	(c)		Biased sample	1	B1 for biased or not representative sample eg could all be too similar

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			Points plotted at (5, 6), (15, 9), (25, 8), (35, 7), (45,5) and joined with line segments	2	B2 for correct plotting of 5 points and joining with line segments (B1 for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the class interval (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined) NB Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted
17			29	4	M1 for complete correct method to find the total number of girls eg 120 – 30 (=90) M1 for a complete correct method to find the number of girls who play Football and hockey eg 26 + 35 (=61) M1 for “90” – “61” A1 for identifying 29 as the answer **OR** M1 for a complete correct method to find the total number playing tennis M1 for a complete correct method to find the number of boys playing tennis M1 for “total for tennis” “boys playing tennis” A1 for identifying 29 as the answer

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Example diagram for Question 11:

Heights	Tally	Freq
$120 \leq h < 130$ $130 \leq h < 140$ $140 \leq h < 150$ $150 \leq h < 160$ etc		

Example diagram for Question 11:

Heights	Tally	Freq
120 - 129 130 - 139 140 - 149 150 - 159 etc		

Question 17 possible 2-way table:

	B	G	Tot
F	**10**	35	**45**
H	12	26	**38**
T	**8**	**29**	**37**
Tot	30	**90**	120

Question 17 possible 2-way table:

	F	H	T	Tot
B	**10**	12	**8**	30
G	35	26	**29**	**90**
Tot	**45**	**38**	**37**	120

Modifications to the mark scheme for Modified Large Print (MLP) papers.

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Angles: ±5º
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
1		Just number given-no cards-wording	Standard mark scheme
4		Boxes in diagram –enlarged	Standard mark scheme
7		10.5 cm grid.	Standard mark scheme
9		Table moved around so that fridges are together with freezers underneath	Standard mark scheme
12	(a)(i) (a)(ii) (b)	Angles for Thai is 60degrees .Angle for Chinese is 150degrees	B1 for 58 – 62 B1 ft from their part (i) for their $\frac{60}{360}$ oe; do not accept decimals M1 ft for subtraction from 360° [=148-152] M1 ft for 360 ÷ 60 = 6º or "150" ÷ 6 A1 cao **Or** M1 ft for subtraction from 360° [=148-152] M1ft for using their 150 in $\frac{150}{360}\times 60$ A1 cao

PMT

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
14		Stem and leaf diagram: horizontal lines inserted	Standard mark scheme
16		x-axis 2cm for 5. *y*- axis 2cm for 1	Standard mark scheme

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Mark Scheme (Results)

Summer 2013

GCSE Mathematics (2MB01) Foundation
5MB3F (Calculator) Paper 01

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

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PMT

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		44.89	1	B1 cao
	(b)		3.7	1	B1 accept -3.7 or ± 3.7
2			8.32 8 51.22	3	B1 cao B1 cao B1 ft from '8.32'
3	(a)		Octagon	1	B1 cao
	(b)		Pentagon drawn	1	B1 cao
	(c)		121	3	M1 for attempted sum of given angles (=779), or subtraction of all given angles from a number > 900 M1 for 900 – '779' or subtraction of all given angles from 900 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		0.5	1	B1 cao
	(b)		$\frac{3}{4}$	1	B1 for $\frac{3}{4}$ oe eg. $\frac{75}{100}$
	(c)		$\frac{19}{30}$	1	B1 for $\frac{19}{30}$
5			240	3	M1 for 67.5 × 8 (=540) or 75 × 8 ÷ 2 (=300) M1(dep) for '540' – '300' A1 cao **OR** M1 for 67.5 × 2 – 75 (= 60) M1 (dep) for '60' × 8 ÷ 2 A1 cao

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*6			AECBDA 149 km	4	M1 for any route starting and ending at A going through B, C, D and E (could be implied by addition eg. 20 + 26 + 30 + 45 + 28) Condone missing last section back to A M1 for a valid route for which their total is shown A1 for 149 C1 (dep on M1) ft for communicating the shortest route with 149 km seen in the working
7			Reflection	1	B1 cao
8			31	2	M1 for 60 ÷ 2 (= 30) or for starting to position cones on a line 2m apart with distances shown or for $2(n - 1) = 60$ A1 cao

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		175.14	3	M1 for 135.70 + 85 (= 220.70) **or** 135.70 – 45.56 (= 90.14) **or** 85 – 45.56 (= 39.44) **or** 45.56 – 85 (= 39.44) M1 for correct complete method, eg. 135.70 + 85 – 45.56 A1 cao
	(b)		700	1	B1 cao
	(c)		November	1	B1 for Nov oe
	(d)		April , August	1	B1 for April and August oe
10	(a)		B, D	1	B1 cao
	(b)		F	1	B1 cao
11			417	3	M1 for 24 × 18 (= 432) M1 for '432' – 15 A1 cao **or** M1 for 24 – 15 or 24 × 17 (= 408) M1 for '24 – 15' + 24 × 17 A1 cao

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		6	1	B1 cao
	(b)		7	1	B1 cao
	(c)		2.6	2	M1 for clear intention to add 4 to both sides **or** clear intention to divide all terms by 5 A1 for $\frac{13}{5}$ oe
13			correct triangle	2	M1 for *BC* 6.4cm ± 2mm (within guidelines on overlay) or angle *B* $40^o \pm 2^o$ (within guidelines on overlay) A1 correct triangle within guidelines on overlay

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		29	2	M1 for substituting 20 into the word formula e.g. 20 × 1.25 + 4 (= 25 + 4) A1 cao
	(b)		35	3	M1 for 47.75 = x × 1.25 + 4 **or** 47.45 – 4 (= 43.75) M1 for "43.75" ÷ 1.25 A1 cao or M1 for 47.75 – "29" (=18.75) M1 for 20 + '18.75'÷1.25 A1 cao NB. Accept reverse flow chart
15	(a)		8	1	B1 for 7.8 – 8.2
	(b)		155	2	M1 for correct bearing clearly identified on diagram A1 for 153 – 157 **SC** B1 for answer of 333 -337 given

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			£109.20	4	M1 for 24 × 130 (=3120) M1 for 13 × (730 – 130) (=7800) M1 for "3120" + "7800" **or** 10920 **or** 109.2 **or** 109.20 C1 (dep on M1) for £109.20 or 10920p with correct money notation clearly identified **NB** candidates can work in pounds or pence
17	(a)			2	B1 for any 2 lines of correct length **or** correct enlargement with scale factor n, n≠3 B1 for correct enlarged shape drawn anywhere on grid
	(b)		Reflection in *y* axis	2	B1 for Reflection B1 for *y* axis or *x* = 0 NB: If more than one transformation indicated then no marks
18			41.968	2	B2 for 41.968 (B1 for $\frac{5246}{125}$ **or** 32.768 **or** 9.2)
19			Correct net	3	B3 for correct net (B2 for 5 faces drawn all correct **or** 6 faces drawn with 4 or 5 correct) (B1 for any net of a cuboid)

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20		$x + 2x + 15 = 63$ $3x = 48$	16	3	M1 for $x + 2x + 15 = 63$ M1 for attempt to subtract 15 from each side of their equation A1 cao **or** M1 for 63 – 15 (=48) M1 for '48'÷3 A1 cao **or** M2 for16 and 32 seen (M1 for strategy for finding at least two pairs of marbles that meet the criteria x, $2x$) A1 cao
21			550	5	M1 for a correct method to find 20% of an amount eg 3500×0.2 oe (=700) M1 for a correct method to increase an amount by 20% eg 3500×1.2 oe (=4200) M1 for subtracting 900 M1 for division by 6 A1 for 550 NB : Operations may occur in any order as long as they could lead to the correct answer. Award marks until a breakdown of method occurs

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22		342 ÷ 88 =3.886… 570 ÷ 195 =2.923… 1500 ÷ 399 =3.759… **or** 88 ÷ 342 =0.257… 195 ÷ 570 =0.342… 399 ÷ 1500 =0.266	small with correct calculations	4	M1 for one of 342 ÷ 88 (=3.886…), 570 ÷ 195 (=2.923…), 1500 ÷ 399 (=3.759…) **or** for one of 88 ÷ 342 (=0.257…), 195 ÷ 570 (=0.342…), 399 ÷ 1500 (=0.266) **or** any other calculations that could lead to a comparative figure M1 for calculations that could lead to comparative figures for 2 bottles M1 for calculations that could lead to comparative figures for 3 bottles e.g. all three from the above list C1 for three correct comparative figures for all 3 bottles, leading to a correctly stated comparison : small or 342g best value
23			26.7	3	M1 for $(GJ^2 =)\ 24.5^2 + 10.6^2$ or 600.25 + 112.36 or 712.61 M1 for $\sqrt{24.5^2 + 10.6^2}$ or $\sqrt{712.61}$ A1 26.69 – 26.7

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
24		4 → 40 4.1 → 44.(321) 4.2 → 48.(888) 4.3 → 53.(707) 4.4 → 58.(784) 4.5 → 64.(125) 4.6 → 69.(736) 4.7 → 75.(623) 4.8 → 81.(792) 4.9 → 88.(249) 5 → 95 4.81 → 82.4(2464) 4.82 → 83.0(6017) 4.83 → 83.6(9859) 4.84 → 84.3(399) 4.85 → 84.9(8412)	4.8	4	B2 for a trial between 4 and 5 exclusive (B1 for a trial at 4 or 5) B1 for a different trial of $4.8 < x \leq 4.85$ B1 (dep on at least one previous B1) for 4.8 NB. Trials should be evaluated to at least 2 sf truncated or rounded for values of x correct to 1 decimal place. Trials should be evaluated to at least 1 dp truncated or rounded for values of x correct to 2dp. (NB. For trial at 4.82, accept 83 for trial at 4.85 accept 85) **NB** No working scores 0 marks even if answer is correct

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Modifications to the mark scheme for Modified Large Print (MLP) papers.

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Measurements of length: ±5 mm

PAPER: 5MB3F_01			
Question		**Modifications**	**Notes**
2		Braille only: Roman numerals inserted into spaces as below 16 £0.52 £(i) (ii) £4.65 £37.20 Total cost £(iii)	Standard mark scheme
7		3 columns on the left and 4 columns on the right removed. 2cm grid. "Mirror line" put at top of diagram as well as at the bottom	Standard mark scheme
10		2cm grid. Shape D rotated 180 degrees. 3 bottom rows of grid removed.	Standard mark scheme
13		Diagram measurements labels changed. AB= 10cm, BC = 7.5cm, Line AB is drawn as 10cm.	Apply mark scheme with these new measurements

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PAPER: 5MB3F_01			
Question		**Modifications**	**Notes**
15		"Langford" moved left of X. Stevenage X moved cm away in same direction as Langford to Stevenage. North lines inserted at Hitchin, Langford and Stevenage – all 9 cm long.	Check the bearing on the new paper and apply above tolerances to marking.
17	(a)	2cm grid. Image labelled Shape X. Enlargement drawn on grid and labelled Shape Y. Candidates asked "Describe the single transformation that maps Shape X onto Shape Y."	B1 for "enlargement"; B1 for "scale factor 3"; ignore any reference to points of enlargement that might be given.
	(b)	2cm grid. Wording inserted "The diagram shows Shape A and Shape B."	Standard mark scheme
19		Model given as well as a diagram. A diagram with four shapes A B C and D , drawn accurately. Candidates are asked "Which shape is the accurate net for the cuboid?" Answer is Shape C.	B0 for answer of B B1 for answer of A or D B3 for answer of C
22		No pictures – just information given	Standard mark scheme
23		Braille only – information given about measurements of lines and angles.	Standard mark scheme

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Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
In Mathematics Linear (1MA0)
Foundation (Non-Calculator) Paper 1F

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Comprehension and meaning is clear by using correct notation and labelling conventions.

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Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

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If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
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If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
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Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

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It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

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Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

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Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

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Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

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Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1			157.50	3	M1 50 × 3 (=150) or 2.5 × 3 (=7.5) or 50 + 2.5 (=52.5) M1 "150" + "7.50" or 3 × "52.5" oe (=157.5) A1 cao SC B1 for final answer of 152.5(0) if M0 awarded
2	(a)		8	1	B1 cao
	(b)		10	1	B1 cao
	(c)		$1\frac{3}{4}$ circles	1	B1 cao
3	(a)(i)		8 40 oe	2	B1 for 8 40 oe
			9 40 oe		B1 for 9 40 oe
	(ii) (b)		15 20	1	B1 cao
4			26	2	M1 for correct substitution into expression 4×5 + 2 ×3 A1 cao
5	(a)(i)		23	2	B1 cao
	ii)		284		B1 cao
	(b)(i)		71+95 or 91+75	2	B1 for showing addition of 71 and 95 **or** 91 and 75
	(ii)		166		B1ft for the sum of their two numbers given provided they used only the digits 5, 1, 7 and 9 exactly once each

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		Cross at $\frac{1}{4}$	1	B1 for cross in correct position
	(b)		Cross at $\frac{1}{2}$	1	B1 for cross in correct position
	(c)		Cross at 0	1	B1 for cross in correct position
7	(a)(i)		6	3	B1 cao
			12		B1 cao
	(ii)		8		B1 cao
	(iii)				
	(b)		120	2	M1 10 × 3 × 4 A1 cao
8	(a)		10	1	B1 cao
	(b)		16	1	B1 cao
	(c)		-11	1	B1 cao
	(d)		17	1	B1 cao
	(e)		12-2×(3+1)	1	B1 cao
	(f)		Explanation/ reason	1	B1 Correct explanation of equivalence eg: Indication that the same operation needs to be applied to both numerator and denominator. Correct shading on diagrams to demonstrate 1 quarter and 2 eighths Conversion of both fractions to a common format 2 is $\frac{1}{4}$ of 8 oe

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		35	1	B1 cao
	(b)		Thursday	1	B1 for Thurs(day)
	*(c)	Jack 25+30+45+30=130 Grahan 40+25+35+40=140	Graham and reason	3	M1 for intention to add either Jack's total or Graham's total (allow one error reading from chart) A1 for 130 and 140 or 2(h) 10 and 2(h) 20 with working C1 (dep on M1 and two totals) for clearly stating Graham as their answer or ft from their 2 totals. **OR** M1 for the intention to find the difference between the times on each of the 4 days A1 for 10 or -10 with working C1 (dep on M1 and a net difference) for clearly stating Graham as their answer or ft from their difference [SC B1 for Graham with 130 and 140 or 10 if M0 scored]
10			SB ST SV PB PT PV MB MT MV	2	M1 for at least 4 correct pairs A1 for all 9 combinations with no extras or repeats
11	(a)		$4b$	1	B1 for $4b$ oe
	(b)		$5n$	1	B1 for $5n$ cao
	(c)		$3cd$	1	B1 for $3cd$ oe algebraic simplified form
	(d)		$5x+6y$	2	M1 $5x$ or $6y$ A1 cao

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		2	1	B1 cao
	(b)		0,1,2	2	M1 for any two of 0, 1, 2 correct with no extras **or** for showing 3,4,6,7 as consecutive numbers in an ordered list (ignore numbers before or after 3,4,6,7 and allow an extra 4 written within the list 3,4,4,6,7). A1 fully correct answer in any order
13			4	2	M1 for correct order of operations +7 then ÷3 A1 cao OR M1 for forming the equation $3x - 7 = 5$ and showing intention to add 7 to both sides or divide each term by 3 as a first step A1 cao NB Embedded solutions get M1 mark provided the equation or working is complete.
14	(a)		7	1	B1 for 6.8-7.2
	(b)(i)		78	2	B1 cao
	(ii)				B1 for vertically opposite angles are equal **or** clear indication of 2 step process and angles on a straight line add up to 180°

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*15			Yes with reasons	4	M1 for 14×100 (= 1400) or 18×100 (= 1800) or 230 + 50 + 30 (=310) M1 for "1400" + "310" **or** complete correct method to find 2 other comparable amounts A1 for £1710 total **or** £17.1(0) ticket price **or** £90 **or** £310 **and** £400 C1 for a clear statement and conclusion from their two correct comparable figures. **OR** M1 for 230÷100 or 50÷100 or 30÷100 M1 "2.30" + "0.50" + "0.3" + 14 A1 £17.1(0) C1 for a clear statement and conclusion from their two correct comparable figures.
16			×2 enlargement	2	M1 for quadrilateral with at least 2 correct sides A1 cao
17			0.6, 0.606, 65%, $\frac{2}{3}$	2	M1 for attempt to convert all to the same form for comparison with at least one correct conversion (Accept at least 0.66, 0.67 66%, 67% or better for $\frac{2}{3}$) A1 for a correctly ordered list (in any form) SC B1 for correct numbers in reverse order if no method seen.
18	(a)		120	2	M1 4 × 30 A1 cao
	*(b)		Tuesday 125 miles > 120 miles 200 km > 192 km	3	M1 for 200 ÷ 8 × 5 or "120" ÷ 5 × 8 A1 for 125 or 192 or ft from "a" C1 (dep M1) Correct conclusion for their calculated figure with its correct units stated. of "125" miles and "a" miles **or "**192" km and 200 km

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Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		14	1	B1 cao
	(b)		5	2	M1 for intention to subtract 4 from each side or divide each term by 3 as a first step **or** embedded answer. A1 cao
20			Tally chart	3	B3 for a **table** with all 3 aspects: Column/row heading 'months **or** list of at least 3 months Column/row heading 'tally' or tally marks Column/row heading 'frequency' or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects)
21			Triangle drawn	2	M1 for a triangle with at least one side of length 5 cm (± 0.2) or at least one angle 60° (±2°) A1 for a correct triangle
22	(a)		36	2	M1 $12 \times 6 \div 2$ A1 cao
	(b)		10	2	M1 $55 \times 2 \div 11$ or an embedded answer A1 cao
23	(a)		Shape with vertices at (–1, 3), (0, 6), (2, 6), (1, 3)	1	B1 for correct shape in correct position
	(b)		Rotation centre (0,0) 90° anticlockwise	3	B1 Rotation B1 (centre) (0,0) or *O* or origin B1 90° anticlockwise or 270° clockwise Note: award no marks if more than one transformation is given

PAPER: 1MA0_1F					
Question		Working	Answer	Mark	Notes
*24			Not enough, needs £133	5	M1 for splitting the shape (or showing recognition of the "absent" rectangle) and using a correct method to find the area of one shape M1 for a complete and correct method to find the total area M1 for a complete method to find 70% of 19 (= 13.3) or 70% of their total cost or 70% of their area A1 114(m^2) and (£)133 **or** 114(m^2) and (£)13.3(0) and 108(m^2) C1 (dep on M2) for a conclusion supported by their calculations OR M1 for a complete method for the number of tins required for one section of the area of the floor M1 for a complete method to find the number of tins for the whole floor M1 for a complete method to find 70% of their total number of tins and multiply by 19 A1 (£)133 C1 (dep on M2) for a conclusion supported by their calculations

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		Criticisms	2	B1 Qu 1 Overlapping boxes, no units B1 Qu 2 e.g. no time frame, non-specific responses, no number quantities, open to interpretation, no option for those who do not exercise
	(b)		Question given	2	B1 for a correct question with a time frame B1 for at least 3 correctly labelled non-overlapping response boxes (need not be exhaustive) or at least 3 response boxes that are exhaustive for all integer values of their time unit (could be overlapping) NB Units must be included in either question or response boxes to score full marks [Do not allow inequalities in response boxes]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26		<table><tr><td>x</td><td>–2</td><td>–1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>y</td><td>–4</td><td>–1</td><td>2</td><td>5</td><td>8</td></tr></table>	$y = 3x + 2$ drawn	4	B1 for axes scaled and labelled **(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x M1 ft for plotting at least 2 of their points (any points from their table must be correctly plotted) A1 for correct line between $x = –2$ and $x = 2$ **(No table of values)** M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 3x + 2$ drawn A1 for correct line between $x = –2$ and $x = 2$ **(Use of $y = mx + c$)** M1 for line drawn with gradient of 3 **OR** line drawn with y intercept at 2 M1 for line drawn with gradient of 3 **AND** with y intercept at 2 A1 for correct line between $x = –2$ and $x = 2$ [SC B2 (indep of B1) for correct line segment between x=0 and x=2 – ignore any additional incorrect line segment(s)]

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
27	(i)	20, 40, 60 12, 24, 36, 48, 60 $20 = 4\times5 = 2\times2\times5$ $12 = 4\times3 = 2\times2\times3$	3 and 5 or any multiple of 3, 5	4	M1 attempts multiples of both 20 and 12 (at least 3 of each shown but condone errors if intention is clear) or identifies 60 or a multiple of 60 M1 (dep on M1) for a division by 20 or 12 or counts up 'multiples' or identifies a common mulitple (implied if one answer is correct or answers reversed) A1 cheese slices (packets) 3, burgers (boxes) 5 or any multiple of 3, 5 OR M1 for expansion of either 20 or 12 into factors M1 for demonstration that both expansions include 4 (or 2×2) A1 cao for cheese slices (packets) 3, burgers (boxes) 5
	(ii)		60		B1 for 60 or ft from their correct answer to (i) or ft "common multiple"
28			38	5	M1 $3x - 5 = 19 - x$ M1 for a correct operation to collect the x terms or the number terms on one side of an equation of the form $ax+b=cx+d$ A1 for $x = 6$ M1 for substituting their value of x in the three expressions and adding **or** substituting their value of x after adding the three expressions A1 cao

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
2		25 mm diameter	Standard mark scheme
4		*a* change to *e* ,*b* changed to *f*	Standard mark scheme
5		Braille only- There are numbers on five cards 4,5,7,8? Cards not given	Standard mark scheme
6		Probability scales are 16 cm	Standard mark scheme
7		2 models as well as diagrams	Standard mark scheme
9		Jack's bars are stripes ,Graham's are dotty shading	Standard mark scheme
11	(a) (d)	*b* changed to *y* *x* changed to *e*, *y* changed to *f*	B1 for 4*y* oe M1 5*e* or 6*f* A1 cao
14	(a)	Line *PQ* is 9 cm	B1 for 8.5 - 9.5

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
16		Enlargement (shape S) given on 2cm grid. Wording "Shape S is an enlargement of Shape R. What is the scale factor of the enlargement?"	B2 for 2
21		Base line of the equilateral triangle is given-side length 10cm	M1 for a triangle with at least one side of length 10 cm (± 0.5) drawn in addition to the base line given or at least one angle 60° (±5°) A1 for a correctly drawn triangle with 3 side lengths 10 cm (± 0.5) and 3 angles of 60° (±5°)
23	(a) (b)	2cm grid. Shape A moved two squares to the right. *x* axis finishes at -5. 2 cm grid. *x* axis reduced	Standard mark scheme
24		Braille only-diagram labelled clockwise A to F and information given.	Standard mark scheme
26		2cm grid. Axes drawn but not labelled	Standard mark scheme

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Pearson Edexcel GCSE
In Mathematics Modular (2MB01)
Unit 1: (5MB1F_01) Foundation (Calculator)

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PAPER: 5MB1F_01					
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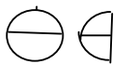
1	(a)		24	1	B1 cao
	(b)		22	2	M1 for 8 + 8 + 6 oe or "24" − 2 A1 cao
	(c)			1	B1 for drawing a circle showing 4 quadrants and a semicircle showing 2 sectors
2	(a)		evens	1	B1 cao
	(b)		unlikely	1	B1 cao
	(c)		1 marked	1	B1 for cross marked at 1
	(d)		colours	1	B1 for 2 or 3 additional counters marked red
*3	(a)		diagram or chart	4	B1 for a key or suitable labels to identify Harry and Shamus B1 for horizontal or vertical axis labelled B1 for at least 3 correct plots C1 for fully correct diagram(s) or charts(s)
	(b)		comparisons	2	B1, B1 ft for any two correct comparisons.

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$\frac{1}{4}$

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			7.31	4	M1 for a correct method to work out the total cost (= 16.92) M1 for a correct method to find $\frac{1}{4}$ of their total cost (or $\frac{3}{4}$) M1 (dep on at least M1) for subtraction from £20 A1 cao
5	(a)		2	2	M1 for attempt to order or two middle unordered numbers selected A1 cao
	(b)		4	2	M1 for 5 – 1 or 1 – 5 or 1 to 5 A1 cao
	(c)		18 11 7 3 1	1	B1 cao
	(d)		40	1	B1 for 40 or ft their frequencies
	(e)	18×0 + 11×1 + 7×2 + 3×3 + 1×4 =	38	2	M1 for Σ *fx* A1 cao [SC: no working- B1 for 56]
*6			No	2	M1 for a relevant calculation, eg 60 +30 or 95 ÷ 60 (= 1.58…) or sight of 90 C1 (dep on M1) for correct statement with correct calculations
7	(a)		(A1), A2, A3 B1, B2, B3 C1,C2 C3	2	B2 for a fully correct list (B1 for 5 or 6 more correct. Ignore repeats)
	(b)		$\frac{1}{9}$	1	B1 for $\frac{1}{9}$ oe or ft part (a)

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		$\frac{1}{4}$	1	B1 for $\frac{1}{4}$ oe
	(b)		$2x°$	1	B1 for $2x°$ oe (condone omission of °)
	(c)		20	2	M1 for $150 \div 360 \times 48$ oe or $48 \div 4 + \frac{2}{3} \times (48 \div 4)$ oe A1 cao
*9			Investment B	4	M1 for 3×12×5 (= 180) M1 for 2500 × 3 × 2.5 ÷ 100 (= £187.50) A1 for (£)180 and (£)187.5(0) or (£)2680 and (£)2687.5(0) C1 (dep on M2) for correct conclusion for their figures Alternative method: M1 for 12 × 5 = 60 M1 for '60'÷ 2500 × 100 A1 for 2.4(%) C1 (dep on M2) for correct conclusion for their figures NB: accept comparable figures for different time periods SC: If compound interest used can score M1 M0 A0 C1 ft

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)	<table><tr><td>4</td><td>**15**</td><td>**11**</td><td>**30**</td></tr><tr><td>**12**</td><td>5</td><td>**10**</td><td>27</td></tr><tr><td>**16**</td><td>20</td><td>21</td><td>57</td></tr></table>	complete 2-way table	3	B3 cao (B2 for 4 or 5 correct entries B1 for 2 or 3 correct entries)
	(b)		5	1	B1 cao
	(c)		19	1	B1 for 19 or ft 4 + “15” or 30 – “11”
11	(a)		question + response boxes	2	B1 for appropriate question with time period B1 for at least 3 boxes that are either non-overlapping but not necessarily exhaustive, or exhaustive but not necessarily non-overlapping NB time period and/or unit of time may appear in either the question or with the response boxes; award a maximum of B1 if no units
	(b)		two correct reasons	2	B2 for 2 correct reasons from, eg only girls, (all about) the same age, same year group, same school (B1 for 1 correct reason)
12	(a)		$0.75 - x$	2	M1 for $1 - 0.25 + x$ or $0.25 + x$ A1 or $0.75 - x$ oe
	(b)		60	2	M1 for 0.25×240 oe A1 cao

PMT

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Positive correlation	1	B1 for positive correlation or the greater the rainfall the more umbrellas sold oe
	(b)		52 – 58	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or an indication on the diagram from 28 on the *x*-axis A1 for an answer in the range of 52 – 58
*14		2 × 462 + 251 = 1175 0.95×1175 = 1116.25 2 × 485 + 218 = 1188 1188 – 75 = 1113.00	Jetstream	5	M1for identifying correct costs for either Highway Airlines or Jetstream Airlines M1 for attempt to calculate the costs for the family eg 2× “462” “251” or 2 × “485” + “218” M1 for a correct method to work out the discount for one company eg 0.95 × “1175” or 0.05 × “1175” or “1188” – 75 A1 for (£)1116.25 and (£)1113.00 C1 (dep on M1) for calculations clearly identified with each airline and correct decision from their figures

Modifications to the mark scheme for Modified Large Print (MLP) papers.

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The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER:			
Question		**Modification**	**Notes**
Q1		Circles are 2.5cm diameter. Key at top of pictogram.	Standard mark scheme
Q2	(c)	Probability scale is 16cm long.	Standard mark scheme
Q3		Grid is 2cm squares.	Standard mark scheme
Q4		No pictures just information given.	Standard mark scheme
Q10		Braille table has (i) to (vi) in spaces. 4 (i) (vi) (ii) (iv) 5 (v) 27 (iii) 2 21 57	Standard mark scheme
Q13		*x* axis 2cm for 5. *y* axis 2cm for 10. *x* changed to filled in circles. Right axis labelled.	Standard mark scheme
	(b)	Rainfall changed from 28mm to 30mm.	Standard mark scheme
Q14		On both tables top 2 rows and bottom 2 rows removed.	Standard mark scheme

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Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
In Mathematics Modular (2MB01)
Unit 2: (5MB2F_01) Foundation
(Non-Calculator)

PMT

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2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

PAPER: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		90	1	B1 cao
	(b)		*O* marked correctly	1	B1
	(c)		Correct arrows	1	B1
2			8	2	M1 for 30 ÷ 4 or at least 3 multiples of 4 shown A1 cao SC B1 7 on answer line, no working shown
3	(a)		3 or 5 or 21	1	B1 for 3 or 5 or 21
	(b)		16	1	B1 cao
	(c)		24	1	B1 cao
4	(a)		Squares shaded	1	B1 for any 6 squares shaded
	(b)		$\frac{1}{5}$	2	M1 $\frac{20}{100}$ or equivalent fraction A1 cao
5	(a)		$3p$	1	B1 for $3p$
	(b)		$8t$	1	B1 for $8t$

PAPER: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*6			No with working and (£)1.76 or (£)8.19	4	M1 for method to find the total of the two items eg 3.25 + 2.99 (= 6.24) M1 for complete method eg subtract the cost of two items from 8 or add on the cost of a coffee to the two items A1 for (£)1.76 or (£)8.19 C1 (dep on M1) ft for statement shown with correct money notation. OR M1 for subtraction of the cost of an item from 4 or 8 M1 for complete method eg adding the two remainders or subtracting the second value from their running total A1 for (£)1.76 C1 (dep on M1) ft for statement shown with correct money notation.
7	(a)		Warsaw	1	B1 accept –8
	(b)		6	1	B1 accept –6
	(c)		–3	1	B1 cao
8	(a)		40	1	B1 cao
	(b)(i)		55	3	M1 180 – (40 + 25 + 60) or 180 – 125 or 180-40-25-60 A1 cao
	(ii)				B1 (indep) Sum of the angles on a straight line is 180°

PAPER: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)	8×3 + 20	44	2	M1 for 8 × 3 + 20 A1 cao
	(b)		No + reason	2	B2 No + you only pay the £20 once oe OR B1 6×8+20(=68) B1 No + valid comparison
10	(a)		Correct pattern	1	B1
	(b)		12	1	B1 cao
	(c)	20÷2 or Diagram or Table	11	2	M1 for a complete method to find the pattern number from the number of grey tiles A1 cao
11	(a)		0.8 drawn	1	B1 cao
	(b)	$\frac{3}{4}+\frac{3}{4}=1\frac{1}{2}$ 1.500 – 0.8 = 0.7 0.7 × 1000 OR $\frac{3}{4}+\frac{3}{4}=1\frac{1}{2}$ $1\frac{1}{2}$ kg = 1500 g 0.8 kg = 800g 1500 – 800 OR 0.8kg = 800g $\frac{3}{4}$ kg = 750g 800 – 750 = 50 750 – 50	700	4	M1 For a complete method to find the weight of two puddings M1 For a complete method to find the difference of 'weight of two puddings' and 0.8kg M1 For a complete method to convert an appropriate weight from kg to g A1 cao OR M1 For a complete method to find the difference between 0.8 kg and $\frac{3}{4}$ kg M1 For a complete method to find the difference between $\frac{3}{4}$ kg and '0.8-$\frac{3}{4}$' M1 For a complete method to convert an appropriate weight from kg to g A1 cao

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PAPER: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		Correct diagram	1	B1
	(b)		Correct diagram	1	B1 cao
*13			Yes with working	4	M1 9.60 ÷3 (=3.20) or 9.60 × 2 (= 19.20) or 9.60 × $\frac{2}{3}$ (=6.40) M1 for a fully correct method to find the cost of the two shirts A1 12.8(0) C1 (dep on M2) ft statement supported by working OR M1 9.60 ÷3 (=3.20) or 9.60 × $\frac{2}{3}$ (=6.40) M1 13 ÷ 2 A1 for 6.4(0) and 6.5(0) C1 (dep on M2) ft statement supported by working
14			290	3	M1 for (180 – 40) ÷ 2 M1 for 360 – '70' A1 cao
15	(a)		$10c + 15d$	1	B1 cao
	(b)	$x + x + 3 + 2x = 4x + 3$ $2(3x – 2) = 6x – 4$ $6x – 4 – (4x + 3)$	$2x – 7$	4	M1 for $x + x + 3 + 2x$ (= $4x + 3$) M1 for $2(3x − 2)$ (= $6x − 4$) M1 for '$6x$' –'$4x$' – '4' ± '3' oe A1 cao OR M1 for $2(3x − 2)$ (= $6x − 4$) M1 for '$6x$'− x– x – $2x$ (=$2x$) oe M1 for '−4' ± 3 A1 cao

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PAPER: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)		Correct diagram	2	B2 (B1 any isometric face correct)
	(b)		6	2	M1 (1) × 2 × 3 A1 6 OR M1 for 2 × 4 × 6 ÷(2 × 2 × 2) A1 6
17			4500	5	M1 for splitting the shape (or show the recognition of the "absent" rectangle) and using a correct method to find the area of one rectangle M1 for a correct method to find the area of a 2nd rectangle M1 for a complete and correct method to find the total area M1 (dep on at least one prevM1) for a correct method to find 90% of their total area A1 cao

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PAPER:			
Question		**Modification**	**Notes**
Q1		Diagram is size × 2.	Standard mark scheme
Q3		'eight' inserted into 1st line.	Standard mark scheme
Q4		2cm squares.	Standard mark scheme
Q7		Map removed and replaced with a table giving places in alphabetical order	Standard mark scheme
Q9		No picture.	Standard mark scheme
Q10		2cm squares. Shading is dotty. 'grey' changed to 'shaded' throughout.	Standard mark scheme
Q11		Just scale given.	Standard mark scheme
Q13		Just information given with no box.	Standard mark scheme
Q15		MLP only: *x* changed to *y*, arrows removed, information written in.	Standard mark scheme (*x* changed to *y*)

PAPER:			
Question		**Modification**	**Notes**
Q16		Model for part (a) has no dimensions written on it. Models for part (b) – dimensions of 2 × 4 × 6 given. Wording given below	
Q16a		Look at the model or at the diagram for Question 16(a). They show a cuboid. For the cuboid (i) write down the number of faces, (ii) write down the number of edges, (iii) write down the number of vertices. (2 marks)	B2 All answers correct (B1 at least one correct answer given)
Q16b		Look at the two models or at the diagram for Question 16(b). They are NOT accurate. A different box has been made to hold cubes. This box is in the shape of a cuboid. A cube is also shown. Each cube has edges of length 2 cm Work out the largest number of cubes that can fit into the box. (2 marks)	Standard Mark Scheme

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Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
In Mathematics Modular (2MB01)
Unit 3: (5MB3F_01) Foundation (Calculator)

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PMT

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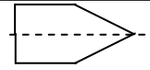
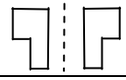
PMT

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Correct reflection	1	B1 cao
	(b)		Correct reflection	1	B1 cao
2	(a)		54	2	M1 for 12 + 19 + 23 A1 cao
	(b)		11	2	M1 for 12 + 19 (= 31) or 19 + 23 (= 42) or 23 – 12 or 12 – 23 A1 for 11 (accept – 11) **SC:** Award B2 for 31 **and** 42 seen with no answer. or 23 – 12 (or 12 – 23) with no answer
3	(a)		hexagon	1	B1 for (regular) hexagon
	(b)		D, E	1	B1 cao
	(c)		A	1	B1 cao
	(d)		108	2	M1 for 540 ÷ 5 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			8	3	M1 for 23 – 7 (= 16) or 23 ÷ 2 (= 12.5) M1 for correct order of operations –7 then ÷ 2 A1 cao OR M1 for forming the equation $2x + 7 = 23$ M1 for attempt to isolate the number terms or divide all terms by 2 as the first step A1 cao
5	(a)		1.7	1	B1 cao
	(b)		56.96	1	B1 cao
	(c)		19.683	1	B1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6			127	3	M1 for 6×24 (= 144) M1 for '144' – 17 A1 cao OR M1 for 5×24 (= 120) M1 for '120' + 7 (= 127) A1 cao
7	(a)		0.75	1	B1 cao
	(b)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ oe fraction
8	(a)		320	2	M1 for 80×4 A1 cao
	(b)		65	2	M1 for $130 \div 2$ A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		Graph drawn	2	B2 for correct straight line from (0,0) to (10,25) (B1 for at least 3 points plotted correctly or a line through at least 3 of the points from the table)
	*(b)		Kate with comparison	3	M1 for an attempt to convert 62 inches to cm (eg 15×10 + 5) or convert 150 cm into inches (eg 10 × 6) A1 for 60 (inches) or 155 (cm) C1 (dep M1) for Kate with comparison eg '62' > 60 or '155' > 150 ft from a straight line segment
10	(a)		9	1	B1 cao
	(b)		28	1	B1 cao
	(c)		35	1	B1 cao
	(d)		12.5	2	M1 for attempt to isolate the number term or divide all the terms by 4 as the first step. A1 for 12.5 oe

PMT

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*11			No as 33 > 26 or 50 > 48.6	5	M1 for finding the sale price of either books eg 46 × 0.50 (= 23) or 68 × 0.30 (= 20.4) M1 for finding the total sale price of all the books eg 23 + 20.4 (= 43.4) M1 for finding the change (eg 50 – '23' – '20.4' (= 6.6)) or the sale price of the magazines (eg 26 × 0.20 (= 5.2)) A1 for 33 or 48 or 6.6(0) **and** 5.2(0) or 48.6(0) C1 (dep on at least M1) for No and comparison of their values (Accept working throughout in £ or pence)

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		145	1	B1 accept 143 – 147
	(b)		7 – 9	4	M1 for carrying out a correct measurement of one of the lines eg (AC as) 10.3 – 10.7 or (BC as) 7.8 – 8.2 or (AB as) 6.3 − 6.7 M1 for scaling at any stage (by ×2) M1 for complete process of lengths AC – (AB + BC) ; scaled or unscaled A1 for answer in range 7 – 9
13			Tessellation	2	B2 for at least 6 correct shapes (including initial shape) correctly tessellating (B1 for at least 4 correct shapes (including initial shape) correctly tessellating)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		$\frac{75}{200}$	1	B1 for $\frac{75}{200}$ or equivalent fraction
	(b)		6	2	M1 for $\frac{81}{1350} \times 100$ oe A1 cao
15			Correct enlargement	2	M1 for enlarging 2 adjacent sides correctly or correct enlargement using incorrect scale factor ($\neq 1$) A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			Office Deals with reason	4	M1 for 60 ÷ 20 (= 3) or 60 = 20 × 3 **and** 60 ÷ 15 (= 4) or 60 = 15 × 4 M1 for '3' × 10.80 (= 32.4) M1 for '4' × 8.40 (= 33.6) C1 for Office Deals and with comparison of two correct figures for total cost with correct money notation eg £32.40 < £33.60 eg £1.20 less OR M1 for 10.8 ÷ 20 (= 0.54) M1 for 8.40 ÷ 15 (= 0.56) M1 for showing 60 is multiple of 15 and of 30 eg 60 ÷ 20 = 3 or 3 × 20 = 60 C1 for Office Deals and with comparison of two correct figures for cost per folder £0.54 < £0.56 with correct money notation and evidence that 60 is common multiple of both 15 and 20

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			27	4	B1 for correct conversion of units eg 0.76(0) eg 25 000 eg 4300 M1 for taking the weight if 1 empty box into account eg 25 – 4.3 or a complete method to find number of plates, ignoring the box, and rounding down M1 for a complete correct method (before rounding down) eg 27.2(368...) A1 cao
18			34	2	M1 for 4 × 6 (=24) or 2 × 5 (=10) A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
19			58.05	4	B1 for identifying 19.5(0) and 15(.00) M1 for a correct method to find the total cost of their identified tickets for the family, or for a correct method to find the discounted cost of at least one of the identified tickets M1 (dep) for a correct method to find the total discounted cost of their 1 adult and 3 child tickets A1 cao
20	(a)			2	B2 for correct full size plan (B1 for square with 6cm side length or complete plan not full size)
	(b)		Correct diagram	3	M1 for one correct side length (tolerance ± 2mm) M1 for another correct side length (tolerance ± 2mm) A1 for fully correct diagram **SC:** B1 for a fully correct sloping face in a 3D sketch

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21		65% is 5473 $\frac{1}{5}$ is 1684 85% is 7157 15% is 1263	1263	4	M1 for a correct method to find 65% (= 5473) of the customers M1 for a correct method to find $\frac{1}{5}$ (= 1684) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao OR M1 for a correct method of adding 65% and $\frac{1}{5}$ when both correctly written as percentages (= 85%) or decimals (= 0.85) or fractions (= $\frac{85}{100}$ oe) M1 ft for a correct method to find the percentage or decimal or fraction of the customers (= 7157) M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21 (cont)					OR M1 for a correct method of adding 65% and $\frac{1}{5}$ when both correct percentages (= 85%) or decimals (= 0.85) or fractions (= $\frac{85}{100}$ oe) M1 ft for a correct method to find the remaining percentage (= 15%) or decimal (= 0.15) or fraction ($\frac{15}{100}$ oe) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
22		$x = 3$ gives 39 $x = 4$ gives 80 $x = 3.1$ gives 42.(191) $x = 3.2$ gives 45.(568) $x = 3.3$ gives 49.(137) $x = 3.4$ gives 52.(904) $x = 3.5$ gives 56.(875) $x = 3.6$ gives 61.(056) $x = 3.7$ gives 65.(453) $x = 3.8$ gives 70.(072) $x = 3.9$ gives 74.(919) $x = 3.55$ gives 58.9(38) $x = 3.56$ gives 59.3(58) $x = 3.57$ gives 59.7(79)	3.6	4	B2 for a correct trial in the range $3.5 \leq x \leq 3.6$ evaluated (B1 for a correct trial in the range $3 \leq x \leq 4$ evaluated) B1 for a different correct trial in the range $3.55 \leq x < 3.58$ evaluated B1 (dep on at least one previous B1) for 3.6 Accept trials correct to the nearest whole number (rounded or truncated) if the value of x is to 1 dp but to 1 dp (rounded or truncated) if the value of x is to 2 dp **NB:** If no working shown, no marks can be awarded, even if the answer is correct.

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q1	(a)	2cm grid. 'Mirror line' written at each side.	Standard mark scheme
	(b)	2cm grid. 'Mirror line' written at top and bottom.	Standard mark scheme
Q3		Shape H removed.	Standard mark scheme
Q9		*x* axis 2cm for 1. *y* axis is 2cm for 2 ½ . Right axis labelled.	Standard mark scheme
Q12		Frame and shading removed. N line extended to 10cm. Same size kept. Leeway needed for measurement of the angle in part (a).	Standard mark scheme Angles: ±5º
Q13		Five shapes asked for instead of 6. 1½ cm grid. 2 end columns removed. MLP 18pt and 24pt: 1 shape given. BRL and larger print additional shapes given.	B2 for at least 5 correct shapes (including initial shape) correctly tessellating (B1 for at least 3 correct shapes (including initial shape) correctly tessellating)

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q15		Shape A given and also shape B (the enlargement). Wording changed: "Shape A has been mapped to Shape B." Describe the single transformation. 1 ½ cm grid.	Standard mark scheme
Q18		MLP *a* changed to *e*, *b* changed to *f*.	Standard mark scheme
Q19		Table format for July dates modified, information is the same.	Standard mark scheme
Q20	(a)	Model and diagram given. Side 6.5cm changed to 7.5cm. 2cm grid wording changed: "Draw…..on the square grid. Each square on the grid represents a one centimetre square."	Standard mark scheme
	(b)	Base line given, other 2 sides will be 7.5cm not 6.5cm.	

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Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Unit 1: 5MB1F_01 (Foundation)

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NOTES ON MARKING PRINCIPLES

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2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark for correct method A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		10	1	B1 cao
	(b)		7	1	B1 cao
	(c)		Two circles	2	B1 for 2 circles for Thursday
			4 whole circles 1 half circle		B1 for 4 whole circles and 1 half circle for Friday oe
2	(a)		2	1	B1 cao
	(b)		Red, Grey	1	B1 cao
	(c)		Bowfell	1	B1 cao
3	(a)		23	1	B1 cao
	(b)		25	1	B1 cao
	(c)		Decreasing	1	B1 for decreasing, downward, falling, –3° etc
4	(a)		Cross at ½	1	B1 for mark at ½
	(b)		Cross at 0	1	B1 for mark at 0
	(c)		Cross at ¾	1	B1 for mark at ¾

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			2 ½ hours	4	M1 for an attempt to find the difference between 2.40pm and 6pm eg 3h 20 min M1 (dep) for attempt to subtract 2 × 25min from time difference A1 for 2½ (hours) or 2.30oe C1 for correct units for with their answer OR M1 for an attempt to add 25 min to 2.40pm (= 3.05) or take 25 min from 6pm (= 5.35) M1 (dep) for "5.35" – "3.05" A1 for 2½ (hours) or 2.30 oe C1 for correct units with their answer
6			TS, TR, TF CS, CR, CF MS, MR, MF	2	B2 all correct pairs with no incorrect pairs. (B1 for at least 6 different correct pairs, ignoring any incorrect combinations)
7	(a)		Correct frequencies: 4,9,6,3	2	B2 for all frequencies correct (B1 for 2 tallies or 2 frequencies correct)
	(b)		Swimming or 9	1	B1 ft from frequencies or tallies in (a) or diagram in (c)
	(c)		Diagram or chart	3	B1 for labelling horizontal axis with activities B1 for linear scale labelled frequency oe B1 for accurately representing the data ft from their frequencies or tallies in (a)
*8			Yes and reason	2	M1 for a line drawn up from 50 or across from 80 or reading 55 or 74 C1 (dep on M1) for statement including yes and a correct reading eg 55, 74 or £6 less"

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		13	2	M1 for 18 – 5 or 5 – 18 or a – 5 or 18 – a (where a is score in list $a \neq 18$) or − 13 A1 cao
	(b)		11.5	2	M1 for an attempt to order or for answer 9 Or $\frac{10+13}{2}$ or $\frac{5+13}{2}$ A1 cao
	(c)		15	2	M1 12 × 7 (=84) or "84" − 69 A1 cao
*10			Quick Mix from correct working	4	M1 for 13.50 + 4 × 6.90 (= 41.1) M1 for 7.20 × (4 + 1) +5.90 (= 41.9) A1 for 41.1(0) **and** 41.9(0) if working seen C1 ft (dep on M1) for a statement of Quick Mix with amounts clearly associated with correct companies

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		No and comparison	2	M1 for writing a fraction of 360 eg $\frac{40}{360}$ or $\frac{36}{360}$ OR $\frac{1}{9}$ or $\frac{1}{10}$ or decimals 0.11 or 0.1 or percentages 11.1% or 10% (% needed) A1 for No and $\frac{40}{360} > \frac{36}{360}$ oe OR M1 for $\frac{10}{100} \times 360$ (= 36) A1 for No with 36
	(b)		75	3	M1 for 360 – (70 + 40 + 150) (= 100) M1 for 150 ÷ ("100" ÷ 50) oe A1 cao
12	(a)		(17) 9 (14) 12 (13) 7 (29) 22 (21)	2	B2 for all 4 correct entries (B1 for 2 or 3 correct entries)
	(b)		$\frac{40}{72}$	1	B1 for $\frac{40}{72}$ oe
	(c)		$\frac{13}{32}$	1	B1 for $\frac{13}{32}$ oe

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*13			4	4	M1 for 200 ÷ (1 + 9) (= 20) M1 for 750 ÷ 20 (= 37.5) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 750 × 10 (= 7500) M1 for 200 × 140 (= 28 000) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 × 140 (= 28 000) M1 for 28 000 ÷ (9 + 1) (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown **OR** M1 for 200 ÷ (1 + 9) (= 20) M1 for 140 × "20" (= 2800) A1 for 3.7(3….) or $3\frac{11}{15}$ or 2800 **and** 3000 C1 ft (dep on M1) for clear statement of 4 bottles with working shown

Paper_5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		Point plotted	1	B1 for point plotted at (6,35)
	(b)			1	B1 for description of dynamic relationship eg "the lower the temperature, the more hot chocolate sold" or negative correlation
	(c)			1	Single straight line of best fit which could be used to take readings
	(d)		21-26	1	B1 for answer in the range 21-26 or ft from single straight line segment (if previous B0)
15			$\frac{20-x}{20}$	2	M1 for writing $20 - x$ OR 20 as any denominator below an algebraic expression in x or $20 - x \div 20$ A1 for $\frac{20-x}{20}$ or $1 - \frac{x}{20}$ oe
16	(a)		2 reasons	2	B2 for 2 aspects from: Bias or leading question; No time frame; Vague response boxes (B1 for 1 aspect)
	(b)		Question	2	B1 for unbiased question including time period B1 for at least 3 non-overlapping which are also exhaustive; do not accept inequality symbols in response boxes.

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PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q01		Pictogram circles larger	
Q04 Q07c		Probability scales longer 1.5cm grid Wording inserted "You may use the space below or the grid in the Diagram Book"	
Q08		Graph line moved to go through (50, 70) . 2cm grid. Y axis finishes at 100.	
Q12 Q14	(a)	Wording inserted "There are four spaces to fill" 2cm grid crosses, changed to filled in circles. Right axis labeled	

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Mark Scheme (Results)

November 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 1

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The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
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It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
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Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

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PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
1. (a)		20	1	B1 cao
(b)		14	1	B1 cao
(c)		2 squares	2	B1 for 2 squares
		$4\frac{1}{2}$ squares		B1 for $4\frac{1}{2}$ squares
2. (a)		8	1	B1 cao
(b)	6+5+8+6+7+7+8 +8+8+6 = 69 69÷10	6.9	2	M1 for complete correct method to find mean e.g. sum ÷ 10 A1 for 6.9
(c)		3	2	M1 for 8 − 5 or 5 − 8 or −3 A1 cao
(d)		No with reason	1	B1 for No and reason e.g. 7 is between highest and lowest
3. (a)		Reed Farm	1	B1 cao
(b)		Rosewood	1	B1 cao
(c)		£545	1	B1 cao

PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
4.		£4.45	3	M1 for adding 3 different prices (e.g. 3.00 + 3.50 + 2.95 (= 9.45)) or selecting the 3 highest prices M1 for complete method to find difference between total of 3 highest normal prices and £5 A1 cao
*5.		Diagram or chart	4	M1 for key or suitable labels to identify max and min M1 for 5 correct day labels or a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least 3 days C1 for fully correct diagram or chart with axes correctly scaled and labelled
6. (a)		1418	1	B1 cao
(b)		Correct plan showing departure times and arrival times for 2 train journeys.	4	B1 for a departure time from Cromer of 10 57, 11 57 or 12 57 M1 for an arrival time at Norwich which is no later than 13 41 M1 for adding 30 minutes to 16 55 or correct departure time. A1 all train departure and arrival times correct (10 57 and 11 41 or 11 57 and 12 41 or 12 57 and 13 41 AND 17 45 (and 18 36))
7. (a)		Cross at $\frac{3}{10}$	1	B1 for cross at $\frac{3}{10}$
(b)		Cross at 0	1	B1 for cross at 0
(c)		I	1	B1 cao
8.		3	2	M1 for working out or using a correct duration of time. A1 cao

PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
9.		Correct pairs 3,7 or 4,6 or 2,8 or 5,5	2	B2 for 2 pairs from 5,5 or 3,7 or 4,6 or 2,8 (B1 for one pair) (Note: Condone non-integers if correct pair(s) given)
*10		London is more expensive	4	M1 for reading from the graph, e.g. £10 = €12 or €7 = £5.80 M1 for a complete method to convert either £60 into € or €70 into £ A1 for answer in interval €71 to €72 or in interval £57 to £59 C1 ft (dep on M1) for correct conclusion for their figures using consistent units
11.		165	3	M1 for correct method to find 5% of 300 or $\frac{2}{5}$ of 300 M1 (dep) for 300 – "15" – "120" A1 cao OR M1 for 1 – 0.05 – 0.4 (= 0.55) M1 (dep) for "0.55" × 300 A1 cao

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PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12. (a)		22	1	B1 cao
(b)		23	3	M1 for correct method to find total women who came by bus, e.g. 13 – 6 (=7) M1 for correct method to find women who came by train, e.g. 22 – 7 – 4 (=11) A1 cao OR M1 for correct method to find men who came by car, e.g. 28 – 6 – 12 (= 10) M1 for correct method to find total who came by car, e.g. 10 + 4 (= 14) A1 cao
(c)		$\frac{3}{7}$	2	M1 for $\frac{12}{28}$ oe A1 oe
13.		30	2	M1 for 0.6 × 50 oe A1 cao
14.		$\frac{x+x+5+2x}{3}$	2	M1 for intention to add x, $x + 5$, $2x$ or $4x + 5$ seen or ambiguous answer, e.g. "$4x + 5$" ÷ 3 A1 for $\frac{x+x+5+2x}{3}$ oe

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PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15. (a)		2 different reasons	2	B1 for a reason relating to: Bias – due to gender or due to railway station location Size of sample too small B1 for one other reason
(b)		Question and response boxes	2	B1 for a suitable question with time period and units in question or response boxes B1 for at least 3 non-overlapping and exhaustive response boxes
16.		12 | 3 5 9 13 | 0 3 3 5 7 8 14 | 7 7 8 9 15 | 0 1	3	B2 for a fully correct ordered diagram (B1 for correct unordered diagram or ordered with at most two errors) B1 for correct key eg 12 | 3 means 123 (cm)
17. (a)		Point at (47, 34)	1	B1 point plotted
(b)		Positive	1	Positive (correlation)
(c)		48 to 51 inclusive	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a horizontal line from 35 or point marked at (n, 35) A1 for given answer in the range 48 – 51

Modifications to the mark scheme for Modified Large Print (MLP) papers.

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Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
1		Key top left. Pictures size x 2½	
3		Table: Location column removed	
5		Table: Friday row removed, Saturday – 17 changed to 12 Grid: Vertical axis – 15 x 2 cm squares, horizontal axis 10 x 2 cm squares Room left for labelling on the left and below.	
6		Table: North Walsham now removed from both tables. 1057 and 1557 removed from Cromer to Norwich 1445 and 1955 removed from Norwich to Cromer	
7		Probability scales lengthened	
10		1½ cm grid. Inside measurements of squares are 1.4 cm. Right axis labelled	

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PAPER: 5MB3H_01			
Question		**Modification**	**Notes**
12		Braille: (i) is put in total women and (ii) in train total	
16		Diagram enlarged. 4th horizontal line drawn in at the bottom.	
17		1½cm grid. Inside measurements of squares are 1.4 cm. Crosses changed to filled in circles. Right axis labelled	

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Mark Scheme (Results)

November 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

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Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
1	(a)(i)		2.67	3	B1 cao
	(ii)		4		B1 cao
	(iii)		1.8		B1 cao
	(b)		$\frac{53}{100}$	1	B1 cao
	(c)		0.6	1	B1 cao
2	(a)		Pentagon	1	B1 cao
	(b)		7	1	B1 cao
	(c)		122	2	M1 for 360 – (56+87+95) A1 cao
	(d)		A and G	1	B1 cao
3			22.5(0)	3	M1 for working out the change for one week eg 15+3.5−2 (=16.5) or 3.5−2 (=1.5) or 6−4 (=2) or 6.5−3.5 (=3) M1 for working out the change for all weeks or differences eg (15+)3.5−2+4−6+5+6.5−3.5 oe or "1.5" + "−2" + "5" + "3" (=7.5) A1 for 22.5(0) OR M1 for working out the totals in or out eg 3.5+4+5+6.5 (=19) or 2+6+3.5 (=11.5) M1 for finding the differences of totals eg "19" – "11.5" (=7.5) A1 for 22.5(0)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Reflection	1	B1 for correct reflection
	(b)		2	1	B1 cao
5	(a)		393	2	M1 for attempt to find the total mileage eg 178+215 or 207+186 A1 cao
	(b)		29	2	M1 for attempt to find the difference between the signs eg 207−178 or 215−186 or "393" – (178 + 186) or [(215+207)−(178+186)]÷2 oe A1 cao
6	(a)		2300	1	B1 cao
	(b)		35	1	B1 cao
	(c)		27	1	B1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*7			Enough bags Not enough bricks	4	M1 for a correct method to find bricks or mortar for $8m^2$ eg 8×60 (=480) oe or 8×2.4 (=19.2) oe M1 for a correct method to find bricks and mortar for $8m^2$ eg 8×60 (=480) oe and 8×2.4 (=19.2) oe A1 for 480 and 19.2 C1 (dep M1) ft for enough bags and not enough bricks oe OR M1 for a correct method to find area coverage for bricks or mortar eg 450÷60 (=7.5) or 20÷2.4 (=8.3...) oe M1 for a correct method to find area coverage for bricks or and mortar eg 450÷60 (=7.5) and 20÷2.4 (=8.3...) A1 for 7.5 and 8.3... C1 (dep M1) ft for enough bags and not enough bricks oe
8	(a)		2	1	B1 cao
	(b)		15	1	B1 cao
	(c)		9	1	B1 cao
	(d)		14	2	M1 for intention to subtract 5 from sides or multiply both sides by 2 as a first step A1 cao
*9			56p	3	M1 for a correct method to find total cost of pencils in £ or pence eg 12×37 (=444) M1 for a correct method to find the change from £5 eg 500 – "444" C1 for 56p or £0.56 ie with correct monetary units

PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
10			construction	2	M1 for a correctly drawn equilateral triangle or appropriate construction lines A1 for a correctly drawn triangle with all accurate and appropriate construction lines shown
11			6 or − 6	3	M1 for 43 – 7 (=36) or √43 M1 for correct order of operations −7 then intention to square root A1 for 6 or −6 or both OR M1 for $x^2 - 7 = 43$ M1 for adding 7 to both sides A1 for 6 or −6 or both
12			18	3	M1 for a correct method to find the number of cartons of one size that can be bought, target £11.50 M1 for a correct method to find a combination of two or more cartons of different sizes that can be bought, target £11.50 A1 cao OR M1 for a correct method to find the carton size that gives the best value for money M1 for finding the maximum number of cartons of their best value carton size, target £11.50 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13			Bloomsbury	3	M1 for a correct method to find total points from Felton or Bloomsbury eg 4×5 + 2×2 + 1×3 (=27) or 2×5 + 2×2 + 5×3 (=29) oe M1 for a correct method to find total points from Felton and Bloomsbury eg 4×5 + 2×2 + 1×3 (=27) and 2×5 + 2×2 + 5×3 (=29) oe A1 for Bloomsbury identified and 27 and 29 oe OR M1 for a correct method to find one difference in points eg (4–2)×5 (=10) or (5–-1)×3 (=12) oe M1 for a correct method to find both differences in points eg (4–2)×5 (=10) and (5–-1)×3 (=12) oe A1 for Bloomsbury and 10 and 12 oe
14	(a)		9	2	M1 for 100÷20+4 oe A1 cao
	(b)		1120	3	M1 for $x \div 20 + 4 = 60$ or $60 - 4$ (=56) or for 60 – "9" (=51) M1 for "56"×20 or for 100 + "51"×20 A1 cao or ft part (a)
15			Net	2	B2 for a net which shows an approximation to a square with 4 connecting triangles (B1 for square with at least one connected triangle

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)		$\frac{7}{13}$	2	M1 for $\frac{35}{65}$ A1 cao
	(b)		15.625	2	M1 for $\frac{1.25}{8}\times 100$ oe A1 for 15.625 oe
17			37.5	3	M1 for $90 + 5x + 7x = 180$ oe or uses the ratio of 5:7 eg 5+7 (=12) M1 for (x=) 90÷12 (=7.5) A1 cao
18	(a)		15.2 – 15.6	1	B1 for 15.2 – 15.6
	(b)		107 – 111	2	M1 for correct bearing clearly identified on diagram A1 for 107 – 111
	(c)		Region shaded	3	B1 for circle centre f, radius 3.5cm B1 for circle centre b, radius 6cm B1 for correct region shaded
*19		1.2×(550÷50) ×£4.15 =£54.78 4×£2.95×4 + 2×£2.95 =£53.10	Hammer company	5	M1 for 20% of a cost in Nail Company, eg 4.15 × 0.2 (= 0.83) oe M1(dep) for adding their 20% to their cost, eg 4.15 × 1.2 (= 4.98) oe M1 for using special offer in Hammer Company, M1 for 4 × 125 and 2 × 25 in Hammer Company oe C1 for Hammer Company and figures 54.78 [Nail Company] and 53.1(0) [Hammer Company]

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
20			36	3	M1 for 3×180 ÷ 5 (=108) or 540 ÷ 5 (=108) or for a correct calculation to find the exterior angle eg 360 ÷ 5 or 180 – 360 ÷ 5 (=108) M1 (dep) for "108" – 72 or 180 – "360 ÷ 5" – 72 or "360 ÷ 5" ÷ 2 A1 cao OR M1 for $x + x + (72 + x) = 180$ oe or $5(x + 72) = 540$ oe M1 for $(x =) (180 – 72) ÷ 3$ oe or $(x =) 540 ÷ 5 – 72$ oe A1 cao
21		2 62 2.1 65(.961) 2.2 70(.048) 2.3 74(.267) 2.4 78(.624) 2.5 83(.125) 2.6 87(.776) 2.7 92(.583) 2.8 97(.552) 2.9 102.689 3 108 2.61 88.2(49...) 2.62 88.7(24...) 2.63 89.2(01...) 2.64 89.6(79...) 2.65 90.1(59...) 2.66 90.6(41...) 2.67 91.1(24...) 2.68 91.6(08...) 2.69 92.0(95...)	2.6	4	B2 for a correct trial $2.6 \leq x \leq 2.7$ evaluated (B1 for a correct trial $2 \leq x \leq 3$ evaluated) B1 for a different correct trial $2.6 < x < 2.7$ evaluated B1 (dep on at least one previous B1) for 2.6 Accept trials correct to the nearest whole number (rounded or truncated) if the value of x is to 1 dp but correct to 1 dp (rounded or truncated) if the value of x is to 2 dp NB: no working scores no marks even if answer is correct

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PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
22			43	3	M1 for π×40 or 2× π ×20 M1 for 34×2×π×20 A1 for 42.7 – 43

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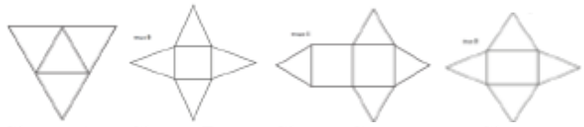
PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
2	(d)	Remove triangle H	
4	(b)	Grid enlarged. 'mirror line' repeated on the left	
5		Road given as straight line	
8	(a) (b)	MLP x changed to y t changed to e	
10		Given line 7 cm	
12		No picture – just information given	
15		Model given and a diagram for MLP Question revised – 4 shapes drawn (cut out shapes for braille) Candidates asked which shape would be a net of the square based pyramid	

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
15	ii	 Shape A Shape B Shape C Shape	
18		Garden enlarged – fountain to bench is 9.5 cm North lines put in from fountain and bench and removed from the right side.	
		Line joins fountain to bench.	
	(c)	Change 7 metres to 11 metres. Change 12 metres to 14 metres.	
12		Ground labelled	

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Mark Scheme (Results)

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In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Lhotse	1	B1 cao
	(b)		8200	1	B1 cao
	(c)		Seven thousand four hundred and twenty-eight	1	B1 for any unambiguous answer
	(d)		8051	1	B1 cao
2	(a)		4,8,3,3,2	2	M1 for at least 2 tallies or 2 frequencies correct A1 for 5 correct frequencies
	(b)		correct graph	3	M1 for bar chart or other suitable chart with at least 2 correct frequencies drawn for their scale (ft from (a)) M1 for all bars labelled and vertical axis correctly scaled A1 for accurately representing their data, with all labels, ft from (a)
3	(a)		56 000	1	B1 cao
	(b)		276	1	B1 cao
	(c)		6	1	B1 cao
	(d)		29	1	B1 cao
	(e)		13	1	B1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			3	3	M1 for attempt to find number of bags needed eg 254 ÷ 20 oe (= 12.7) **or** 12 **or** 13 M1 (dep) for "254 ÷ 20" ÷ 5 oe (= 2.4) A1 cao **OR** M1 for 5 × 20 (=100) M1 (dep) for intention to find how many "100" in 254 (= 2.54) A1 cao
5	(a)		B or C	1	B1 for B **or** C **or** B and C
	(b)		G, E	2	B1 for G; B1 for E
	(c)		Hexagon	1	B1 cao
	(d)		Parallelogram	1	B1 cao
6	(a)		$3m$	1	B1 cao
	(b)		$7e$	1	B1 cao
	(c)		$15g$	1	B1 cao
7	(a)		31	2	M1 for 3 × 5 + 2 × 8 **or** 15 and 16 A1 cao
	(b)		$6x + 8y$	2	M1 for $6x$ **or** $8y$ A1 for $6x + 8y$ oe as final answer

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		Tables-R-Us 120 + (120 + 2 × 40) = 320 Fred's Furniture 120 + (32 × 6) = 312 Tables 'n Chairs 120 + (3 × 70) = 330	Fred's Furniture with working	4	M1 for correct method to find total cost of chairs (and table) for at least one shop M1 for correct method to find total cost of chairs (and table) for at least two shops A1 for 3 comparable totals (eg. chairs £200, £192, £210 **or** table and chairs £320, £312, £330) C1 (dep on M1) ft for correct statement with shop name from comparable figures
9			48	2	M1 for method to find 15% of 320 A1 cao
10	(a)		5	1	B1 cao
	(b)		evens	1	B1 cao
	(c)		$\frac{2}{6}$ oe	2	M1 for $\frac{a}{6}$ where $a < 6$ **or** $\frac{2}{b}$ where $b > 2$ A1 for $\frac{2}{6}$ oe
11	*(a)		No with working	2	M1 for 19.5 + 22.8 (= 42.3) **or** 40 − 19.5 − 22.8 (= −2.3) **or** 22 + 19 (= 41) C1 for statement with No and 42.3 **or** ±2.3 **or** 41 seen
	(b)		12 40	3	M1 for correct start eg. addition of two times **or** subtraction of one time from 1430 M1 for a complete method A1 for 12 40 (pm)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12			126 or 176	4	M1 for correct unit conversion of 2 m or 3 m or 20 cm M1 for method to find number in width or number in length **or** 14 or 9 or 16 or 11 M1 (dep on M1) for "number in length" × "number in width" eg 14 × 9 eg 16 × 11 A1 for 126 or 176
*13			Amsterdam with figures	3	B1 for a correct conversion from miles to km or km to miles eg 8 km = 5 miles eg 28 miles = 44 km M1 for a correct method to convert 280 miles to km or 500 km to miles **or** 420 – 460 (km) **or** 300 − 320 (miles) C1 (dep on M1) for statement with correct conclusion and correct conversions (420 – 460 km or 300 – 320 miles)
14			correct shape	2	M1 for at least 2 correctly enlarged sides A1 for correct shape **SC:** B1 for a fully correct enlargement scale factor 2 or 4
15	(a)		18	1	B1 cao
	(b)		56	1	B1 cao
	(c)		33	2	M1 for 23 and 56 identified A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			No with reason	3	M1 for 17, 20 .**or** + 3 **or** $3n + 2$ M1 for method to show that 34 is not in the sequence eg continue sequence to at least 32 eg attempt to solve $3n + 2 = 34$ C1 (dep on M2) for statement with conclusion eg No with 32, 35 shown eg $n = 32 \div 3$ which is not a whole number
17			700 cm^3	3	M1 for $20 \times 5 \times 7$ A1 for 700 B1 (indep) for cm^3
18			4	3	B1 for 11.8 − 12.2 (cm) or 1180 − 1220 (km) M1 for "12" × 100 ÷ 300 oe A1 for 3.9 – 4.1 from correct figures or ft from "12" × 100 ÷ 300 oe
19			1340	4	M1 for 500 × 4 (= 2000) M1 for 960 – 300 (= 660) or "2000" + 300 (= 2300) or "2000" – 960 (= 1040) M1 (dep on M2) for a fully correct method eg "2000" – "660" or "2300" – "960" or "1040" + 300 A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)		$\frac{5}{12}$	2	M1 for $\frac{150}{360}$ or equivalent fraction A1 cao
	(b)		42	2	M1 for 60 ÷ 12 (= 5) **or** 210 ÷ 60 (= 3.5) oe A1 cao
	(c)		not enough information	1	B1 for 'not enough information' ticked **and** appropriate explanation given
21			25	4	M1 for 600 ÷ 4 (= 150) M1 for 4500 ÷ "150" (= 30) M1 for 750 ÷ "30" A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) M1 for 600 ÷ 4 (= 150) or 600 ÷ "6" (= 100) M1 for "150" ÷ "6" or "100" ÷ 4 A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) or 750 ÷ 4500 (= $\frac{1}{6}$) M1 for $\frac{1}{4}\times"\frac{1}{6}"$ $\left(=\frac{1}{24}\right)$ M1 for $"\frac{1}{24}"\times 600$ A1 for 25 with supporting working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			130 + correct reasons	4	M1 for angle *BFG* = 65 (may be seen on diagram) M1 (dep) for correct method to calculate *x* eg (*x* =) 65 + 65 (= 130) **or** (*x* =) 180 − (180 − 2 × 65) (= 130) C2 for *x* =130 **and** full appropriate reasons related to method shown (C1 (dep on M1) for any one appropriate reason related to method shown) eg alternate angles are equal ; base angles in an isosceles triangle are equal; angles in a triangle add up to 180°; angles on a straight line add up to 180°; exterior angle of triangle = sum of two interior opposite angles co-interior angles (allied angles) add up to 180°
23	(a)		2 reasons	2	B2 for two different reasons (B1 for 1 reason) eg No units (of distance) eg Overlapping intervals (2 and/or 3 in two boxes) eg Missing box (no box for more than 6 (km/miles) or 'other' or 4.5 (km/miles))
	(b)		Question	2	B1 for a suitable question which includes a time frame (time frame could appear with response boxes) B1 for at least 3relevant non-overlapping **and** exhaustive response boxes [Do not allow inequalities in response boxes]

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)		$e(3e + 5)$	1	B1 for $e(3e + 5)$
	(b)		4	3	M1 for intention to expand brackets eg $7k - 21$ **or** division of all terms on RHS by 7 as a first step M1 for correct method to isolate terms in k in an equation A1 cao
	(c)		$a = 2f - 1$	2	M1 for a correct first step eg intention to multiply both sides by 2 A1 cao
25			$2 \times 2 \times 3 \times 3 \times 5$	3	M1 for continual prime factorisation (at least two consecutive steps correct) **or** at least two stages of a factor tree correct M1 for a fully correct factor tree **or** list 2, 2, 3, 3, 5 A1 for $2 \times 2 \times 3 \times 3 \times 5$ or $2^2 \times 3^2 \times 5$
26			9	4	M1 for method to find the area of one rectangle eg 15×8 (=120) or 15×11 (=165) M1 (dep) for subtraction from/by given area eg 138 − "120" (=18) or "165" – 138 (=27) M1 for final step from complete method shown eg 15 − "18"÷ 3 or for "27" ÷ 3 A1 cao **OR** M1 for a correct expression for the area of one rectangle eg $(8 + 3) \times (15 - x)$ or $8 \times x$ M1 (dep) for a correct equation eg $(8 + 3) \times (15 - x) + 8 \times x = 138$ M1 for correct method to isolate x eg $3x = 27$ A1 cao

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		Take out Jannu	
2	(b)	Table layout modified 2 cm grid provided with 14 squares across and 12 squares up Space on left and at the bottom for labeling	
5		Shapes H and I removed	
7		*a* changed to *e* *c* changed to *f*	
10		Spinner straightened up,● at centre to represent spike	
13		2 cm grid provided	
14		1½ cm grid provided Enlargement given Question reversed – 'Describe fully the transformation that maps Shape A onto Shape B	

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
15		Horizontal lines inserted to separate rows	
17		Model provided	

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Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)			1	B1 for 6 TVs drawn for Sunday
	(b)		37	2	M1 for attempt to find the total for 4 days (eg 8+10+13+6) by adding individual days with at least 3 days correct A1 cao
2	(a)		50	1	B1 cao
	(b)		$\frac{3}{8}$	1	B1 cao
	(c)		2 squares shaded	1	B1 cao
	(d)		$\frac{2}{8}$ and $\frac{5}{20}$	2	B2 for both correct (B1 for one correct)
3	(a)		37.4	1	B1 cao
	(b)		6500	2	M1 for sight of 3500 or attempt to count up from 3500 on scale or count down from 10000 on scale or 10000 – "3500" ["3500" in the range 3000 – 4000] or an answer which includes the digits 65 A1 cao
4	(a)		Gulf	1	B1 cao
	(b)		Avris	1	B1 cao
	(c)		19 200	1	B1 cao

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		Parallel lines marked	1	B1 for parallel lines marked
	(b)		Right angle	1	B1 for right angle marked
	(c)		35	1	B1 for 33 - 37
6	(a)		11	1	B1 cao
	(b)		+ 8 or × 3	1	B1 for + 8 or × 3
7	(a)		08 12	1	B1 cao
	(b)		6	2	M1 for evidence of counting on 15 minutes from 09 20, could be shown with table A1 cao
	(c)		17 35	1	B1 cao
8	(a)(i)		likely	2	B1 cao
	(ii)		Mark at 0		B1 cao
	(b)		Mark at $\frac{1}{2}$	1	B1 cao
	(c)	(1, H), (2, H), (3, H), (4, H), (5, H); (6, H), (1, T), (2, T), (3, T), (4, T), (5, T), (6, T)	combinations shown	2	M1 for at least 4 correct outcomes A1 for all 12 correct outcomes with no incorrect outcomes and no repeats

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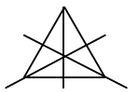
PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		4.40	3	M1 for a method to find the cost for one delivery method eg 19 + 7 × 0.7(0) (= 23.9(0)) or 16 + 7 × 0.5(0) (= 19.5(0)) M1 for a method to find the cost for **both** delivery methods **and** attempting to subtract eg 23.90 – 19.50 A1 cao Accept 4.4 **OR** M1 for method to find the difference between the two delivery costs eg 19−16 (=3) and 70-50 (=20) M1 for a method to find the "cost" using the differences eg "3" + 7 × "20" A1 cao Accept 4.4
	(b)		23	3	M1 for 25 – 16 (= 9) M1 for a method to divide "9" by 0.50 (= 18) A1 cao **OR** M1 for starting with 16 and a method to add on 0.50s M1 for starting with 16 and adding on 0.50s to within 0.50 of 25 A1 cao
10	(a)		5.8 to 6	1	B1 for an answer in the range 5.8 to 6
	*(b)		No (supported)	3	M1 for a correct conversion of any amount (lb to kg or kg to lb) excepting that in (a) M1 (dep M1) for a complete method to convert 100 kg (from 25×4) to lb (to compare with 200 lb) or to convert 50 lb (from 200÷4) to kg (to compare with 25 kg) C1 for "no" and a comparison with a converted weight of 212 - 228 pounds or 88 - 94 kg

<table>
<tr><th colspan="6">PAPER: 1MA0_1F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>11</td><td>(a)</td><td></td><td>2, 1</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(b)</td><td></td><td>–2, 3</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(c)</td><td></td><td>Point marked</td><td>1</td><td>B1 for point marked at (–3, –1)</td></tr>
<tr><td></td><td>(d)</td><td></td><td>Line $x = 3$ drawn</td><td>1</td><td>B1 for line $x = 3$ drawn</td></tr>
<tr><td>12</td><td></td><td></td><td>13
−1
13
26</td><td>4</td><td>B1 cao
B1 cao
B1 cao
B1 cao
SC: If B0 scored award M1 for appropriate working shown</td></tr>
<tr><td>13</td><td>(a)</td><td></td><td>9</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(b)</td><td></td><td>50</td><td>1</td><td>B1 cao</td></tr>
<tr><td>*14</td><td></td><td>
<table>
<tr><td colspan="2">g</td><td colspan="2">kg</td></tr>
<tr><td>2000</td><td>600</td><td>2</td><td>0.6</td></tr>
<tr><td colspan="2">mm</td><td colspan="2">cm</td></tr>
<tr><td>400</td><td>450</td><td>40</td><td>45</td></tr>
<tr><td>210</td><td>350</td><td>21</td><td>35</td></tr>
<tr><td>75</td><td>80</td><td>7.5</td><td>8</td></tr>
</table>
</td><td>Yes with correct conversions</td><td>4</td><td>M1 for using 1 kg = 1000 g eg sight of 2000 or 0.6
M1 for using 1 cm = 10 mm eg sight of 400, 210, 25, 45, 35 or 8
M1 for evidence of considering three boxes eg 2.5×3 (=7.5) or reducing the 2kg parcel to compare with one box
C1 for “yes” with correct conversions of dimensions and weight
NB: Candidates can work in cm or in mm and in kg or g</td></tr>
<tr><td>15</td><td>(a)</td><td></td><td>1</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(b)</td><td></td><td>54</td><td>2</td><td>M1 fx (at least 3 seen from 0×2, 1×12, 2×8, 3×6, 4×2) or for an answer of 56
A1 cao</td></tr>
</table>

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)			2	M1 for any 1 correct line of symmetry, allow extras A1 for all 3 lines and no extras
	(b)		Triangle drawn	2	M1 for intersecting arcs of radii 6cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
	(c)		48	2	M1 for 24 ÷ 3 (=8) A1 cao
	(d)		Tessellation	2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating)
17	(a)		–7	2	M1 for 2 × 4 + 3 × –5 or 8 – 15 oe A1 cao
	(b)		36	1	B1 cao
*18			x =115° with complete reasons	3	M1 for angle CEB = 180 – 25 – 90 (= 65) or angle ABE = 90 – 25 (= 65) or for x = 25 + 90 A1 for 115 C1 (dep on M1) for full reasons, appropriate to their given method e.g. angles in a triangle add up to 180° **and** angles on a straight line add up to 180° e.g. the exterior angle of a triangle is equal to the sum of the interior opposite angles e.g. angles in a quadrilateral add up to 360° e.g. alternate angles are equal

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		16	2	M1 for 360 ÷ 45 oe or 2 × 8 or Roach identified as 6 or Bream identified as 8 A1 cao
	(b)		No	1	B1 for 'No' and correct explanation, e.g. the pie charts only show that the proportions OR explains that she could be correct if the total number of fish is the same in each chart OR explains that we don't know if she is correct because the total number of fish is not known.
20			18	3	M1 for $\frac{1}{10} \times 60$ (= 6) or $\frac{1}{10} + \frac{3}{5}$ or "$\frac{7}{10}$" oe M1 for $\frac{3}{5} \times 60$ (= 36) or 1 – "$\frac{7}{10}$" (=$\frac{3}{10}$) or "$\frac{7}{10}$"× 60 (= 42) A1 cao
21			12	3	M1 for a method to find volume of a cuboid, eg. 2 × 10 × 15 (= 300) or 5 × 5 × x (= 25x) M1 (dep) for "300" ÷ "25" oe A1 cao OR M1 for 10 ÷5 (= 2) and 15 ÷ 5 (= 3) or 10 ÷5 (= 2) and 2 ÷ 5 (= 0.4) M1 (dep) for 2 × "2" × "3" or 15 × "2" × "0.4" A1 cao

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			Question	2	B1 for a question with a time frame for frequency of use B1 for at least 3 correctly labelled response boxes (non-overlapping and exhaustive) [Do not allow inequalities in response boxes]
23	(a)		$2(4x + 3)$	1	B1 cao
	(b)		$y(y - 2)$	1	B1 cao
	(c)		p^5	2	M1 for $\frac{p^{3+4}}{p^2}\left(=\frac{p^7}{p^2}\right)$ or $p^{3-2} \times p^4$ $(= p^1 \times p^4)$ or $p^3 \times p^{4-2}$ $(= p^3 \times p^2)$ A1 cao

PAPER: 1MA0_1F

Question		Working	Answer	Mark	Notes
*24		1195 4780 5975 **2 3 9** 5 | 0 4 | 0 6 | 1 8 | **2** 5 | 1 0 | 1 5 | 4 5 | **5** 9 7 5 | | 200 | 30 | 9 | | 20 | 4000 | 600 | 180 | | 5 | 1000 | 150 | 45 | 4000 + 1000 + 600 + 150 + 180 + 45 = 5975	Kirsty's Plants with correct calculations	5	M1 for complete method with relative place value correct. Condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation or digits 5975 M1 for a complete method to find 120% of £52.50 A1 for 59.75 and 63(.00) C1 (dep on M2) for correct conclusion for their figures OR M1 for the start of a method to divide £52.50 by 25, eg. 2 rem 2 M1 for a complete method to divide £52.50 by 25, condone one arithmetic error, or digits 21 M1 for a complete method to find 120% of "£2.10" A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures OR M1 for a complete method to find 120% of £52.50 M1 for the start of a method to divide "63" by 25, eg. 2 rem 13 M1 for a complete method to divide "63" by 25, condone one arithmetic error, or digits 252 A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures
25	(a)		Relationship	1	B1 for a description of a dynamic relationship eg "The older the car the lower the price" or "The newer the car the greater the price" oe (accept negative correlation)
	(b)		6400 to 7000	2	B2 for an answer in the range 6400 to 7000 OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit or vert. line from 3.5 or a point plotted at (3.5, *y*), *y* in the range 6400 to 7000 A1 for 6400 to 7000

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26		40, 80, 120 15, 30, 45, 60, 75, 90, 105, 120 40 = 2 × 2 × 2 × 5 15 = 3 × 5	3 and 8 or any multiple of 3, 8	3	M1 for multiples of both 40 and 15 (at least 2 of each shown but condone errors if intention is clear) or 40 × 15 M1 (dep on M1) for a complete method to find a common multiple of 40 and 15, eg sight of 120, 240, 600, condoning one arithmetic error in any lists of multiples shown A1 for 3, 8 or any multiple of 3, 8 **OR** M1 for factors 2,2,2,5 and factors 3,5 M1 (dep on M1) for a complete method to find a common multiple of 40 and 15 A1 for 3, 8 or any multiple of 3, 8
*27			Has enough (with evidence)	5	M1 for splitting the shape (or showing recognition of the "absent" triangles) and using a method to find the area of one shape M1 for a complete method to find the total area, (= 9 m^2) M1 (dep M1) for a method to find the number of packs required from their total area, eg. "9" ÷ 2 = 4.5 rounded up to 5 M1 for a method to find 75% of 24.80 or 75% of the cost of their total number of packs, eg. 24.80 × 5 × $\frac{75}{100}$ (= 93) or 24.80 × $\frac{75}{100}$ (= 18.6) C1 for a conclusion supported by fully correct answers, eg. showing 9 (m^2), 5 (packs) and 93 or 7 (from 100 – 93) **OR** M1 for method to find 75% of £24.80, eg. 24.80 × $\frac{75}{100}$ (= 18.6) M1 for method to find total number of packs Mary can buy, eg. 100 ÷ "18.60" = 5.3.... truncated to 5 or 10 (m^2) M1 for finding area of one relevant shape or showing how one pack (2 m^2) can fit in the diagram M1 (dep on previous M1) for complete method to show that 5 packs can cover the floor C1 for a conclusion supported by fully correct answers, showing the capacity (10) greater than total area (9)

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Modifications to the mark scheme for Modified Large Print (MLP) papers.

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Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q1	(a)	Diagram enlarged. The key has been moved above the diagram. Braille only: rectangle has been divided into 4 in the diagram.	B1 for 6 TVs drawn for Sunday
Q1	(b)	Diagram enlarged. The key has been moved above the diagram. Braille only: rectangle has been divided into 4 in the diagram.	M1 for attempt to find the total for 4 days (eg 8+10+13+6) by adding individual days with at least 3 days correct A1 cao
Q2	(a)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(b)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(c)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(d)	All diagrams enlarged. Shading changed to dotty shading. 'some' replaced by 'five'.	B2 for both correct (B1 for one correct)

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q3	(a)	All diagrams enlarged.	B1 cao
Q3	(b)	All diagrams enlarged.	M1 for sight of 3500 or attempt to count up from 3500 on scale or count down from 10000 on scale or 10000 – "3500" ["3500" in the range 3000 – 4000] or an answer which includes the digits 65 A1 cao
Q4	(a)	Final column removed from the table.	B1 cao
Q4	(b)	Final column removed from the table.	B1 cao
Q4	(c)	Final column removed from the table.	B1 cao
Q5	(a)	Diagram enlarged. Angle arc put inside the angle size.	B1 for parallel lines marked
Q5	(b)	Diagram enlarged. Angle arc put inside the angle size.	B1 for right angle marked
Q5	(c)	Diagram enlarged. Angle arc put inside the angle size.	B1 for 33 - 37
Q6	(a)	Diagrams enlarged.	B1 cao
Q6	(b)	Diagrams enlarged. Braille only: (i) placed in the space.	B1 for + 8 or × 3
Q8	(a)(i)	Candidates asked to write the word instead of circling. Diagrams enlarged.	B1 cao

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q10	(a)	13 pounds changed to 35 pounds. Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B1 for an answer of 16
Q10	*(b)	Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	M1 for a correct conversion of any amount (lb to kg or kg to lb) excepting that in (a) M1 (dep M1) for a complete method to convert 100 kg (from 25×4) to lb (to compare with 200 lb) or to convert 50 lb (from 200÷4) to kg (to compare with 25 kg) C1 for "no" and a comparison with a converted weight of 212 - 228 pounds or 88 - 94 kg
Q11	(a)	Grid enlarged. Crosses changed to filled in circles.	B1 cao
Q11	(b)	Grid enlarged. Crosses changed to filled in circles.	B1 cao
Q11	(d)	Grid enlarged. Crosses changed to filled in circles.	B1 for line $x = 3$ drawn
Q11	(c)	Grid enlarged. Crosses changed to filled in circles. 'with a cross (x)' removed.	B1 for point marked at (–3, –1)

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q12		Wording added: 'There are four spaces to fill.'	B1 cao B1 cao B1 cao B1 cao SC: If B0 scored award M1 for appropriate working shown
Q13	(a)	MLP only: x changed to y.	B1 cao
Q14		2 models provided for all candidates. MLP also have diagrams for Diagrams A and B. For third diagram, all have a diagram showing the side view and the end view . Wording is adjusted.	M1 for using 1 kg = 1000 g eg sight of 2000 or 0.6 M1 for using 1 cm = 10 mm eg sight of 400, 210, 25, 45, 35 or 8 M1 for evidence of considering three boxes eg 2.5×3 (=7.5) or reducing the 2kg parcel to compare with one box C1 for "yes" with correct conversions of dimensions and weight NB: Candidates can work in cm or in mm and in kg or g
Q15	(a)	MLP only: Frequency column is widened to allow for working.	B1 cao
Q15	(b)	MLP only: Frequency column is widened to allow for working.	M1 *fx* (at least 3 seen from 0×2, 1×12, 2×8, 3×6, 4×2) or for an answer of 56 A1 cao

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q16	(a)	Diagram is enlarged.	M1 for any 1 correct line of symmetry, allow extras A1 for all 3 lines and no extras
Q16	(b)	Diagram is enlarged. 6 cm changed to 8 cm. Base line given on the diagram.	M1 for intersecting arcs of radii 8cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
Q16	(c)	Diagram is enlarged. Diagrams enlarged.	M1 for 24 ÷ 3 (=8) A1 cao
Q16	(d)	Diagram is enlarged. Grid enlarged. Dots are 3 cm apart. Cut out shape provided for all. Braille candidates have extra shapes.	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating)
Q17	(a)	MLP only: a changed to e, b changed to f.	M1 for $2 \times 4 + 3 \times -5$ or $8 - 15$ oe A1 cao
Q18		Diagram enlarged. Angle arc put inside the angle size. Wording added: 'Angle DEB is marked x.'	M1 for angle *CEB* = 180 – 25 – 90 (= 65) or angle *ABE* = 90 – 25 (= 65) or for $x = 25 + 90$ A1 for 115 C1 (dep on M1) for full reasons, appropriate to their given method e.g. angles in a triangle add up to 180° **and** angles on a straight line add up to 180° e.g. the exterior angle of a triangle is equal to the sum of the interior opposite angles e.g. angles in a quadrilateral add up to 360° e.g. alternate angles are equal

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q19	(a)	Diagrams enlarged.	M1 for 360 ÷ 45 oe or 2 × 8 or Roach identified as 6 or Bream identified as 8 A1 cao
Q19	(b)	Diagrams enlarged.	B1 for 'No' and correct explanation, e.g. the pie charts only show that the proportions OR explains that she could be correct if the total number of fish is the same in each chart OR explains that we don't know if she is correct because the total number of fish is not known.
Q21		2 models provided for all candidates. MLP also have diagrams. In text, wording is added to give the dimensions of the first cheese.	M1 for a method to find volume of a cuboid, eg. 2 × 10 × 15 (= 300) or 5 × 5 × x (= 25x) M1 (dep) for "300" ÷ "25" oe A1 cao OR M1 for 10 ÷5 (= 2) and 15 ÷ 5 (= 3) or 10 ÷5 (= 2) and 2 ÷ 5 (= 0.4) M1 (dep) for 2 × "2" × "3" or 15 × "2" × "0.4" A1 cao
Q23	(a)	MLP only: x changed to y.	B1 cao

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q25	(a)	Diagram enlarged. Crosses changed to filled in circles. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B1 for a description of a dynamic relationship eg "The older the car the lower the price" or "The newer the car the greater the price" oe (accept negative correlation)
Q25	(b)	Diagram enlarged. Crosses changed to filled in circles. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B2 for an answer in the range 6400 to 7000 OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit or vert. line from 3.5 or a point plotted at (3.5, *y*), *y* in the range 6400 to 7000 A1 for 6400 to 7000
Q27		Diagram enlarged. Measurement lines for 1 metre and 2.2 metres are removed. Dashed measurement line for 3.4 metres.	M1 for splitting the shape (or showing recognition of the "absent" triangles) and using a method to find the area of one shape M1 for a complete method to find the total area, (= 9 m^2) M1 (dep M1) for a method to find the number of packs required from their total area, eg. "9" ÷ 2 = 4.5 rounded up to 5 M1 for a method to find 75% of 24.80 or 75% of the cost of their total number of packs, eg. $24.80 \times 5 \times \frac{75}{100}$ (= 93) or $24.80 \times \frac{75}{100}$ (= 18.6) C1 for a conclusion supported by fully correct answers, eg. showing 9 (m^2), 5 (packs) and 93 or 7 (from 100 – 93) **OR** M1 for method to find 75% of £24.80, eg. $24.80 \times \frac{75}{100}$ (= 18.6) M1 for method to find total number of packs Mary can buy, eg. 100 ÷ "18.60" = 5.3.... truncated to 5 or 10 (m^2) M1 for finding area of one relevant shape or showing how one pack (2 m^2) can fit in the diagram M1 (dep on previous M1) for complete method to show that 5 packs can cover the floor C1 for a conclusion supported by fully correct answers, showing the capacity (10) greater than total area (9)

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Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

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NOTES ON MARKING PRINCIPLES

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3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

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5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given as fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		17.1	1	B1 cao
	(b)		1.3	1	B1 cao
	(c)		10.24	1	B1 cao
2	(a)		Hexagon	1	B1 cao
	(b)		8	1	B1 cao
3		$4 \times 17 + 3$	71	2	M1 for a complete method seen or 68 given as the answer A1 cao
*4			D C F S R 7 5 3 1 4 Suitable chart or diagram	3	M1 bar chart or other suitable chart with sections for at least 2 pets M1 sections for each pet and vertical axis correctly scaled / 2 correct frequencies C1 fully correct chart or diagram, including correct frequencies and all labels
5	(a)		$5e$	1	B1 cao
	(b)		$7gh$	1	B1 cao
	(c)		$a + 6d$	2	M1 for a or $6d$ A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6			9	3	M1 for two correct operations seen or implied M1 for a complete method A1 cao OR M1 for 13 + 5 (= 18) and 4 + 7 (= 11) M1 for a complete method A1
7	(a)(i)		95	2	B1 cao
	(ii)		Reason		B1 angles in a triangle add to 180°
	(b)		Drawing	3	B3 for a fully correct triangle (B2 for a triangle with 2 of the 3 aspects: line of 8cm; angle of 40º; angle of 45º) (B1 for 1 of the 3 aspects)
8	(a)		15 minutes	2	B1 15 B1 (indep) minutes
	(b)		3 05	2	M1 for intention to add 10 minutes and 55 minutes to 2 o'clock A1 3 05 oe
	*(c)		No with reason	2	M1 for a method to add 75 minutes to '3 05' or to work out the difference between '3 05' and 4 pm or to subtract 75 minutes from 4 pm C1(dep M1) for conclusion based on appropriate working and correct time calculations, ft from (b)

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		12.5	1	B1 cao
	(b)		500	2	M1 for a complete method to find $\frac{5}{6}$ of 600 or 600 ÷ 6 (= 100) A1 cao
10	(a)		$\frac{68}{105}$	1	B1 oe
	(b)		22	2	M1 for 105 – 15 – 68 oe A1 cao
	(c)		14.3	2	M1 15 ÷ 105 × 100 oe A1 for answer in range14.2 – 14.3
11	(a)		300	1	B1 cao
	(b)		100	3	M1 for intention to find the total number of adults or the total number of children M1(dep) for subtracting the two totals A1 for answer in range 90 to 110 OR M1 for intention to find the difference between the number of adults and the number of children for two months M1 (dep) for correctly processing all the differences A1 for answer in range 90 to 110

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*12			£52.74 or 5274p	4	M1 for subtracting to find the units used (= 293) M1 for '293' × 18 or '293' × 0.18 A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units OR M1 for 2968 × 18 (= 53424) or 2675 × 18 (= 48150) or 2968 × 0.18 (= 534.24) or 2675 × 0.18 (= 481.50) M1 for subtracting their two costs (consistent in pence or pounds) A1 for 52.74 or 5274 C1 (dep M2) for identifying their answer with the correct monetary units
13	(a)(i)		19	2	B1 cao
	(ii)		Reason		B1 explanation, e.g. add 4 each time
	(b)		43	1	B1 cao
	(c)		Yes with reason	1	B1 reason eg 1 less than 80 and 80 is a multiple of 4, or generate series to 79, or 79 is the 20th term, oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		12	1	B1 cao
	(b)		6	2	M1 for 18 –12 or 12 –18 or 12 to 18 A1 cao
	(c)		15	2	M1 for listing the numbers in order or identifying the middle two numbers as 15 or an answer of 14 A1 cao
	(d)	174÷12	14.5	2	M1 for adding the numbers and dividing by 12 A1 cao
*15			65 km is not enough	4	M1 for intention to add the four distances M1 for adding with consistent and correct use of units A1 65(km) oe [can work in other units eg metres] C1 (dep on M2) correct conclusion comparing their figure to 70 with supporting working eg 18.2+14.25+20.5+12.05 = 65km or 18+14+20+12 = 64; 0.2+0.25+0.5+0.05 = 1; 64+1 = 65km
16			Suitable data collection sheet	3	B3 for a table with all 3 aspects: column/row heading ‘colour’ or list of at least three colours column/row heading ‘tally’ or tally marks column/row heading ‘frequency’ or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects) NB: Do not accept questionnaires or graphs

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			$T = 6d + 15f$	3	M1 for $6d$ or $15f$ or T = a linear expression in d and/or f M1 for $6d + 15f$ oe or $T = 6d$ (+ kf) oe or $T = 15f$ (+ kd) A1 $T = 6d + 15f$ oe
18	(a)	2,5	2 or 5	1	B1 cao
	(b)	1, 4, 9, 16 1 + 4 + 16	1, 4, 16	2	M1 for identifying at least 2 different square numbers from the list A1 cao
19	(a)		–0.5	2	M1 for intention to subtract 19 from both sides or divide all terms by 8 as a first step A1 for –0.5 oe
	(b)		3	2	M1 for a correct operation to collect the c terms or the number terms on one side of the equation e.g. $2c – c + 5 = 8$, $2c + 5 – 5 = c + 8 – 5$ A1 cao
20			4	3	M1 for method to find 6% of 2000 (= 120) M1 (dep) for 480 ÷ '120' or for repeated addition of '120' to 480 A1 cao
21			45	4	M1 for finding the price of 1 kg or 0.5 kg of oranges M1 for using their value to find the price of 4.5 kg of oranges M1 (dep M2) for a complete method to find the price of 1 kg of apples A1 oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		$\frac{1}{30}$	1	B1 oe
	(b)		$\frac{3}{10}$	2	M1 for method to sum number of white chocolates, eg 4 + 4 + 1 (= 9) A1 $\frac{3}{10}$ or $\frac{9}{30}$ oe
	(c)		0.48	2	M1 for 1 – (0.35 + 0.17) oe A1 0.48 oe
*23		1155 ÷ 15 = 77 $x + 2x + x – 7 = 77$ $4x – 7 = 77$ $4x = 84$ $x = 21$ OR $15x + (15 \times 2x) + 15(x – 7)$ $=1155$ $60x – 105 = 1155$ $60x = 1260$ $x = 21$	Redlands 21 St Samuels 42 Francis Long 14	5	M1 for $2x$ or $x–7$ M1 for 1155 ÷ 15 (= 77) M1 (dep M2) for equation summing their three expressions to '77' A1 for 21,42 and 14 C1 for fully correct answer with correct labels OR M1 an expression for the cost of the pupils from Redlands M1 for expression for the cost of the pupils from either St Samuels or Francis Long M1 (dep M2) for equation summing their three expressions to 1155 A1 for 21,42 and 14 C1 for fully correct answer with correct labels
24			Loci drawn	3	B1 line parallel to *BC* and 3 cm from *BC* B1 arc drawn centre *C* with radius 4 cm B1 ft for shading a region below their horizontal line **and** inside their arc

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*25			No supported by working	4	M1 for π × 7 (= 21.9 to 22) or π × 7 × 2.54 (= 55.5 to 56) M1 (dep) for a complete method that could lead to two figures that are comparable e.g. π × 7 × 2.54; π × 7 and 50 ÷ 2.54 A1 for correct comparable figures e.g. 55.5 to 56 (cm); 21.9 to 22 (in) and 19.6 to 19.7 (in) C1 (dep M2) for a correct conclusion based on their comparable figures OR M1 for 50 ÷ π (= 15.9 to 15.92) or 50 ÷ 2.54π (= 6.26 to 6.27) M1 (dep) for a complete method that could lead to two figures that are comparable e.g. (50 ÷ π) ÷ 2.54; 50 ÷ π and 7 × 2.54 A1 for correct comparable figures e.g. 6.26 to 6.27 (in); 15.9 to 15.92 (cm) and 17.7 to 17.8 (cm) C1 (dep M2) for a correct conclusion based on their comparable figures
26			172.1	4	M1 for $30^2 + 20^2$ or 900 + 400 or 1300 M1 for $\sqrt{30^2 + 20^2}$ or $\sqrt{1300}$ (= 36(.0555)) M1 for a complete method to find the length of wire required e.g. 2×'36.1' + 2×30 + 2×20 A1 172 – 172.2

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
2	(a)	Diagram is enlarged.	
4		Diagram is enlarged.	
5	(c)	MLP only: *a* changed to *p*, *d* changed to *q*.	M1 for *p* or 6*q* A1 cao
7	(a)	Diagram enlarged. Angle arc put inside the angle size.	
	(b)	Diagram enlarged. Angle arc put inside the angle size. Braille only: base line given on diagram sheet. Part (c) added: 'Draw a line 8 cm long.'	

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PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
11		Diagram enlarged. Label for vertical axis placed above the axis. Right axis is labelled. 'Number of children': shading changed to dotty shading. Key moved to the top left.	
19	(b)	MLP only: *c* changed to *p*.	M1 for a correct operation to collect the *c* terms or the number terms on one side of the equation e.g. $2p - p + 5 = 8$, $2p + 5 - 5 = p + 8 - 5$ A1 cao
24		Rectangle has been widened so that *AD* and *BC* are 12 cm. In text, 8 metres has been changed to 10 metres.	B1 line parallel to *BC* and 3 cm from *BC* B1 arc drawn centre *C* with radius 5 cm B1 ft for shading a region below their horizontal line **and** inside their arc
25		Diagram is enlarged.	
26		Diagram is enlarged. 20 cm moved to the left. 30 cm moved to the top.	

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Mark Scheme (Results)

Summer 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2



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The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

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If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
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It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
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11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		43	1	B1 cao
(b)		15	1	B1 cao
(c)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ or 3 tenths oe
2 (a)		3	1	B1 cao
(b)(i)		5	2	B1 cao
(b)(ii)		9		B1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
3 (a)		$\frac{3}{4}$ shaded	1	B1 for 6 sectors shaded
*(b)		$\frac{1}{3}$ + correct reason	2	M1 for 1 ÷ 3 (=0.33…) C1 for correct statement and 0.33(…) **OR** M1 for $\frac{3\times3}{10\times3}$ and $\frac{1\times10}{3\times10}$ C1 for correct statement and $\frac{9}{30}$ and $\frac{10}{30}$ **OR** M1 for $\frac{1\times3}{3\times3}$ C1 for correct statement and $\frac{3}{9}$ and $\frac{3}{10}$ **OR** M1 for e.g. $\frac{1}{3}\times 30$ (=10) and 0.3×30 (=9) C1 for correct statement and e.g. 10 and 9
4		7	2	M1 for 40 ÷ 6 (=6.66…) OR 6 × 6 (=36) oe or 6 × 7 (=42) oe OR 40, 34, 28… oe A1 cao
5 (a)		8	1	B1 cao
(b)		rectangle drawn	2	M1 for drawing a rectangle (accept square) A1 for correct area

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
*6		No with working	3	M1 for 15×25 (=375) A1 for 375 (cm) or 75 (cm short) C1 (dep on M1) for No oe with working or ft '375' or '75' **OR** M1 for 300÷15 (=20) A1 for 20 (parcels) or 5 (parcels short) C1 (dep on M1) for No oe with working or ft '20' or '5' **OR** M1 for 300÷25 (=12) A1 for 12 (cm) or 3 (cm short) C1 (dep on M1) for No oe with working or ft '12' or '3'
7 (a)		diameter	1	B1 cao
(b)		tangent	1	B1 cao
(c)		sector drawn	1	B1 cao
8 (a)		trapezium	1	B1 cao
(b)		line of symmetry drawn	1	B1 cao
(c)		(3, 4) marked	1	B1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
9		11(am)	4	M1 for 2 ÷ 0.5 oe (=4) or 80 (minutes) M1 for '4' × 20 + 10 oe (=90 minutes) M1 for 12 30 – '90 (minutes)' oe A1 for 11(am) oe SC B2 for 10 30(am)
10		80, 75 reason	2	B1 cao B1 for correct reason, e.g. take 5 (each time)
11 (a)		18	2	M1 for 0.3×60 or 6 + 6 + 6 oe A1 cao
(b)		5	1	B1 for 5 or +5
(c)		25	1	B1 cao
12 (a)		ab	1	B1 for ab oe
(b)		$3x^2$	1	B1 for $3x^2$ oe
(c)		$4x - 5y$	2	M1 for $3x + x$ (=$4x$) or $-2y - 3y$ (= $-5y$) A1 cao
13		3	2	M1 for 120 ÷ (5 × 8) oe A1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
14	eg 5m = 16.5ft (50m =) 10×16.5 =165ft 360 – 165 = 195ft OR eg 20ft = 6m (360ft =) 18 × 6 =108m 108 – 50 =58m	185 – 210 feet or 55 – 63 metres	3	M1 for converting ft to m or m to ft M1 (dep) for difference in heights in consistent units A1 for 185 – 210 feet or 55 – 63 metres

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
*15		x = 120 with correct reasons	4	M1 for (CED=) 35 M1 for (EBD=) 180–(50+35+35) (=60) A1 for x = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle equal 2. angles in triangle add to 180 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 or (ECD=) 110 M1 for (EBD=) 110–50 (=60) A1 for x = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle are equal 2. exterior angle of triangle equals sum of interior opposite angles 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 M1 for (ECA=) 35+35 (=70) or 50 + 'ECD' A1 for x = 120 oe C1 (dep on M1) for both of 1. exterior angle of triangle equals sum of interior opposite angles 2. base angles of isosceles triangle are equal

PMT

5MB2F/01 June 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16		(Cost per paperclip) 40 ÷ 50 = 0.8 90 ÷ 120 = 0.75 OR (Paperclip per penny) 50 ÷ 40 = 1.25 120 ÷ 90 = 1.33(3) OR e.g. (number of paperclip for £3.60) 9 × 50 (=450) 4 × 120 (=480)	large with correct figures	3	M1 for 40÷50 (= 0.8) or 90÷120 (= 0.75) OR 50÷40 (=1.25) or 120÷90 (= 1.33…) OR appropriate calculation that could lead to a comparative figure, e.g. 9 × 50 (=450) or 4 × 120 (=480) M1 for method to compare figures for both boxes, e.g. 40÷50 (= 0.8) and 90÷120 (= 0.75) C1 for correct comparative figures for both boxes leading to a correct comparison, e.g. 0.8 and 0.75 and large (box) or 120 paperclip (box) or 90p (box)
17	(a)		$6xy\ (1 + 3y)$	2	M1 for correct expression with at least one factor extracted or $6xy$ (linear expression in y) A1 cao
	(b)		w^3	1	B1 cao
	(c)		a^{20}	1	B1 cao

PMT

5MB2F/01 June 2015				
Question	**Working**	**Answer**	**Mark**	**Notes**
18		270	3	M1 for 9 ÷ 0.1 (=90) or 4.5 ÷ 1.5 (=3) oe M1 for '3'× '90' oe (=270) A1 cao **OR** M1 for 4.5 ÷ 0.1 (=45) or 9 ÷ 1.5 (=6) oe M1 for '6'× '45'oe (=270) A1 cao **OR** M1 for 9 × 4.5 (=40.5) or 1.5 × 0.1(=0.15) oe M1 for '40.5' ÷ '0.15' (=270) A1 cao
19	3000 ÷ 20 = 150 150 ÷ (14+1) = 10 10 ÷ 0.5 = 20 20 × 3.99	79.80	4	M1 for 3000 ÷ 20 (=150) M1 (dep) for correct use of ratio M1(dep on M1, M1) for total cost of bottles A1 for 79.8(0)

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q2	(a)	Triangle has been enlarged.	B1 cao
Q2	(b)(ii)	Model provided for all candidates. Also a diagram provided for MLP. Diagram has been enlarged.	B1 cao
Q2	(b)(ii)	Model provided for all candidates. Also a diagram provided for MLP. Diagram has been enlarged.	B1 cao

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q3	(a)	Diagram has been enlarged.	B1 for 6 sectors shaded
Q3	(b)	Diagram has been enlarged.	M1 for 1 ÷ 3 (=0.33…) C1 for correct statement and 0.33(…) **OR** M1 for $\frac{3\times3}{10\times3}$ and $\frac{1\times10}{3\times10}$ C1 for correct statement and $\frac{9}{30}$ and $\frac{10}{30}$ **OR** M1 for $\frac{1\times3}{3\times3}$ C1 for correct statement and $\frac{3}{9}$ and $\frac{3}{10}$ **OR** M1 for e.g. $\frac{1}{3}\times 30$ (=10) and 0.3×30 (=9) C1 for correct statement and e.g. 10 and 9
Q5	(a)	Grid has been enlarged. Wording is added: “Each square represents a one centimetre square”.	B1 cao
Q5	(b)	Grid has been enlarged. Wording is added: “Each square represents a one centimetre square”.	M1 for drawing a rectangle (accept square) A1 for correct area
Q7	(a)	Diagram has been enlarged.	B1 cao
Q7	(b)	Diagram has been enlarged.	B1 cao
Q7	(c)	Diagram has been enlarged.	B1 cao

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q8	(a)	Grid has been enlarged.	B1 cao
Q8	(b)	Grid has been enlarged.	B1 cao
Q8	(c)	Grid has been enlarged.	B1 cao
Q12	(a)	MLP *a* changed to x. *b* changed to *y*.	B1 for *xy* oe
Q12	(b)	MLP *x* changed to *y*.	B1 for $3y^2$ oe
Q12	(c)	MLP *x* changed to *e* *y* changed to *f*	M1 for $3e + e$ (=$4e$) or $-2f - 3f$(= $-5f$) A1 cao
Q13		Model provided for all candidates. Also diagram provided for MLP. Diagram has been enlarged	M1 for $120 \div (5 \times 8)$ oe A1 cao
Q14		Grid has been enlarged. Right axis labelled.	M1 for converting ft to m or m to ft M1 (dep) for difference in heights in consistent units A1 for 185 – 210 feet or 55 – 63 metres

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q15		Diagram has been enlarged. Wording added: "Angle EBA is marked *x*".	M1 for (CED=) 35 M1 for (EBD=) 180–(50+35+35) (=60) A1 for *x* = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle equal 2. angles in triangle add to 180 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 or (ECD=) 110 M1 for (EBD=) 110–50 (=60) A1 for *x* = 120 oe C1 (dep on M1) for two of 1. base angles of isosceles triangle are equal 2. exterior angle of triangle equals sum of interior opposite angles 3. angles on straight line add to 180 **OR** M1 for (CED=) 35 M1 for (ECA=) 35+35 (=70) or 50 + 'ECD' A1 for *x* = 120 oe C1 (dep on M1) for both of 1. exterior angle of triangle equals sum of interior opposite angles 2. base angles of isosceles triangle are equal

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q16		Diagrams have been removed.	M1 for 40÷50 (= 0.8) or 90÷120 (= 0.75) OR 50÷40 (=1.25) or 120÷90 (= 1.33…) OR appropriate calculation that could lead to a comparative figure, e.g. 9 × 50 (=450) or 4 × 120 (=480) M1 for method to compare figures for both boxes, e.g. 40÷50 (= 0.8) and 90÷120 (= 0.75) C1 for correct comparative figures for both boxes leading to a correct comparison, e.g. 0.8 and 0.75 and large (box) or 120 paperclip (box) or 90p (box)
Q17	(a)		M1 for correct expression with at least one factor extracted or 6*xy* (linear expression in *y*) A1 cao
Q17	(b)		B1 cao
Q17	(c)	MLP and Braille: a changed to *x*.	B1 cao

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q18		Diagram has been enlarged. 9 metres moved to top of diagram 4.5 metres moved to the left of diagram.	M1 for 9 ÷ 0.1 (=90) or 4.5 ÷ 1.5 (=3) oe M1 for '3'× '90' oe (=270) A1 cao **OR** M1 for 4.5 ÷ 0.1 (=45) or 9 ÷ 1.5 (=6) oe M1 for '6'× '45'oe (=270) A1 cao **OR** M1 for 9 × 4.5 (=40.5) or 1.5 × 0.1(=0.15) oe M1 for '40.5' ÷ '0.15' (=270) A1 cao

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Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 1

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB1F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1.	(a)		Black	1	B1 cao
	(b)		Fran	1	B1 cao
	(c)		Derek	1	B1 cao
2.	(i)		16	2	B1 cao
	(ii)		12		B1 cao
3.	(a)		A	1	B1 cao
	(b)		D	1	B1 cao
4.			£44.80 or 4480p	4	M1 for 8565 – 8437 (=128) M1 for "128" × 35 A1 for digits 448(0) C1 for £44.80 or 4480p ie clearly stated answer with correct money notation.

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
5.			Diagram or chart	4	B1 for a key or suitable labels to identify the Wizard and Reds. The key may be ignored if unclear provided the graph is clear, ie if different colours are used to shade in the graph. B1 for a diagram(s) or chart(s) set up for comparison showing data for at least 3 months eg dual bar chart, composite bar charts, frequency polygon, etc. B1 for correct heights for Wizards or Reds or totals C1 for a fully correct diagram or chart.
6.		(S,F), (S,M), (S,P) (J,F), (J,M), (J,P)	6 choices	2	B2 for all 6 choices with no extras or repeats (B1 for at least 3 correct; ignore extras or repeats)
7.	(a)		$\frac{3}{10}$	2	M1 for $\frac{a}{10}$ or $\frac{3}{b}$ where $a < 10$ and $b > 3$ A1 for $\frac{3}{10}$ oe
	(b)		$\frac{7}{10}$	1	B1 ft or for $\frac{7}{10}$ oe

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
8.	(a)		3	2	M1 for evidence of ordering A1 cao
	(b)		4	2	M1 for 6 – 2 A1 cao
	(c)		3.5	2	M1 for (3 + 6 + 2 + 2 + 5 + 3) ÷ 6 or 21 ÷ 6 A1 cao
9.			Data collection sheet	3	B1 for data illustrated for fruit (at least 3 items) or correct heading B1 for tally column or frequency column labelled B1 for suitable data collection sheet appropriate to the task e.g. with exactly 3 columns and which are all correctly labelled NB do not accept questionnaires or graphs

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
10.			67	2	M1 for at least three of 1 × 8, 2 × 6, 3 × 7, 4 × 4, 5 × 2 or at least three of 8, 12, 21, 16, 10 A1 cao
11.	(a)		15.86	4	M1 for 4 × 96 (= 384) or 3 × 56 (= 168) M1 for (“384” + ”168”) × 3 ÷ 4 oe or sight of 414 M1 for 20 – “4.14” or 1586 A1 cao **OR** M1 for 4 × 96 (= 384) or 3 × 56 (= 168) M1 for 20 – (“384” + ”168”) or 20 – “552” (= 1448) M1 for “1448” + (“552” ÷ 4) A1 cao NB allow work in £ or p for M marks
	(b)		7	2	M1 for 14 ÷ 1.84 or 7.60(8695…) or 12.88 and 14.72 A1 cao
12.	(a)		$20 - t$	1	B1 for $20 - t$
	(b)		$4x + 20y$	2	B2 for $4x + 20y$ (B1 for $4x$ or $20y$)

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
13.	(a)		20	2	M1 for $\frac{60}{360}\times 120$ A1 cao **OR** M1 for 360 ÷ 120 (= 3) or 60 ÷ 3 A1 cao
	(b)		50	3	M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for 360 ÷ 120 (= 3°) or "150" ÷ 3 A1 for 50; allow answers in the range 49-51 **OR** M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for $\frac{"150"}{360}\times 120$ A1 for 50; allow answers in the range 49-51 **OR** M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for $\frac{"150"}{60}\times "20"$ A1 for 50; allow answers in the range 49-51 **OR** M1 for working out how many in all three sectors M1 for subtraction from 120 A1 for 50; allow answers in the range 49 - 51

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
14.	(a)		(146, 41)	1	B1 point plotted
	(b)		Description	1	B1 for description of dynamic relationship or statement of positive correlation
	(c)		155 – 158	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a horizontal line from 47.5 A1 answer in the range 155 – 158 or ft from line
15.	(a)		Out: 1023/1148 Return: 1737/1918 in Colwyn 5h 49min	4	B1 for selecting 1023 train (cheapest out) B1 for selecting 1737 B1 for 5h 49min (spent in Colwyn) C1 (dep on at least B1) clearly stating departure and arrival times of both trains used and correct time in Colwyn for their trains
	(b)		133.40	3	M1 for 30% of any adult fare M1 for 2 × adult fare + 3 × child fare for at least one of their chosen trains A1 (accept 133.4) (SC B2 for £188.60)

5MB1F 1F November 2015

Question	Working	Answer	Mark	Notes
16.	<table><tr><td></td><td>Bus</td><td>Pre</td><td>Ec</td><td>Tot</td></tr><tr><td>M</td><td>(30)</td><td>28</td><td>34</td><td>(92</td></tr><tr><td>F</td><td>14</td><td>32</td><td>(62)</td><td>108</td></tr><tr><td>Total</td><td>(44)</td><td>(60)</td><td>96</td><td>(200</td></tr></table> ( ) value given	28	4	M1 for total female passengers 200 – 92 or 108 seen; or for total Economy passengers 200 – 44 – 60 or 96 seen. M1 for male passengers in Economy “96” – 62 or 34 seen; or for female Premium “108” – 62 – (44 – 30) or 32 seen M1 for 92 – 30 – “34” or for 60 – “32” A1 cao **OR** Answers may appear in a two-way table with no other method seen B1 for Female total 108 or Total Economy 96 M1 for “96” – 62 or 34 seen in Male Economy; or “108” – 62 – (44 – 30) or 32 seen in Female Premium M1 for 92 – 30 – “34” or for 60 – “32” A1 cao

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q01		Row for Gary removed.	
Q02		Diagram enlarged.	
Q03		Crosses changed to filled in circles. Diagram enlarged.	
Q05		Value on table changed: Wizard: 20 28 18 32. Reds not altered. Grid enlarged.	
Q10		Frequency column widened to allow for working.	
Q13		Diagram enlarged.	
Q14	(a)	Grid enlarged. Crosses changed to filled in circles. 146 cm changed to 150 cm. 41 kg changed to 40 kg.	
Q15		Crewe to Colwyn – First 2 columns removed. Colwyn to Crewe – First and last columns removed	

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Mark Scheme (Results)

November 2015

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In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

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The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 – method mark for appropriate method in the context of the question A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		37	1	B1 cao
	(b)		23 079	1	B1 cao
	(c)		8 hundred	1	B1 for 8 hundreds or 800
2			117 cm	2	M1 for 123−6 or 1.23−0.06 or 117 or 1.17 A1 for 117 cm or 1.17 m
3	(a)		(4, 2)	1	B1 cao
	(b)		Cross at $(1, \frac{1}{2})$	1	B1 cao
4			80	3	M1 for 120 ÷ 3 (=40) M1 for 120 − "40" A1 cao OR M1 for 120 ÷ 3 (=40) M1 for "40" × 2 A1 cao

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		7.5 cm	2	B2 for 7.3 cm − 7.7 cm or 73 mm − 77 mm or 7 cm 5 mm (B1 for cm with value in range 6.5 − 8.5 or mm with value in range 65 − 85)
	(b)(i)		Acute	2	B1 cao
	(ii)		53		B1 for 51 − 55
6			3	2	M1 for correct method to find both total scores A1 cao OR M1 for correct method to find differences for each judge A1 cao
7	(a)		Parallelogram	1	B1 (accept trapezium)
	(b)		2	1	B1 cao

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8			No with working	3	M1 for correct method to find time of arrival at station 8 16 + 25 + 12 A1 for 8 53 C1 ft (dep on M1)for correct comparison of "8 53"(and 8 50) OR M1 for correct method to find time interval from 8 16 to 8 50 A1 for 34 and 37 C1 ft (dep on M1) for correct comparison of "34" and "37"
9	(a)		0.37, 0.401, 0.439, 0.46	1	B1 cao
	(b)	$\frac{1}{4}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{7}{8}$ 0.75, 0.875, 0.25, 0.5, 0.66	0.25, $\frac{1}{2}, \frac{2}{3}$, 75%, $\frac{7}{8}$	2	M1 for attempt to convert all to same form or one error in ordered listing A1 for correct order (Accept 0.67 or 0.66 for $\frac{2}{3}$) (**SC**: B1 for order reversed)
10			3.15	4	M1 for correct first step eg 8.2 + 6.1 + 6.1 (= 20.4) eg 30 − one ticket price M1 for finding money left over eg 30 – "20.4" (= 9.6) or finding the cost of 3 drinks of one size eg 3.15 × 3 M1 for a complete method to work out the price of each drink eg "9.6" ÷ 3 (= 3.2) eg 30 – "20.4" **and** cost of 3 drinks of all sizes A1 for 3.15 from correct calculations

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5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(i)		11	3	B1 cao
	(ii)		50		B1 cao
	(iii)		31		B1 cao
12			27	2	M1 for $6 \times 2 + 5 \times 3$ oe A1 cao
13	(a)		5r	1	B1
	(b)		14t	1	B1
	(c)		2ab	1	B1
14			40	3	M1 for $24 \div 3$ (= 8) M1 for "8"× 5 A1 cao OR M1 for 3×24 (= 72) M1 for "3×24" – 8 – 8 – 8 – 8 A1 cao
15		1, 4, 9, 16, 25 1, 8, 27	Liz 25, Howard 27	2	M1 for a list of at least 2 square numbers or at least 2 cube numbers identified with no ambiguity or Liz and Howard's ages reversed A1 cao

5MB2F_01 November 2015					
Question		Working	Answer	Mark	Notes
*16			20°	4	B1 for identifying 60° angle on the diagram or in a correct statement of working M1 for completing method eg 180−(360−140−60) A1 for 20 C1 for all reasons used Angles at a point add up to 360° Angles in a triangle add up to 180° Base angles of an isosceles triangle are equal
17			50	2	M1 for 200 ÷ 4 A1 cao

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
18			68	5	B1 for correct conversion of units M1 for 250 ÷ 25 (= 10) or 300 ÷ 20 (= 15) M1 for "10" × "15" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68 OR B1 for correct conversion of units M1 for 250 ÷ 20 (= 12.5) or 300 ÷ 25 (= 12) M1 for "12.5" × "12" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68 OR B1 for correct conversion of units M1 for 3 × 2.5 (= 7 .5) or 20 × 25 (= 500) M1 for "3 × 2.5" ÷ "0.2 × 0.25" or "300 × 250" ÷ "20 × 25" M1 (dep on M2) for number of tiles ÷ 20, round up, × 8.5(0) A1 for 68
*19		1, 4, 7, 10, 13 8, 6, 4, 2, 0	Explanation	2	M1 for listing at least 3 terms of both sequences C1 for Yes and explanation from fully correct working that 4 is in both sequences; numbers in A are increasing; numbers in B are decreasing

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5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
20			7.21 (am)	3	M1 for listing multiples 9,18,27,36 and 12,24,36 (condone 1 arithmetic error) or method to find LCM M1 for identifying 36 as LCM A1 cao OR M1 for listing times 6.54, 7.03, 7.12, 7.21 or for listing times 6.57, 7.09, 7.21 (condone one arithmetic error) M1 for listing times 6.54, 7.03, 7.12, 7.21 **and** 6.57, 7.09, 7.21 (condone one arithmetic error) A1 cao

5MB2F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
21		$y = \frac{1}{2}x + 3$ x −2 −1 0 1 2 3 4 y 2 2.5 3 3.5 4 4.5 5	Correct line from (−2, 2) to (4, 5)	3	**(Table of values / calculation of values)** M1 for at least 2 correct attempts to find points by substituting values of x. M1 ft for plotting at least 2 of their points (any points plotted from their table must be correctly plotted) A1 for correct line between $x = –2$ and $x = 4$ **(No table of values)** M1 for at least 2 correct points with no more than 2 incorrect points plotted M1 for at least 2 correct points (and no incorrect points) plotted **OR** line segment of $y = \frac{1}{2}x + 3$ drawn A1 for correct line between $x = –2$ and $x = 4$ **(Use of $y = mx + c$)** M1 for line drawn with gradient of $\frac{1}{2}$ **OR** line drawn with a y intercept of 3 M1 for line drawn with gradient of $\frac{1}{2}$ **AND** line drawn with a y intercept of 3 A1 for correct line between $x = –2$ and $x = 4$ **SC** : B2 for correct line from $x = 0$ to $x = 4$

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Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		0.2	1	B1 cao
	(b)		$\frac{37}{100}$	1	B1 cao
	(c)		4	1	B1 cao
	(d)		6	1	B1 for 6 or +6
2	(a)		A and G	1	B1 cao
	(b)		F	1	B1 cao
3			70	2	M1 for 20+25+25 (=70) or 15+35+25 (=75) or 20+60 (=80) A1 cao
4	(a)		300	1	B1 cao
	(b)		4	1	B1 cao
	(c)		0.7	1	B1 cao

5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
5			3	3	M1 for 4200÷25 (=168) M1 for "168" ÷ 60 (=2.8) or "160" – 60 – 60 (=40) A1 cao OR M1 for 25 × 60 (=1500) M1 for 4200 ÷ "1500" (=2.8) or 4200 – "1500" – "1500" (=1200) A1 cao
6			16.75	2	M1 for 6.5 – 6.9 (cm) or "measurement" × 2.5 A1 for 16.25 – 17.25
7			41.50	3	M1 for (7=) 3+3+1 or n×8.3, where $1 < n < 7$ oe M1 for complete method to find total cost using both vouchers eg 8.3(0) × 5 A1 for 41.5(0)
8	(a)		decagon	1	B1 cao
	(b)		1440	1	B1 cao

5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*9			yes + reason	3	M1 for 3×18 (=54) or 2×25 (=50) M1 for 3×18 (=54) and 2×25 (=50) C1 for yes and 54 and 50 oe (eg 4 slices left over) OR M1 for 18÷2 (=9) M1 for "9"+"9"+"9" (=27) C1 for yes and 27 oe (eg 2 sandwiches more) OR M1 for 2×25 (=50) M1 for "50"÷18 (=2.77...) C1 for yes and 2.7 – 2.8 packs
10	(a)		parallel line	1	B1 cao
	(b)		correct net	1	B1 for one correct square drawn
11			1.08	3	M1 for 3×1 + 4×2 + 2×5 (=21) or 4×1 + 3×2 + 2×10 (=30) or 1×2 + 3×5 + 4×10 (=57) M1 for "21"+"30"+"57" (=108) A1 cao OR M1 (3+4) ×1 (=7) or (4+3+1) ×2 (=16) or (2+3) ×5 (=25) or (2+4) ×10 (=60) M1 for "7"+"16"+"25"+"60" (=108) A1 cao
12	(a)		mirror line	1	B1 cao
	(b)		rectangle	2	B2 for an accurate rectangle (B1 for a rectangle with an accurate line or an accurate right angle)

5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
13			4.35	2	M1 for 1.85 + 1.25 + 1.25 A1 cao (SC B1 for 3.1(0))
14	(a)		29	2	M1 for 7.25 × 4 A1 cao
	(b)		7	2	M1 for 50.75 ÷ 7.25 A1 cao
15	(a)		10	1	B1 cao
	(b)		13	1	B1 cao
	(c)		8	1	B1 cao
	(d)		5	2	M1 for 7 × −1 (= −7) and 4 × 3 (=12) A1 cao
16	(a)		correct enlargement	1	B1 for a 4 by 6 rectangle
	(b)		correct rotation	2	B2 cao (B1 for rotation, direction and angle correct but wrong centre OR rotation, direction and centre correct but wrong angle)

5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
*17			Yes with comparison	4	M1 for 5.5×60 (=330) or 0.75 × 5.5 (=4.125) M1 for "330" × 0.75 (=247.5) or "4.125" × 60 A1 for 247.5 C1 (dep on M1)for yes and correct comparison including unit, eg 247.5 litres < 250 litres oe OR M1 for 5.5×60 (=330) M1 for 250÷0.75 (=333.33...) A1 for 330 and 333.33 oe C1 (dep on M1) for yes and correct comparison including unit, eg 330 hrs < 333 hrs OR M1 for 5.5×60 (=330) M1 for 250 ÷ "330" (=0.757...) A1 for 0.757 – 0.76 C1 (dep on M1) for yes and correct comparison including unit, eg 0.757... litres per hour > 0.75 litres per hour OR M1 for 250÷0.75 (=333.33...) M1 for "333.33..." ÷ 5.5 (=60.6...) A1 for 60.6 – 60.61 C1 (dep on M1) for yes and correct comparison including unit, eg 60.6 days > 60 days

5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		correct line	2	M1 for plotting points condone one error A1 cao
	(b)		1582 grams or 54.4 ounces	3	M1 for changing to consistent units; condone misreading scales eg 1.6 ounces = 46 grams or 64 grams = 2.2 ounces M1 for complete method for total weight Eg 24 × 64 + "46" (=1582) or 24 × "2.2" + 1.6 (=54.4) A1 for 1580 – 1584 grams or 52 – 56.8 ounces
19			Correct tessellation	2	M1 for at least 5 correct shapes drawn A1 for 7 or more correct shapes drawn in a pattern that can be replicated
20			Correct reason	3	M1 for $\frac{2.5}{100} \times 1000$ (=25) oe M1 (dep) for "25"× 2 A1 for £50 (or £10 more) or states 1050 & 1060 OR M1 for $\frac{60}{1000} \times 100$ (=6) oe M1 (dep) for "6"÷2 A1 for 3% (or 0.5% more) OR M1 for $\frac{60}{1000} \times 100$ (=6) oe or 2×2.5 (=5) M1 for $\frac{60}{1000} \times 100$ oe and 2×2.5 A1 for 6% and 5%

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5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
21			Correct point marked	3	M1 for showing line bearing 300° M1 for showing line bearing 40° A1 cao
*22			Bottle with reason	5	**Cans** M1 for 30×0.28 – 10×0.25 (=5.9) oe **Bottles** M1 0.15 × 1.60 (=£0.24) oe or 0.15 × 6.40 (=0.96) oe M1 (dep) for 1.60 – 0.24 (=£1.36 per bottle, or £5.44 for 4 bottles) oe **Best value** M1 for "1.36" ÷ 2.5 (=0.544 £/litre) and "5.9" ÷ 9.9 (=0.595…£/litre) oe C1 (dep on M1) for 0.544 and 0.595… and bottle identified OR M1 for 2.5 ÷ "1.36 (=1.83… litres/£) and 9.9 ÷"5.9" (=1.67… litres/£) C1 (dep on M1) for 1.67... and 1.83… and bottle identified
23			31	4	M1 for $x + (2x+7) + (3x–4)$ (=75) M1 for complete method to isolate x condone one error or (x =) 12 M1 (dep on M2) for 2 × "12" + 7 (=31) A1 cao OR M1 for $x + (2x+7) + (3x–4)$ (=75) M1 for "$6x$ + 3" +"18" = 75 +"18" (=93) M1 for $3(2x + 7) = 93$ or "93" ÷ 3 (=31) A1 cao

5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)		0, 4, 3, −5	2	M1 for one correct value, could be taken from graph A1 cao
	(b)		correct curve	2	M1 for at least 4 points plotted correctly from table A1 for correct curve drawn
25		$\pi\times25^2\times90$ =176000 - 177000 ÷10 000	18	4	M1 for correct use of $\pi\times r^2\times h$ or $\pi\times25^2$ (=1963……) M1 for $\pi\times25^2\times90$ (=176714) M1 (dep on M1) for "176714"÷10 000 (=176714) A1 for 17 or 18

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q02		2cm grid. Shape F is turned vertical. Text: Line 1 “centimetre” removed.	
Q03		Diagram enlarged.	
Q06		White Tor to Gilly Tor = 6.5 cm. Joined by a dashed line.	
Q08		Diagram enlarged.	
Q10	(a)	Grid enlarged. Text: Line 1 “centimetre” removed.	
Q10	(b)	3 cm squares.	
Q12	(a)	Grid enlarged.	
Q12	(b)	4 cm changed to 8 cm. 3 cm changed to 6 cm. Sketch of rectangle given.	

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q15	(a)	MLP only: x changed to y.	
Q15	(d)	MLP only: x and y changed to e and f.	
Q16	(b)	Given shape labelled A. Transformation, labelled B, put on diagram. Question reversed and candidates asked to describe the transformation.	
Q18	(a)	Grid enlarged.	
Q18	(b)	64 grams changed to 60 grams.	
Q21		Harbour to Lighthouse = 10 cm. Harbour and Lighthouse are joined with a dashed line. North line extended.	
Q22		Drawings removed. Text kept.	
Q23		MLP only : x changed to y.	
Q24		Grid enlarged.	
Q25		Model provided for all candidates. MLP also has an enlarged diagram. Wording added : “The height of the cylinder is 90 cm. The diameter of the base is 50 cm.	

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Mark Scheme (Results)

Summer 2016

Pearson Edexcel GCSE
In Mathematic A (1MA0)
Foundation (Non-Calculator) Paper 1F

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2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PMT

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		February	1	B1 cao
	(b)		Onions	1	B1 cao
	(c)		Lettuces	1	B1 cao
2	(a)		0.5	1	B1 cao
	(b)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ or equivalent fraction
	(c)		80	1	B1 cao
	(d)		57.6	1	B1 cao
	(e)		$\frac{1}{3}$	2	M1 for writing over a single denominator eg $\frac{7-3}{12}$ or for $\frac{4}{12}$ A1 cao
3	(a)		A, D	1	B1 cao
	(b)		B	1	B1 cao

PMT

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*4	(a)		Statement (supported)	3	M1 for method to find total visitors for 2009 or for 2010 eg 185+108+133+231+124 (=781) or 177+120+128+230+118 (=773) A1 for 781 **and** 773 (or 781000 **and** 773000) C1 ft (dep on M1 and two totals) for clearly stating 2009 as their answer or ft from their two totals. OR M1 for method to find difference in the number of visitors for each castle eg 8, −12, 5, 1, 6 or −8, 12, −5, −1, −6 A1 for correct total net difference 8 or −8 C1 (dep M1 and a net difference) for clearly stating 2009 as their answer or ft from their net difference.
	(b)(i)		09 36	2	B1
	(ii)		54		B1 cao
	(c)		09 21	1	B1
5	(a)		unlikely	1	B1 cao
	(b)		cross at $\frac{1}{2}$	1	B1 for cross at $\frac{1}{2}$
	(c)		cross at O	1	B1 for cross at O

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		30	3	M1 for 21 × 6 (= 126) or 32 × 6 ÷ 2 (=96) M1 for 21 × 6 – (32 × 6 ÷ 2) A1 cao OR M1 for 21 × 2 – 32 (= 10) M1 (21 × 2 – 32) × 6 ÷ 2 A1 cao
	(b)	(C, F) (C, E) (C, T) (L, F) (L, E) (L, T)	list of 6 pairs	2	B2 for six correct and distinct pairs with no repeats (B1 for at least 3 correct pairs and no incorrect pairs)
7	(a)		parallelogram	1	B1 cao
	(b)		Sketch of cuboid	1	B1 for sketch of cuboid
8	(a)		15	1	B1 cao
	(b)		6	1	B1 cao
	(c)		3	2	M1 for intention to subtract 7 from both sides or divide all terms by 2 as a first step A1 cao
*9			1 cm^2	3	M1 for method to find the area of A or area of B eg for A 6 + 3 (=9), 12 – 3 (=9) eg for B 4 + 4 (=8), 12 – 4 (=8) A1 for 9 and 8 C1 (dep M1) for 1cm^2 or ft from their 2 areas

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		6	1	B1 cao
	(b)		44	1	B1 cao
	(c)		33, 11, 4 or 4, 11, 33 or 8, 4, 6 or 6, 4, 8	1	B1 cao
11	(a)		24	3	M1 for 4×10 (= 40) M1 for operations –"40" then ÷ 7 in correct order or 20 A1 cao
	(b)		$35e$	2	M1 for $7 \times e$ or $5 \times e$ or $7 \times 5 \times e$ oe A1 for $35e$ (ignore £ signs)
12			40 m*l* or 0.04 *l*	3	M1 for 12×330 (= 3960) M1 for $4 \times 1000 - (12 \times 330)$ (= 40) A1 for 40 m*l* OR M1 for $12 \times \frac{330}{1000}$ (= 3.96) or digits 396 M1 for $4 - (12 \times \frac{330}{1000})$ (= 0.04) A1 0.04 *l*

PMT

PAPER: 1MA0/1F					
Question		Working	Answer	Mark	Notes
13	(a)		42	5	M1 for 300 × 3 (= 900) or 150 ÷ 3 (= 50) M1 (dep) for "900" ÷ 150 (= 6 jars) or 300 ÷ "50" (= 6 jars) M1 for 500 ÷ 160 (= 4 boxes) M1 for "6" × 4.00 (=24) + "4" × 4.50 (18) A1 cao
	(b)		168	3	M1 for 6 × 30 M1 (dep) for "180" – 12 A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*14	(a)		4.5	1	B1 cao
	(b)		Comparison (supported)	3	M1 for correct use of graph to convert 0°F into °C A1 for –17.5 to –18 C1 (dep M1) for correct comparison of relative temperatures with units correct. eg freezer is warmer with –18°C or ft using their converted temperature with correct units. OR M1 for correct use of graph to convert −10°C into °F A1 for 14 C1 (dep M1) for correct comparison of relative temperatures with units correct. eg freezer is warmer with 14°F or ft using their converted temperature with correct units.
15			Data collection sheet	3	B1 for a fruit type column. B1 for tally column. B1 for frequency column.
16	(a)		30	1	B1 cao
	(b)		120	2	M1 for $\frac{15}{100} \times 800$ oe A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17	(a)		3 (5) 7 (9) 11, 13	2	B2 for 3, 7, 11, 13 (B1 for 2 or 3 correct values)
	(b)		Graph drawn	2	M1 (may ft from (a) if B1 awarded) for at least 5 points correctly plotted A1 for correct graph from $x = 0$ to $x = 5$
18	(a)		$\frac{120}{360}$	2	M1 for 360 – 45 – 105 – 90 (= 120) oe A1 for $\frac{120}{360}$ oe OR M1 for measuring angle as 118 – 122 A1 ft for $\frac{"120"}{360}$ oe
	(b)		18000	2	M1 for 4500 × 4 oe A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)(i)		12	2	B1 cao
	(ii)		8		B1 cao
	(b)		Sketch of net	2	M1 for attempt to draw net with 2 of the following 3 features: 6 rectangles 2 polygon faces with at least 5 edges a net with correct connections to give at least one vertex with 3 faces meeting. A1 for a correct net
	c)		750 cm^3	3	M1 for 30×25 A1 for 750 B1 (indep) for cm^3
20	(a)		p^7	1	B1 cao
	(b)		$-5m + 10$	2	M1 for $3m + 12$ or $-8m - 2$ or $8m + 2$ A1 for $-5m + 10$ or $10 - 5m$ or $-5(m - 2)$ or $5(2 - m)$
	(c)		$n(n - 7)$	1	B1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		250	2	M1 for $400 \div 8$ or $\frac{5}{8}$ oe A1 cao
	(b)		60	3	M1 for $\frac{16}{80}$ or $\frac{300}{80}$ oe M1 (dep) for "$\frac{16}{80}$" $\times 300$ or "$\frac{300}{80}$" $\times 16$ A1 cao
22	(a)		Correct shape	2	B2 for correct reflection with vertices (–4, 2) (–6, 3) (–6, 7) (–4, 6) (B1 for reflection in a vertical or horizontal line)
	(b)		Correct shape	2	B2 for correct rotation with vertices (–1, 3) (–5, 3) (–6, 5) (–2, 5) (B1 for rotation of 90° clockwise about (0,1) **or** correct orientation fully in correct quadrant)
23	(a)		Reasons	2	B2 for 2 reasons from: no time frame, vague response boxes, not exhaustive eg "always" (B1 for 1 reason)
	(b)		Question written	2	B1 for a suitable question which includes a time frame (the time frame could appear with the response boxes) B1 for at least 3 non-overlapping exhaustive response boxes with no use of inequality symbols

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PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*24			Conclusion (supported)	5	M1 for finding the area of one rectangle which is not 6 × 10 eg 2×2.5 (=5) or 4×10 (=40) or 2.5 × 6 or 5 × 2 M1 for a complete method to find the total area eg 5+5+40 or 60−10 (=50) M1 for a complete method to find the number of tins needed eg "50" ÷ 5 ÷ 2.5 (=4) OR for a complete method to find the number of litres needed. eg "50" ÷ 5 (=10) OR for a complete method to find the area covered by 3 tins eg 3×2.5×5 (=37.5) A1 for 50 (m^2) **and** (4 tins needed) **or** for 10 (litres) **and** 7.5 (litres) **or** for 50(m^2) **and** 37.5(m^2) C1 (dep M2) for a conclusion supported by their calculations

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		3rd row in table for beans removed	Standard mark scheme
3	(a)	Background grid has been removed. Labels added above the shapes. MLP only: Shape B and D exchanged.	B1 for A, B
3	(b)	Background grid has been removed. Labels added above the shapes. MLP only: Shape B and D exchanged.	B1 for D cao
4	(b)	Braille only: Coombe Florey row removed.	B1 cao
5		Diagram enlarged.	Standard mark scheme
	(b)	Probability scale enlarged. The wording 'with a cross (x)' has been removed.	Standard mark scheme
	(c)	Probability scale enlarged. The wording 'with a cross (x)' has been removed	Standard mark scheme
7	(a)	Diagram enlarged	Standard mark scheme
	(b)	Model of a cuboid provided for all candidates. Diagram enlarged and also provided for MLP. Wording changed 'Name the solid shape shown.' Answer line added	B1 for cuboid

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
9		Grid enlarged. Shading changed to dotty shading. Label added above the shapes. 'centimetre grid' replaced by'grid of squares'. Wording added 'Each square on the grid represents a one centimetre square.'	Standard mark scheme
13	(a)	Diagrams removed.	Standard mark scheme
	(b)	Diagrams removed.	Standard mark scheme
14		Grid enlarged. Small squares removed.	Standard mark scheme
17	(a)	Wording added above the table 'There are four spaces to fill.'	Standard mark scheme
	(b)	Grid enlarged. Right axis labelled.	Standard mark scheme
18	(a)	Diagram enlarged.	Standard mark scheme
	(b)	Diagram enlarged.	Standard mark scheme
19	(a)	Model provided for all candidates. Diagram enlarged and also provided for MLP	Standard mark scheme
	(b)	Question changed: 4 nets drawn A, B, C and D. Wording removed 'In the space below, sketch a net of the prism.' Wording added 'Which shape A, B, C or D shows the net of the prism.'	B2 for B cao
	(c)	Model provided for all candidates. Diagram enlarged and also provided for MLP.	Standard mark scheme
21		Diagram enlarged. Dot added to the centre. Arrow head changed to an open headed arrow. Left side of arrow removed.	Standard mark scheme

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
22	(a)	Reflection drawn on the diagram. Shading changed to dotty shading. Wording changed 'It shows shape P and shape Q given on a grid. Describe fully the transformation that maps shape P onto shape Q.' Grid enlarged. y axis is cut at -4. 3 answer lines given.	B1 for reflection B1 for x = – 1
	(b)	Rotation drawn on the diagram. Wording changed 'It shows shape P and shape S given on a grid. Describe fully the single transformation that maps shape P onto shape S.' 3 answer lines given.	B2 for all three of: Rotation 90° anti-clockwise Centre (0, 1) (B1 for two)
24		Diagram enlarged. Braille only: Plan of floor labelled ABCDEFGH as 1F Q24.	Standard mark scheme

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Mark Scheme (Results)

Summer 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

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The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

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If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
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If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

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It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

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Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

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13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

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PMT

PAPER: 5MB2F/01					
Question		Working	Answer	Mark	Notes
1	(a)		6037	1	B1 cao
	(b)		8380	1	B1 cao
	(c)		19,21,26,37,43	1	B1 cao
2	(a)		Rectangle	1	B1 (accept square)
	(b)		Cylinder	1	B1 cao
	(c)		Circle drawn	1	B1 for circle radius 4 cm
3	(a)		London	1	B1 cao
	(b)(i)		5	2	B1 for 5 (accept −5)
	(ii)		6		B1 for 6 (accept −6)
4	(a)		4.6	1	B1 for 4.4 − 4.8
	(b)		Parallel lines	1	B1 for parallel lines marked
	(c)		Acute angle	1	B1 for acute angle identified
	(d)		Angle *EDC*	1	B1 for angle *EDC* identified

PAPER: 5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*5			No (supported)	2	M1 for 53 × 10 (= 530) or 0.53 × 10 (= 5.3(0)) or 50 × 10 and 3 × 10 C1 for no, (£)5.30 > (£)5 oe OR M1 for 500 ÷ 10 (= 50) C1 for no, 50(p) < 53(p) oe OR M1 for 500 ÷ 53 (= 9…) or 9 × 53 (= 477) C1 for no, 9… < 10 oe or 477 < 500 oe
6	(a)		48	1	B1 cao
	(b)		115	1	B1 cao
7	(a)		$\frac{10}{20}$	1	B1 for fraction $\frac{10}{20}$ oe
	*(b)		$\frac{5}{7}$	3	M1 for 14 squares shaded for $\frac{2}{3}$ or for 15 squares shaded for $\frac{5}{7}$ M1 for 14 squares shaded for $\frac{2}{3}$ and 15 squares shaded for $\frac{5}{7}$ C1 for correct statement from supportive working OR M1 for method to express each fraction with a common denominator eg $\frac{2\times7}{3\times7}$ and $\frac{5\times3}{7\times3}$, at least one numerator correct. M1 for $\frac{14}{21}$ and $\frac{15}{21}$ oe C1 for correct statement from supportive working

PAPER: 5MB2F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		6	1	B1 cao
	(b)		11	1	B1 cao
	(c)	(s, Δ) = (2,1), (3,3), (4,5), (5,7), (6, 9), (7, 11), (8, 13), (9, 15), (10, 17)	17	2	M1 for relating number of triangles to number of stars for at least one pattern greater than Pattern 7, eg (8, 13), (9, 15) or (10, 17) or for identifying Pattern 9 A1 cao
9	(a)		E	1	B1 cao
	(b)(i)		*P* marked	2	B1 for correct point marked, eg (1, −1)
	(ii)		coordinates of *P*		B1 for correct coordinates for 'point'
10			63	2	M1 for $\frac{30}{100} \times 210$ or 0.3×210 or $21 + 21 + 21$ oe A1 cao
11	(a)		10.5 − 11	1	B1 for 10.5 − 11
	(b)	eg 15 lbs = 6.8 kg So, 150 lbs = 68 kg 68 + 64 = 132 kg	132	3	M1 for converting 150 lbs to kg M1 for addition of 150 pounds and 64 kg in consistent units A1 for 130 − 134 kg
*12			Patterned and Textured	5	M1 for 5 + 7 + 5 + 7 (= 24) M1 for ("24" ÷ 3) × 20 (= 160) or ("24" ÷ 2) × 11 (= 132) or ("24" ÷ 2.4) × 14.5 (= 145) M1 for two of the above. A1 for 160 and 132 and 145 C1 ft (dep on M3) for Patterned and Textured from a comparison of 3 costs

PMT

PAPER: 5MB2F/01					
Question		Working	Answer	Mark	Notes
13	(a)		7000	1	B1 cao
	(b)		6	1	B1 cao
14	(a)		$4a$	1	B1 cao
	(b)		$6m$	1	B1 cao
	(c)		$3x^2$	1	B1 cao
	(d)		$7cd$	1	B1 cao
*15			Yes (supported)	4	M1 for attempt to divide corresponding sides eg 500 ÷ 50 (= 10) or 250 ÷ 50 (= 5) or 200 ÷ 50 (= 4) M1 (dep) multiplying divisors eg "10" × "5" × "4" (= 200) [consistent units] M1 for use of 3 containers eg "200" × 3 (= 600) or use of 500 boxes eg 500 ÷ "200" (=2.5) C1 for yes and 600 (boxes) or 2.5 (containers) oe OR M1 for attempt to find the volume, eg 500 × 250 × 200 (= 25 000 000) or 50 × 50 × 50 (=125 000) M1 (dep) for dividing volumes [consistent units] eg "25 000 000" ÷ "125 000" (=200) or "125 000" × 500 (=62 500 000) M1 for use of 3 containers eg "25 000 000" × 3 (=75 000 000) or "200" × 3 (=600) or use of 500 boxes eg for "125 000" × 500 (= 62 500 000) and "25 000 000" × 3 (= 75 000 000) or 500 ÷ "200" (=2.5) C1 for yes and 600 (boxes) or 2.5 (containers) or 62 500 000 and 75 000 000 oe

PMT

PAPER: 5MB2F/01					
Question		Working	Answer	Mark	Notes
16			$A = 13x + 8$	3	M1 for $5(2x + 1)$ or $3(x + 1)$ or $5 \times 2x + 1 + 3 \times x + 1$ M1 for $5(2x + 1) + 3(x + 1)$ or $13x + 8$ oe A1 for $A = 13x + 8$ oe OR M1 for $8(x + 1)$ or $5x$ or $8 \times x + 1 + 5x$ M1 for $8(x + 1) + 5x$ or $13x + 8$ oe A1 for $A = 13x + 8$ oe OR M1 for $8(2x + 1)$ or $3x$ or $8 \times 2x + 1 - 3x$ M1 for $8(2x + 1) - 3x$ or $13x + 8$ oe A1 for $A = 13x + 8$ oe
17		24, 48, 72, 96, 120, 144, 168, 192, 216, 240, 264, **288** 36, 72, 108, 144, 180, 216, 252, **288**	12 boxes of book marks 8 packs of dust covers	4	M1 attempts multiples of either 24 or 36 (at least 3 but condone errors if intention is clear) M1 attempts multiples of both 24 and 36 (at least 3 but condone errors if intention is clear) M1 (dep on M2) for a division of 250 or 288 by 24 or 36, or counts up "multiples" (implied if answers reversed) A1 for 12 boxes of book marks, 8 packs of dust covers. Accept (15b, 10p), (18b, 12p) etc (SCB1 for (11b, 7p))

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PAPER: 5MB2F/01					
Question		Working	Answer	Mark	Notes
18			88	4	M1 for (*APT* =) 180 − (32 + 90) (= 58) M1 for (*PTR* =) "58" M1 for 360 − ("58" + 124 + 90) A1 cao OR (line *XY* drawn through *Q* parallel to *AB*) M1 for (*QRD* =) 180 − 124 (= 56) M1 for (*XQR* =) "56" M1 for (*PQX* =) 32 A1 cao

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q2	(b)	Model provided for all candidates. Diagram enlarged and provided for MLP.	B1 cao
	(c)	Diagram enlarged. Wording changed to 'a circle of radius 5 cm.'	B1 for circle radius 5 cm
Q3		Map removed. Information put in table.	B1 cao B1 for 5 (accept −5) B1 for 6 (accept −6)
		Braille only London changed to −1°, Manchester changed to 0°	Braille only B1 for at least one correct, none incorrect B1 for 6 (accept −6) B1 for 2 (accept −2)

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q4		Diagram enlarged so $AB = 7.5$ cm. The wording 'with arrows (>>)' is removed.	B1 for 7.0 – 8.0 B1 for parallel lines marked B1 for acute angle identified B1 for angle EDC identified
Q6	(a) (b)	Diagram enlarged. Diagram enlarged.	B1 cao B1 cao
Q7	(a) *(b)	Grid enlarged. Shading changed to dotty shading.	B1 for fraction $\frac{10}{20}$ oe M1 for 14 squares shaded for $\frac{2}{3}$ or for 15 squares shaded for $\frac{5}{7}$ M1 for 14 squares shaded for $\frac{2}{3}$ and 15 squares shaded for $\frac{5}{7}$ C1 for correct statement from supportive working OR M1 for method to express each fraction with a common denominator eg $\frac{2\times7}{3\times7}$ and $\frac{5\times3}{7\times3}$, at least one numerator correct. M1 for $\frac{14}{21}$ and $\frac{15}{21}$ oe C1 for correct statement from supportive working

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q8	(c)	Diagram enlarged. Stars changed to circles and wording changed from 'stars' to 'circles'.	M1 for relating number of triangles to number of stars for at least one pattern greater than Pattern 7, eg (8, 13), (9, 15) or (10, 17) or for identifying Pattern 9 A1 cao
Q9	(a) (b)(i) (ii)	Grid enlarged. Crosses changed to filled in circles	B1 cao B1 for correct point marked, eg (1, −1) B1 for correct coordinates for 'point'
Q11	(a) (b)	Grid enlarged	B1 for 10.5 – 11 M1 for converting 150 lbs to kg M1 for addition of 150 pounds and 64 kg in consistent units A1 for 130 − 134 kg

PMT

PAPER: 5MB2F_01			
Question		**Modification**	**Notes**
Q12		Diagram enlarged. Braille only – *A B C D* added to floor plan, measurements added to text.	M1 for 5 + 7 + 5 + 7 (= 24) M1 for ("24" ÷ 3) × 20 (= 160) or ("24" ÷ 2) × 11 (= 132) or ("24" ÷ 2.4) × 14.5 (= 145) M1 for two of the above. A1 for 160 and 132 and 145 C1 ft (dep on M3) for Patterned and Textured from a comparison of 3 costs
Q14	(a)	MLP only – *a* changed to *y*.	B1 cao
	(d)	Braille only – $3cd + 4cd$ changed to $3pq + 4pq$.	B1 cao

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Mark Scheme (Results)

Summer 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		0.25	1	B1 cao
	(b)		$\frac{7}{10}$	1	B1 for $\frac{7}{10}$ oe
	(c)		$\frac{21}{25}$	2	M1 for $\frac{42}{50}$ oe A1 cao
	(d)		50	1	B1 cao
2	(i)		25.1	4	M1 for any route starting and ending at C going through H, S and Y. Condone missing last section back to C M1 for a valid route for which their correct total is shown A1 for 25.1 B1 ft for communicating their shortest route (must start and end at C and pass through S, H and Y).
	(ii)		CSHSYC or CYSHSC		
3	(a)		B, G	1	B1 cao
	(b)		C	1	B1 cao
	(c)		Enlarged shape	2	M1 for drawing at least two sides correct length or a correct enlargement of scale factor other than 3 (excluding 1) A1 for fully correct enlargement

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PAPER: 5MB3F/01					
Question		Working	Answer	Mark	Notes
4	(a)		32, 12, 88.92	3	B1 for 32 B1 for 12 B1 ft "32" for 88.92
	(b)		509.98	3	M1 for a correct step 452.25 + 120 (= 572.25) or 452.25 + 2.56 (= 454.81) or 452.25 – 64.83 (= 387.42) or 120 + 2.56 (= 122.56) or 120 – 64.83 (=55.17) or 64.83 – 2.56 (= 62.27) M1 for a complete method A1 cao
5	(a)		pentagon	1	B1 cao
	(b)		Line drawn	1	B1 for parallel line drawn.
6	(a)		Reflected shape	1	B1 cao
	(b)		Rotated shape	2	M1 for quarter turn clockwise about any point or quarter turn anticlockwise about *O* A1 cao
	(c)		Tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating and no incorrectly drawn tiles or gaps. (B1 for at least 4 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)
7			20	3	M1 for 5×60 (=300)or 8×35 (=280) M1 for $5 \times 60 - 8 \times 35$ A1 cao

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PAPER: 5MB3F/01					
Question		Working	Answer	Mark	Notes
8			30	3	M1 for 50 + 10 (= 60) or 50 ÷ 2 (= 25) M1 for correct order of operations + 10 then ÷ 2 A1 cao
9			–3	3	M1 for full substitution or –12 or 9 M1 for –12 + 9 A1 cao
10	(a)		7	1	B1 for 6.8 – 7.2
	(b)		110	2	M1 for correct angle used or for 68 - 72 or 288 - 292 A1 for 108 – 112
	(c)		Cross in correct position	1	B1 for a possible correct position
*11			Decision (supported)	3	M1 for 258 + 24 × 27.5 + 24 × 8.5 (=1122) oe M1 for 45 × 24 (= 1080) C1 for 1080 and 1122 and "No, £45 is not enough" oe OR M1 for 258 ÷ 24 (= 10.75) M1 for "10.75" + 27.50 + 8.50 C1 for £46.75 and "No, £45 is not enough" oe OR M1 for 27.50 × 24 + 8.50 × 24(=864) oe M1 for ("864" + 258) ÷ 24 C1 for £46.75 and "No, £45 is not enough" oe OR M1 for 45 – 27.50 – 8.50 (= 9) M1 for 258 ÷ 24 (= 10.75) C1 for 9 and 10.75 and "No, £45 is not enough" oe

PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		83	1	B1 for 82 – 84
	(b)		0.3 – 0.7	3	M 1 for reading off graph at 80°, 70° or 60° with at least one reading in 0.5 – 0.6 oe, or 2.5 – 2.6 oe, or 5.0 – 5.1oe or one correct interval (1.9 - 2.1 or 2.4 - 2.6) oe M 1 for reading off graph at 80°, 70° and 60° with all 3 readings in 0.5 – 0.6 oe and 2.5 – 2.6 oe and 5.0 – 5.1 oe or both correct intervals (1.9 - 2.1 and 2.4 - 2.6) oe A1 for 0.3 – 0.7
*13			Farm B has the greater area	3	M1 for 80 ÷ 2.47 or 35 × 2.47 A1 for 32.(3….) (hectares) or for 86.(4..)(acres) C1 for correct conclusion, eg “Farm B has the greater area”
14	(a)		13	1	B1 cao
	(b)		3	1	B1 cao
	(c)		36	2	M1 for intention to subtract 3 from both sides or to multiply all three terms by 4 A1 cao
15			Correct triangle	2	M1 for angle *P* drawn as 44 – 48° or PQ drawn as 6.8 to 7.2 cm A1 correct triangle
16	(a)		56.25	1	B1 for 56.25 or $\frac{225}{4}$
	(b)		3.2	1	B1 for 3.2 or $\frac{16}{5}$

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PAPER: 5MB3F/01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			Correct region shaded	3	M1 for a circle centre *M* or *N* (accept arc of sufficient length to define the region) M1 for circle centre M radius 5 cm **and** circle centre *N* radius 3 cm (accept arc of sufficient length to define the region) A1 for correct region shaded
*18			Decision (supported)	3	M1 for correct first step e.g. 15 ÷ 3 M1 for complete method C1 ft for decision with accurate figures
19		3 42 3.1 45.(291) 3.2 48.(768) 3.3 52.(437) 3.4 56.(304) 3.5 60.(375) 3.6 64.(656) 3.7 69.(153) 3.8 73.(872) 3.9 78.(819) 4 84 3.71 69.6(14811) 3.72 70.(078848) 3.73 70.5(45117) 3.74 71.(013624) 3.75 71.4(84375)	3.7	4	B2 for a trial between 3 and 4 exclusive (B1 for a trial at 3 or 4) B1 for a different trial of $3.7 < x \leq 3.75$ B1 (dep on at least one previous B1) for 3.7 NB. Trials should be evaluated to at least 2 sf truncated or rounded for values of *x* correct to 1 decimal place. Trials should be evaluated to at least 1 dp truncated or rounded for values of *x* correct to 2dp. **NB** No working scores 0 marks even if answer is correct

PAPER: 5MB3F/01					
Question		Working	Answer	Mark	Notes
20			161.50	5	M2 for a correct method to decrease 6720 by 20%, eg 6720 × 0.8 (= 5376) or 6720 × 0.2 (= 1344 and 6720 – 1344(= 5376)) (M1 for a correct method to find 20% of 6720 eg 6720 × 0.2 or $\frac{20}{100}$ × 6720 (= 1344)) M1 for subtracting 1500 (= 3876) after a percentage calculation M1 "3876" ÷ 24 after the subtraction of 1500 A1 for 161.5(0)
*21			Conclusion (supported)	4	M1 for π × 120² (= 45 216 – 45 249) M1 for "π × 120²" ÷ 1800 A1 for 25.1 – 25.2 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for π × 120² (= 45 216 – 45 249) M1 for 20 × 1800 A1 for 36 000 and 45 216 – 45 249 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for π × 120² (= 45 216 – 45 249) M1 for "π × 120²" ÷ 20 A1 for 2260 – 2263 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for 1800 × 20 M1 for 36000 ÷ π (=11 457 – 11465) A1 for 107(.0…) C1 ft (dep on M2) for appropriate conclusion from their figures

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PAPER: 5MB3F/01					
Question		Working	Answer	Mark	Notes
22			22.5	4	M1 for $4(x - 8) = 2x + 13$ M1 for expansion of bracket or division of all terms by 4, eg $4x - 32 = 2x + 13$, or $x - 8 = \frac{2x}{4} + \frac{13}{4}$ M1 for isolating x and number terms eg $2x = 45$, $\frac{x}{2} = \frac{45}{4}$ A1 for $\frac{45}{2}$ or 22.5 OR M1 for $(180 - 64) \div 2$ (= 58) M1 for $4(x - 8)$ = "58" or $2x + 13$ = "58" or "58" – 13 (= 45) M1 for isolating x and number terms eg $4x = 90$, $2x = 45$ or "45" ÷ 2 A1 for $\frac{45}{2}$ or 22.5 OR M1 for $64 + 4(x - 8) + 2x + 13$ M1 for $64 + 4(x - 8) + 2x + 13 = 180$ M1 for isolating x and number terms eg $6x = 135$ A1 for $\frac{45}{2}$ or 22.5

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q2		Diagram enlarged. Solid circles added at C, Y, S and H.	M1 for any route starting and ending at C going through H, S and Y. Condone missing last section back to C M1 for a valid route for which their total is shown A1 for 25.1 B1 ft for communicating their shortest route (must start and end at C and pass through S, H and Y).

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q3		Background grid removed. Shapes enlarged. Labels added above shapes. Shape D removed and last three shapes renamed. Grid enlarged. Shape F changed to shape E. Scale factor 3 changed to scale factor 2. Shape E put on the grid. Last 4 columns removed. Braille only: Question reversed. Shapes E and F given on diagram. Candidates asked to describe the transformation. Question changed: 'Look at the diagram for Question 3(c). The diagram shows shape E and shape F on a grid. Describe the single transformation that maps shape E on shape F.' Braille only - a set of cut out shapes is also available for this question. Shape E as original exam (was Shape F) Shape F x 2 scale factor enlargement given as (to match your MLP).	B1 cao B1 cao M1 for drawing at least one side correct length or a correct enlargement of scale factor other than 2 (excluding 1) A1 for fully correct enlargement
Q4	(a)	Wording added 'There are three boxes to fill.' under 'Complete the bill.' Outline of boxes made thicker. Answer lines removed from boxes.	B1 for 32 B1 for 12 B1 ft "32" for 88.92
Q5	(a)	Diagram enlarged.	B1 cao
Q5	(b)	Line kept the same size as in standard. Wording changed to 'On the diagram, draw a line parallel to the line given.' Braille only – Line made 10 cm long.	B1 for parallel line drawn.

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q6	(a)	Grid enlarged. Mirror line label repeated below. Mirror line extended at the top and bottom. Wording for V version added 'A cut out shape is available for you to use.' Shading changed to dotty shading.	B1 cao
Q6	(b)	Grid enlarged. Shading changed to dotty shading. Image labelled 'triangle A'. Rotation shown on the grid labelled 'triangle B'. Wording changed to 'It shows triangle A and triangle B on a grid.' Question changed: Image labelled triangle A, rotation shown on the grid labelled triangle B. Wording changed: 'Describe fully the single transformation that maps triangle A onto triangle B. Three answer lines given. Wording for V version added 'A cut out shape is available for you to use.'	M1 for 90° rotation or quarter turn. A1 clockwise about *O*
Q6	(c)	Grid enlarged. Shading changed to dotty shading. Top and bottom rows removed from the grid. Wording changed to 'You should draw at least 5 shapes. A cut out shape is provided for you to use if you wish.'	B2 for at least 6 correct shapes, including initial shape, correctly tessellating and no incorrectly drawn tiles or gaps. (B1 for at least 4 correct shapes, including initial shape, correctly tessellating; ignore any additional sections attempted, gaps or incorrect shapes)
Q10		North line extended. Frame removed. Crosses changed to filled in circles. Scale moved above and to the left of the diagram. Dashed line joins Skelton to Catterlen. Wording removed 'with a cross (x)'.	B1 for 8.5 – 9.5 M1 for correct angle used or 70 or 290 A1 for 105 – 115 B1 for a possible correct position

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q12		Grid enlarged. The horizontal axis is 1.5 cm for 1 and the vertical 1.5 cm for 10. [Leeway needed for answering the question.]	B1 for 82 - 88 M1 for reading off graph at 80°, 70° or 60° with at least one reading in the intervals, 0.5 – 0.7, 2.4 – 2.7, 4.8 – 5.2 M1 for correct method to find one time interval A1 for 0.3 – 0.7
Q15		Diagram enlarged. PR line kept the same size and standard and put below first diagram. Angle QPR changed to 45°. Crosses changed to filled in circles. Braille only – measurements given in the text.	M1 for angle P drawn as 40 – 50° or PQ drawn as 6.5 to 7.5 cm A1 correct triangle
Q17		Diagram kept the same size as original. Scale moved above the diagram and also put in the question paper.	B1 for circle centre M radius 5 cm B1 for circle centre N radius 3 cm B1 for correct region shaded

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PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q21		Diagram enlarged. Cross changed to filled in circles. Arrow heads removed.	M1 for $\pi \times 120^2$ (= 45238….) M1 for "$\pi \times 120^2$" ÷ 1800 A1 for 25.0 – 25.2 C1 for "surface is large enough as 25 > 20" oe OR M1 for $\pi \times 120^2$ (= 45238….) M1 for 20 × 1800 A1 for 36000 C1 for "surface is large enough as 36000 < 45238..." oe OR M1 for $\pi \times r^2 = 1800 \times 20$ M1 for 36000 ÷ π (=11459..) A1 for 107.0… C1 for "surface is large enough as 107…< 120" oe

Q22		Diagram enlarged. MLP only – x changed to y. Braille only – measurements given in the text.	M1 for $4(y - 8) = 2y + 13$ M1 for expansion of bracket or division of all terms by 4, eg $4y - 32 = 2y + 13$, $y - 8 = \frac{2y}{4} + \frac{13}{4}$ M1 for isolating x and number terms eg $2y = 45$, $\frac{y}{2} = \frac{45}{4}$ A1 for $\frac{45}{2}$ or 22.5 OR M1 for $(180 - 64) \div 2$ $(= 58)$ M1 for $4(y - 8) = 58$ or $2y + 13 = 58$ M1 for isolating y and number terms eg $4y = 90$, $2y = 45$ A1 for $\frac{45}{2}$ or 22.5 OR M1 for $64 + 4(y - 8) + 2y + 13$ M1 for $64 + 4(y - 8) + 2y + 13 = 180$ M1 for isolating x and number terms eg $6y = 135$ A1 for $\frac{45}{2}$ or 22.5

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Mark Scheme (Results)

November 2016

Pearson Edexcel GCSE
In Mathematics Linear (1MA0)
Foundation (Non-Calculator) Paper 1F

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5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

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The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
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If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)			1	B1 for 4 people unambiguously drawn for Cricket
	(b)		27	2	M1 ft from their pictogram for 4 + 6 + 9 + 8 or 2 × (2 + 3 + 4.5 + 4) A1 cao
2	(a)		6.5	1	B1 for 6.5 ± 0.2, accept 6½
	(b)		obtuse	1	B1 cao
	(c)		135	1	B1 for 135 ± 2
3	(a)		millilitres	1	B1 for millilitres or m*l* or cm^3
	(b)		kilometres	1	B1 for kilometres or km
	(c)		tonnes	1	B1 for tonnes or tonne
4	(a)	ruler, pen ruler, pencil, eraser ruler, 3 erasers **or**	3	2	M1 for at least one correct way listed in words or as costs **or** for answer of 3 A1 for 3 **and** the three correct ways listed in words or as costs
	(b)	7 × 30 + 3 × 45 = 3.45 5.00 – 3.45 =	1.55	3	M1 for 7 × 30 (= 210) or 3 × 45 (= 135) M1 (dep on previous M1) for £5 – their **total** of 7 × 30 and 3 × 45 **or** digits 155 seen A1 for 1.55 cao **B1 SC** for 4.25
	(c)		20*y*	1	B1 for 20*y* oe

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)			1	B1 cao
	(b)		20	1	B1 cao
	(c)	(i)	15	2	B1 cao
	(c)	(ii)	Response		B1 for "divide 45 by 3" or "divide 30 by 2" or "a third of the squares are grey" oe
6	(a)		8	1	B1 for 8 or – 8
	(b)		14 30	1	B1 for 14 30 or 2 30 pm
	(c)		18 00	2	M1 for intent to add 9 h to 1400 **and** subtract 5 h in any acceptable order A1 for 18 00 or 6 pm
7			(2, –1) or (4, 5) or (–8, –1)	3	M1 for **plotting** one point correctly M1 for plotting all three points correctly A1 **SC B1 ft** their points for coordinates of point giving parallelogram if M0 scored
8	(a)		300	2	M1 for using 1000 g = 1 kg or 1.7 or 0.3 seen (maybe on scale) A1 cao
	(b)		21	3	M1 for sight of 18 or 3 (maybe on scale) M1 for complete process of ("18" – 15) × 7 A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		13347	1	B1cao
	(b)		73314	2	B2 cao (B1 for 74331 **or** any number made from the given 5 digits ending with 4)
	(c)		$\frac{1}{5}$	1	B1 for $\frac{1}{5}$ oe
	(d)		$\frac{4}{5}$	1	B1 ft for $\frac{4}{5}$ oe
*10			1.2 m or 120 cm	4	B1 for evidence of using 1 m = 100 cm M1 for subtracting the four post widths from the total length eg $4 - 4 \times 10$ (= 360) or "400" $- 4 \times 10$ or $3x + 40 = 400$ (oe) M1 for dividing their total space found by 3 or subtracting 40 from both sides of $3x + 40 = 400$ C1 for correct conclusion for 1.2 m or 120 cm with supported working
11	(a)		$3h$	1	B1
	(b)		$3pr$	1	B1
	(c)		$2x + 7y$	2	M1 for $2x$ or $7y$ A1 for $2x + 7y$
	(d)		22	2	M1 for correct substitution e.g. $2 \times 5 + 4 \times 3$ A1 cao

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
12 (a)		Correct explanation	2	M1 for working out area of triangle (=6) and area of rectangle (=24) **or** for dividing rectangle into eighths or other comparable areas A1 for explaining that that 24 ÷ 6 is 4 **or** $\frac{2}{8} = \frac{1}{4}$ **or** that ½ × ½ = ¼ from symmetry of shape
(b)		75	1	B1 cao
13 (a)		9.4	1	B1 cao
*(b)		Diagram or chart	4	B1 for a key, or suitable labels, to identify regular yoghurt and low fat yoghurt. B1 for diagram(s) or chart(s) set up for comparison, showing data for protein, carbohydrate and fat, e.g. dual bar chart, line graph, etc B1 for correct heights for regular yoghurt **or** low fat yoghurt, dependent on a linear scale C1 for a fully correct diagram or chart to include labels for protein, carbohydrate and fat and vertical axis correctly scaled and labelled
14	0.25, $\frac{3}{10}$, 0.32, 35%, $\frac{2}{5}$	Correct order	2	M1 for conversion to decimals with one error **or** conversion to percentages with one error **or** conversion to fractions with a common denominator with one error **or** correct order with one error **or** correct in reverse order A1 for correct order in any format
15		Data collection table	3	Table with columns: B1 for column with 'method of travel' oe or at least 3 examples B1 for column with 'tally' or tally marks B1 for column with 'frequency' or 'number of people' **NB** Do not accept questionnaires or attempts at graphs.

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			25	3	M1 for (opposite angle =) 50 May be marked on the diagram M1 for complete method eg 90 – (180 – "50") ÷ 2 or 50 ÷ 2 A1 cao **or** M1 for 180 – 50 (= 130) May be marked on the diagram M1 for complete method eg (180 – "130") ÷ 2 A1 cao
17	(a)		30 minutes or ½ hour	1	B1 for 30 minutes or ½ hour
	(b)		4	1	B1 cao
	(c)		5 30 pm	1	B1 for 5 30(pm) or 17 30
18	(a)		Diagram	2	B2 for a correct enlargement scale factor 3 (B1 for at least 2 lines correctly enlarged or any enlargement using an incorrect scale factor, sf ≠ 1)
	(b)		Diagram	2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating ignoring extra shapes)

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
19 (a)		$\frac{1}{6}$	1	B1 cao
(b)		4	2	M1 for 20 ÷ 5 (=4) Allow build up method to 4 lots of 1:5 A1 cao
(c)		6	2	M1 for a full method to find the number of red counters needed eg 20 ÷ 2 – "4" A1 ft from (b)
20	(A, 1), (A, 2), (A, 3) (B, 1), (B, 2), (B, 3) (C, 1), (C, 2), (C, 3)	$\frac{1}{9}$	3	M1 for any 3 combinations with no incorrect combinations or for 3 × 3 A1 for all 9 combinations with no duplicates or extras **or** for 9 B1 (dep on M1) for $\frac{1}{'9'}$ **Alternative scheme** B1 for $\frac{1}{3}$ seen M1 for $\frac{1}{3} \times \frac{1}{3}$ A1 for $\frac{1}{9}$ oe
21		17.6(0)	4	M1 18 × 6.45 (= 116.1(0) or 18 × 645 = (11610) M1 for 18 × 6.45 – 98.50 in the correct order but units may not be consistent A1 for digits 1760 A1 ft (dep on M2) for correct placement of decimal point after subtraction (of appropriate values)

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22 (a)		$50 < a \leq 60$	1	B1 for correctly identifying the modal class interval e.g. 50 – 60 oe
(b)		Polygon	2	B2 for fully correct frequency polygon - points plotted at the midpoint (B1 for all points plotted accurately but not joined with straight line segments **or** all points plotted accurately and joined with last joined to first to make a polygon **or** all points at the correct heights and consistently within or at the ends of the intervals **and** joined (can include joining last to first to make a polygon) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.
23	$(7 + 3 + 3) \times (4 + 3 + 3) - 7 \times 4 = 102$ **or** $2 \times 7 \times 3 + 2 \times 4 \times 3 + 4 \times 3 \times 3 = 102$	11	4	M1 for a correct method to find the area of one appropriate rectangle M1 for a complete method to find the area of the path M1 (dep on M1) for "102" ÷ 10 A1 cao
*24		Bathroom Mart and correct figures	4	M1 for $\frac{1}{3} \times 1500$ (= 500) or $\frac{2}{3} \times 1500$ (= 1000) M2 for a correct method to reduce 1500 by 60% **and then** by a further 15% eg 1500 × "0.4" × 0.85 (= 510) oe (M1 for method to find 60% or 40% of 1500 e.g. $\frac{60}{100} \times 1500$ (= 900) C1 for 510 and 500 with a correct conclusion.

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*25		95° with reasons	4	M1 for angle *DBC* = 180 – 125 (= 55) **or** angle *EAC* = 180 – 125 (=55) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) with full reasons for their given method, e.g. angles on a straight line add up to 180° **and** angles in a triangle add up to 180° **and** corresponding angles are equal **or** allied angles / co-interior angles add up to 180° **and** angles in a triangle add up to 180° (C1 (dep on M1) for one appropriate reason linked to parallel lines) M1 for angle CDB = 125 – 30 (= 95)) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) for full reasons, for their given method, e.g. exterior angles are equal to the sum of the interior opposite angles **and** corresponding angles are equal (C1 (dep on M1) for one of these appropriate reasons linked to parallel lines)
26 (a)		Diagram	2	B2 for fully correct solution with all three aspects with no ambiguity Aspect 1: circle at 3 Aspect 2: circle not shaded Aspect 3: arrow pointing left indicating extension beyond −4 or line extending beyond −4 (B1 for any two aspects)
(b)		$x \geqslant 5$	2	M1 for intention to add 7 to both sides (of inequality or equation) or to divide all 3 terms by 4 as a first step, or (*x* =) 5 A1 for $x \geqslant 5$ oe

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		Diagram enlarged. Stick men changed to circles. Key moved above and to the left of the diagram.	Standard mark scheme
2	(a)	Line AB has been increased 8.5cm to allow for use of specialist equipment.	B1 for 8.5 ± 0.5, accept 8½
	(b)	Diagram enlarged.	B1 for obtuse
	(c)	Diagram enlarged.	B1 for 135 ± 5
4		Price list has been put into a table.	Standard mark scheme

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
5		3 patterns are placed vertically. Pattern number 3 is repeated below and labelled 'Pattern number 4 (not completed)' Wording altered: Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram. 'Grey' wording changed to 'shaded' throughout. Shading changed to dotty shading.	Standard mark scheme
6		Table has been turned to vertical format.	Standard mark scheme
7		Grid has been enlarged.	Standard mark scheme
8	(a) (b)	Scale is drawn as a horizontal line labelled from 0 to 4 kg. Additional text added: It shows a scale. Scale is drawn as a horizontal line with measurements along it from 0 to 40kg.	Standard mark scheme
10		Diagram enlarged. '10cm' put inside the posts.	Standard mark scheme
11	(a) (c)	Braille only: h changed to q. MLP only: x changed to e and y changed to f.	Standard mark scheme

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
12		Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
13		Table has been turned to a vertical layout. Grid changed to 14 squares by 12 squares. Grid has been enlarged. Table values have been changed. Regular 4.5, 4.5, 3.5. Low fat 6.0, 5.5, 0.5.	Standard mark scheme using revised values
16		Diagram enlarged.	Standard mark scheme
17		Diagram enlarged. Axes labels have been moved to the top of the vertical axis and to the left of the horizontal axis. Right axis has been labelled.	Standard mark scheme

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
18	(a)	Two shapes are given on the grid, labelled Shape P and Shape Q. Question text has been changed to: 'Shape P has been mapped onto Shape Q. Describe fully the transformation that maps Shape P onto Shape Q.'	B1 for enlargement B1 scale factor 3
	(b)	Number of shapes to draw has been reduced to 5. A cut out shape is provided for all candidates. 1 column has been removed from the right hand side.	Standard mark scheme
20		Boxes have been removed around letters and numbers.	Standard mark scheme
22	(a)	The letter 'a' has been changed to't' for all candidates. Frequency numbers have been changed to 5, 15, 15, 20, 5.	Standard mark scheme using changed values
	(b)	Grid has been enlarged. Axes labels have been moved to the top of the vertical axis and to the left of the horizontal axis. Right axis has been labelled.	Standard mark scheme
23		Diagram has been enlarged. Shading changed to dotty shading.	Standard mark scheme
25		Diagram has been enlarged. Wording added 'Angle CEA is marked x.'	Standard mark scheme

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
26		Diagram has been enlarged. Wording added 'It shows a number line.'	Standard mark scheme

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Mark Scheme (Results)

November 2016

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

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NOTES ON MARKING PRINCIPLES

1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.

5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Partial answers shown (usually indicated in the ms by brackets) can be awarded the method mark associated with it (implied).
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks; transcription errors may also gain some credit. Send any such responses to review for the Team Leader to consider.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 − 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

Guidance on the use of codes within this mark scheme
M1 − method mark for appropriate method in the context of the question A1 − accuracy mark B1 − Working mark C1 − communication mark QWC − quality of written communication oe − or equivalent cao − correct answer only ft − follow through sc − special case dep − dependent (on a previous mark or conclusion) indep − independent isw − ignore subsequent working

PAPER: 1MA0/2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		5906	1	B1 cao
	(b)		7200	1	B1 cao
	(c)		28	1	B1 cao
	(d)		3.67, 5.08, 5.45, 6.03	1	B1 cao
2	(a)		white	1	B1 cao
	(b)		Sunflower	1	B1 cao
	(c)		Poppy	1	B1 cao
3			531	2	M1 for 565 − 143 (= 422) or 565 + 109 (= 674) or for 143 − 109 (= 34) A1 cao
4	(a)		G	1	B1 cao
	(b)		A	1	B1 cao
	(c)		8	1	B1 cao

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
5 (a)		2	1	B1 cao
(b)		14	1	B1 Accept −14
6 (a)		32	2	M1 for reading off frequencies (condone one error) A1 cao
(b)		7	1	B1 cao
(c)		8	2	M1 for 10 − 2 or 2 − 10 or −8 A1 cao
7		76p	3	M1 for 1000 ÷ 84 or 10 ÷ 0.84 (= 11.90…) or 11 × 84 (=924) or 11 × 0.84 (=9.24) or 11 given as the answer. M1 for complete method to find the change (showing figures in compatible units) or 76 as the answer no/incorrect units. A1 for 76p or £0.76 or £0.76p
8		36	1	B1 cao for Cazda
		120°	1	B1 cao for Zusuki
		42	2	M1 for correct method from using 105° eg 18÷45×105, "36"÷90×105 or from table eg Cazda "36"×4−(18+36+48) A1 for 42 or ft values from their table.

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PAPER: 1MA0/2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		6	1	B1 cao
	(b)		8	1	B1 cao
*10			Jane should buy Greens Garden Shop + costs	4	M1 for Suttons: 140 ÷ 20 (= 7) bags of compost needed M1 for 3 × 3.25 (= 9.75) + 1 × 2.25 (=12) M1 for Greens: cost of 2 bags eg × 4.99 (= 9.98) , 2 × 5 (=10) etc. C1 for correct conclusion from a comparison of correct appropriate figures
11	(a)		14 cm	2	B1 for 14 B1 for cm
	(b)		$\frac{1}{8}$	2	M1 for $\frac{7}{56}$ or 0.125 A1 cao
	(c)		three squares correctly added	1	B1 for 3 squares shaded to give a shape with one line of symmetry
	(d)		three squares correctly added	1	B1 for 3 squares shaded to give a shape with rotational symmetry of order 2

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
12 (a)		50	2	M1 for 1 kg = 1000g or 1 ÷ 20 (=0.05) A1 cao
(b)		70	3	M1 for 5000/20 (=250) or for 250 /100 (= 2.5) or for 5000/2000 (=2.5) M1 for 28 × "2.5" A1 cao Note: calculations may be carried out in kg or in g.
13 (i)		72	3	B1 cao
(ii)		5		B1 cao
(iii)		5 or 31		B1 cao

PAPER: 1MA0/2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		61	2	M1 for a complete method eg 7 × 8 + 5 A1 cao
	(b)		3	3	M1 for 29 – 5 (=24) or for $8x + 5 = 29$ M1 for "24" ÷ 8 or for $8x = 24$ A1 cao
15	(a)		66	1	B1 for 65 – 67
	(b)		125	2	M1 for complete method using graph eg 50 euros = £42; 42 × 3 A1 for 122 – 128
16	(a)		6	1	B1 cao
	(b)		sketch of net	2	B2 for a correct sketch of a possible net. (B1 for between 3 and 5 faces (of which at least one must be a rectangle and no more than two triangles) with adjoining edges)
	(c)		triangle drawn	2	M1 for line length 6.5 cm drawn (± 2mm) A1 for accurately drawn triangle (within overlay)
17	(a)		6.7	1	B1 for 6.7
	(b)		0.064	2	B2 for 0.064 (B1 for 15.625 oe or 0.4 oe)

PAPER: 1MA0/2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18			1440	3	M1 for correct method to find volume of a cuboid eg 300 × 600 × 200 (=36000000) or 25 × 50 × 20 (=25000) M1 (dep) for "volume of container" ÷ "volume of box" A1 cao Ignore units. OR M1 for correct method to find number of boxes along one edge eg 300 ÷ 25 (=12) or 600 ÷ 50 (=12) or 200 ÷ 20 (=10) M1 (dep) for intention to use 3 values to find total number of boxes A1 cao Ignore units. NB : must use consistent units for M marks.
19	(a)		9.6	2	M1 for complete method to calculate the mean eg (12+6+7+10+13) ÷ 5 A1 for 9.6 oe
	(b)		5	2	M1 for $\frac{12}{240}\times 100$ oe A1 cao
20	(a)		10, 8, (6), 4, 2, (0)	2	B2 for fully correct table (B1 for 2 or 3 entries correct)
	(b)		line drawn	2	B2 for correct straight line between $x = -1$ and $x = 4$ (B1 for a single straight line which passes through (0, 8) or for a single straight line with negative gradient –2 or for at least 5 points from their table plotted correctly)

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
21 (a)		25	1	B1 cao
*(b)		yes with correct comparative figures	3	M1 for method to calculate journey time travelling at 30 mph, eg $\frac{20}{30}$ (=0.66…) or 40 (mins) M1 (dep) for method to work out arrival time at home, (consistent units), eg 18 10 + "40 mins" (=18 50) C1 for yes with comparison of 40 minutes with 50 minutes or stating arrival time home as 18 50 OR M1 for method to calculate speed in order to get home by 1900 eg $20 \div \frac{50}{60}$ (= 24 mph) M1 (dep) for stating speed as 24 mph C1 for yes with supporting calculations showing speed as 24 mph
22		Question and responses	2	B1 for a suitable question which includes a time frame (the time frame could appear with the response boxes) B1 for at least 3 non-overlapping response boxes which are exhaustive for their question NB do not accept inequality signs
23 (a)		0.3	2	M1 for $1 - (0.25 + 0.10 + 0.20 + 0.15)$ oe A1 oe
(b)		6	2	M1 for 60×0.10 oe A1 cao

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*24		large carton with correct calculations	3	M1 for 1.60 ÷ 125 (= 0.0128) or 2.8 ÷ 225 (= 0.0124(4…) or 125 ÷ 1.60 (= 78(.125(g)) or 225 ÷ 2.80 (= 80(.35…g)) or any other calculation that could lead to a comparative figure M1 for 1.60 ÷ 125 (= 0.0128) **and** 2.8 ÷ 225 (= 0.0124(4…) or for 125 ÷ 1.60 (= 78(.125(g)) **and** 225 ÷ 2.80 (= 80(.35…g)) or for calculations that could lead to comparative figures for the 2 cartons C1 for correct comparative figures for both cartons leading to a correctly stated comparison. Accept any other method considered equivalent. Figures may be truncated or rounded as long as their method is clear.
25 (a)		n^4	2	M1 for $\frac{n^{10}}{n^6}$ oe or $n^3 \times n$ oe or $\frac{n^7}{n^3}$ oe A1 cao
(b)		$5(y-3)$	1	B1 cao

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
26		6 : 5	4	M1 for $\frac{2}{3} \times 165$ oe (= 110) [black counters] M1 (dep M1) for $\frac{40}{100} \times$ "110" oe (=44) [where 110 is their black counters] M1 (dep M2) for (110 − "44") : 55 or 66 : 55 or a reversed ratio A1 cao OR M1 for 2 : 1 M1 for 2 × "1 − 0.4" or 1.2 M1 (dep M2) for "1.2" : 1 A1 cao OR M1 for correct method to find proportion of black counters left in the bag eg $\frac{60}{100} \times \frac{2}{3}$ $(= \frac{120}{300})$ M1 for correct method to find proportion of white counters in the bag ie $\frac{1}{3}$ oe M1 (dep M2) for correct method to find ratio after eg "$\frac{120}{300}$" : "$\frac{1}{3}$" A1 cao

PAPER: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
27		26	3	M1 for (360 − 90) ÷ 2 (= 135) M1 for $4x + 31 =$ "135" or $6x - 21 =$ "135" A1 cao OR M1 for forming an appropriate equation eg $4x + 31 = 6x - 21$ or $6x - 21 + 4x + 31 + 90 = 360$ oe M1 (dep) for isolating terms in x and number terms A1 cao
28		41.1	4	M1 for method to work out the area of the circle or quarter circle or semi-circle eg $\pi \times 6^2$ (=113.(09..)) or $\pi \times 6^2 \div 2$ (=56.5(48..)) or $\pi \times 6^2 \div 4$ (= 28.2(7…)) M1 for method to work out the area of the square eg (=72) oe or a triangle eg ½×6×6 (=18) M1 for complete method to find shaded area. A1 for value in the range 41.04 - 41.112

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Mark Scheme (Results)

November 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

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5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
1	(a)		9 squares shaded	1	B1 cao	C
	(b)		$\frac{75}{100}$	1	B1 for $\frac{75}{100}$ oe eg $\frac{3}{4}$	C
	(c)		4	1	B1 cao	C
	(d)		$\frac{3}{8}$	1	B1 cao	C
2	(a)		19	1	B1 cao	C
	(b)		31	1	B1 cao	C
	(c)		Reason given	1	B1 for correct reason eg: 80 is even Terms of the sequence are odd Terms end 1, 3, 5, 7, 9 Shows 79 and 83 or 79 or 83 with term to term difference of 4 given	E
3	(a)		6	1	B1 cao	C
	(b)		−9	1	B1 cao	C
4	(a)		6.90	3	M1 for 13.60 + 13.60 (=27.20) M1 for "27.20" – 20.30 or 6.9 A1 for 6.90	E
	(b)		26	1	B1 cao	C
	(c)		5.23 pm	1	B1	C
5			2.9 kg or 2900g	2	M1 for 3.4 – 0.5 or 3400 – 500 or 2.9 or 2900 A1 for 2.9 kg or 2900 g (units must be correct)	G

5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
6	(a)		sector	1	B1	C
	(b)(i)		prism	3	B1 for prism	C
	(b)(ii)		5		B1 cao	C
	(b)(iii)		6		B1 cao	C
7	(a)		965	1	B1 cao	C
	(b)		596	1	B1 cao	C
*8			23 Norwich 27 Ipswich	3	M1 for 30 – 12 and 20+7 **or** 20 – 5 and 30+7 **or** 30 – 12 and 20 + 12 **or** 20 – 5 and 30 + 5 **or** 30 – 12 and 20 – 5 **or** 30 + 5 and 20 + 12 **or** 30 – 12 + 5 **or** 20 – 5 + 12 **or** 12 – 5 (= 7) M1 for 30 – 12 + 5 **and** 20 – 5 + 12 C1 for Norwich 23 and Ipswich 27	E
9	(a)(i)		(2, −4)	2	B1 cao	C
	(a)(ii)		Point plotted		B1 for point plotted at (−2,3)	C
	(b)		$y = x$ drawn	1	B1 for correct line	G
10	(a)		E	1	B1 cao	C
	(b)		1	1	B1 cao	C
	(c)		B, E	1	B1 cao	C
11		8 +8 + 8 = 24 24 ÷ 4 = 6 6 × 6 = 36	36 cm^2	5	M1 for 8 +8 + 8 (= 24) M1 for finding square side length (“24” ÷ 4) M1 for squaring side length (“24” ÷ 4) × (“24” ÷ 4) A1 for 36 cao B1 for cm^2	E

5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
*12		180 – (68 + 68) = 44 44 + 44 = 88	88°	4	M1 for 180 – (68 + 68) (= 44) M1 dep for completing method to find angle y 44 + 44 or 180 – (180 – 44 – 44) A1 for $y = 88$ C1 for fully correct appropriate reasons for complete method used. Base angles of isosceles triangle are equal Angles in a triangle add up to 180° Exterior angle of a triangle equals sum of the interior opposite angles **or** Angles on a straight line add up to 180° NOTE – If angles or working is incorrectly assigned either in working or on diagram, award M0	E
13	(a)		9	1	B1 cao	C
	(b)		12	1	B1 cao	C

5MB2F November 2016						
Question		**Working**	**Answer**	**Mark**	**Notes**	**Type**
14		6, 10, 14, 18 8, 13, 18	18	3	M1 for listing at least 3 multiples of 4 and at least 3 multiples of 5 M1 for adding 2 to multiples of 4 **and** adding 3 to multiples of 5 A1 for 18 cao	E
*15		120 ÷ 8 × 5 80 + 75 = 155 155 > 150 OR 150 – 80 = 70 70 ÷ 5 × 8 112 < 120	No with reason	3	M1 for method to convert 120 km to miles 120 ÷ 8 × 5 (=75) M1 for 80 + '75' (=155) C1 for No with correct total distances in miles OR M1 for 150 – 80 = 70 M1 for complete method to convert 70 miles to km 70 ÷ 5 × 8 (=112) C1 for No with correct values for distance driven in France and mileage remaining.	E
16	(a)	$7a + 4a – 8b$	$11a – 8b$	2	M1 for $4a – 8b$ A1 for $11a – 8b$	G
	(b)		n^{11}	1	B1 cao	C
	(c)		$5(x + 2)$	1	B1 cao	C

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5MB2F November 2016					
Question	**Working**	**Answer**	**Mark**	**Notes**	**Type**
17		74	4	M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for "180" ÷ (1 + 2 + 7) (= 18) M1 for "18" × (1 + 2) + 20 A1 cao OR M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for $\frac{70}{100} \times 180$ (=126) M1 for 180 – '126' + 20 A1 cao	E
18	$4 \times 3 = 12$ $2 \times 10 = 20$ $(12 + 20 + 20) \times 1.5$ $8 \times 10 \times 1.5 = 120$ $\frac{1}{2} \times 4 \times 7 \times 1.5 = 21$ $120 - 21 - 21$	78	4	M1 for method to find area of parallelogram or 2 triangles M1 for method to find whole cross sectional area M1 for complete method to find volume A1 cao OR M1 for method to find volume of enclosing cuboid or volume of a single cuboid. M1 for method to find volume of triangular prism(s) of method to find parallelogram prism M1 for complete method to find volume of prism. A1 cao	E

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PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Line drawn	1	B1
	(b)		Circle drawn	1	B1
2			4.50 1.40 3.90	3	B1 cao B1 cao B1 ft sum of stated profit figures
*3			Belinda with working	3	M1 adding the scores for Ami (=59.2) and for Belinda (=59.7) A1 for 59.2 and 59.7 C1 ft (dep on M1) for conclusion OR M1 for method to find four differences A1 for final difference of 0.5 C1 ft (dep on M1) for conclusion
4	(a)		6	1	B1 cao
	(b)		4	1	B1 cao
	(c)		6	1	B1 cao
	(d)		3.25	2	M1 for method to isolate the q term or division by 8 through as the first step A1 oe
	(e)		19	2	M1 for substitution eg 4+5×3 A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		octagon	1	B1 cao
	(b)		reflection	1	B1 cao
	(c)		B & F	1	B1 cao
	(d)		G	1	B1 cao
6	(a)		174	2	M1 for substitution eg 36×4+30 A1 cao
	(b)		4.5	3	M1 for algebraic statement eg 192=36*x*+30 oe or one inverse operation shown or 192 – "174" = 18 extra units M1 for correct inverse statement or rearrangement of equation eg (192−30) ÷ 36 or "18" ÷ 36 as an extra ½ kg A1 cao
7			9	3	M1 any appropriate inverse operation eg 22 +5, 27 ÷ 3 M1 complete method eg 22 + 5 ÷ 3 A1 cao
8	(a)		10	2	M1 for 8 ÷ 0.75 oe (= 10.6666..) A1 cao
	(b)		$\frac{40}{200}$	1	B1 oe
9			11	3	M1 for measurement of a single side eg 8 (cm), 3 (cm) or method to find total length M1 for use of scale with a length eg 4 (m), 1.5 (cm) A1 answers in the range 10.8 to 11.2 SC B1 for 44

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*10			246 Conclusion Eg yes	4	M1 for 45 × 3 (=135) or 37 × 3 (=111) M1 for 45×3+37×3 (=135+111) A1 cao C1 (dep on at least M1) for conclusion OR M1 for 45 + 37 (=82) M1 for 3 × "82" A1 cao C1 (dep on at least M1) for conclusion
11			1.64	4	M1 for 3 × 48 (=144) M1 for totalling the amounts eg 1.79+1.20+3.53+"1.44" (=7.96) M1 subtraction from 9.60 eg 9.60 – "7.96" A1 cao
12			Correct triangle	2	M1 for one side correct and a triangle or a correct enlargement with a scale factor of 3 A1 correct triangle (any orientation)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13			42	3	M1 for any attempt to find how many 46s make 180 or 180÷46 (=3.9….) M1 for complete method eg 180 – (46×no.of tickets) A1 cao
14	(i)		−11	4	B1 cao
	(ii)		1.69		B1 cao
	(iii)		3.5		B1 cao
	(iv)		512		B1 cao
15	(a)		Tessellation	2	B2 for at least 6 shapes tessellating correctly (no gaps) (B1 for at least 3 shapes tessellating)
	(b)		Triangle drawn	1	B1 cao
16			600	3	M1 0.04 × 5000 (=200) M1 3 × "200" or sight of 5600 A1 cao
17			$h = \frac{G+5}{3}$	2	M1 for intention to isolate the $3h$ or divide all terms by 3 as the first step A1 oe

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*18			Tymes shop	3	M1 for 80 – 18 (= 62) or for method to reduce 80 by 20% oe (= 80 − 16 = 64) A1 for 62 and 64 C1 for comparison using 62 and 64 OR M1 for method to find 20% of 80 (=16) A1 for 16 C1 for comparison using 16 and given 18 OR M1 for writing £18 as a % of £80 (= 22.5%) A1 for 22.5% C1 for comparison using 22.5% and 20%
19	(i)		$N = 3x + 7$	5	M1 for $x + x + 3 + x + 4$ (=N) A1 cao
	(ii)		21		M1 ft for 61 = "$3x + 7$" M1 for isolating the x A1 ft "18" + 3 OR M1 for choosing a value of x and stating x, x+3, x+4 M1 for adding their values A1 ft
20	(a)		3.5	1	B1 cao
	(b)		3000	1	B1 cao
	(c)		30000	2	M1 for 3 × 100 × 100 oe A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21	(a)		Triangle	2	B1 for triangle translated B1 for triangle at (−2,2),(−2,0),(−1,0)
	(b)		Rotation 90° anticlockwise centre (0,0)	3	B1 Rotation B1 90° anticlockwise oe B1 centre (0,0) Note Award no marks if more than one transformation is given
*22			Flow pumps	5	M1 for a correct first step, eg 4 × 35 (= 140 galls in 1 min or 8400 galls in 1 hour) or 1000000 ÷ 2100 (= 476 hours for 1 speedy pump) or 35 × 60 (= 2100 gallons in 1 hour) M1 for a correct method to find a time taken for one type of pump, eg 1000000 ÷ 8400 (= 119 hours) M1 for a correct method to find a time taken for the other type of pump (consistent), eg 500 ÷ 5 (= 100 hours) A1 for two correct comparable values, eg 119 (hours) and 100 (hours) C1 ft (dep M3) for conclusion of Flow pumps with correct figures for comparison OR M1 for a correct first step, eg 4 × 35 (= 140 galls in 1 min) M1 for a correct method to find the number of gallons pumped out by one type of pump in a certain time period, eg 1000000 ÷ 100 (= 10000 gall in 1 hour) M1 for a correct method to find the number of gallons pumped out by the other type of pump in a certain time period (consistent), eg for two correct comparable values, eg 10000 ÷ 60 (= 166 gallons in 1 min) A1 for 140 (galls in 1 min) and 166 (galls in 1 min) oe C1 ft (dep M3) for conclusion of Flow pumps with correct figures for comparison

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5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labelling conventions.

ii*) select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review, and discuss each of these situations with your Team Leader.
If there is no answer on the answer line then check the working for an obvious answer.
Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.
If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

Paper: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8	1	B1 cao
	(b)		30	2	M1 for 8 + 4 + 6 + 12 or 7 × 4 + 2 A1 cao
	(c)		4 circles on Friday	1	B1 cao
2	(a)		5	1	B1 cao
	(b)		$\frac{7}{10}$	1	B1 accept any equivalent vulgar fraction
	(c)		0.03	1	B1 cao
	(d)		16	2	M1for a method to work out 20% of 80 e.g. 80 ÷ 10 × 2 or 2 × 8 oe A1 cao
3	(a)		B and D	1	B1 cao
	(b)		E	1	B1 cao
	(c)		10	1	B1 cao

Paper: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*4			60p	4	M1 for price of child ticket e.g. 8.40 ÷ 2 (= 4.20) M1 for a method to work out the total cost of the 2 adults e.g 2 × 8.40 (= 16.80) **or** of the 3 children e.g "4.20" × 3 (= 12.60) **or** of the whole family e.g. 2 × 8.40 + 3 × "4.20" (= 29.40) M1 for a complete method to work out the change e.g. 3 × £10 – "29.40" = (0.60) **or** 3 × £10 – (2 × 8.40 + 3 × "4.20") (= 0.60) C1 for change with correct money notation 60p or £0.60 (accept £0.60p) **NB** candidates may work in pence rather than pounds
5	(a)		Diagram	1	B1 for correct addition to diagram
	(b)		13, 16	1	B1 cao
	(c)		37	1	B1 cao
	(d)		24	1	B1 cao
6	(a)		40	2	M1 for evidence of using the fact that there are 180° on a straight line eg 100 + 2x = 180 or 180 – 100 – 2x A1 cao
	(b)		Acute	1	B1 cao
	(c)		Accurate drawing	2	B2 for a fully correct drawing (B1 for PR = 6.5 cm ± 0.2 cm or angle QPR = 70° ± 2°)

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
7		15000 m or 15 km	3	M1 for 4 × 1500 (= 6000) **or** 3 × 3 (= 9) M1 correct method to change to consistent units e.g 3 × 1000 (= 3000) **or** 1500 ÷ 1000 (= 1.5) A1 for 15 000 m or 15 km
*8		4 35 pm	4	M1 for 4 × 25 (= 100 (min)) M1 for "100" + 15 (= 115) (min) M1 for 6 30 – "1hr 55 min" C1 for correct time with pm e.g.4 35 pm or16 35(oe) **or** M1 takes off 15 min e.g. 6 30 − 15 (= 6 15) M1 takes off 25 min 4 times e.g "6 15"→5 50→5 25→ 5 00→ 4 35 **or** 6 30 →6 05 →5 40 → 5 15 → 4 50 M1 takes off 15 min **and** takes off 25 min 4 times C1 for correct time with pm e.g 4 35 pm or 16 35(oe)
9 (a)		8	1	B1 7.8 – 8.2
*(b)		No with working	3	M1 for complete method to change 90 gallons to litres e.g. 10 gallons = "45" litres **and** 9 × "45" = 405 (litres) or 9 gallons = "40" litres **and** 10 × "40" = 400 (litres) A1 for answer in range 396 - 414 (litres) **or** room for 36 – 54(litres) C1 (dep on M1) for conclusion ft their answer. **or** M1 for complete method to change 450 litres to gallons e.g. 50 litres = "11" gallons **and** 9 × "11" (= 99 (gallons)) **or** 45 litres = "10" gallons **and** "10" × 10 (= 100 (gallons)) A1 for answer in range 99 to 100 (gallons) **or** room for 9 or 10 (gallons) C1 (dep on M1) for conclusion ft their answer.

Paper: 1MA0/1F					
Question		Working	Answer	Mark	Notes
10	(a)		28	1	B1 cao
	(b)		42	1	B1 cao
	(c)		24	2	M1 for complete method to find the difference between males and females condone one error in reading frequencies **or** one error in totalling correct frequencies eg (Males 28 + 16 + 24 + 8) – (Females 16 + 12 + 18 + 6) or 76 − 52 A1 cao **or** M1 for finding the differences for each pair of columns condone one error in reading frequencies eg (28 − 16) + (16 − 12) + (24 − 18) + (8 −6) or 12 + 4 + 6 + 2 A1 cao
11	(a)		Newcastle	1	B1 cao
	(b)		6	1	B1 accept −6
	(c)		−4	1	B1 cao
	(d)		1	2	M1 for (4 −2 + 3 − 4 + 4) ÷ 5 A1 cao
12	(a)		Correct lines	2	B2 exactly 3 correct lines of symmetry (B1 for 1 or 2 correct lines and no incorrect lines)
	(b)		16	3	M1 for a method to find the area of the square e.g 8 × 8 (= 64) **or** the height of the shaded triangle e.g. 8 ÷ 2 (= 4) M1 for a complete method to find the area of the shaded triangle e.g. “64” ÷ 4 **or** ½ × 8 × “4” A1 cao

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		−7	2	M1 for substitution eg $4 \times 2 - 3 \times 5$ A1 cao
(b)		9	2	M1 for substitution eg $30 = 4x - 3 \times 2$ or $\frac{30+6}{4}$ or $y + 3t = 4x$ oe A1 cao
14		485	5	M1 for a method to find weekly basic pay e.g. 7×10 (= 70) **and** "70" × 5 (= 350) M1 for a method to find overtime rate e.g. 10 + 5 or 1½ × 10 (=15) M1 for a method to find total overtime pay e.g. (3 + 2 + 1 + 3) × "15" (=135) M1 for a method to find total pay e.g. "350" + "135" A1 cao **or** M3 for method to calculate pay per day for 5 days e.g. Mon 70 + 45 (= 115), Tues = 70 + 30 (= 100), Wed = 70, Thurs = 70 + 15 (= 85), Fri = 70 + 45 (= 115) (M2 for method to calculate pay per day for 3 or 4 days) (M1 for method to calculate pay per day for 1 or 2days except Wednesday) M1 for totalling all five days e.g. "115" + "100" + "70" + "85" + "115" A1 cao **or** M1 for a method to find overtime hours e.g. 3 + 2 + 1 + 3 (= 9) **and** weekday hours 7×5 (=35) M1 for a method to find equivalent time on overtime e.g "9" + "9" ÷ 2 M1 for a method to find total equivalent time e.g. "13.5" + "35" M1 for a method to find total pay e.g "48.5" × 10 A1 cao **SC** B2 for answer of 575

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
15 (a)		$\frac{1}{6}$	2	B2 cao (B1 for any equivalent fraction)
(b)		75	3	M1 for method to work out degree equivalent of 1 person e.g 60 ÷ 30 (= 2) M1 for a complete method to work out number of women e.g. (360 − 60 − 60 − 90) ÷ "2" oe A1 cao **or** M1 for complete method to work out angle of women sector eg 360 − 60 − 60 − 90 (= 150) M1 for a complete method to work out number of women e.g ("150" ÷ 60) × 30 oe A1 cao
(c)		Can't tell or No (supported)	1	B1 for a convincing reason e.g. there is no information about the population size this week
16 (a)		$7x$	1	B1 cao
(b)		$6y$	1	B1 cao
(c)		$8e - 2e^2$	2	B2 or any correct two term factorised form (B1 for $8e$ **or** $-2e^2$)

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*17		45	4	M1 for complete method to find angle *ABC* e.g. (180 − 70) ÷ 2 (= 55) M1 for complete method to find *x* e.g. angle *CBD* = 180 –"55" (= 125) **and** "125" – 80 A1 cao C1 base angles of an isosceles triangle are equal **and** the sum of the angles in a triangle is 180 **and** the sum of the angles on a straight line is 180 **or** M1 for complete method to find angle *BAC* e.g. (180 − 70) ÷ 2 (= 55) M1 for complete method to find *x* e.g 70 + "55" (= 125) **and** "125" −80 A1 cao C1 base angles of an isosceles triangle are equal **and** the exterior angle of a triangle is equal to the sum of the two interior opposite angles
18		12	4	M1 for a correct expression for the volume of a block e.g. 2 × 2 × 10 (= 40) M1 for a correct expression for the volume of a box e.g. 10 × 8 × *x* **or** for "40" × 24 M1 for a complete method to find *x* e.g. ("40" × 24) ÷ (10 × 8) A1 cao **or** M1 for a method to find number of blocks that can fit in a bottom row of the box 8 ÷ 2 (= 4) M1 for a method to find the number of rows 24 ÷ 4 (= 6) M1 for a complete method to find *x* e.g. "6" × 2 A1 cao

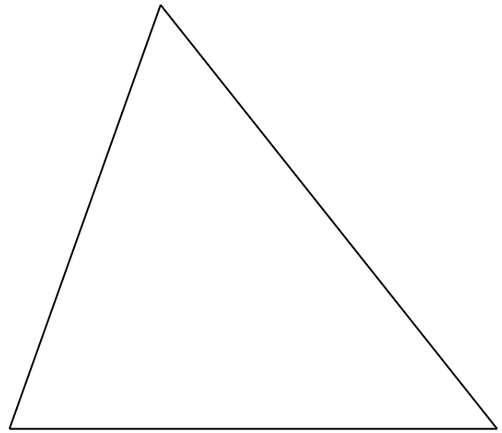
Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Yes (supported)	5	M1 for method to calculate profit on one laptop e.g.400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for method to calculate selling price of one laptop e.g. 400 × 1.3 oe (= 520) **or** 400 × 1.15 oe (= 460) M1 for method to calculate the total selling price in one of the two deals e.g.40 × 400 × 1.3 oe (= 20 800) **or** for 10 × 400 × 1.15 oe (= 4600) M1 for total income e.g. “20 800” + “4600” C1 for Yes **and** (£)25 400 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit in one of the two deals e.g.40 × “120” (= 4800) **or** 10 × “60” (= 600) M1 for a method for total profit “4800” + “600” (= 5400) M1 for a method for target profit e.g. 25 000 − 400 × 50 (= 5000) C1 for Yes with (£)5400 **and** (£)5000 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit for one of the two deals e.g.40 × “120” (= 4800) **or** 10 × “60” (= 600) M1 for 50 × 400 +“4800” or 50 × 400 + “600” or “4800” + “600” M1 for 50 × 400 +”4800” + “600” (= 25 400) C1 for Yes **and** (£)25 400 **or** Yes with £400 more

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		Frequency polygon	2	B2 correct frequency polygon (B1 for points plotted correctly but not joined **or** for points plotted at the correct heights, consistently placed within the class intervals (including ends) and joined **or** for an otherwise correct frequency polygon with no more than one point incorrect **or** correct frequency polygon with first and last points joined directly) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.
(b)		$60 < A \leq 80$	1	B1 ft from their frequency polygon
21		-2	3	M1 for expanding brackets e.g. $4x+12\ (=2x+8)$ or divide by 4 as a first step e.g. $x+3=\frac{2x}{4}+\frac{8}{4}$ M1 ft their equations which have to be of the form $ax + b = 2x + 8$ **or** $x + 3 = ax + b$ for isolating terms in x **and** numbers e.g. $4x - 2x = 8 - 12$ seen as part of their solution oe A1 cao

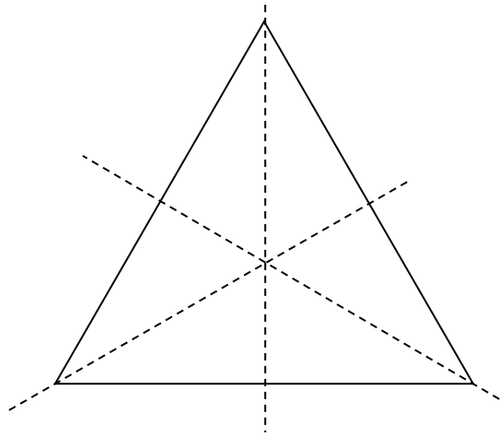
Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22 (a)		40, 100	3	M1 method to find unit weight e.g. 60 ÷ 3 (= 20) M1 for complete method to find weight of **one** of the other ingredients e.g "20" × 2 (= 40) **or** "20" × 5 (= 100) A1 cao
(b)		1.44	3	M1 for a complete method to work out the weight of nuts needed e.g. 300 ÷ (3 + 2 + 5) × 3 (= 90) **or** 300 ÷ (60 + "40" + "100") × 60 (= 90) M1 for a complete method to work out the cost eg (800 ÷ 500) × "90" (= 144) A1 cao
23		15 200	3	M1 for a method to obtain at least two different areas from 50 × 80 (= 4000), $\frac{1}{2} \times 40 \times 60 \ (= 1200)$, 60 × 80 (= 4800) M1 (dep on M1) for adding at least 4 correct face areas A1 cao

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
24		$\frac{4}{15}$	3	M1 for a method to find the total number of people e.g 3×5 (= 15) or writing $\frac{5}{15}$ as an equivalent fraction to $\frac{1}{3}$ M1 (dep) for "15" – 5 – 6 (= 4) A1 oe **or** M1 for a method to find prob (boy) e.g. $\frac{6}{5} \times \frac{1}{3} (= \frac{6}{15})$ M1 (dep) for $1 - "\frac{6}{15}" - \frac{1}{3}$ A1 oe **or** M1 for an expression for the probability of the number of girls in the room e.g. $\frac{5}{5+6+x}$ M1 (dep) for "$\frac{5}{5+6+x}$" = $\frac{1}{3}$ or $x = 4$ A1 oe **SC B2 for** $\frac{4}{n}$ where $n > 4$ and $\neq 15$

6c



12a



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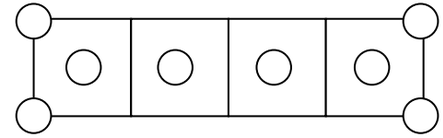
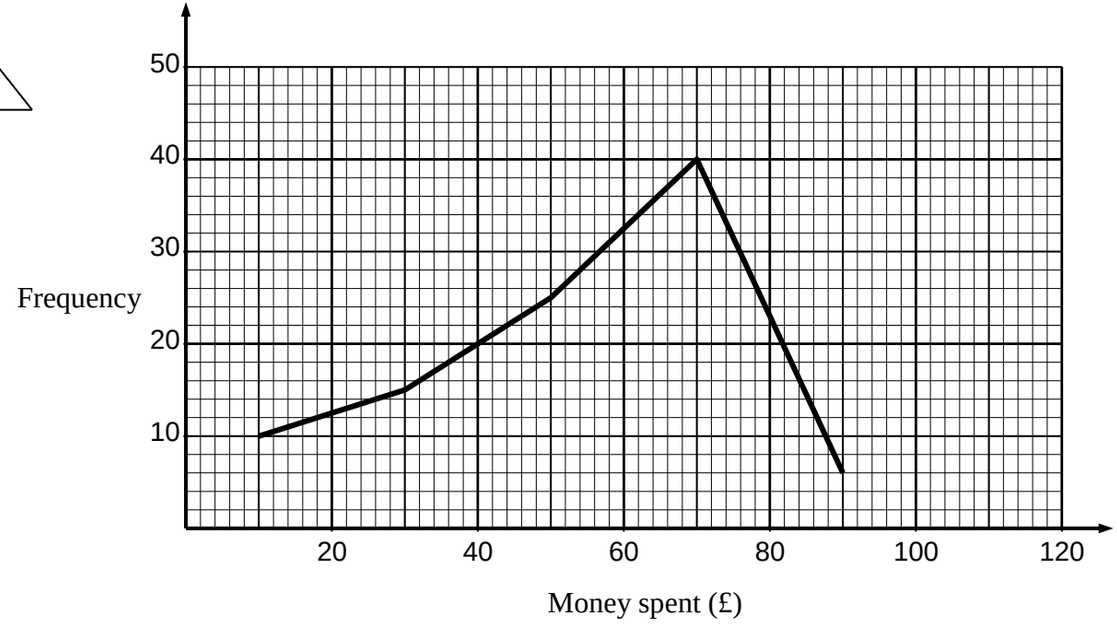


20a



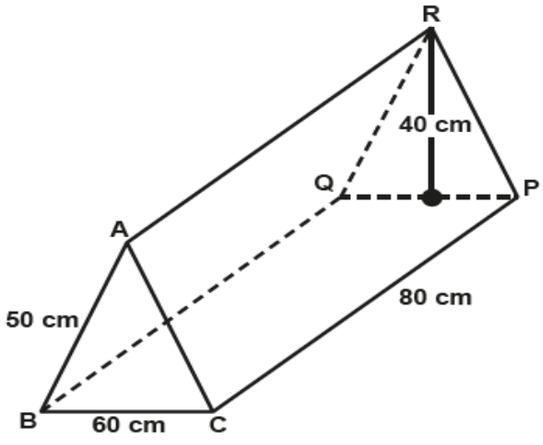
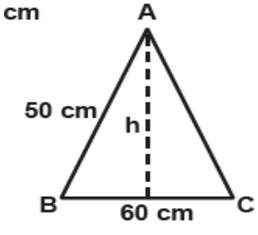
Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Mark scheme notes**
1		Diagram enlarged. Key moved above and to the left of the diagram.	Standard mark scheme
3		Diagram enlarged. Wording 'centimetre' removed. Shapes labelled 'shape A, shape B, shape C, shape D, shape E and shape F.' Layout of shapes changed so shapes A B C are on the top row then D E F are below. Shading changed to dotty shading. In (c) Wording added 'Each square on the grid represents a one centimetre square.'	Standard mark scheme
5		The 3 patterns are stacked vertically. Pattern number 3 is repeated below pattern number 3 and is labelled 'pattern number 4.' Wording changed to 'There is a sequence of patterns made from lines and circles: pattern number 1, pattern number 2 and pattern number 3.' In (a) Wording changed to 'Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram.' Diagram removed. In (b) Table has been turned to vertical format. Wording added 'There are two spaces to fill.'	Standard mark scheme
6	(a)	Diagram enlarged. Angle sizes moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
6	(b)	Diagram enlarged. 7 cm changed to 9 cm and 6.5 cm changed to 8.5 cm. Angle size moved outside of the arc and the arc has been made smaller.	Standard mark scheme
6	(c)	Line *PQ* made 9 cm.	Standard mark scheme adjusted for the fact that *PR* has now changed from 6.5 cm to 8.5 cm.
9		Diagram enlarged. Right axis has been labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) 36 changed to 35.	In (a) award the mark for an answer in the range 7.6 to 7.9 gallons. In (b) use the standard mark scheme.

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
10		Diagram enlarged. Right axis has been labelled. Key has been moved above and to the left of the diagram Male shading changed to dotty shading. Female shading changed to white. Vertical axis label moved above the vertical axis. Vertical axis extended to end at 35. Points on the graph moved to: Car – male: 30, female: 15. Walk – male: 15, female: 10. Bus – male: 25, female: 20. Other – male: 10, female: 5.	(a) B1 for 30 (b) B1 for 45 (c) M1 for finding the difference between males and females eg (Males 30 + 15 + 25 + 10) – (Females 15 + 10 + 20 + 5) or 80 − 50 A1 for 30 OR M1 for finding the differences for each pair of columns eg (30 − 15) + (15 − 10) + (25 − 20) + (10 − 5) A1 for 30
12		In (a) Diagram enlarged. In (b) Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
14		Table has been turned to vertical format.	Standard mark scheme
15		Both pie charts have been put on the same page and labelled ‘Last week’ and ‘This week’. In (a) Diagram enlarged. Angles have been moved outside of the angle arcs and the arcs have been made smaller. In (c) Diagram enlarged. Angles have been moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
16	(a)	MLP only: *x* changed to *f*.	Standard mark scheme but *x* changed to *f* for MLP
16	(c)	Braille only: *e* changed to *n*.	Standard mark scheme but *e* changed to *n* for Braille
17		Diagram enlarged. Angle sizes have been moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
18		Models provided for all candidates. Diagrams also enlarged and provided for MLP. Labels ‘Box’ and ‘Block’ have been moved above the diagrams.	Standard mark scheme
20		Number 6 on the frequency column of the table changed to number 5. Diagram enlarged. Right axis has been labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis.	Standard mark scheme
21		MLP only: *x* changed to *y*.	Standard mark scheme but *x* changed to *y* for MLP

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
23		 Cross section of prism h = height 40 cm 	Diagram changed as shown. Model provided for all candidates. Diagram also enlarged and provided for MLP. Cross section of the prism also provided. Key provided for the cross section of the prism. Braille only: will label the cross section R P Q.	Standard mark scheme

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Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F



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Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

9 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect canceling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.
If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

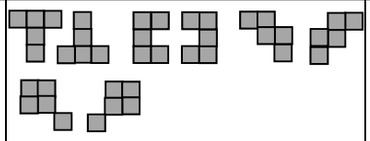
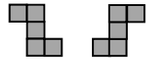
11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded.

12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 Range of answers
Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme
M1 – method mark A1 – accuracy mark B1 – Working mark C1 – communication mark QWC – quality of written communication oe – or equivalent cao – correct answer only ft – follow through sc – special case dep – dependent (on a previous mark or conclusion) indep – independent isw – ignore subsequent working

Paper: 1MA0/2F					
Question		Working	Answer	Mark	Notes
1	(a)		6500	1	B1 cao
	(b)		168	1	B1 cao
	(c)		Arrow at 7.2	1	B1 cao
2	(a)		(2, 1)	1	B1 cao
	(b)		(0, 5)	1	B1 cao
	(c)		(1, 3)	1	B1 cao
	(d)		Point	1	B1 for point marked, eg at (4, 5) or (4, 3) or (5, 5) or (7, 6) or (3, 4) or (4, 7)
3			54	3	M1 for $200 \div 3.85$ (= 51.94.. or 51) or $200 \div 3.65$ (= 54.79.. or 54) or $200 \div 3.49$ (= 57.31.. or 57) M1 for working out all of the above, or an answer of 54.79... A1 cao
4	(a)		Mark at $\frac{1}{2}$	1	B1 for mark at $\frac{1}{2}$
	(b)		Mark at 1	1	B1 for mark at 1
	(c)		Mark at $\frac{1}{4}$	1	B1 for mark at $\frac{1}{4}$

Paper: 1MA0/2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		4.5	1	B1 for 4.3 to 4.7
	(b)		Sector drawn	1	B1 for sector drawn
	(c)		Chord	1	B1 cao
6		SP, SL, SR, SF, SC, MP, ML, MR, MF, MC	10 outcomes	2	M1 for at least 4 correct outcomes A1 for all 10 correct outcomes with no incorrect outcomes and no repeats
*7			Liz is wrong (supported)	4	M1 for adding the 4 times eg 2 × 1 min + 2 × 45secs (= 3 min 30 sec or 210 sec) M1 for 60 ÷ "3.5" (= 17.14..) oe or 200 ÷ 10 (= 20) M1 for complete method leading to comparable figures eg. compares no. trips: 60 ÷ "3.5" (=**17.14**..) and 200÷10 (**20**) compares no. people: 60÷ "3.5" (=17.14..) then ×10 (=**171.4**..) [**200** given] compares tot. time needed: 200÷10 (=20) then × "3.5" (=**70**) [**60** min given] compares time per trip 200÷10 (=20) then 60 ÷ "20" (= **3**) ["**3.5"**calculated] C1 for statement that Liz is wrong with correct comparable figures (see above) NB: throughout accept rounding of 17.14 to 17 for all marks, and work in seconds if consistent.
8	(a)		Shape completed	1	B1 for a correct shape
	(b)		Shape completed	1	B1 for a correct shape

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
9		Yes with correct calculations	3	M1 for 768 ÷ 56 (= 13.71...or 14) OR 13 × 56 (=728) or 14 × 56 (=784) M1 for (768 – 19) ÷ 56 (= 13.375) OR for [13 × 56 (=728) or 14 × 56 (=784)] **and** 768 – 19 (= 749) A1 for correct conclusion from correct calculations, eg Yes, he still needs 14 buses.
*10		Diagram or chart	4	M1 for a key, or suitable labels, to identify Year 7 and Year 8 M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least 3 days, e.g. dual bar chart, line graph M1 for correct heights, dependent on a linear scale (condone up to 2 errors) C1 for a fully correct diagram or chart to include labels for days of the week and vertical axis correctly scaled and labelled.
11 (a)		0927	1	B1 cao
(b)		12	2	M1 for method to add 50 minutes to 0935 (= 1025) or method to find the difference between 0935 and 1013 (= 38) A1 cao
12 (a)		12	1	B1 cao
(b)		45	1	B1 cao
(c)		16	2	M1 for correct order of inverse operations –12 then ÷3 or for forming the equation $3x + 12 = 60$ and showing intention to subtract 12 from both sides or divide each term by 3 as a first step A1 cao
13		4	3	M1 for 10 + 10 + 10 (= 30) M1 for (“30” – 11 – 11) ÷ 2 oe A1 cao

Paper: 1MA0/2F					
Question		Working	Answer	Mark	Notes
14	(a)		6	1	B1 cao
	(b)		5.5	2	M1 for listing the numbers in order or an answer of 4 A1 for 5.5
	(c)		7	2	M1 for 9 – 2 or 2 – 9 or 2 to 9 A1 cao
15	(a)		trapezium	1	B1 cao
	(b)		8	2	M1 for a strategy to find the area, eg splitting the shape into two triangles or drawing a rectangle around it or using the formula for the area of a trapezium A1 cao
	(c)		Shape reflected	2	B2 for correct reflection drawn (B1 for 3 vertices correct or correct orientation, incorrect position)
	(d)		Enlargement sf 3 drawn	2	B2 correct enlargement drawn (B1 for any two sides correct or a correct enlargement with scale factor other than 3)

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*16		Yes with comparable values	3	M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) M1 for method to convert an amount of in to cm eg "172" × 2.54 (= 436.(88) or 437), 4 × 2.54 (=10.16), (12 × 14) × 2.54 (=426.72) C1 for Yes with 4.36-4.37 or with 436.(88) or 437 and 440 OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to convert cm to in eg 440 ÷ 2.54 (= 173.22...) C1 for Yes with 14 ft 5 in OR M1 for method to convert 4.4 m to cm eg 4.4 × 100 (= 440) M1 for method to change 14 ft 4 in to in eg 14 × 12 + 4 (= 172) C1 for Yes with 173(.22..) and 172
17		6.29	3	M1 for using 1kg = 1000 g, eg 650 ÷ 1000 (= 0.65) M1 complete method, eg "0.65" × 9.68 or 9.68 ÷ 1000 × 650 or for 6.292 A1 for 6.29, accept 6.3(0) SC: B1 for 62.92
18 (a)		10	1	B1 cao
(b)		7	2	M1 for 11 20 – 11 00 (= 20) or 11 57 – 11 30 (= 27) or 57 – 20 (=37) or 57 – 27 (=30) A1 cao
(c)		12	1	B1 cao

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Vans for hire and correct calculations	5	M1 for method to find $\frac{1}{3}$ of 87 (= 29) or $\frac{2}{3}$ of 87 (= 58) oe M1 for complete method to find cost for Best vans, eg (87 – "29") × 2 (=116) M1 for method to find the cost of the extra miles, eg (400 – 250) × 0.15 (= 22.50) or (400 – 250) × 15 (= 2250) M1 for complete method to find cost for Vans for hire, eg 44 × 2 + "22.50" (=110.5(0)) with consistent units C1 for Vans for hire and 116 and 110.5(0)
20	$\frac{2}{5}$, 0.405, 41%, $\frac{3}{7}$, 0.45	Ordered numbers	2	M1 for conversion to decimals or conversion to percentages or correct order with one error or correct order but reversed. A1 for correct order
21 (a)		5, 4, (3), 2, 1, (0)	2	M1 for 1 or 2 or 3 correct entries A1 cao
(b)		Line drawn	2	M1 plots 5 of their points correctly or a straight line with gradient –1 or a straight line through (0, 4) A1 correct line between $x = -1$ and $x = 4$
22		Question	2	B1 for a question with a time frame for frequency of use B1 for at least 3 correctly labelled response boxes (non-overlapping and exhaustive) [Do not allow inequalities in response boxes]
23		555	3	M1 for recognising that 1295 is 70% eg 70% = 1295 M1 for 10% = 1295 ÷ 7 (=185) or 1% = 1295 ÷ 70 (=18.5) or 1295 × $\frac{3}{7}$ oe or (1295 – 185) ÷ 2 or $1295 \times \frac{10}{7}$ oe (=1850) A1 cao

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
24	**£:** 189 ÷ 1.39= 135.97 174 ÷ 1.27 = 137.01 **SF:** 115 × 1.39 = 159.85 174 ÷ 1.27 × 1.39 = 190.44 **€:** 115 × 1.27 = 146.05 189 ÷ 1.39 × 1.27 = 172.68	London with correct comparable figures	3	M1 for method to convert one price to another currency, eg 189 ÷ 1.39 M1 for a complete method leading to 3 prices in the same currency or to figures that can be used to compare the 3 prices A1 for London and correct comparable figures. (accept rounded or truncated to the nearest unit)
25 (a)		positive	1	B1 cao
(b)		17 – 21.5	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a horizontal line from 21 or a point plotted at (x, 21) where x is in the range 17 – 21.5 A1 for answer in range 17 – 21.5
26		23	3	M1 for method to find difference in cost, eg 23×24 – 425 (= 127) or for 425 ÷ (23×24) (= 0.7699...) or 24 – (425 ÷ 23) (=5.52…) M1 for $\frac{"127"}{"552"} \times 100$ oe or 100 – "0.7699"×100 or $\frac{"5.52"}{24} \times 100$ A1 for answer in range 23 – 23.01
27		22.6	3	M1 for $19.3^2 + 11.7^2$ or 372.49 + 136.89 or 509.38 M1 for $\sqrt{19.3^2 + 11.7^2}$ or $\sqrt{509.38}$ A1 for answer in range 22.5 to 22.6
28		72	4	M1 for "x" + 24 or "x" – 24 or for "g" and 5"g" M1 for forming an appropriate equation eg $x + 24 = 5(x - 24)$ or for $(5g - g) \div 2 = 24$ or $g = 12$ M1 for correct operations to isolate x terms and non-x terms in an equation of the form $ax + b = cx + d$ or $ax + b = c(x + d)$ or $x = 36$ or for 6 × "12" oe A1 cao

Paper: 1MA0/2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*29		No (supported)	5	M1 for π × 9 ÷ 2 (=14.137…) or π × 5 ÷ 2 (=7.85…) or for π × 9 (=28.27…) or π × 5 (=15.7…) M1 for complete method to work out perimeter: 2 + 2 + (π × 9 ÷ 2) + (π × 5 ÷ 2) (= 25.99...) M1 (dep M1) for method to find number of rolls required for their perimeter, eg "their total perimeter" ÷ 2.4 eg 25.99..÷2.4 (=10.8), "47.98.."÷2.4 (=19.9) or "43.98.." ÷2.4 (=18.3) M1 for method to work out cost eg 3×10 + 2×3.99 (= 37.98), or 11 × 3.99 (=43.89); 20 →67.98, 19→63.99 or for method to find how many rolls can be bought for £35 (= 10) C1 for a conclusion supported by fully correct answers eg 37.98 (for comparing with 35) or 10 and 10.8 OR M1 for π × 9 ÷ 2 (=14.137…) or π × 5 ÷ 2 (=7.85…) or for π × 9 (=28.27…) or π × 5 (=15.7…) M1 for complete method to work out perimeter eg 2 + 2 + (π × 9 ÷ 2) + (π × 5 ÷ 2) (= 25.99...) M1 for a method to find how many rolls can be bought for £35 (=10) M1 for a method to work out the coverage of 10 rolls e.g. 10 × 2.4 (=24) C1 for a conclusion supported by fully correct answers eg 25.9(...) and 24

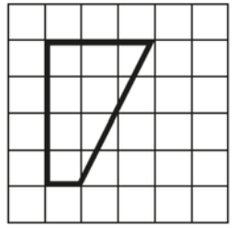
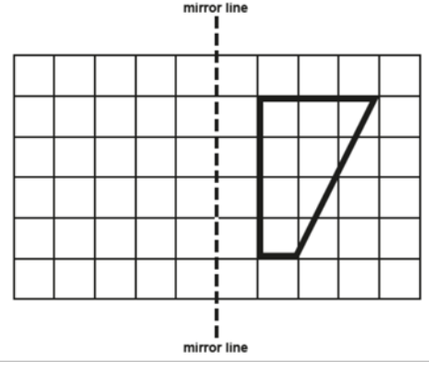
Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_2F

Question		Modification	Mark scheme notes
1	(b)	Diagram enlarged. Arrow head changed to an open headed arrow.	Standard mark scheme
1	(c)	Diagram enlarged. Wording 'with an arrow' removed.	Standard mark scheme
2		Grid enlarged. Crosses changed to solid dots.	Standard mark scheme
2	(d)	Wording 'with a cross (x)' removed.	Standard mark scheme
4	(a)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
4	(b)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
4	(c)	Diagram enlarged. Wording 'below' and 'with a cross (x)' removed.	Standard mark scheme
5	(a)	Diagram made 7.5 cm diameter. Dot made bigger.	B1 for 7.1 to 7.9
5	(b)	Diagram made 7.5 cm diameter. Dot made bigger. Wording 'Shade' replaced with 'Mark'.	Standard mark scheme
5	(c)	Diagram made 7.5 cm diameter. Dot made bigger.	Standard mark scheme
8	(a)	Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
8	(b)	Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
10		Table turned to vertical format and left aligned. Wednesday's numbers in the table changed from 17 and 11 to 18 and 10. Thursday's numbers in the table changed from 21 and 13 to 20 and 12. Grid enlarged.	Apply standard mark scheme for: Mon Tue Wed Thu Fri Y7 16 14 18 20 26 Y8 16 18 10 12 20

PAPER: 1MA0_2F			
Question		**Modification**	**Mark scheme notes**
11		First column of timetable has been removed from the table. Horizontal lines have been added to the information.	Standard mark scheme
13		Diagrams enlarged. 11 cm measurement on the rectangle moved above the rectangle.	Standard mark scheme
15	(a),(b)	Diagram enlarged. Shape changed. Wording 'centimetre' removed. Wording added 'Each square on the grid represents a one centimetre square'. 	Standard mark scheme for this shape; answers remain the same.
15	(c)	Diagram enlarged. Shape changed. Mirror line added to the top of the line as well. 	Standard mark scheme applied to this shape.
15	(d)	Question reversed. Shape changed. The quadrilateral which is labelled 'Shape P' has been enlarged by a scale factor 3 and labelled 'Shape Q'. Question wording changed to 'It shows Shape P and Shape Q given on a grid. Describe the single transformation that maps Shape P onto Shape Q.' 3 answer lines have been provided. 3 rows have been cut off the side and 2 rows have been removed from the top of the grid and one from the bottom.	B1 for enlargement B1 for scale factor 3

PAPER: 1MA0_2F			
Question		**Modification**	**Mark scheme notes**
18		Diagram enlarged. Axes labels moved to the left of the horizontal axis and above the vertical axis. Right axis has been labelled. Graph line moved so it finishes at 11.55.	Amended mark scheme: M1 for 11 20 – 11 00 (= 20) or 11 55 – 11 30 (= 25) or or 55 – 20 – "10" A1 for 5
20		Wording 'five' added.	Standard mark scheme
21	(a)	Table has been turned to vertical format and left aligned. Wording added 'There are four spaces to fill.' Braille only: will label the spaces to fill (i) to (iv).	Standard mark scheme
21	(b)	Diagram enlarged.	Standard mark scheme
25		Diagram enlarged. Axes labels moved to the left of the horizontal axis and above the vertical axis. Right axis has been labelled. Crosses have been changed to solid dots. In (b) the number 21 cm has been changed to 20 cm.	Standard mark scheme but in (b) the range used should be 20 - 24
27		Diagram enlarged. Braille only: will add information about the diagram into the question wording.	Standard mark scheme
29		Diagram enlarged. Arrows removed from 2 m. Open headed arrows for 5 m. Dot has been made bigger. Information removed from the box and written as a sentence in the question wording.	Standard mark scheme

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Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 2F



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General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

1 All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no answer) indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 **Crossed out work**
This should be marked **unless** the candidate has replaced it with an alternative response.

4 **Choice of method**
If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 **Incorrect method**
If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks. Send the response to review for your Team Leader to check.

6 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, but if ambiguous do not award.

Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

7 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question or its context. (e.g.. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (e.g.. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

10 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g. 3.5 – 4.2) then this is inclusive of the end points (e.g. 3.5, 4.2) and all numbers within the range.

Guidance on the use of abbreviations within this mark scheme	
M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		$3p$	B1	cao
(b)		$2m^3$	B1	cao
(c)		$10 - 4c + 6d$	M1	for $-4c$ or $6d$ (accept $+-4c$)
			A1	for $10 - 4c + 6d$
2		60	B1	cao
3 (a)		Walk	B1	cao
(b)		7 on chart	B1	for bar of height 7 drawn for girls walking
(c)		4	B1	cao
(d)		96	M1	for method to find number of Year 6 students in the survey e.g. $5 + 9 + 6 + 4 + 9 + 7 + 4 + 1 + 2 + 1$ (= 48) or $14 + 10 + 16 + 5 + 3$ (= 48)
			A1	for 96 or ft from (b), eg 82 if no bar in (b)
4		$\frac{11}{30}, \frac{2}{5}, \frac{7}{15}, \frac{1}{2}$	M1	converts fractions to a common form, e.g. fractions with a denominator of 30, decimals or percentages, at least two conversions correct or any 3 fractions in correct order
			A1	correct order

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
5 (a)		Monday wrong	C1	for seeing difference in tally marks and frequency for Monday
(b)		Comment	C1	for suitable comment, eg extra picture for Tuesday needed or explains that 0.5 of a CD is not possible
6		268.20	P1	for a process to work out the value of the £1 coins, eg. 495 ÷ 3 (= 165) or 495 × 0.33...or of the 50p coins, eg. 124 ÷ 2 (= 62)
			P1	for process to find the number of 20p coins, eg. (495 – 124 – (“165”) (= 206)
			P1	for complete process to find total value using consistent units., eg. (“165”) + (124 ÷ 2) + (“206” × 0.2) or 165 + 62 + 41.2
			A1	cao (accept 268.2)
7		0.985	B1	oe
8 (a)		25	B1	for 25 (accept 5^2)
(b)		24	B1	cao
(c)		23, 29	B1	for 23 and 29 and no extras
9		54	M1	for method to form equation, eg $90 + 2x + 3x = 360$ or for $360 – 90$ (= 270)
			M1	for $5x = 360 – 90$ or for $2x + 3x = 360 – 90$ or for $2x = 108$ or for $3x = 162$ or for $270 \div 5$
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
10		Letters2send (supported)	P1	for the start of a process to find comparable costs at either shop, e.g. 150 ÷ 25 (= 6) or 150 ÷ 30 (= 5), 150 ÷ 10 (= 15), 2.10 ÷ 15 = (=0.14)
			P1	for process to find cost from Letters2send, e.g. (150 ÷ 25) × 3.49 (= 20.94)
			P1	for process to find cost at Stationery World, e.g. (150 ÷ 30) × 2 × 2.10 (= 21)
			C1	for correct conclusion with correct values from each shop (20.94 and 21)
				OR
			P1	for the start of a process to find comparable costs, eg 3.49 ÷ 25 (= 0.1396), 2.10 ÷ 10 (= 0.21), 25 ÷ 3.49 = (7.1...), 2.10 ÷ 15 = (= 0.14)
			P1	for process to take into account the offer at Stationery World, eg buy 30 envelopes pay for 20,
			P1	for complete process to find values that can be used for comparison, eg 30 × 0.13(96) and 2 × 2.10 (= 4.2(0))
			C1	for correct conclusion with correct values from each shop (4.1(88) and 4.2(0))

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		29	B1	answer in the range 29 to 30
(b)		186 to 195	M1	for changing 6ft 3 inches to inches e.g. $6 \times 12 + 3$ (= 75) or changing 1ft to 30 cm
			M1	for a method to convert to cm, e.g. 25 →63 then × 3, $6 \times 30 + \frac{1}{4} \times 30$
			A1	for answer in the range 186 to 195 or ft from correct use of graph
12		0.0733(03...)	M1 A1	for correct numerator (3.4496.....) or correct denominator (47.0596) or 0.073 for 0.0733(03.....)
13 (a)		Rotation	B2	for a fully correct rotation at (–4,–1), (–3,–1), (–4,–4), (–1,–2)
			[B1	for the quadrilateral in correct orientation and size or rotated 90° anticlockwise about the origin]
(b)		Reflection in the *y*-axis	B1	for reflection
			B1	for *y*-axis (or *x* =0)
				[A combination of transformations scores 0 marks]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)		$5(1 - 2m)$	B1	cao
(b)		$2ab(a + 3b)$	M1	for $2a(ab + 3b^2)$ or $2b(a^2 + 3ab)$ or $ab(2a + 6b)$ or $2ab$(2 term expression with terms in a or b or ab, can include constants), eg $2ab(1a + 3ab)$, $2ab(1 + 3b)$
			A1	for $2ab(a + 3b)$
15 (a)		0.47	B1	
(b)		2.28×10^9	M1	for correct value but not in standard form, eg $22.8 \times 10^{3+5}$, 228×10^7, 2 280 000 000 or for 2.28×10^n , $n \neq 9$
			A1	cao
16		T shown on the map	C1	for showing a perpendicular bisector or point T equidistant from points B and C.
			C1	for a circle or arc of circle of radius 2.5 cm or point T 2.5 cm from point A
			C1	for T shown in correct position

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
17		98	P1	for process to find P(1), e.g. 1 – 0.17 – 0.18 – 0.09 – 0.15 – 0.1 (= 0.31) or for a process to find P(1 or 3), e.g. 1 – 0.17 – 0.09 – 0.15 – 0.1 (= 0.49)
			P1	for process to find the number of 3s, e.g. 0.18 × 200 (=36) or process to find the number of 1s, e.g. P(1) × 200 (= 62), or process to find the number of (1 or 3)s, eg [P(1) + 0.18] × 200 or process to find any expected frequency, using any probability × 200, eg 0.17 × 200
			A1	cao
				OR
		98	P1	for process to find P(2 or 4 or 5 or 6), eg 0.17 + 0.09 + 0.15 + 0.1 (= 0.51)
			P1	for process to find the number of (2 or 4 or 5 or 6)'s, eg "0.51" × 200 (= 102)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18		Yes (supported)	P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			P1	(dep P1) for process to work out total number of adults or the total number of people, e.g. "468" × 5 ÷ 2 (= 1170) or "468" × 7 ÷ 2 (= 1638)
			A1	for 1170 or 1638
			P1	for process to work out the percentage of theatre full, e.g. $\frac{"468"+"1170"}{2600} \times 100$ (= 63) or for a process to work out 60% of 2600 (= 1560)
			C1	for a correct conclusion supported by correct figures e.g. 63% or 1560 **and** 1638
				OR
			P1	for a process to work out 60% of 2600, eg. $\frac{60}{100} \times 2600$ (= 1560)
			P1	(dep P1) for process to work out total number of children, e.g. "1560" × 2 ÷ 7 (= 445(.7...)
			A1	for 445(.7...)
			P1	for process to work out number of children in the circle, eg. "445(.7...)" ÷ 4 (= 111 to 112)
			C1	for a correct conclusion supported by correct figures e.g. 111 to 112
				[Where appropriate, accept rounded or truncated values]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
18 cont.				OR
			P1	for a process to find the maximum number of children, eg. 2600 × 2 ÷ 7 (= 742(.8…))
			P1	for process to work out the total number of children, e.g. 117 × 4 (= 468)
			A1	for 468 and 742(.8...)
			P1	for $\frac{"468"}{"742(.8..)"} \times 100$ (= 63) or process to work out 60% of "742.8.." (= 445(7..))
			C1	for a correct conclusion supported by correct figures e.g. 63% or 468 and 445(.7...)
				[Where appropriate, accept rounded or truncated values]
19		Side elevation	C2	for the side elevation (4 cm by 2 cm rectangle with a solid line drawn 1 cm from the 2 cm edge, and correct orientation)
			[C1	for the side elevation as a rectangle]
		Front elevation	C2	for the front elevation as a trapezium in correct orientation with base 4 cm, parallel sides 1 cm and 4 cm
			[C1	for the front elevation as a trapezium with two right angles]
				[Ignore incorrect or no labelling]

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		57.1	P1	for a process to find time from Liverpool to Manchester, eg. 56 ÷ 70 (= 0.8 (hrs) or 48 (mins))
			P1	for a process to find the total distance, eg 56 + 61 (= 117) or the total time, eg"48" + 75 (= 123) or "0.8" + $\frac{75}{60}$ (= 2.05), with consistent units of time
			P1	(dep P2) for a correct process to find average speed with consistent units of time, eg."117" ÷ "2.05" or ."117" ÷ "123"
			A1	for answer in the range 57 to 57.1
(b)		explanation	C1	for explaining that the time taken for the two parts of the journey must be the same or the distance from Leeds to York is $\frac{3}{4}$ the distance from Barnsley to York oe
21 (a)		3.9	M1	for a ratio of $\frac{8.1}{5.4}$ (= 1.5) oe or $\frac{5.4}{8.1}$ (= 0.66..) oe or $\frac{2.6}{5.4}$ (= 0.48..) oe or $\frac{5.4}{2.6}$ (= 2.07..) oe
			A1	cao
(b)		2.05	M1	for $\frac{5.4}{8.1} \times 6.15$ (= 4.1) or $\frac{2.7}{8.1} \times 6.15$ oe or ft "scale factor" from (a)
			A1	cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22		Secure Bank (supported)	P1 P1 C1	for a process to work out the interest after one year e.g. 0.02×25000 (= 500) or 0.043×25000 (= 1075) or for 1.02 or 25500 or 1.043 or 26075 for process to find value of the investment after 3 years or the multiplicative factor for 3 years at one of the banks, e.g. $25000 \times 1.02 \times 1.02 \times 1.02$ oe (= 26530...) or 1.02^3 (= 1.0612...) or $25000 \times 1.043 \times 1.009 \times 1.009$ oe (= 26546...) or $1.043 \times 1.009 \times 1.009$ (= 1.0618.....) [accept total interest of 1530...or 1546...if final values of investment are not found] for Secure Bank from correct figures eg 26530.. and 26546..or 1530.. and 1546.. or 1.0612.. and 1.0618
23		$4.755 \leq n < 4.765$	B2 [B1	for $4.755 \leq n < 4.765$ for 4.755 or 4.765 or 4.764$\dot{9}$]
24		$x = -8$, $x = 3$	M1 M1 A1	for factorisation or for substitution into quadratic formula $(x \pm a)(x \pm b)$ where product of a and b = 24, eg $(x \pm 4)(x \pm 6)$ or difference of a and b = 5, eg $(x \pm 2)(x \pm 7)$ $\frac{-5 \pm \sqrt{5^2 - 4 \times 1 \times -24}}{2}$ oe (condone one sign error) for $(x + 8)(x - 3)$ or for $\frac{-5 \pm \sqrt{121}}{2}$ oe cao

Paper 1MA1: 2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
25 (a)		$5n - 2$	B2	for $5n - 2$ oe
			[B1	for $5n + k$, k may be 0]
(b)		No (supported)	C1	for No with evidence, e.g. $3 \times 4^2 = 48$, $\sqrt{48}$ is not an integer, he has multiplied by 3 first but should have squared first

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
1	(c)	MLP and braille: *c* and *d* changed to *s* and *t*.	Standard mark scheme but change *c* & *d* to *s* & *t*
3		Grid enlarged. Key moved above the diagram. Right axis has been labelled. Boys shading has been changed to dotty. The vertical axis label has been moved above the vertical axis	Standard mark scheme
5	(b)	Pictogram enlarged. Key moved above the diagram.	Standard mark scheme
8		Wording 'nine' added	Standard mark scheme
9		Diagram enlarged. Angle sizes moved outside the angle arcs; the arcs have been made smaller.	Standard mark scheme
11		Grid enlarged. Right axis labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) Number '74' changed to '90'.	(a) becomes 35 to 37. In (b) suggest 180 to 200
13	(a)	Question reversed. Rotation drawn on the diagram and labelled as 'shape B'. Grid enlarged and *y* axis reduced so it finishes at 2. Shapes labelled 'shape A' and 'shape B'. Wording changed 'It shows shape A and shape B given on a grid. Describe fully the single transformation that maps shape A onto shape B.'	Award B1 for "rotation" Award B1 for "90° clockwise about centre O [or (0,0)] NB: award B0 for any indication of a mention of other transformations
13	(b)	Grid enlarged and y axis reduced so it starts at -2. Wording 'B' and 'C' deleted and shapes labelled as 'shape P' and 'shape Q'. Triangles P and Q moved above the *x* axis. Wording added 'It shows shape P and shape Q given on a grid.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
14	(b)	MLP only: *a* changed to *x* and *b* changed to *y*.	Standard mark scheme but change *a* & *b* to *x* & *y*
16		Number '250 metres' changed to '500 metres'. Points *B* and *C* moved to the right to allow for use of specialist equipment. Points *B* and *C* joined with a line. Scale moved above the diagram.	Standard mark scheme, but given the alternations to the given diagram, the relative positions of any constructions and the position(s) of *T* will change.
17		Table turned to vertical format.	Standard mark scheme
19		Alternative question. Model has been provided for all candidates. Diagram enlarged and also provided for MLP. The measurements on the prism have been doubled. Wording added next to the diagram of the trapezium 'Diagram NOT accurately drawn'. Four shapes have been provided below the trapezium labelled A to D. Wording added above the four shapes 'scale: 2 cm to 1 metre'. Question wording has changed and has been split into two parts: 'Look at the model or at the diagrams for Question 19 in the Diagram Book. They show a prism with a cross section in the shape of a trapezium. All measurements are in metres. Below the prism there are four shapes A, B, C and D. (i) Which shape shows the front elevation of the prism? (ii) Which shape shows the side elevation of the prism?'	Mark scheme amended as follows: (i) B2 for C (ii) B2 for A (B1 for B or D)
21		Diagram enlarged. Measurements '2.6 cm' and '5.4 cm' added to the diagram.	Standard mark scheme

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Question 1

A good opening question that was accessible to almost all students.

Question 3

This question was well answered. The vast majority of students just wrote down the answer but some did not evaluate the bracket first and so gave an incorrect answer.

Question 5

This question was well answered but some students did find it more challenging than the previous questions. Many showed working, listing the numbers and looking for the ‘middle’. Of those that gave an incorrect answer, 11.5 was a common error.

Question 6

This question was the first on the paper to be classified as a problem. Most students scored well on this question. Successful students set their work out in a methodical way, making sure that the answer to each component was clear so that they knew which numbers to add at the end. Many students added the prices for one person then multiplied by 4, this seemed to be quite a popular way to tackle the problem. However, some students found the use of 7 nights and 4 people challenging. They appeared unsure when to use which number as a multiplier and so just multiplied all the numbers together. Others forgot to multiply the 50 by both 7 and 5 meaning that £1950 was a popular incorrect answer which gained three out of the available four marks.

Unfortunately, there were lots of arithmetic errors seen in the multiplication, meaning the loss of the accuracy mark even when a full correct set of processes were seen. The numbers in this question were easy for manipulation so errors should not really have been so common.

Question 8

This question was generally answered well and most students scored at least one mark. This was available either by converting to percentages, comparable fractions or equivalent decimals, or for a list with one misplaced fraction – usually 7/12. Lists were often given unaccompanied by working, so more than one misplacement resulted in no mark being awarded. There was little evidence of the list given in descending rather than ascending order, though many weaker students simply ordered on the size of the denominator. Attempts by drawing diagrams are to be discouraged, as these are rarely of a consistent size, or accurate enough depictions of the fractions. Accurately stating ½ = 0.5 or 50% and ¼ = 0.25 or 25% was sufficient for the method mark to be awarded, so it was in the student's interest to show their working and stating these simple conversions is a better strategy than poorly drawn diagrams.

Question 11

This was well answered and all three of the approaches given on the mark scheme were commonly seen. The main issue was the accuracy mark which was most often lost because of a single simple arithmetic error. A small number of students struggled with this question and clearly didn't understand how to multiply the two numbers together; some just multiplied 70×50 and added this to 4×8. This was the most consistent conceptual error seen.

Question 15

Both parts of this question were well answered. In part (b) 15 was seen as an incorrect answer and occasionally an arithmetic error was seen.

Question 18

Many fully correct justifications were seen. There were some well organised attempts clearly earning three method marks where an arithmetic error was obviously the only mistake. The most commonly used starting points were either to find the area of the rectangle or the number of paving stones needed to cover a side of the rectangle. The second step then caused difficulty, the area of the rectangle was often divided by the length of a stone, rather than the area of one stone, or the number of stones on each side was added rather than multiplied.

Students using the second approach were more successful if they worked out the cost of covering one length eg 20× (£)2.50, then said they needed 4 rows like this to find £200. This kind of approach using the diagram and drawing in the rows seemed to add scaffolding for many students.

Some students tried to work with perimeter which is not a correct first step and so no marks could be awarded.

Question 23

Many students appeared to read the question carefully and produced a simple well organised solution for full marks.

Many who could not complete the question were able to make a creditworthy start to part (a), usually for finding 150g of flour was needed for 15 biscuits, or for deciding that 60 ÷15 would tell them how many batches of biscuits were needed, although this was not always given as 4 as a counting error often occurred, with 15+15 = 30, 30+30=60 and so 3 batches are needed.

Many students also found the amount of butter required while doing part (a) and went on to score full marks, but others did not label their quantities and became confused when attempting part (b). Students should be advised to set out their working carefully with values and mark what values represent, again to aid their own working but also to ensure correct methods in longer question can be clearly seen and part marks awarded.
A few students tried to use a unitary method here, many mixed up the ordering but some did use it correctly although premature of rounding often meant that their answer was not accurate enough, in these cases process marks were awarded.

A common error seen in part (b) was to confuse butter and flour and use 600g of flour so 3 packets. Occasionally 100g was used as the butter, if this was clearly stated and then 1 pack required a process mark could be awarded.

As stated in the mark scheme instructions and general guidance, if 2 was given on the answer line but came from incorrect working no marks were awarded.

Question 2

Again, most students gained the mark here; a small minority thought that –1 is smaller than −3.

Question 5

The correct value for two million was usually seen although the omission or addition of 0s was common.

Question 6

Whilst many students gained at least two marks, and often three, it was alarming to see errors in arithmetic on a calculator paper. Some students failed to note that there were two coffees purchased and results of 4.35 (10 – 2.75 – 2.9) were common. A significant number of students, having correctly calculated Dave's change, said that Dave was not correct or gave no final decision, clearly not reading the question carefully enough.

Question 10

The most common error here was to get the inequalities the wrong way round. Some said that $4 + 7$ was less than $103 - 92$. Most students gained at least one mark, usually for $2^2 = 2 \times 2$ and one other correct sign.

Question 12

Part (a) was usually answered correctly.

In part (b), although generally well done, many students confused time notation with decimal notation and incorrectly wrote 9.00 – 7.22 = 1.78 This gained one mark for clearly showing the intention to find a time difference. However 1.78 or 2hrs 38mins were often seen without working and these gained no credit. Some students gave an answer of 1.38 or 1:38 showing an actual time and not a length of time. This gained one mark with or without working. Some only worked out the minutes at 38 with no regard for hours; this gained no marks.

Question 17

There are many ways to start to solve this problem. Many gained two marks usually for correctly finding the number of calories in the 150g of yogurt; the calculation for banana was a little more demanding depending upon the process chosen. A significant number of students found the "correct rounded" answer from simply 'playing' with the numbers in the question, eg. 84 – (100 – 60) + 87 + (150 – 100) = 181 This gained NO credit. A number of students had no appreciation of proportion as a multiplicative relationship. Those that began with 100/87 = 1.14 received one mark for working with proportion, but they nearly always proceeded with multiplying by150 rather than dividing, depriving them of any further marks.

Question 18

It was pleasing to see so many students gaining at least two marks for working out the number of parts produced by either of the machines; machine B (520) being the more successful. Many then went on to gain full marks. Simply converting hours into minutes was not seen as a sufficient start in solving the problem and no credit was given just for this. The most efficient process for each machine was to work out the number of parts made each hour, 36 for machine A and 52 for machine B, students working along these lines usually went on to give a fully correct solution. Mistakes were made by many when working out the number of parts made per minute or the time taken to make one part. Some students, failing to carefully read the question, mixed up the values and therefore were unable to gain any credit.
Many students were happy saying there were 4 lots of 15 minutes in an hour and successfully getting 52 for machine B, but did not apply the same reasoning for lots of 10 minutes in an hour for machine A. $60 \times 12 = 720$ was a common incorrect answer for machine A.

Question 4

There were few correct answers for this question. Most students appeared to want to give the numbers that were multiples of 3, rather than powers of 3. Some gave just one of the numbers, and not both.

Question 8

There were many correct answers which gained full marks. Many realised that 1/4 was 13 (litres) and gave this as their final answer; use of quantities such as 13 rather than a fractional approach was far more popular. Those who scored no marks often subtracted the 1/4 from the number of litres, that is 52 – 0.25, or divided 52 by 1/4.

Question 1

This question was quite well done with a big majority of students giving the correct answer “70”. Examiners accepted the answer “7 tens” but did not accept the word “tens” alone. Some students gave other incorrect responses such as “tenths” or “7 tenths”.

Question 3

The majority of students answered this question correctly. 0.317, 317 and 31700 were the most commonly seen incorrect responses but some students introduced zeros between one or more of the digits in 31.7 and gave answers such as 3100.7.

Question 7

Most students scored both marks for their answer to this question though a surprisingly low proportion of students took the shorter route of writing 1¼ hours as 1 hour 15 minutes then comparing it with 1 hour 25 minutes. Students generally preferred to convert both times to minutes.
This approach was often successful but there was a significant number of students who wrote 1¼ hours as 1.25 hours then changed this to 85 minutes. Their resultant final answer was "0" and the sense that this must be wrong was usually missing. Another error seen was writing ¼ of an hour as 45 minutes. This led to a final incorrect answer of 20 minutes.

Question 8

Over a half of all students scored the full three marks for their responses to this question. The majority of students worked in grams, starting by converting 3 kilograms to 3000 grams. Only a small number of students worked in kilograms. Most of the errors seen in working were in the calculation of 4×650. Students making a mistake here usually scored two of the three marks available. The most common error seen in the method to solve this problem involved students dividing the 650 grams by 4 as part of their solution. Some other students subtracted the weight of one block from the total weight of all five blocks to give an answer of 2350 grams.

Question 14

Students usually scored two marks for a fully correct response to this question. There were several different methods seen and no one method was used much more frequently than any of the other methods. Students who could demonstrate a correct method scored at least one mark. Errors in the evaluation of 10×20 were commonplace. Of those students who could not be awarded any marks, a common approach was to calculate $20 \times 10 + 3 \times 5$.

Question 17

A high percentage of students correctly obtained the value of x from the equation given but only about a quarter of students were able to use the correct order of operations to find the correct value (18) of the expression $2x^2$ when $x = 3$. Instead most students worked out the value of $(2x)^2$, giving 36 as their final answer. The working $2 \times 3 = 6$, $6 \times 6 = 36$ was seen on many scripts.

Question 1

Most students were able to write the numbers in order of size.

Question 6

This question was well attempted and a pleasing number of students were able to show a complete process to work out the number of tickets that were not sold. A common approach was to subtract the number of tickets that had not been sold (1274 ÷ 6.50) from the total number of seats in the cinema (14 × 15). The other common approach was to start by working out the total cost of all the seats in the cinema (14 × 15 × 6.50) and then subtract the total cost of the tickets that were sold (1274) to get 91. Dividing 91 by 6.50 completed the process. A common mistake made by students using this approach was to miss out the final step and give 91 as the answer.

Question 10

Students who divided 8.40 by 0.024 had an efficient process to find the length of time spent in the car park in minutes and gained the first mark. This was the most common first step. Some students started by multiplying 0.024 by 60 to find that the cost per hour was 1.44 euros. Dividing 8.40 by 1.44 completed the process to find the length of time in hours and the first mark could be awarded. Some students used 1.44 in a build up method and attempted to reach 8.40 but few completed the method correctly. The next stage of the problem involved adding the length of time to 10 45. This was done by adding on 350 minutes in steps or by first converting it to 5 hours 50 minutes. However, this stage proved to be the downfall of many students. It was common to see 350 minutes converted to 3 hours 50 minutes or to see 5.83 (from 350 ÷ 60 or 8.40 ÷ 1.44) interpreted as 5 hours 83 minutes or 6 hours 23 minutes or 5 hours 8 minutes. Some of the students who added the length of time to 10 45 correctly gave the answer as 4 35 rather than as 4 35 pm or 16 35 and lost the accuracy mark. Students should be encouraged to use the time button on their calculator to deal with this type of question.

Question 11

Part (a) saw the first problem solving question on the paper, and it was one that was answered very well. Students are really starting to get a solid understanding of money based problems and have good success.

It was pleasing to note that only a small minority showed arithmetic errors or incomplete processing. Students who failed to score any marks simply subtracted the cost of one set of lights from 20 and chose to ignore the multiple lights and multiple £20 notes given in the question.

Part (b) was testing students ability to find a fractional change of an amount. Those who failed to get any marks usually tried to subtract $\frac{1}{5}$ or 0.2 from 120, rather than finding $\frac{1}{5}$ of 120 and subtracting that. Very few students followed the more efficient method of finding $\frac{4}{5}$.

Question 12

Another problem solving question answered well by many students. The full range of marks was awarded. The initial mark was for a first step in the process, finding the weight of the small boxes, which almost all students were able to score. The next process was to find the number of large boxes. The most efficient method was to subtract the weight of the small boxes and divide by 750. However, with this being a foundation paper, more inefficient build up methods were regularly seen (and catered for in the mark scheme) and the second mark was regularly awarded. In most cases, once the second mark was awarded, so was the third. This tended to not be the case only when arithmetic errors occurred. Again, with proper calculator use this error could have been eradicated.

Question 23

A good number of students were able to gain both marks. Of those who didn't a large proportion gained no marks, often because no intermediate work was shown. Students really should be encouraged to show intermediate steps of working as good exam technique and ensure the method mark can be awarded.

In part (b) students were asked to round their answer to part (a) to 4 significant figures. This mark could be awarded whatever was seen in (a) provided the value had at least 5 significant figures. It is clear many students have no real understanding of what significant figures means, with many giving 4 decimal places, or including trailing zeros.

Question 1

Very few failed to earn the mark here although 0.32 and 0.35 were often reversed.

Question 5

Most students correctly recorded the value of the 7 as 700 or 7 hundred, a significant number just gave an answer of ‘hundred(s)’ and so failed to correctly answer the question.

Question 10

It was pleasing to see many students scoring well on this question; often only poor arithmetic in calculating 70 × 3 and 50 × 9, or the addition of these products, prevented the award of full marks. However, a significant number of students were unable to correctly work out ¼ of 12, a value of 4 being the most common error. This error could be followed through if a correct method to find ¼ of 12 (for example 12 ÷ 4) had been demonstrated. Unfortunately, this was not often the case.

Question 15

Many students did not read the question carefully enough and never truly realised that the drink was made from orange squash and water. The most common incorrect solution was simply to multiply 750 by 9 thinking this was the complete drink. This was often followed by 6750 being rounded up to 7000 to give an answer of 7 litres. Such 'correct' answers from incorrect working did not gain full marks. It was also very clear here that a great many students did not know the conversion factor for millilitres into litres; 100 m*l* = 1 litre was often seen.

Question 28

Many students were able to score at least one mark here for ordering at least three of the numbers correctly. Many students were let down by their inability to write the given numbers in the same format, usually as ordinary numbers. 6.72×10^5 was often written as 6.72000 and 67.2×10^{-4} as 0.0672 or 0.000672. Some thought that the largest powers would indicate the biggest number resulting in the largest two being the wrong way round. There were a great many transcription errors with students unable to correctly copy down the four numbers.

Question 6

It was very pleasing to see that students were able to answer this early problem solving question involving calculating with time well. Many students were awarded full marks for using the common method of converting to hours and minutes, a full method of addition to the start time and giving a correct conclusion. A range of alternative methods were also used successfully, such as finding the time duration between the film ending and the bus leaving to be able to compare to the 20 minutes walking time needed.

When full marks were not awarded partial marks were often awarded for a correct conversion of 105 minutes into hours and minutes or showing the intention to add both 105 minutes and 20 minutes walking time, with many showing both stages but losing the final mark for loss of accuracy or for not stating a conclusion.

When only one mark was awarded, it was often due to not converting to hours and minutes correctly and assuming 105 minutes represented 1 hour and 5 minutes or 1 hour 50 minutes. The other main reason one mark was awarded was when students did a fully accurate conversion and addition but did not include any consideration of the additional 20 minutes walking time.

Question 13

Many correct answers of 19 sweets were seen. However, a good proportion of students were successful only in determining the number of bags by showing 4275 divided by 28, for the first process mark and this was the only mark they gained. Some students went on to find the remainder and then gave 6 as the final answer. Some students found the fully correct answer and stated 19 sweets left but wrote 152 or 28 on the answer line. Centres should remind students to check their final answer does in fact answer the question asked.

Some build up methods were seen for this question but they were often left incomplete and so usually only scored part marks.

Question 2

Ordering of negative numbers was correctly carried out by most students.

Question 5

This was surprisingly poorly answered with 14 as the most common incorrect response. A significant number of students just wrote 7×7 without giving a value.

Question 7

Few failed to get the correct answer of 14 when dividing 42 by 3 although a small minority insisted on halving then halving again thinking this was the correct method of finding a third of a quantity. This error was repeated in question 14 when trying to divide £1.80 by 3.
Many students also used repeated addition or listed multiples, the majority eventually arriving at 42.

Question 9

Failure to gain full marks in this question was usually a result of considering just one packet of cheese instead of two. However, arithmetical errors were made far too often in either the addition or in subtracting £6.50 from £10; £4.50 being a common incorrect result given. Some failed to give a conclusion and so failed to gain the final mark. Lack of working let some students down and the subtraction from £10 was incorrect in a significant number of cases.

Question 10

It was pleasing to see many students dealing with the arithmetic of negative values well. Most were able to compute Wednesday's temperature as – 2ºC although many offered this as their final answer; clearly not having read the question carefully. While getting the negative temperature on Wednesday was good some students struggled to go from negative to positive integers and often missed counting 0 and got an answer of 6 degrees. Many used number lines and were usually successful. Quite a few students calculated -5 + 3 as -8. It was common to see 5 – 2 = 3 for the difference rather than 5 – (-2) = 7.

Question 14

Most students knew to calculate the cost of one kilogram of carrots by dividing £1.80 by 3 and subsequently secure a second mark for working out the cost of four kilograms. Problems arose when trying to work out the cost of one kilogram of potatoes. Many subtracted £1.80 (instead of £1.20) from £3.45 and then divided by 5. Some subtracted £1.20 but then made an arithmetical error, usually resulting in a value of £2.20 giving 44p as the cost of one kilogram of potatoes. A considerable number ignored the 2kg of carrots and divided 3.45 by 5 to find the cost of 1 kg potatoes as 69p.

Question 20

Complete solutions of this long multiplication of two decimal numbers in part (a) were scarce. With whichever method adopted, students need to be aware that initially ignoring the decimal points and multiplying, in this case, 367 by 42, was the best way to approach this calculation. Far too many students made place value errors in their chosen method largely by trying to include the decimal parts in their calculation. Where students had a correct method, it was common to see incorrect answers due to times table errors.

In part (b), again fully correct solutions were few and far between. Simply dividing 59 by 16 was too great a demand for many. Those that attempted the division were often able to gain the first mark for the first digit being 3.

In both parts, encouragement should be given to work out an estimate to identify the size of the answer and hence place the decimal point correctly.

Question 3

More students were successful on this question than on question 2. The vast majority were able to correctly order the decimal figures given.

Question 7

This question was generally well answered with many correct answers seen. The major problem seen in this question was students stopping after subtracting 940 from 2500 and not dividing their answer by 2. This working allowed one mark to be awarded. The other issues seen in this question was arithmetic errors or some students thought that there were two bags of 940g so the third bag was 620g.

Question 9

This question was answered very well with many students scoring the communication mark available. The most common correct responses were to perform the correct calculation stating that the true answer was 14 and state that multiplication should be done before addition. Many students wrote BIDMAS or BODMAS as part of their response and often giving the correct answer of 14 as well. Where the mark was lost it was often due to contradicting information being used or a calculation being shown which did not give the correct answer (14). Some students said that 20 was actually correct and scored no marks for just re writing the working given.

Question 15

This question was not so well answered and proved quite difficult for many students. Those who gained both marks usually did so by converting the given fractions to decimals first then ordering correctly.

However, many students only achieved one mark usually as a result of incorrect or incomplete conversions. It was common to see $\frac{3}{5}$ and $\frac{5}{8}$ correctly converted to a decimal but when converting the other two fractions students often only worked to 1 decimal place hence losing accuracy and gaining two values of 0.6 to compare. This method allowed the award of the method mark only for two correct conversions.

Others showed no working but did list the fractions and some did so correctly, a high risk strategy, others with no working often scored one mark for three fractions ordered correctly.
A small minority tried to work with equivalent fractions but this method often broke down and was rarely successful.

Question 18

This problem presented students with a slightly different approach to testing frequency tables and the question was well answered by many.

When partial marks were awarded it was often for finding the total length of the planks represented in the table, continuing to subtract from 92 to find that the 2m lengths equated to 26m and then losing the final mark due to either forgetting to divide by 2 or because of arithmetic errors.

Common incorrect approaches seen included adding the frequencies and subtracting this from 92, giving an answer of 55 or using a combination of adding both columns of the table. Less commonly seen incorrect approaches included looking for a pattern or sequence from the frequencies provided, usually arriving at 11, or giving an answer of 20 due to assuming that if 10 planks represented the 1 metre lengths then 20 planks must represent the 2 metre lengths.

Question 19

This was a very accessible problem and allowed students to score a range of the available marks. The modal score was full marks.

When full marks were not scored a common approach for this question was to find Rachel's share (£240). Many then incorrectly calculated Samina's share as ¼ of £240 or ¼ of 600 and not ¼ of (£600 - £240) as required. This then obviously led to Tom's share for this method being incorrect but most students did find 600 ÷ 3 = 200 and so gain the third process mark.
Of those who correctly calculated all three correct shares, the majority went on to gain the communication mark by giving a correct conclusion and accurate comparative figures. A few gave confused or ambiguous statements; again, succinct statements are recommended.

Question 3

A question in which nearly all students gained the mark.

Question 4

Most students gave the correct response. A common error was to see $\frac{1}{6}$ changed to a decimal which resulted in a decimal answer. It was evident that these students did not appreciate that multiplying by $\frac{1}{6}$ is the same as dividing by 6.

Question 8

This question was generally well answered with nearly all students gaining full marks. Most mistakes were in respect of accuracy of calculations rather than process, suggesting that some students were not using their calculator effectively, or perhaps did not have one. Those who just worked with one of each item were able to be awarded the first mark.

Question 10

Successful students used their calculator to divide 300 by 4.85 and rounded down to find 61 books could be bought, but 61.8 rounded up to 62 was often seen. Unsuccessful approaches were to either round the book price to 1 significant figures and estimate, or to multiply 300 by 4.85 instead of divide. Build up methods using repeated addition rarely earned method marks, as multiple calculations increased the risk of errors and students did not always make it clear where the end point was.

Question 14

The most successful method here was to exclude zeros and work with 600 rather than 600,000,000. A number lost the final accuracy mark by virtue of recording an incorrect number of zeros even though the non-zero digits through their working were correct. Some students only gained 1 mark since they got as far as 520 (million) but failed to then subtract this from 600. Very few realised they could use $\frac{2}{15}$ to get to the answer.

Premature rounding again lost students marks as it was not uncommon to see $\frac{13}{15}$ converted to 86% meaning their final answer was then incorrect. Many of those trying to find 86% using build up methods soon got into difficulties.

Question 18

Probably the worse answered question on the paper. Lots of 100 and 1000, with the correct answer of 10 000 very rare.

Question 22

The majority of the students were only able to gain 1 mark. This was for adding the parts of the ratio or for noting that the weight of the cheese would be 1000g. Some got no further than this although they did produce a large amount of spurious working out. Many divided 6000 by 175 or multiplied 600 by 2.25 not having realised that they needed to calculate the weight of cheese required first. Again, premature rounding played a part in some incorrect calculations.

Question 4

Most students correctly identified the value of the 6 as six thousand.
16000 and 600 were the most common errors.

Question 5

This was answered well with many showing understanding of equivalent forms, A few gave the 3 values in reverse order and were penalised for not reading the question carefully enough. A common misunderstanding was for 0.5 to be less than 0.45 thinking perhaps that since 5 < 45 then 0.5 < 0.45. A small proportion did not convert all values to the same equivalent form which resulted in evaluating $\frac{1}{2}$ as smaller than 45%.

Question 7

Generally well answered, some with minimal working shown. Careless arithmetic was a major reason for some students not gaining full marks in this question. 20 – 6 = 24 or 20 – 6 = 12 were the most common errors made but by dividing correctly by 2 to get 12 or 6, 2 out of the 3 marks available were possible. A common approach was to list costs of candles in multiples of 2. However, it was not uncommon for some multiples to be omitted, thus affecting the final number of candles bought. Some weaker students got no further than working out the number of candles that could be bought for £20. To gain any credit £6 ÷ 2 also needed to be seen. Giving an answer of 14 on the answer line was also common following correct calculations, with 7 candles often being an embedded answer.

Question 10

Whilst many were able to find the required temperature of 27, $-15 + 42$ was often evaluated as -57 or $+57$. The drawing of a temperature scale was a common approach, sometimes leading to the correct answer but often leading to an answer of 26 (counting from -15 upwards 42 times). 33 was a very common answer were $-15 + 42$ was incorrectly calculated using column method.

It is a concern that this question was poorly done by many students.

Question 11

Many students did not realise that the number of units of electricity used in November was the difference in the two meter readings, and simply multiplied the November reading by the 16p. Two marks were still available here if a correct method for long multiplication was shown. Whilst a correct method of long multiplication was often seen, the number of simple arithmetic and place value errors in multiplying is a cause for concern. Place value errors were also common within the final answer, where £7360, £736.0 and £7.36 were seen on many occasions. Some managed to score 3 marks but lost the final mark as no units were included.

Some students tried to find the difference in the readings by subtracting the larger value from the lower value.

Question 6

This question was exceptionally well answered with most students gaining the mark. A minority of students lost the mark by omitting a number from their answer or for getting confused on the negatives, giving answers such as -2, -7, -11, 3, 8, 10.

Question 10

This was generally well answered and the modal score was three marks. When full marks was not scored this was often due to arithmetic errors; it was disappointing to see so many arithmetic errors, particularly in the subtraction of £150 from £1428 when a calculator could be used. Students either did not have a calculator or chose not to use it. Centres should encourage students to use a calculator on the calculator papers. A few students decided to add together the £150 and the £1428 before dividing by six. Unfortunately, this was an incorrect process and gained no marks. Some students left two methods to be marked, in this case both will be marked and the lower of the two marks awarded. Students should be discouraged from this practice and make their own choice as to which method they want marking. In this question the choice was often either a fully correct answer or 1428 ÷ 6 and if nothing was written on the answer line then the student scored no marks.

Question 14

Both parts of this question were well answered with part (b) scoring slightly higher. The symbols used seemed to be well understood by the vast majority of students.

Question 2

Working out $\frac{1}{4}$ of 28 wasn't a problem for most students.

Question 7

This question was answered well, though there was a significant minority who did not attempt the question or fail to gain at least one mark. The main issues for students who did not earn full marks were either poor numeracy skills (not using a calculator), misreading numbers from the table, or only working out the difference for one week. They rarely opted for the method of finding the difference for each week, this method was very poorly executed as they tended to either ignore the −5 altogether or simply ignore the negative. A surprising number of students appeared not to use a calculator.

Question 11

This question was answered well by most students. A few students did not give a final conclusion and therefore could not achieve full marks. The most common approach was to multiply to find the number of nails needed and the number of nails they had. Other preferred

methods included working out how many nails they had and divide by 4 to find the number of frames that could be made. A small number of students misunderstood what their values represented and therefore said she didn't have enough and needed 4 more nails instead.

Students need to ensure they use their calculator to check their final values as some showed a correct method, but their multiplication skills meant their values were not correct to get full marks.

Question 15

This question was generally answered well. Most common errors included students rounding, not fully simplifying the fraction and incorrectly entering numbers into the calculator by multiplying the top, then dividing by 10 and then subtracting 1.97

The most successful approach is always to work out and state the numerator and denominator separately, and then divide them.

Question 2. This question was usually answered correctly although an answer of 6 (3×2) was a common mistake.

Question 3. Another well answered question with few mistakes. It was pleasing to see most able to follow the correct order of operations.

Question 4. Although 10 and/or 12 were seen more often than not, a number of students failed to gain the mark by offering extra, incorrect values. 6 being the most common seen.

Question 6. It was very pleasing to see so many students gaining good marks on this multi-step question. The vast majority gaining 2+ marks. In general, marks were lost through not reading the question carefully. Often just one child was considered, or two adults were included. Another common mistake was to omit the cost of petrol while in other cases it was seen as a cost for each person. Poor arithmetic often denied many full marks, mainly with the addition of two child tickets (the only non-integer), or with an inability to line up integers and non-integers successfully in a column addition method. Some gave the total cost of the trip instead of the change.

The standard of presentation of answers was lacking, in some cases, with little structure or order to what they were doing

Question 1

A good accessible start to the paper. This question was well answered with most students scoring the mark.

Question 3

Students found this question slightly more challenging. Even so, the majority gave the correct answer.

Question 5

3674 was the common inaccurate answer and students are advised to carefully read the question being asked.

Question 8

This question was very well answered with only a very few students failing to full marks. The main errors seen were arithmetic.

Question 10

Part (a) was answered well with most students gaining at least the first mark for correctly selecting the arrival time from the bus timetable with the intention to subtract. The accuracy marks were usually lost for arriving at a value of 89, using 100 minutes to the hour. The most successful working showed the use of timeline diagrams or used a build up or chunking method. Encouraging candidates to show working and use of the time function on a calculator would be beneficial to centres.

Part (b) was variable for students, with many completely correct answers seen, the best often showing a sound understanding of the concept of the question with some excellent annotations. A step-by-step approach for the journey worked best here and again, timeline diagrams were useful.

However, others only added 7 minutes to 8am and could not select a bus to work with. Others selected the correct starting time but did not read the timetable effectively and gave the wrong arrival time. Some even read across the timetable.

One surprise was the number of students who scored 0 in part (a) and 3 in part (b), often not attempting part (a) but being able to show full working in part (b).

Question 12

Part (a) of this question was well answered with the majority successfully calculating the correct answer. Common errors leading to no marks being awarded were to change $\frac{5}{8}$ to a decimal and divide or to divide by 5 before multiplying by 8. Some arithmetic errors were seen but these were rare.

In part (b) the majority of students gained at least 1 mark for correctly ordering three of the four fractions or correctly converting at least 2 of the fractions to a common format, often decimals. Of the students that converted the fractions to a common format, the majority correctly ordered all four fractions to gain full marks.

Students should be encouraged to show conversions to a common format as those who were awarded no marks often showed no attempt to convert to a common format.

Question 16

Most students gained only 1 mark for an appropriate step to the process, most commonly from 12 divided by 4, but their answers broke down frequently applying direct proportion rather than inverse.

It was also common to see several approaches for this question. From the scripts seen it was clear that students found this question challenging. Going forward students are advised that checking the response to see if it is sensible is a good strategy: "Do we expect a larger or smaller numerical answer?" this will assist the students in dismissing incorrect working and selecting the correct operations needed.

Question 25

Both parts of this question proved challenging for this cohort with very few gaining any marks at all.

In part (a) students did not seem to know what to do so a lack of understanding of the term reciprocal would seem to be the problem here

In part (b) the use of the term significant figures seem to pose more of a challenge then when this type of question is set around decimal places.

Students would benefit from being given examples of mathematical terms they need to know and practice in rounding to a fixed number of significant figures as often as they round to a given number of decimal places.

Question 1

This question was not answered quite as well as one might expect. Whilst many gave the correct answer, a minority had 0.41, 0.46 in the wrong order.

Question 2

A well answered question.

Question 6

In part (a), 6 was the most common answer, but some candidates mis-counted and gave either 5 or 7 as their answer.
Part (b) was well answered, though a small number of candidates read off April instead of May.

Question 7

The majority of candidates completed this question with no issues. Of those candidates who failed to gain full marks, the most common error was in failing to give their answer in correct money notation, that is stating £145.6 rather than £145.60. This lost the final accuracy mark. Some candidates lost marks by doing a variety of strange calculations which some checking would have spotted. This included 208 – 0.25, 52 × 93.6, or cases of finding 52 then showing 208 × 60p rather than 52 × 60p.

Question 15

A significant number of candidates were able to score some marks on this question although only a small proportion of candidates were able to progress through this problem to achieve a conclusion based on correct comparable figures. Most candidates made a good start by finding the cost of 1kg of carrots. Those who were able to progress further then chose to isolate the cost of 2.5kg of onions. Where candidates scored the first P2, many struggled to scale 2.5kg to 4kg and were therefore unable to progress through the remainder of the question correctly. Of the candidates scoring 0 marks, many incorrectly halved the £2.36 to split the cost of the carrots and the onions equally. Common errors that stopped candidates from progressing correctly included the multiplying of different quantities by 2 to get 5kg of onions or 5kg of onions and 4kg carrots or 6kg of carrots. Some good responses might have gained full marks had the candidate fully answered the question by communicating the correct conclusion.

Question 3

Many students failed to read this question carefully and offered an ordered list of the given numbers, often correctly. This was only accepted if the correct answer of 0.5 was then

explicitly chosen as the smallest number. Some wrote 0.50 for their answer. This was perfectly acceptable.

Question 4

Although –4 was the modal answer, answers of –14 and 4 were common.

Question 10

It was very pleasing to see many students clearly reading and comprehending the demand of this question and achieving full marks. Repeated addition was a preferred method rather than multiplication. Other than losing marks through arithmetic errors, marks were lost if the student hadn't fully understood the 'special offer' either by just finding the cost of 6 large plates and 6 small plates at their normal prices or by thinking that the offer applied to large plates as well as small.

Question 20

Many students did not know how to approach long division, especially with decimals. Far too many arithmetic errors prevented many students getting more than maybe one mark in this question. Even when division was carried out correctly accurate placement of the decimal point was rare. Some were unable to deal with the remainder of 6 and an answer of 56.6 was common. Several students who found the correct answer 56.4 in their working then divided by 100 and wrote 0.564 on the answer line.
Some students tried build up methods. These rarely resulted in a fully correct final answer but credit was often earned along the way with 5 as the first digit and often a correct size of their final answer.

Question 29

Some did some good work showing an understanding of the rules of indices but ultimately often failed to work out the value as required; 4^2 was a common answer.
$4\frac{3}{4}$ was often seen but rarely converted to 16. 1^3 was a common answer following from this.
Whilst 4^2 was a common answer it had often been derived from incorrect working. $\frac{16^3}{4}$ was often seen from incorrect working of the numerator. This then was usually simplified to 4^2 gaining no credit. Unfortunately, some candidates spent a lot of time trying to evaluate the separate elements.

Question 11

Using a frequency table to find the total weight was generally well answered, with most students understanding that they needed to multiply the weights by the number of people, before adding together to get the total weight. Some just added the weights in the weight column, ignoring the frequencies thus gaining no credit. Arithmetic errors cost a minority of students the accuracy mark (disappointing on a calculator paper) and some students only included 5 products, usually omitting a weight with frequency of one. Adding an extra column to the table proved very helpful for many students.
It is important for students to have experience of working with data in tables and to understand how to extract the relevant information. Centres should also encourage students to make full use of a calculator to check their answers when in a calculator exam.

Question 13

Success in this question was mixed, with understanding of the information provided being vital in the level of success. Whilst most of the cohort gained both the marks available, many scored no marks at all, often due to not identifying that 50 represented one sixteenth and subsequently dividing 50 by 16 rather than multiplying by 16. Of those who correctly interpreted the information given, some incorrectly thought they still needed to add or subtract the 50 teachers to their answer.

Question 20

It was pleasing to see that the majority of students gave a fully correct answer to this question. Many of the students who gained the 2 marks for the question simply gave the full answer, which was acceptable for the award of the marks, but many showed no intermediate calculations for the numerator or denominator and gained no marks for an incorrect final answer. A method mark was often awarded for correctly evaluating either the denominator or the numerator but the values were then added or multiplied rather than divided. Most students wrote down all the figures from their calculator as advised in the question without rounding unnecessarily which was also pleasing to see.
A common error was to get a final answer of 28.306.... that resulted from entering the calculation into the calculator in one go without brackets or proper use of fraction function. This led to BIDMAS being applied incorrectly on the calculator and often led to no marks being awarded. Students should be encouraged to work out and write down the value of the numerator and denominator separately to ensure they are awarded for their working out and to avoid order of operation errors.

Working out the value of the reciprocal in part (b) appeared demanding, with very few students gaining the mark available. Many wrote the reciprocal of 0.625 as $\frac{1}{0.625}$ but did not evaluate to give the answer as an acceptable value such as 1.6.

Question 1

This question was answered correctly by most candidates. In cases where zero marks were awarded it was most likely to be because of extra zeros which showed a lack of understanding of place value, for example 30001007 or 31007.

Question 5

This question was answered well. Those that didn't get the mark generally ordered the two negative numbers incorrectly, though some only wrote down four of the numbers.

Question 10

This question was well done by the majority of candidates with most gaining 3 or 4 marks. Most showed they needed to add all the times to 8.30 but for many this was not a strong point thus losing the C mark as their figures were not accurate. A lot of students obtained an answer of 9.15 rather than 10.15 for the first calculation when adding 1 hour 45 minutes to 8.30. Candidates also lost marks for forgetting the rest period when calculating the final time. A very efficient process seen on quite a few occasions was to add the times to give 3 hr 25m and then add that to 8.30, leading directly to 11.55. Mistakes crept in when carrying times over the hour, or when they attempted to use their calculators to do the arithmetic, or from arithmetic errors.

Question 15

Most candidates were able to utilise the ratio and scale up the 35 to 140 with many of them then realising that they had to sum the two parts to arrive at the correct answer. Those that did sum the two parts were rewarded with the method mark and nearly all candidates were then able to secure the accuracy mark. However, not all candidates were able to do this and left their answer as 140 scoring no marks.

Question 23

It was rare to see a fully correct answer to this question. The majority of successful answers were found by 14 × 5 = 70 and then dividing by 4. Many students did not grasp the question at all or recognise that the answer must be larger. By far the most common answer seen was 11.2, the result of 14 ÷ 5 and then multiplying by 4. Some simply added their result from 14 ÷ 5 to 14, giving 16.8. Some students tried to convert to minutes, which was rarely successful.

Question 28

Part (a) was not answered particularly well. The requirement to write the ratio in the form 1: *n* seemed to confuse many with few students achieving both marks. The majority attempted to convert both values into ordinary numbers with 9000 being the common error at this stage. Those that did convert the values correctly often failed to write them as a ratio losing both marks. Generally candidates found it hard to simplify to the 1 : *n* form with many at this point not realising they needed to divide both values by 90 000.
In part (b) candidates found more success. Perhaps having a calculator made it more accessible to the students as the vast majority attempted to give an answer. It was pleasing to see how many students were able to convert standard form numbers into ordinary numbers though some clearly did not use their calculators to help them with this. This was by far the most successful approach to answering this question correctly with the majority who did the conversion gaining full marks. Where students did not get full marks, most were able to gain one mark for having no more than one error in the order, or for converting into ordinary numbers. A common incorrect approach was to put them in order by their index number.

Summary

On the evidence of performance on this paper, students need to:

- Written work needs to be legible for examiners to consider awarding marks. Figures taken from the question, and taken from candidate's own work, need to be transcribed accurately.
- Candidates need to be trained to avoid rounding or truncating answers to calculations, and to use the most accurate values where possible.
- There is a continued need for emphasis to be given to algebraic manipulation and derivation, and application of ratios, scaling and rates, and time in preparing for future examinations.
- Candidates need to be trained to use their calculators for working with percentages, rather than always using a break-down / partitioned approach.
- The inclusion of working out to support answers continues to need emphasis.

Question 8

The first multi-step problem on the paper was tackled well with most students able to work with the different multiples of objects and obtain the correct cost for at least 2 different items using the constraints given. The presentation and amount of explanation varied, with some showing calculations to gain £188.5 only and others annotating to explain that £188.50 is less than £200 or calculating the amount of money left over. Each of these responses were sufficient for the award of all four marks.

Some mistakes were often made, the majority of which seemed to be related to misreading or misinterpreting the information. Common mistakes were that 4 tennis balls cost £4 rather than £5 or that the hockey sticks were £30 each. The majority of students who did not score full marks were able to score partial marks by clearly showing their processes for multiplication and addition, however there were a few who missed out on marks due to not clearly showing their process. For example, writing £80 for hockey sticks without showing where this came from.

Question 14

This question involving the use of direct proportion in a multi-step problem was answered correctly by more than half of the students which was very pleasing to note. Almost all students

were able to find the cost of 1kg of flour by dividing 4.05 by 3 to get 1.35, with many then gaining the second mark for beginning to work with the cost of the sugar using a variety of methods. A larger than expected number of students misinterpreted the information with many assuming that 6kg of sugar was £11.85 and then dividing £11.85 by 6 to find the cost of 5kg sugar without considering whether their answer was feasible. Students who found 5.10 often then correctly found the cost of 5kg of sugar and stopped. Many found 6.95 as the answer but some found the separate costs (2.70 and 4.25), which were also awarded full marks.
For this question involving a large number of figures to use and interpret, students may have benefitted from labelling each calculation with what the value represented, as students who showed their processes clearly and methodically were often more successful.

Question 3

A question in which nearly all candidates gained the mark. A minority gave incorrect answers where the numerical component was less, such as −4.

Question 5

This received a variety of answers with many candidates unable to identify tenths. Stating 0.9 was a more successful approach. "Uniths" was a common incorrect answer.

Question 7

Many candidates gained one mark for either 322 or 4450. But the next steps seemed to cause an issue for many candidates. If using 322 and 178, then the tendency was to add the two figures to get 500 laps, rather than subtract. If 4450 was subtracted from the initial distance and 3600 m found, then candidates struggled to convert this to lengths. Many candidates made arithmetic errors with subtraction even though it was a calculator paper.

Question 9

The familiar context of this question meant that candidates were able to access it and make some good progress into the marks. The most common method seen was to take 105g and then multiply it through by 3 (portions) and by 7 (days in a week) to find the total dog food needed for one week of 2205g. From there candidates either systematically showed totals for multiple weeks getting to 11025g **or** then divided 12000 by 2205 to understand that the food would last 5.4... weeks. Many implied the first process mark, even if they didn't state that 12kg = 12000g and ran the risk of losing that first mark if they did not go on to get a correct solution or show enough workings to justify it, like a solution of "5.4 weeks". Alternatively, other candidates chose to work in weeks and arrive at 38.09... weeks, however they often left their solution as this and so either scored only 2 marks or 3 marks if they had stated that 12kg = 12000g. Other common misconceptions were seen such as; 12kg = 1200g or that candidates thought that there were only 5 or 6 days in a week.

Question 12

Candidates always seem to struggle with time, and this paper was no exception. Although it was not uncommon to see the correct answer, there were also many examples of candidates treating $\frac{1}{4}$ hour as 25 minutes, or in some cases 20 minutes. The temptation to reach for the calculator was too much for many, who simply worked out 14.1 – 3.25 or added time to 14 10 rather than finding the difference.

Question 14

It was pleasing to see many correct answers given, with the numbers (or their equivalents) given in the correct order. Candidates who attempted to convert to fractions quickly realised that this was a more difficult route since you then had to find fractions with common denominators in order to make a comparison. They usually joined the rest in converting the two fractions to a decimal, and then ordering their five decimals, though this was not always done correctly.

Question 22

In part (a) the majority of candidates were able to show they understood what the table meant. Many candidates were able to find a value within the inequalities and multiply this by the frequency. In using a variety of different methods candidates used mid-points, ends and other values.

All candidates were able to pick up the two method marks if they then went on to sum their six products and divide the total by fifty to find an estimate for the mean. Those who used the correct method of using the mid-points were able to go on to achieve the correct solution and were awarded the final accuracy mark.
The usual misconceptions were seen, such as adding the frequencies, adding the midpoints or summing their chosen values from within each inequality and then finding the mean of these, all of which gained no marks.
In part (b) many candidates were unable to answer this question correctly and gain any credit. Many took the misconception offered and chose to agree that Seija was correct often justifying this by taking the ordered midpoints and finding the middle of these. Other common misconceptions seen included ordering the frequencies and then opting for the 15-20 inequality or selecting 17.5 (the midpoint from this).

Question 24

This was a very well answered question with most correct answers coming from listing multiples of 30 and 24, realising that 120 was a common multiple and giving the final answer of 4 and 5 for full marks. Occasionally candidates used a different common multiple but still commonly scored full marks.
Candidates who did not score generally had tried using factors rather than multiples (just by listing them). Occasionally candidates attempting to list multiples made an error before they reached three multiples for each of 24 and 30, scoring zero.

Question 25

Many candidates did not recognise this question as inverse proportion, so there were many examples of $30 \div 4 = 7.5$
Some candidates just worked with the numbers to see what they got, though a few reached the correct answer, explaining their logical steps. An example of this was where they reasoned that if it takes 4 machine 30 hours it will take $4 \times 30 = 120$ hours for 1 machine, then $120 \div 6 = 20$ machines to take 6 hours.
Candidates were usually awarded 0 or 2 for this question; it was very rare for anyone to pick up 1 mark.

Question 4

This question was answered well by candidates, with most being able to place the decimal values given in ascending order. Some candidates placed 0s in the hundredths column of the 0.2 and 0.1 to assist them in ordering the values, this was generally a successful strategy. Where incorrect answers were seen these were sometimes the result of ignoring the decimal point and the relative place value of the values leading to an answer of 0.1, 0.2, 0.03, 0.16, 0.21 or similar. Another common incorrect ordering was 0.03, 0.1, 0.2, 0.16, 0.21 which may have been the result of partial understanding of place value.

Question 6

A well answered question with many candidates able to correctly find that £1.50 was the cost of a single can of soup. It was also common to see slips in arithmetic in what was otherwise a correct process, candidates who showed their working clearly benefitted here as marks could still be awarded even when errors in evaluation were seen. An answer of £2.40 was relatively common, this came from candidates neglecting to take off the change from the £10 that they started with, but otherwise working correctly.
Where candidates did not have a full correct process, they were often able to gain credit for subtracting the change $(10 - 1.80)$ or for a process to find the total cost of the 4 cakes (4×1.30). It was common to see just one cake being subtracted from the £10 rather than four. Where candidates reached the cost of the two cakes, it was common for candidates to miss the last step of the process leaving an answer of £3.

Question 11

In part (a) candidates were asked to calculate $-12 \div -4$. The majority of candidates were able to find the correct answer of 3, but there were also a significant proportion of candidates who incorrectly gave the answer -3. Other incorrect answers included 4 from an arithmetic error, 48 and -48 from working with multiplication rather than division.
In part (b) candidates were asked to find the value of 2^5. The majority were able to give the correct answer of 32, often having shown their working. Common incorrect answers came from working with an incorrect number of 2's when multiplying leading to answers of 16 or 64, or from incorrectly interpreting 2^5 as 2×5 and giving an answer of 10.
Part (c) required candidates to add a single pair of brackets to the calculation to make the given answer correct. The majority of candidates gave the anticipated answer of $30 \div (3 + 2) - 4 = 2$, but a small number gave an alternative correct answer of $30 \div 3 + 2(-4) = 2$. Where incorrect answers were seen these generally involved placing a single pair of brackets in an incorrect place in the equation, although some candidates did use more than one set of brackets.

Question 14

This was a standard question on multiplication of a 3 digit number by a 2 digit number. The majority of candidates were able to work accurately with their chosen method to obtain the correct answer. The most common approaches to multiplication were the column method and Napier's bones. Where an accurate final answer was not obtained then this was often due to slips in arithmetic, but there were also a significant proportion of candidates who made errors in place value when attempting the multiplication.

Question 18

A slight minority of candidates were able to correctly give the value of 10^0.The most common incorrect response was 0 which came from incorrectly interpreting this as 10×0. An answer of 10 was frequently seen.

Question 21

In part (a) of the question candidates were asked to work out $3\frac{4}{5} - 1\frac{2}{3}$. Many candidates started by writing the mixed numbers as improper fractions which wasn't needed for this question, but could form part of a correct method. Many candidates attempted to write each fraction over a common denominator with 15 being the most frequently used common denominator. Candidates who identified the need to write over a common denominator were often able to do so correctly and went on to reach the correct answer with many leaving this as $\frac{32}{15}$ (which was acceptable) and others converting back to a mixed number. There were some candidates who had reached $\frac{32}{15}$ but made errors when attempting to convert back to a mixed number, as the mixed number was not required in this case the incorrect attempt at conversion was ignored. Common incorrect approaches involved subtracting numerators and

denominators without writing over a common denominator, sometimes working with the original mixed numbers and sometimes after having converted to improper fractions.
In part (b) candidates were presented with working for a product of fractions and asked to identify the mistake. Around half of candidates were able to correctly identify the issue with conversion from the improper fraction to the mixed number with many indicating that the answer should have been $1\frac{11}{24}$ rather than $1\frac{9}{24}$. The most common incorrect answers were indicating that they should have used a common denominator and that the initial conversion from the mixed number to the improper fraction was incorrect.

Question 22

This two-part question was attempted by the vast majority of candidates. It was well answered by slightly less than half of the candidates with many of these being able to give a fully correct answer to both parts.

In part (a) candidates who were successful generally calculated the area of the floor by splitting it into two rectangles (5m by 10m and 3m by 6m or 8m by 6m and 4m and 5m). Some were able to go on to find the area that the paint would cover ($75m^2$) or find the volume of paint required to cover the floor together with the volume of paint available and give a correct conclusion for full marks. Some candidates did not show full working to support their conclusion, for example, finding the area as 68 and the amount of paint as 7.5 litres but then not finding the comparable figures (6.8 or 75). A few candidates did not answer the question as yes/no, instead saying that Petra was correct.

Where only partially correct answers were seen these often involved finding the total area of the floor without making further meaningful progress, finding the area of one shape, finding the area covered by the 3 tins available or finding the number of litres required for their area. Common incorrect approaches included working with the perimeter or multiplying together three or more of the side lengths. When considering the floor area that could be covered it was common to see candidates incorrectly working with 100 after misinterpreting the $10m^2$ coverage. Some candidates did not show their calculations and made arithmetic errors and therefore could not score the corresponding process marks: obtaining 70.5 instead of 75 was a common example of this.

In part (b) candidates were told that the paint actually covered a greater area per litre than had been suggested and were asked if this affected their answer to (a). Where candidates had concluded that there was sufficient paint in (a) they were often able to correctly identify that there would be no effect as less paint would be required. Some candidates gave a correct reason – “she would still have enough” but paired incorrectly with the answer yes. Where candidates had incorrect answers to (a) they were often still able to identify the effect that the change would have made for their figures. Common errors included giving the incorrect decision on the effect for the figures that they had found in (a) and including incorrect figures in the statement which then prevented the award of the C mark.

Question 1

The opening question was accessible to all students and was well answered with very few students not being awarded the mark.

Question 9

This first multi-step problem proved challenging for many, with less students than expected gaining all 4 marks available. Students often struggled to interpret the distance readings from the car given in the question as two five-digit mileages, often treating them as single digit distances and simply adding the digits together rather than subtracting. With working shown supporting the method used, these students were frequently awarded two marks, a mark for [mileage] × 47 and a conversion from pounds to pence, pleasingly often seen as a single step of [mileage] × 0.47.
For those who found the real mileage, by subtracting 47241 from 47879, and reached the figure £299.86, the final step of adding the £80 expenses was not always understood, with it either being ignored; being subtracted; or using incorrect magnitude.
When partial marks were not awarded, it was often due to not showing the multiplication. For example, 188 or 1.88 without also showing 4 × 47 gained no credit for [mileage] × 47.

Problem solving activities in lessons with real-life context such as this would be beneficial for students to understand what process is required. Students should also be encouraged to check if their answer makes sense in real life.

Question 12

This question was answered well with the majority of students using correct processes to arrive at 8 × 35 and giving a fully correct answer of 280g. Some students achieved only two marks for an answer of 560g (using white chocolate bars rather than milk) and even fewer achieved only one mark for an answer of 840g (the total weight). For those students who achieved no marks this was either due to them not attempting the question, although this was rare, or not being able to make a correct start to find $\frac{2}{3}$ of 24 due to simply writing $\frac{2}{3}$ of 24 which is insufficient as a process. A common incorrect answer of 12 from just dividing by 2 was also seen. The other common misconception in this question was the use of 0.6 as equivalent of $\frac{2}{3}$. Students should be encouraged to show processes at all times, (e.g. 24 ÷ 3 × 2 or 2 ÷ 3 = …) rather than just writing "$\frac{2}{3}$ = …" as this will enable them to achieve the process marks even when they make mistakes.

Question 19

It was pleasing to see that the majority of students gave a fully correct answer to part (a) of this standard use of a calculator question. Many of the students who gained the 2 marks for the question gave the full answer, which was acceptable for the award of the marks, but many showed no intermediary calculations for the numerator or denominator and gained no marks for an incorrect final answer. A method mark was often awarded for correctly evaluating either the denominator or the numerator, but this was less frequently seen compared to similar questions on previous series. Most students wrote down all the figures from their calculator as advised in the question without rounding unnecessarily which was also pleasing to see.

A common error was to get a final answer of 1.809.... that resulted from evaluating the numerator and then typing $\div 4.6^2 - 8.91$ rather than calculating the denominator separately or making use of the fraction function in the calculator. This led to BIDMAS being applied incorrectly and often led to no marks being awarded due to not always showing the value of the numerator and providing only an answer. Other common incorrect answers suggested students were either not using the fraction button but using ÷ instead (−8.6106….), square-rooting the entire calculation (5.1499….) and only square rooting the 35.2 in the numerator (0.885….).

Part (b) required the answer to part (a) to be rounded to 2 significant figures and whilst a follow through from part (a) was acceptable, the majority of students rounded to 2 decimal places instead.

To improve success on this type of question, students need to be rigorous in showing their working through part calculations and should be encouraged to work out and write down the value of the numerator and denominator separately to ensure they are awarded for partial evaluation and to avoid order of operation errors. They also need to improve their ability to confidently use functions such as the fraction button when entering complex calculations into a calculator.

Question 22

This 2-mark question, on the whole, was answered very well with most students being able to substitute both of the values correctly and being able to find the difference to gain both marks. A common mistake was to substitute the incorrect values or not using the formula at all and dividing the number of bottles, redundant information, by the number of machines. It is therefore important for centres to ensure that students read the questions carefully and not assume that every number is to be used in the question.

Question 3

This question was answered well with most students gaining 1 mark, usually for an answer of 30. For those who didn't, "tenths" or "3000" were the most commonly seen incorrect answers.

Question 5

This question saw mixed results, though a majority still scored the 1 mark available. Of those that did not gain a correct answer, the most common mistake was to have $\frac{1}{2}$ and $\frac{2}{3}$ in the incorrect order. A small number of students ordered the fractions from biggest to smallest, yielding no marks.

Question 8

This question saw a majority of students gain the full 3 marks. There were various ways students could achieve a correct solution and all were seen. The most common method being to find the year that Aisha turned 18 (2011) and then count up in 5's until reaching 2026 or 2031 and arriving at an answer of 'no'. Some students found the difference between 2011 and 2030 (19)

and explained or showed that 19 was not divisible by 5, which was enough to gain 3 marks - although some that found 19 missed the final mark because they did not state that 19 is not divisible by 5. Some found the difference between 2030 and 1993 but then didn't know how to work with it to gain the rest of the marks. A minority of students gained 0 marks, with the most common incorrect process seen being to start at 1993 and count up in multiples of 5. Some attempted to find the year she was 18 by repeated addition but included 1993 so ended up with an answer of 2010.

Question 10

For part (a), most of the cohort provided a correct drawing of the radius. Of those that didn't, a whole variety of incorrect answers were seen, including sector, chord, diameter and tangent. It should be noted that if a student drew two radii, this was awarded 0 marks as it was unclear whether the student was drawing two radii or a sector, unless the radius had been clearly labelled as such. Some students had not properly crossed or rubbed out an incorrect response; students should make it clear to the examiner which line they wish to be considered as their answer.

Part (b) was poorly answered with few students giving the correct answer. A whole variety of incorrect answers were seen such as diameter, segment, tangent, area, arc, circumference, section, showing that this cohort need to learn the names of the parts of the circle.

Question 11

This question saw much success with most of the students scoring 2 marks. The most common method seen was to work out 45 × 8 = 360 then divide by 60 to reach the correct answer of 6. Common incorrect solutions were to reach 360 and be unable to convert to hours, some students treated an hour to be 100 minutes and did 0.45 × 8 and others attempted a build-up method of 8 lots of 45 but went wrong in the method.

Question 5

Almost all learners were able to correctly work out $500 + 145$.

Question 6

This question required learners to use information on the cost of a hire car per day and the cost of insurance in order to work out change from ten £50 notes. The majority of learners were able to do this successfully and often showed clear working. Where incorrect answers were seen, some came from errors in arithmetic and others came from not understanding how to work with the information provided to find the amount of change that would be received, leading to addition and subtraction of a variety of combinations of the figures provided. A small minority of learners misinterpreted the insurance as being per day and this led to an answer of −£250 or £250 this was awarded SC1.

Question 12

Learners were asked to identify the error in a calculation. A slight majority of learners were able to give a correct explanation of the error in the method, with answers such as 'he should have multiplied first' and 'he didn't use BIDMAS' being the common correct responses. Where incorrect answers were seen these commonly included correct reference to the need to do multiplication first, but then indicated that the calculation should be $12 - 5$ or showed $5 - 12 = 7$ which was incorrect.

Question 16

This question presented learners with information about the costs of two different combinations of teas and coffees. They were asked to find the cost for a third combination. This proved to be challenging for learners with the majority not being able to make progress towards a correct solution. Around a quarter of learners were able to correctly find the required cost.

In attempting this question the majority of learners chose to work with the information provided without converting to simultaneous equations. This proved to be successful for those learners who could recognise how the two separate pieces of information could be used to determine the cost of just some teas (more commonly) or just some coffees (as was seen occasionally). Most that were awarded one mark for finding some teas, also successfully found the cost for one tea. Many learners, however, struggled to see how to find the cost of only one type of drink. The most common incorrect approach was assuming that the cost of a cup of tea and a cup of coffee were equal (£2.25). Others attempted to guess the cost of one of the two drinks and see what the cost would be for the second drink type. This approach had the potential to be successful if these costs were checked using both of the initial sets of information, but often the values only worked for one set of cost conditions and this was not recognised. It was common to see extensive working where these trial and improvement approaches had been tried. Some candidates recognised that you could multiply the first cost scenario by three and then add on a cup of tea to gain the correct answer of 15.5(0).

Question 18

This question asked learners to work out 818.4 ÷ 1.2. Many learners made an attempt to perform the division and working with 8184 ÷ 12 before considering the place value / position of the decimal place in the answer. In general, the division was attempted by use of the 'bus stop' method and there were a good number of learners who could perform this fully correctly to obtain the digits 682. Where errors in arithmetic were made these often lead to 6 as the first digit which was sufficient for the method mark to be awarded. There were learners who set up the division calculation, but were not able to complete this due to arithmetic errors or not being able to recall the method beyond the initial layout. The fully correct answer was only obtained by a minority of learners, this was often due to the final answer being given as 68.2 or 6.82.

Question 2

It was pleasing to see that the majority of learners could correctly convert minutes to hours and minutes successfully.

Question 3

Ordering decimal numbers by size was not as well answered as expected. The most successful approach seemed to be those who added trailing zeros to ensure each number had the same number of decimal places to allow an easier comparison to be made.

Question 5

Finding the number halfway between the two given values was also well answered, with many responses showing the use of a list of numbers to identify the correct answer.

Question 6

Whilst many correct responses were seen to this question, a lack of working often led to full marks not being awarded. This question directed learners to show all of their working, which meant evidence of working with both bead colours was required, but it was common to see only the red beads being worked with despite an often correct answer of 10 being shown. This level of working only gained the first mark. Learners showed a variety of approaches such as divisions of 52 ÷ 5 and 80 ÷ 7. The most commonly seen approach was repeated addition of 5 and 7 or repeated subtraction from the available beads. Whilst build-up and build-down methods did gain some credit, occasionally arithmetic errors were made in one or both lists so learners should be encouraged to use their calculators to save time and avoid such errors.
A common incorrect approach was to divide the total number of beads available by the number required for one bracelet, 132 ÷ 12, giving an answer of 11. This gained no marks.

Question 20

This very familiar use of a calculator question was very well answered by most learners, showing that they were able to use a variety of functions on their calculator to reach the accurate answer. Learners who showed figures that implied a partial evaluation, were awarded 1 mark for reaching an intermediate value or for an answer of 4.64 but a response gaining 1 mark only was rare compared to previous series. When errors were made, it was often due to incorrect use of the square root which was commonly only applied to the numerator rather than the whole fraction.

Question 1

This opening question was answered well with the majority of learners gaining 1 mark, usually for an answer of 700, although answers of hundreds or 700 written in words were also accepted and seen regularly. The most common incorrect answers were 3700 and 100.

Question 2

This cohort performed well on this question with almost all able to score 1 mark for an answer of 16.

Question 4

This question was answered very well with almost all learners gaining 1 mark for a correct answer. It was acceptable to give the list of numbers in descending order but this was rarely seen.

Question 8

Part (a) of this question was answered well with the majority of learners gaining 3 marks. Each value was marked individually; for those that did not gain 3 marks, it was the total for tin of paint that caused most problems. For those that did not get the correct value of 49.9(0), there was a follow through for the 3rd B mark where if they added their 4 totals together accurately they could gain the mark and this was seen often. Part (b) also saw the majority of learners gain 3 marks for a correct answer of 771.45. Of those that didn't, common errors included failing to use the correct operation for all 3 values e.g. adding 365.50 instead of subtracting and there was also a significant number of misreads seen, presumably due to the large number of digits involved in the question. A small number of learners saw the word interest and tried to work out 4.47% of 892.48.

Question 10

Part (a) was answered well with a good number of learners able to give the correct answer of 19; incorrect answers were varied and showed no clear pattern. Part (b) saw more mixed results. In (i) a good number of the cohort were able to interpret the information correctly and gain a correct answer of 08 11. Some misinterpreted the information and added 6 and 8, then subtracted from 09 00, gaining 0 marks. There was a Special Case B2 available for an answer of 08 08 (the learner who chooses the correct train but does 08 14 – 6) and 08 09 (the learner who identifies 08 17 but subtracts 8 instead of 6) and these were seen often, 08 08 more so than 08 09. Some learners arrived at the answer of 08 11 but subtracted more time to allow for delays; centres should note that learners should work with the given information in the question and not include further interpretation of their own. (ii) also saw mixed results, although a good number gained B1 for a correct answer; common incorrect answers in the main talked about Barnie being able to leave later.

Question 11

In part (a) learners were asked to work out $\frac{5}{8} - \frac{1}{4}$. Many learners recognised the need to write the fractions over a common denominator and were then successful in completing the required calculation. The most efficient approach was to use a common denominator of 8, but learners did not always recognise this and so denominators of 16 and 32 were also utilised. Some learners identified that they need to write the two fractions over a common denominator, but made an error when finding the numerator and this gained 1 mark when seen. Some learners worked correctly, but then attempted to simplify their answer and made errors at that stage, in these cases the subsequent working was ignored as learners had not been asked to give their answer in its simplest form. An uncommon approach was to attempt to work with a common denominator of 4, this led to a decimal in the numerator of the first fraction and was only condoned if this was recovered later in working to give a fraction where both the numerator and denominator were integers.

A common incorrect approach was to merely subtract numerators and denominators leading to an answer of $\frac{4}{4}$. Other incorrect methods involved changing the subtraction to an addition which was often seen alongside inversion of the second fraction suggesting that learners had confused their method for subtracting fractions with a method for division of fractions.

In the second part of the question learners were asked to find $\frac{2}{5}$ of 40. The most successful responses broke this down into two stages, firstly calculating $40 \div 5$ and then multiplying by 2, this was generally successfully completed although some errors were seen in evaluation. However, as long as the learner showed the correct processes e.g. $40 \div 5 = 8$, $8 \times 2 = 14$, one mark was gained even when arithmetic errors occurred. Some learners worked correctly initially but gave their answer as $\frac{16}{40}$.

Where errors were seen these included incorrect attempts to convert $\frac{2}{5}$ to a decimal or percentage, multiplying by 5 instead of dividing by 5, with many instances of learners equating 2/5 as a half. A few learners worked with percentages, recognising 2/5 as 40% which was acceptable, however when errors were made these learners often did not show their method for finding the incorrect values stated. Final answers of 8 and 20 were common; and a significant number of learners who found $\frac{1}{5}$ of 40 rather than $\frac{2}{5}$ of 40. A small but significant minority found the correct answer but then subtracted this from 40.

Question 12

This question differentiated well between learners. In part (a) learners were asked to identify the train which takes the least time to go from Liverpool to Crewe, showing how they reached their answer. Identifying the required times and showing the appropriate subtractions was commonly seen, however learners often treated the times as values with hundreds, tens and units leading to errors in the evaluation of the second calculation. Counting on was also a common approach and this was successful in many cases with learners often able to work correctly to find the three required journey durations and give a correct conclusion. Learners who worked by showing 'jumps' from the start time to the end time often made errors in their 'jumps' and did not show working to find these.

Some learners did not show their method, where correct journey durations were seen this was not an issue as the method is implied, however others reached incorrect journey durations which limited the marks which could be awarded. Other common errors included finding the journey duration(s) for a different journey, often Liverpool to Birmingham, or reading the wrong times from the timetable.

Quite a few learners thought that the first train was fastest as it arrived at an earlier time than the other trains - working with which train would get you there earliest rather than the fastest train.

Part (b) of the question required working with the concept of a delayed train and asked how long Rose would need to wait for the train. This proved to be more challenging for learners. Learners who were successful generally worked out that the delayed train would arrive at 10:05 and then found that this was 40 minutes after Rose arrived at the station. Whilst many were able to recognise that Rose would catch the 09:30 train it was common for learners to struggle to know what to do with this and this led to incorrect answers of 10:05 (the time of arrival of the delayed train). Another common error was to arrive at an answer of 10:00 which came from waiting 35 minutes from her arrival at the station and did not make reference to the train timetable. There were also a significant number of responses that worked with a whole variety of different numbers, which were often not from a clear source, and added 35 minutes.

Question 15

This was a standard question on multiplication of a 3 digit number by a 2 digit number. A majority of learners were able to work accurately with their chosen method to obtain the correct answer. The most common approaches to multiplication were the column method and Napier's bones. Where an accurate final answer was not obtained then this was often due to slips in arithmetic, but there were also a significant proportion of learners who made errors in place value when attempting the multiplication. The most common of these place value errors was when multiplying the 135 by the 4 in 48 and forgetting to 'add a zero' in the 'units' column. Several learners also forgot to put the decimal place into their answer. An unusual approach that was seen from some learners was to recognise that 0.35 could also be interpreted as 35% and then work to find 35% of 48 which was commonly done by combining 3 lots of 10% with 5%, this was then added on to 48 to complete the method. The Napier's bones method was used by some learners however some got confused with the direction of the partitions in the grid.

Question 1

Learners seemed very able to convert between weeks and days in this opening question.

Question 4

It was pleasing to see that ordering a list of both positive and negative numbers was well answered by learners, with many correct responses seen.

Question 5

Both parts of this question required learners to write down a sensible metric unit that could be used to measure specific items.
Whilst many correct responses for a suitable unit for measuring the height of a mountain were seen in part (i), suggesting a suitable unit of measurement for the weight of a button in part (ii) seemed to be more challenging.
A common error in both parts was to write down an imperial unit such as miles for part (i) and either pounds or ounces for part (ii).

Question 6

Many learners showed good understanding of this question. It was common to see responses that began by subtracting 13 from 76, and the better responses then went on to divide the result by 3. If they did this accurately and reached 21, they were awarded full marks. Writing 21 on the answer line three times was accepted as being clear enough for full marks.

Where an accurate answer was not reached, seeing a sum of any three numbers with a total of 63 was enough evidence to award the first mark. Some responses included statements such as $13 + 3 \times 21 = 76$ followed by incorrectly selecting 13 or 76 as the final answer and such responses were awarded 2 marks but did not gain the final accuracy mark.

Question 7

This 2-mark question required learners to identify and carry out a one-step calculation, and both the method mark and the accuracy mark were often awarded for the correct answer of 6 usually coming from a division calculation.

Learners should be encouraged to use a calculator for this style of question, as it was common for responses to include a longer method of trying to count up in multiples of 55 to reach 330. This used up time and was more likely to result in arithmetic errors because of all the steps involved.

Question 24

In this question, learners needed to recognize that 8000 represented $\frac{4}{5}$ of last year's crop and needed to use this fact to work towards the correct answer of 10 000. For the first mark, a statement or equation linking 8000 to $\frac{4}{5}$ or 80% was required. It could also be earned by dividing 8000 by 4 (to find $\frac{1}{5}$) or by 80 (to find 1%) but each method was rarely seen but when a correct start was shown, the second mark was often given for a complete method, and full marks for the accurate answer. However, it was more common to see an incorrect approach of simply multiplying 8000 by 5 as the entire method, showing no recognition of what fraction was being represented initially. Dividing 8000 by 5 was also sometimes seen, with the resulting 1600 either being added to or subtracted from 8000, and this incorrect start also led to no marks being awarded.

Question 1

A variety of formats were accepted for the correct answer such as tenths, 7 tenths, $\frac{7}{10}$ and 0.7 and these were all seen often. Common incorrect answers were 700, hundredths and 7 hundredths.

Question 6

Most responses that gained 3 marks followed the method outlined in the main mark scheme: calculating the value of the £20 notes (£120), then the value of the £10 notes (£280), and giving a final answer of 28. Build-up methods were used less frequently and with mixed success. This approach involved counting in multiples of 20 to reach £120, then continuing in steps of 10 until £400 was reached. If this process was completed with only one error, P2 could still be awarded. Alternative formats of the answer 28 were accepted, including £28, 28 £10 notes, and 28 × £10. Some responses gained 2 marks by reaching £280 but did not continue further. Others gained 1 mark for reaching £120 but either stopped or made an error in the next step.

A number of responses used £200 instead of £400 due to misreading the question. These could still be awarded both P marks, in line with general marking guidance point 14. In some cases, the working correctly led to 28, but the answer line showed 280, meaning that the final A mark could not be awarded. It is important that the final answer matches the question requirement.

Question 11

The most common correct method involved converting 1.2 metres to centimetres (120), followed by calculating 136 − 120 to give an answer of 16 and gain 2 marks. Some responses converted 136 centimetres to metres (1.36) and subtracted 1.20, resulting in an answer of 0.16; this gained 1 mark.

Other responses gained M1 for a correct conversion but did not complete the method accurately, so the A mark was not awarded. In some cases, 1 mark was awarded where an attempt was made to convert either Elena's or George's height, even if the conversion was incorrect, provided the difference was calculated using a value listed in the additional guidance of the mark scheme. Responses that did not include any conversion typically gained 0 marks.

Question 16

The most common correct method involved identifying the number of games won (18), subtracting this from 48 to find the number of games drawn and lost (30), and then dividing by 2 to reach the final answer of 15.

Some responses used fractional reasoning, calculating the fraction of games drawn and lost and multiplying this by 48 to obtain 30 before continuing. In cases where the response stopped at 30 and gave this as the final answer, 2 marks were awarded.

One mark (P1) could be awarded for correctly subtracting the number of games won from 48, provided the number of games won was clearly stated and an integer less than 48. For example, if a response calculated ¾ of 48 = 36, then did 48 − 36 = 12, the first process mark could be awarded.



Examiners' Report
Principal Examiner Feedback

November 2020

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 3F

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GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 3

Introduction

The overall quality of the presentation of work was good. However, students need to read the questions carefully. There remain a concerning number of cases where students copy down the wrong figures from the question, mis-copy their own figures, or round figures almost randomly. Equally another error sometimes occurs when students prematurely round or truncate figures, either their own figures or figures from the calculator, which usually result in lost accuracy marks and could also make questions more difficult than they were designed to be.

Approaches to questions that required some interpretation or explanation were inconsistent. Questions 10 and 21 were answered well, but poor attempts were made in questions 15 and 26. On too many occasions students included contradictory or incorrect statements, which cannot be credited.

Within a broad range of questions, the paper was able to discriminate well. Weakest areas continue to be the application of ratios, scales and rates, but also algebraic manipulation and problem solving. Most demonstrated good use of a calculator, though on some occasions it was clear that they did not have an understanding of the way in which their calculator worked or did not have one at all, such as in question 9.

Questions which had a slightly unexpected approach, that is required more thought, caused immediate problems for many, even in the earlier part of the paper. This includes questions 18, 20 and 24. Question 25 to 29 were the more challenging questions for those striving to demonstrate ability at the highest grades available, and a significant proportion of students therefore failed to score on these questions.

There were far fewer attempts using trial and improvement approaches. These mainly occurred when students showed evidence of not having a calculator, mainly evident in questions 15, 18, 19 and 20 where non-calculator methods were also seen, such as multiple additions.

The inclusion of working out to support answers remains an issue for many; but not only does working out need to be shown, it needs to be shown legibly, demonstrating the processes of calculation that are used. This is most important in longer questions, and in “show that” questions.

Report on Individual Questions.

Question 1

This was a poorly answered question. Most students gave the correct answer of 3 but 300, 30 and 3000 were frequently seen.

Question 2

A well answered question with nearly all giving the correct answer of 8.

Question 3

This was not always answered correctly.

Question 4

There were few incorrect answers in this question.

Question 5

This was very well answered with few failing to gain the mark. The most common error was the absence of one of the numbers.

Question 6

A very well answered question. There were a few who gave the answer of 4 to part (a).

Question 7

Students were generally very successful with this question with most obtaining full marks. Those achieving partial marks tended to mis-read the shaded section and recorded the fraction unshaded instead leaving their answer as $\frac{1}{4}$. A significant minority failed to give their answer in its simplest form, usually leaving the answer as $\frac{12}{16}$.

Question 8

This question was generally well done with the majority dividing 200 by 25 (some with multiple additions of 25) and then completing the process of 9.75 × 8 and giving the correct answer 78. Some students preferred to list eight lots of £9.75. The most common errors were students multiplying the cost by 200 or by 25.

Question 9

Parts (a) and (b) were not always answered correctly, with students having difficulty with the order of operations on their calculators.

It was rare to see any correct answers to part (c). Knowing the meaning of the term “reciprocal” is clearly a weakness in students.

Question 10

Most students got the marks in parts (a) and (b).

In part (c) students were able to explain that the drop in the first 3 minutes was steeper than the last 3 minutes. Some struggled to articulate this and some forgot to agree and imply that Pam was correct. There were a wide variety of values presented by students, although this question assessed the interpretation of the graph rather than the accuracy of reading values. Students generally used suitable values to explain their reasoning. Some students didn’t use the graph at all but tried to explain that water cools more quickly when it is hotter.

Question 11

Many responses achieved full marks. Many managed to use the fact that angles in a quadrilateral sum to 360 or found the angle on the straight line to *y* was 70 degrees and score one mark. Not all students who correctly calculated angle *PSR* were able to complete this question correctly, deciding to go off in all sorts of related incorrect calculations. Some of the weaker students knew that angles on a straight line totalled 180° but chose to use angle *QPS* with angle *y* to sum to this total.

Question 12

Part (a)(i) was well answered. In parts (a)(ii) and (b) it was clear students did not properly understand the meaning of "term". This was evidenced by statement involving algebra, "*n*th term", "*n* –5" and numbers not relating to the sequence given in the question.

Question 13

Many students added up the numbers that they saw on the diagram to get an answer of 26. Many more managed to score at least one mark on this question as they identified the length of one of the missing sides, usually on the diagram. For some reason finding 2cm was much more prevalent than finding 6cm. Some then forgot to find the missing length of 6cm leading to an answer of 28. The majority understood the meaning of perimeter, but some divided the shape into rectangles and added together the perimeter of both rectangles. The other common mistake was trying to find the area.

Question 14

In part (a) most students understood the need to collect like terms and it was often done successfully. If full marks were not awarded, students usually achieved one method mark, usually for the $5x$.
The negative sometimes caused problems when collecting the *y* terms. Common errors seen included $6xy$ and $5x^2 \pm y^2$.
Part (b) was well done by many with the answer 3 on the answer line, though a formal algebraic approach was not seen very often, students preferring to show $22 - 7 \div 5$. Some showed "–7" written by the equation but this was not credited unless the next stage was shown by, for example, writing $5p = 15$. Few attempted to divide by 5 as their first step. The most common incorrect answer seen was 10 from subtracting the 5 and 7 from 22.

Question 15

There were some good attempts at this question, encouraging since there were several steps needed to get to the answer: division to get the number of packs and rounding 7.5 to 8 before calculating the cost. Conclusions were well stated. The common error was to work out the individual cost of the batteries in each shop and then find the cost of 30 which clearly demonstrated misunderstanding about the packs.

Part (b) was usually well stated with 'No' and a clear reason. Most calculated the cost of 30 individual batteries of £12 and £13.50 and stated 'No, shop A is still cheaper'.

Question 16

In part (a) the majority wrote the correct answer on the answer line. Some went on to convert their answer to a decimal which was unnecessary. It was also pleasing to see most students using the

correct notation for probability with only a minority using the incorrect notation of a ratio. Of those not gaining both marks, most earned M1 for $\frac{5}{n}$ or $\frac{m}{11}$.

In part (b) a common incorrect answer was 0.3, but the majority of students gave the correct answer of 0.7, which was sometimes written as an equivalent fraction.

Question 17

The majority of students attempting this question gained full marks. There were many who gained 1 mark for drawing only one 6cm line correctly, though quite a few struggled to draw an accurate isosceles triangle. Though they were not required in this question, there was very little evidence of construction lines/arcs drawn; it seemed most measured using their rulers.

Question 18

Many students secured one mark for providing an accurate conversion using the graph. However, others drew lines on the graph, not always correctly, but failed to take any accurate readings from these. Of those that did, most went on to complete the method, but many of these confused their $ with £ and so lost the method mark. Other students chose to take their initial reading near the origin, for instance using £5 = $6, which by the time they had multiplied it up to $345 was too inaccurate to give an answer within the range allowed. There was some misunderstanding of the scale on the $ axis, with some students assuming 1 small square = $1

Question 19

In part (a) to achieve both the marks, students needed to understand through proportional reasoning that the number of tuna sandwiches represented 40% of the total sold. Many students were not able to demonstrate this and as such scored no marks. There were some who adopted a bar modelling approach e.g. stating 40% = 56 so 20% = 28, and adding 56 + 56 + 28.

Part (b) was answered slightly better, but still demonstrated that students need more practice of ratio and proportion. Where students showed some understanding of what was required but chose to use a percentage of 18 to scale up were often not able to achieve a solution that was accurate enough.

Question 20

Students that were able to demonstrate some understanding of the context were rewarded with one of two process marks if they able to sum the total of money (200) that Akhtar, Ben and Carl had without the £10 notes or used the mean amount to calculate the total of all the money (240). After scoring one or two process marks there was a variable understanding of how to use these values to solve the problem. Of those who made mistakes many appreciated that the answer had to be an integer and rounded their mistakes rather than reflecting that there had to have been an error and a further check of their work was needed.

Question 21

Part (a) was answered well, with many students gaining the mark. The most common incorrect answer was $\frac{25}{50}$, a probability statement rather than a statement of the number of times.

In part (b) some students thought that the answer was Paula because "10 times was enough" as her approach was quicker. Lots of students had the right idea that the more trials, the more reliable your results, but some failed to actually say "Simon, because…" A common mistake was just talking about 100 throws and not making comparisons.

Question 22

This question was attempted by most students but very few correct plan views were seen. Most students incorrectly drew a net or a side elevation involving a square with a triangle attached. Out of the ones who scored any marks, most scored one mark for a square with sides 6cm, but without the diagonals drawn.

Question 23

Part (a) was not well answered. n^{15} was a common incorrect answer.

In part (b) c was usually shown correctly (frequently written as c^1 but often paired with d^4). Most achieved one mark for c or (less likely) d^3. There were a significant number of correct values for c found from an incorrect method.

In part (c) many students were unsure where to start and a common incorrect answer given was $2.5x > 7$. Of those students who did start to approach the question correctly, many ignored the inequality sign throughout the process getting $x = 2.8$ or $x = \frac{14}{5}$ and as a result could not gain the accuracy mark.

Question 24

Most students attempted this question but very few achieved full marks. The distance, speed, time triangle did not help in this question; students always seem to make more errors at this level when using it rather than taking an everyday approach to the problem. Some added the distances together and the speeds together then divided by 2. Quite a few students gained one mark, but more students gained two marks for finding the times as decimals and adding the two times but failing to convert the times correctly and ended up with 2 hr 75 mins or 3 hr 15 mins which were the most common answers seen.

Question 25

Error intervals remain a weakness and was poorly attempted. Some were able to correctly give 9.35 but rarely gave 9.45; a few 9.44 but not 9.4499...

Question 26

Many were able to secure the first process mark for finding the area of one of the lawns (45 m^2 or 140 m^2) or the amount of seed available (10kg) but did not proceed any further with many reasoning incorrectly that if 3kg covered 5 × 9 area, then 6kg would cover 10 × 18, more than is needed. Other students were successful in gaining the second process mark mainly for the coverage of 1 kg of grass seed ($15m^2$). The most successful approaches seen where students were able to reach the correct conclusion were finding the amount of grass seed needed (9.3…kg) and comparing it with 10kg or finding the area that could be seeded with 10kg ($150m^2$) and comparing it with $140m^2$.

Part (b) required reasoning supported by correct figures and as a result, students were not successful in gaining many marks.

Question 27

Part (a) was generally answered well, and most students were able to write at least two correct probabilities on the tree diagram, sometimes writing these as equivalent fractions of $\frac{2}{4}$2/6 and 4/6. Some students chose to try to use decimals for this problem but were not able to score any marks due to inaccurate approximations of $\frac{1}{3}$.

Having perhaps achieved one or both marks in part (a) many students lacked the knowledge that they needed to select the correct branches and multiply the fractions together and the few that did were rewarded with the marks in part (b).

Question 28

There were very few correct answers in part (a). There seemed little evidence of an understanding that the solutions could be read from the graph. A significant number attempted an algebraic solution, but their algebraic abilities were insufficient for such a task.

In part (b) there were a few who got full marks but for those who knew to read from the intercepts often included 2 with 0.6 and 3.4. Some spoilt their answers by writing the two values as coordinates. Other errors included those who attempted to substitute values into the equation, then plot the points on the graph, using algebraic solving/factorising methods or stating the *y* value at the minimum point.

Question 29

Many started off knowing that they needed to multiply the dimensions 6, 4 and 10 but many failed to take into account that the end shape was a triangle and division by 2 was required. The biggest failing, after calculating the volume correctly, was to divide by 0.8 getting the answer 150. For those students that only omitted division by 2 there was a special case mark for the answer of 192.

Summary

Based on their performance on this paper, students should:

- accurately transcribe figures taken from the question, and taken from their own work
- avoid rounding or truncating answers, and to use the most accurate values in subsequent calculations
- ensure that their work is legible for examiners to consider awarding marks. For example, avoid any possible confusion when writing 1s and 7s, when writing 4s and 9s, and even when writing 0s and 6s.
- ensure that they include working out to support answers
- work on algebraic manipulation and derivation, and application of ratios, scaling and rates in preparing for future examinations.
- learn the meaning of technical terms such as “reciprocal”, the “term” of a sequence and error intervals
- continue to need practise answering response type questions where a written explanation is required.

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Examiners' Report
Principal Examiner Feedback

November 2022

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Non-Calculator) Paper 1F

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GCSE Mathematics 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

The paper offered an opportunity for students of all abilities to demonstrate their understanding of a variety of mathematical concepts.
The early questions acted as a good confidence building way into the paper, with many students gaining a good proportion of the early marks.

Lack of careful reading of some of the questions was a cause for concern; particular ones are quoted in the summary below. Also worrying is the number of arithmetical errors that featured in many students' work. Simple application of the four rules was found wanting on many occasions. For example, 10000/8 being seen as 8/10000. Students should be encouraged to check working before being totally satisfied with their answers.

Some students were clearly avoiding tackling questions that involved algebraic techniques. These attempted trial-and-error methods from quite early on in the paper, even for the simpler questions where an algebraic approach was straightforward.

The quality of handwriting from some candidates made their responses difficult to read. Students are advised to avoid rushing through their work.

Areas of the curriculum that need more attention are, Geometric reasoning (Q9b), Describing transformations (Q11), Equation of a straight line (Q11bii), Fractions (Q20), Indices (Q21) Comparison of ratios (Q24) and Factorisation of polynomials (Q26b).

Again, it was pleasing to see many students clearly showing their working and utilising their communication skills when required. This continues to be an area of improvement.

Report on individual questions

Question 1. This first question was generally well answered and served as a good introduction to the paper. Correct answers of $\frac{3}{10}$ or $\frac{30}{100}$ were the most common.

Question 2. This question was usually answered correctly although an answer of 6 (3×2) was a common mistake.

Question 3. Another well answered question with few mistakes. It was pleasing to see most able to follow the correct order of operations.

Question 4. Although 10 and/or 12 were seen more often than not, a number of students failed to gain the mark by offering extra, incorrect values. 6 being the most common seen.

Question 5. Many students failed to score in this question by not simplifying the given expression fully. $3w \times 5t$ and $15 \times wt$ were popular partial simplifications gaining no marks.

Question 6. It was very pleasing to see so many students gaining good marks on this multi-step question. The vast majority gaining 2+ marks. In general, marks were lost through not reading the question carefully. Often just one child was considered, or two adults were included. Another common mistake was to omit the cost of petrol while in other cases it was seen as a cost for each person. Poor arithmetic often denied many full marks, mainly with the addition of two child tickets (the only non-integer), or with an inability to line up integers and non-integers successfully in a column addition method. Some gave the total cost of the trip instead of the change.

The standard of presentation of answers was lacking, in some cases, with little structure or order to what they were doing

Question 7. Part (a) was answered well, the vast majority clearly understanding the concept of mode. In part (b) also, understanding of probability scales and probability in general was good. In (ii), some simply added a cross to the probability scale, failing to quote the actual numerical probability; this gained no marks. Some students are still using terms such as unlikely in terms of describing probability.

Question 8. Part (a) was answered well, with very few failing to score the mark. Candidates performed less well in part (b) with many not collecting the like terms of $3n$ and n together as a first step. Many tried to subtract the n from both sides of the equation either resulting in $2n = 24$ (giving $n = 12$) or $3n = 24$ (giving $n = 8$). In this question, students usually scored no marks or full marks. Some used an embedded solution, with mixed success. Many candidates who achieved full marks did not attempt the algebraic approach and instead simply stated that $3 \times 6 + 6 = 24$, with a correct answer on the answer line.

Question 9. Part (a) was well answered with the vast majority subtracting 70 from 360 to get a correct answer of 290°. However, a great many were unable to give a correct reason for this answer in part (b). The most common incorrect explanation related to a circle "having 360°". Students need to be made aware that such an explanation is not acceptable. Many simply explained how they did it, rather than why e.g. "I subtracted 70 from 360". Students should be reminded that a calculation is not a reason.
In this case "angles at a point sum to 360°" or words to that effect is the reason required.
A common incorrect approach was to work with 180° rather than 360°.

Question 10. Most students correctly worked out that 5 was the greatest number of jars of coffee that could be bought for £23 in part (a). In part (b), a large number of candidates lost the mark as they hadn't read the question carefully enough, missing the word "exactly" in reference to the number of jars to be bought at half price. Many realised that Michael could now buy an extra 11th jar but then lost the mark because they answered 'yes' to the question "Is Michael correct?".

Question 11. Whilst many students correctly wrote down the scale factor of 2 in (a)(i), only a very small minority were able to pinpoint the centre of the enlargement in (ii). Many tried to position their centre either in between the two shaded triangles, in the centre of one of the triangles or on one (or two) of the vertices. In some cases, students who were able to draw lines to intersect at the point of enlargement identified it correctly but missed the mark because they also placed 'X' somewhere else on the graph.
In part (b)(i), accurate drawing of the mirror line was good. Whilst lines drawn with a straight edge are preferred, freehand, dotted or dashed lines were acceptable. In part (b)(ii), unfortunately, very few students were able to give the equation of their line. Common incorrect lines drawn were $x = 4$ or $y = 4$, which in some cases allowed a follow through mark if they stated this as their equation for (ii).

Question 12. Again with this multi-step problem in part (a), it was pleasing to see many students gaining good marks, often 2 or more. In this question, students had to find a sixth and 20% of 120 minutes. When performing calculations of this type it is important for students to show their working, eg $120 \div 6$ or $\frac{20}{100} \times 120$ so that credit can be awarded for correct method if errors are made with accuracy. In solving this problem, some students subtracted 50 from 120 to give 70 minutes and used this as the time spent playing badminton. Arithmetic errors were seen far too often from students when subtracting from 120.
In part (b), many ignored the good work they had done in part (a) and explained that Elana did not get to the café on time because she spent 2 hours at the sports centre making it 3.30pm when she left. This part followed through the working and answer in part (a) and the mark awarded if the reason and working were correct for the time given in (a).

Question 13. Part (a) was answered correctly by the majority of students, reading 60 from the bar chart. Part (b) was answered less well when a certain amount of extrapolation was required from the chart. 210 was a common incorrect answer.
In part (c), it was evident that many students weren't able to accurately read data from a composite bar chart, many reading the number of men as 90, women 200 and children 280 in 2020. The method mark here was awarded for sight of 80 (children) or 200 (men + women) used in a ratio. Many gained this mark but failed to score full marks as a result of incorrect values read from the chart. As a result of not reading the questions correctly, some students wrote an answer of 80 (child) : 90 (men) : 110 (women).

Question 14. Greater success was achieved in part (a) of this question by finding the sum of the distance travelled in one hour (54 miles) and the distance travelled in half an hour (27 miles). It was pleasing however, to see many students correctly quoting the equation distance = speed × time to solve this problem, although accuracy was often lost through incorrect use of the units of time. 54×90(mins) or 54×1.30 were common errors made.
In part (b), very few students were able to correctly convert from centimetres to kilometres. Many gained one mark for using the scale on the map correctly, $25\,000 \times 6$. Credit was then given for a reasonable attempt at the conversion of 150 000 cm to km, usually just dividing by 1000. Most didn't seem to be clear that they had found a measurement in cm by multiplying by 25 000, those who did include units were more likely to be able to convert correctly as they often spotted that they could convert cm to m then m to km.

Question 15. The diagram proved very useful in getting one correct coordinate, for which one mark was awarded, usually $y = 1$, but rarely was a fully correct answer seen. Whilst many students did use the diagram, drawing the correct line segment, it was also rare to see the correct positioning of the required midpoint. This was often seen placed on the y-axis. There were very few instances of candidates using written methods to find the midpoint.

Question 16. Those students who attempted an algebraic solution often picked up good marks, 2 or more, for a correct expression for the perimeter and then equating it to the given value of 52. Simplifying their algebraic expression often proved more difficult and it was not uncommon to see quadratic terms creeping in. Some students assumed all the lengths to be the same and calculated 52/4 gaining no marks.
Some students correctly found the value of x and then failed to answer the question by finding $2x$, the length of DC. Poor arithmetic let many students down in being unable to divide 57 by 6 and hence not being able to achieve the accuracy mark.
Many students did however adopt a trial and improvement approach which usually cost them a great deal of time for little reward.

Question 17. Again, understanding of probability was good and many students gained the full 2 marks in part (a). One mark was awarded for sight of 100 – 30 (= 70) or a correct value for the probability of taking a blue counter. $\frac{3}{4}$ was a common incorrect answer by some of the less able students, assuming there was an equal number of coloured counters. Students should be reminded that expressing a probability as a ratio is not an acceptable form for this answer.
In part (b), the correct answer of 45 was the modal answer, with incorrect methods following no particular pattern. A common incorrect attempt was also to try to share 30 in the ratio 2 : 3.
Part (c) followed through student's answers in (b). Explanations were usually acceptable, such that 25 counters could not be shared equally between red and yellow. It should be noted that just saying '25 can't be divided by 2' gained no credit. Also, students should be aware that any calculations given as evidence in such questions need to be accurate.

Question 18. Many students were unable to make any progress in this question by not reading the question fully and jumping in to either find a half and/or a twelfth of 240 or to divide 240 by 5, then 3 then 2. Those that correctly divided 240 in the ratio 5 : 3 : 2 usually went on to gain good marks. Many scored 3 marks for finding the numbers of cans remaining, 120, 36 and 44 but were then unable to find the required percentage of cola cans remaining. Finding one number as a percentage of another is an area that needs addressing. Those that did find a percentage were often successful by simplifying their fraction of 120/200 to 60/100.

Question 19. The factorising of 500 was usually carried out with the aid of a factor tree diagram, many of which were seen to be fully correct. Failure to gain full marks was usually down to not giving their product of prime factors as powers as requested, often just leaving the factors in a list. Many arithmetical errors in the construction of a factor tree and some misunderstandings in the concept were seen where the sum instead of a product was given. Centres should emphasise here that complete tree diagrams should have each final branch ending in a prime

Question 20. In part (a), those students who dealt with the fractions and whole numbers separately often gained greater success in achieving full marks, although an answer of $3\frac{4}{9}$ was not uncommon.
Although no credit was given for simply converting the mixed numbers to improper fractions, many did so accurately and then were able to convert both to a common denominator with at least one correct numerator to gain one mark. However, the answer following this approach was often left as an improper fraction, $\frac{77}{20}$. Unfortunately, many just added the numerators and the denominators to give an incorrect answer of $\frac{17}{9}$.
Part (b) proved to be a much greater challenge for many students, many tried to concoct means of dividing $2\frac{2}{3}$ by 6 to get $\frac{4}{9}$, a few students however correctly changed $\frac{8}{3}$ to $\frac{24}{9}$ and divided this by 6 to get $\frac{4}{9}$. The most successful approach was $\frac{8}{3} \times \frac{1}{6}$ showing an ability to divide a fraction by a whole number. Some had success by transposing the problem to show that $\frac{4}{9}$ multiplied by 6 is equal to $2\frac{2}{3}$, although $\frac{24}{54}$ was often seen.
Many students seemed to not understand the requirements for this question.

Question 21. It was clear that the rules of indices are known by many students but the application of them was very poor. $(2^{-5} \times 2^{8})$ was often written as 4^3. This had to be carefully marked as 4^3 as a final answer was an acceptable Special Case answer for one mark.
Sometimes 2^{-10} or 2^{16} were seen but rarely both.
Less able students often unsuccessfully tried to evaluate the terms before finding a product or squaring and had little understanding of negative indices. Occasionally 2^3 was seen for the method mark but this was followed by 2^5. Working with negative numbers continues to be a problem with -5+8 being evaluated as 13 or -13. Many worked exclusively with the powers and did not include the base number at all; -5 + 8 = 3 was often seen.

Question 22. It was common to see the digits 128 quoted in the working or in an answer, but rarely was the fully correct answer of 0.00128 seen. Very few seemed to know the rule of finding the product of the numbers and then counting the decimal places in order to position the decimal point. Many used long multiplication techniques, usually to no avail. It was rare to see an answer given in standard form. Method marks were sometimes gained for arithmetic errors in working but with a correctly positioned decimal place.

Question 23. This question was not answered well at all. Sampling techniques were not well understood at this level. Many either multiplied 40 000 by 80 or divided by 15. Attempts to divide 40 000 by 80 often introduced arithmetic errors, some just left 500 as their answer and those that knew to multiply by 15 struggled to do so correctly. Some students tried to work with percentages which rarely gained any credit eg 15%.
Students need to be encouraged to consider the suitability of their answers as some offered answers which were greater than 40 000, the total number of cars produced.

Question 24. Students at this level find the comparing of ratios particularly challenging. The most common error in part (a)(i) was to add the values of *b* in the ratios to give a triple ratio of 1 : 9 : 5 or used some of the numbers in the given ratios and gave an answer of 1 : 3 : 5. Some using a correct common multiple often spoiled their final answer by more arithmetical mistakes. Although (i) was poorly answered many picked up marks for correctly following through with their values for *a*, *b* and *c* in part (ii).
In part (b), few students were able to make significant progress. Those who assigned values to *m*, *n* and *p* were often successful, but this was rare. The substitution of $n = 2m$ into $p = 5n$ was rare also but usually successful when seen. Occasionally answers lost the accuracy mark for an incorrect order of 10 : 1 or for including letters in their final answer, eg. 1n : 10n.

Question 25. This was very poorly answered. The formula and the force both being given meant there was only the need to work out the area by multiplying 4 by 2. Some students still think that when working with area, they need to square the values first before using them to divide into 10 000. Those who correctly worked out the area usually tried to divide 10 000 by 8, for one mark, but often then failed, again through poor arithmetic. Some stated the area as 6 (4 + 2) and therefore gained no credit.

Question 26. There were many trial and improvement attempts to answer part (a) of this question, the majority of which were unsuccessful, however a few did throw up the critical value of 6. Those following an algebraic approach were able to score one mark initially for a correct process to start a solution. Subtracting 3 from both sides was usually successful but multiplying both sides by 2 was often carried out incorrectly by omitting to multiply the 3 by 2 resulting in $5x + 3 > 36$ or $5x + 3 = 36$. A correct first step was often followed by an incorrect second step or no second step at all.
Replacing the inequality by an equality is not penalised but students must remember to replace the inequality for the final answer. Far too often an answer of $x = 6$ was given.
In part (b), the ability to factorise a polynomial was sketchy. Factorisation of the first two terms [eg. $x(x + 10) + 9$] was often seen but this gained no credit.
$(x + 10)(x – 1)$ was also a common incorrect answer seen. Common incorrect answers included $(x + 1x)(x + 9)$ or $(x + 9x)(x + 1)$

Summary

On the evidence of performance on this paper, students need to:

- take greater care when reading the questions. Performance in questions 6, 10b, 12 and 18 in particular was severely affected by this.
- take care when carrying out arithmetic operations and check their working to avoid careless errors.
- write clearly so that correct values quoted are not altered in subsequent working.
- show clear methods of working particularly in basic calculations such as finding fractions or percentages of quantities.
- set their working out clearly, crossing out working that is being replaced.
- be able to convert using metric units of distance.
- be clear on the specific wording required when giving geometric reasoning

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GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

This paper provided good coverage across the specification and allowed students the opportunity to demonstrate their ability across the grades. Plenty of success was seen across the early part of the paper as students showed confidence picking up marks in the first half of the paper.

Challenges arose when questions contained a context and with it large amounts of text; extracting the key pieces of information and applying it using the correct mathematical processes are an area for improvement. Good amounts of working out were seen which certainly helped students, especially those which had arithmetic errors as part of their solution.

Question 21 onwards proved challenging for this cohort with very few students gaining full marks and the mode score being 0 marks on almost all questions. Nevertheless, the majority of questions were at least attempted in a bid to gain some credit.

For those questions requiring a written conclusion, most responses did have some sort of decision showing that students are well-accustomed to this sort of demand in a question.

Areas of the specification that need to be improved upon are highlighted in the list at the end of this report.

REPORT ON INDIVIDUAL QUESTONS

Question 1

A good number of students were able to give a correct answer of 6 but there were a significant number who did not and a wide variety of incorrect answers were given. The most common incorrect answers were 4 (from finding the median) and 5 (from finding the mean).

Question 2

This question was answered well with the majority of students able to give a correct answer of 31. Of those that didn't gain B1, 209 was the most common incorrect answer from adding instead of subtracting; 41 was also seen when students were unable to deal with the tens correctly.

Question 3

This simplifying question saw mixed results. The majority of students were able to give a correct answer of $12a$ but there were a variety of incorrect answers seen. Students should note that this

type of simplifying question requires no multiplication signs in the answer; $12 \times a$ and $3 \times 4a$ were often seen and gained no marks.

Question 4

Measuring angles is an area of the specification that needs attention. Although some students did gain a correct answer in range, with 40 most commonly seen, there were a whole range of incorrect answers given such as 35, 50 and 140.

Question 5

The majority of this cohort were able to gain B1 for a correct answer of 60. Of those that didn't, 50 and 150 were the most common incorrect answers seen.

Question 6

The majority of students gained 3 marks for an answer of 2300 on this question. For those that didn't it was an error in conversion which was often seen with 1 litre = 100 millilitres being the most common incorrect conversion used; these students could still gain 1 mark if they had a correct process to find the difference using one of the incorrect conversions stated in the mark scheme. Those students who converted 3 litres into millilitres were more successful than those who converted 700 ml into litres and errors in arithmetic were noted when doing 3000 – 700. A small number of students arrived at 2300 but spoiled their answer by then trying to convert to litres; this was still allowed if the student gave an answer of 2.3 litres but 2.3 on its own lost the A mark and this was seen on occasions. Some students also missed that the question was about 3 litres and instead subtracted 700 from 1 litre (1000 ml) obtained 300 ml and gained no marks.

Question 7

Part (a) was answered very well with the majority gaining B1 for an answer of 15. Some students found the difference between 1 and 5 and added this to 3. Part (b) saw less success with more incorrect answers seen than in (a), the most common being 10 from dividing 20 by 2 instead of 4. There were still a good proportion of the cohort who gained B1 for an answer of 4.

Question 8

Part (a) saw mixed results. A good number of students were able to find the correct frequencies for 2 marks. Many gave the correct frequencies in the tally column and something incorrect such as frequency/24 as a fraction which gained 1 mark. Some also confused the definitions of tally and frequency and put the information in the wrong column. It was encouraging to see that a number of students were crossing out items in the list as they entered their tally marks in the frequency table and were using the correct bar notation for recording the tallies. Part (b) was answered well with many gaining B1 for a correct answer; those that didn't often gave a number

for their answer instead of the correct word. Part (c) saw the full range of marks awarded with most students gaining full marks. Of those that didn't, the most common error was an incorrect linear scale, although these students could still gain 2 marks for labelling bars and correct height bars for their scales and many did. Students often struggled to correctly scale the vertical axis, sometimes writing the numbers between the squares instead of on the gridline or using multiples of 3 or 5 which often led to errors.

Question 9

For part (i) and (ii) the majority of students answered the questions correctly to gain 2 marks. Of those that didn't, giving the answer in an incorrect notation, such as ratio, was often the issue; students should be reminded that correct notation for probabilities are fractions, decimals or percentages. Some students gave an answer of $\frac{8}{22}$ for (ii), e.g. the probability for 'pink' instead of 'not pink'. In (iii) the majority of students gained B1 for a correct answer with 0 and $\frac{0}{22}$ given in equal measure. Incorrect answers generally involved incorrect notation such as 0:22 or worded answers, e.g. impossible.

Question 10

It was pleasing to see the majority of students gain 3 marks on this question. The most common process seen was to divide 60 by 20 and then multiply 250 by 3 to arrive at 750. The majority of students who reached this point also gave a positive decision to gain the full 3 marks. Some students used a 'build-down' process starting at 900 and subtracting 250 three times to deduce there would be 150 grams left. Some students attempted to find the amount needed for one cookie and go from there but this process often led to arithmetic errors. Common incorrect processes often revolved around arithmetic errors and a small number of students reached an accurate figure to compare but gave an incorrect or no decision. Some students worked with the other ingredients too but this was ignored as long as it did not contradict their final answer. A number of students believed doubling and then doubling again went from 20 to 60 rather than 80 and therefore gained no credit.

Question 11

Less than half of students in this cohort were able to gain 2 marks for a correct enlargement. Of those that didn't, the main error was in the height of the triangle and the positioning of the top vertex; most were able to gain B1 for a base of 6 cm. Some students misread the scale factor and enlarged the shape by a different scale factor – usually 2 – if done correctly B1 could still be gained.

Question 12

Part (a)(i) was answered well with most students able to gain 2 marks for an answer of 26. Of those that didn't, it was common to see incorrect algebraic expressions such as $6g + 20h$ and 23 + 45 was often seen. Part (a)(ii) saw less success with many students unable to make any progress with the substitution. Many were unsure as to which letters should be substituted for which values and substituting g for 38 was often seen. For those that did manage to show a correct substitution, some were able to rearrange correctly to reach an answer of 13. One commonly seen incorrect answer was $g = 26$. Students should be advised to write the correct answer on the answer, on occasions 13 could be seen embedded in a calculation but the wrong answer given on the answer line, leading to 0 marks. Part (b) saw mixed results as less than half of students in this cohort gained 2 marks. Of those that didn't, many gained 1 mark, usually in one of two ways; successfully working out 3×-3 as -9 but being unable to accurately subtract 2 or for a full substitution; common incorrect answers included -7, 7 and 11. Some students wrote notes saying 2 negatives make a positive, leading to the misconception that the negative for the 9 and the subtraction sign meant the two values needed to be added, leading to an answer of 11.

Question 13

This question saw the full range of marks awarded. Some students were able to work through the process to reach an answer of 23p or £0.23. Of those that didn't, it was common to see 2 or 3 marks awarded, in particular for students who reached 160 or 460 but could go no further. Those that earned 3 marks gave a complete process with arithmetic errors in the process. It is encouraging to see that more students are fully demonstrating their method enabling them to gain marks despite their final answer being incorrect. Centres should continue to encourage their students to set out their working in a logical order so that they can access Method and Process marks. Some students dealt with the information and started the process incorrectly such as $100 \div 3$ or started correctly e.g. $100 \div 5$ but went wrong after that such as 20 + 8 and an answer of 28p. Some students incorrectly divided £3 by 5 following their process of dividing 100 by 5, resulting in an answer of 60p or 68p (after adding 8p) whereas others mixed up units within their working, e.g. 300/100 = 3g instead of 3p.

Question 14

This question saw the full range of marks awarded. Of those students who managed to plot the correct 5 points it was usual to see this accompanied by a straight line through the points. Some students gained 2 marks, usually for a line segment through 3 correct points; students should be able to recognise that an equation of the form $y = mx + c$ produces a straight line and therefore if one point is not in line with the others it will likely be incorrect. Some students gained 1 mark for producing 2 correct points either plotted or stated in the workspace but there were difficulties in calculating y when x was negative. More than half of the cohort gained 0 marks so this is an area of the specification that needs to be worked on.

Question 15

This question saw the full range of marks awarded. The majority of the cohort made a good start with a process to find 25% of 12,000. It was common to see students using the build-up method to work out percentages of amounts but this alone could not be credited with method or process marks if arithmetic errors were made and the process is not complete e.g. all steps seen such as 10% = 12,000 ÷ 10 = 1,200. Many then picked up the 2nd process mark for subtracting the deposit from 12,000 and also the 3rd for a complete process. It was common to see the accuracy mark not gained as students were unable to carry out the arithmetic for the division; 405 and 45 were commonly seen incorrect answers. Some students were not able to gain the first P mark but were able to gain the second and third P mark for a correct process using their deposit value and this was often seen. 12,000 was often misread as 1,200.

Question 16

Around two thirds of this cohort were able to gain 2 marks by reaching a value to show that Shah had passed the exam, usually 42 or 75(%). Some students had a correct method but could not carry it out accurately. Others were not able to gain any marks as they set up a fraction such as $\frac{45}{60}$ but were not able to go any further. Some students reached 42 or 75 but failed to interpret the results correctly, often saying that Shah did not pass the exam.

Question 17

The majority of students were able to gain at least 1 mark for correctly inverting the second fraction and multiplying. It was common to see the second mark gained too, usually for reaching $\frac{18}{5}$. Students who attempted to find a common denominator, e.g. $\frac{18}{30} \div \frac{5}{30}$ often made no further progress. The final step proved to be the most challenging for this cohort but some were able to successfully convert to a mixed number. Students should read the demand of the question carefully as 3.6 given as an answer was seen.

Question 18

The majority of students opted to use column multiplication for this arithmetic question. Some students managed correct place value in their structure and a good number of those managed to reach the digits 1512 to gain the first accuracy mark and place the decimal point correctly to the gain the full 3 marks. Common errors seen were incorrect place value in the columns, as well as incorrect arithmetic when adding the columns, usually arriving at the digits 378 or in trying to break down the components but only using 6 × 2 and 0.3 × 0.4, giving an answer of 13.2. Some students reached 1512 but were unable to place the decimal point in the correct place; centres need to continue to encourage students to use approximation to decide on a sensible place for their decimal point.

Question 19

It was rare to see a correct answer in (a)(i) with incorrect answers of 0 and 5 seen often. (a)(ii) also saw little success with the majority of students gaining B0; common incorrect answers included 0.05, −10 and −25. Part (b) saw mixed results, some students were able to make a correct first step, usually adding the powers for the numerator to reach 2^9. From there students either went onto gain 2 marks for a correct answer or incorrectly simplified, with $2^9 \div 2^3 = 2^3$ most commonly seen. A good proportion of the cohort gained no marks, making an incorrect first step such as $2^5 \times 2^4 = 4^9$ or $2^5 \times 2^4 = 2^{20}$. Some students also evaluated the terms as ordinary numbers and worked from there; if 64 was reached this gained M1 and was seen regularly.

Question 20

Part (a) saw most students make a good attempt at a factor tree. A good number of students were able to complete their factor tree accurately and also write their prime factors as a product. The factor tree was attempted by most students and well set out. There was a good understanding of the need for prime factors and very few included 1. Of those that did not gain 2 marks, common errors included incorrectly considering 39 as a prime number and arithmetic errors when considering the next pair of prime factors. For part (b) it was more common to see 1 mark gained rather than 2. Students were able to produce either the prime factors of 130, at least 4 factors of 156 or 130 or a common factor of 156 and 130. Of those students who gained no marks, finding the lowest common multiple was the most commonly seen incorrect method.

Question 21

Part (a) saw the full range of marks awarded. Some students completed a fully correct process to reach an answer of 3.5 or equivalent. Of those that didn't, some reached as far as $14 \div 4$ but could not follow the process through with 3.2 quite often seen as the result of the division; students and centres should note that $\frac{14}{4}$ gained full marks. Some students were able to find the total length of the 5 sticks but made no further progress. There were also a good number who did not manage to make a correct first step and gained 0 marks; a common error was to calculate 4×7 or 4×4.2 rather than 5×4.2. Part (b) saw little success as most students gained no marks, with common incorrect responses centring around the mean increasing or the length of the other 4 sticks being reduced.

Question 22

It was rare to see a fully correct construction and 90° angle at *P* on this question. Almost all students on this paper did not know what arcs were required. Many students did however gain 1 mark for drawing a 90° angle at *P* without the correct construction lines.

Question 23

Very few students were able to gain full marks on this question. A small number made a positive start and gained one of the first two P marks, the equations most commonly seen were $x = 2y$, $2x + y = 180$ and $y + w = 180$. Division by 3, rather than 5, of the 180° in the triangle was commonly seen. Most students understood the correct angle facts for angles in a triangle / on a straight line. Many students ignored the fact the triangle was isosceles and calculated the angles as if it was an equilateral triangle, giving 60° angles which led to $180 - 60 = 120$ as the incorrect answer. Many students attempted to assign values to x and y, these values were usually incorrect but if the correct values were seen this usually led to a correct value for w as well.

Question 24

This was another challenging multi-step question for this cohort; the majority gained 0 marks. Some were able to make a correct start and set up an equation in x, although some failed to include the x from shelf **A**. Progress from there required a correct process to solve their equation and substitute the value for x into one of the expressions for shelves **B** or **C**, any students that did this successfully often gained the 3rd P mark as well for 7500 ÷ "25". It was rare to see any students get as far as the 4th P mark but those that did usually went on to gain full marks assuming their arithmetic had been correct. There were many completely incorrect solutions seen such as expanding $(3x + 1)(2x - 5)$ or setting $3x + 1$ equal to 7500 and going from there.

Question 25

Those that knew the density, mass, volume formula generally scored 2 marks. Of those that did not gain 2 marks, most scored 0 for incorrect use of mass and volume, with the most common error being to multiply 27 and 10 instead of divide. Other incorrect methods involved trying a volume unit conversion, confusing units^3 with 10^3 and dividing 27 by 1000, and being unable to choose between m/v and $m \times v$ and stating both.

Question 26

It was common to see students gain the first method mark for rounding one of the figures appropriately, 6 or 8 on the numerator being seen most often. The majority then struggled with the next step which was to carry out an accurate calculation. Some were able to reach the digits 16, from attempting 48 ÷ 0.3 but resulting in incorrect place value. Some students attempted to work out the accurate calculation and then round the answer, gaining no marks. A few students were able to deal with the decimal value of 0.3 in the denominator by multiplying both the top and bottom of their fraction by 10. This is a useful skill for centres to continue teaching their students but in general dividing by decimals is a skill that needs more practice. Some students rounded 0.26 down to 0 which led to 48 ÷ 0 and were confused with what to do with the calculation.

Question 27

For part (a) there were many good attempts to expand the brackets but these attempts rarely resulted in credit being awarded. Common errors included $6x$ or $5x$ instead of $6x^2$ and incorrect signs being used. Those students using the grid method to expand the quadratic were usually successful at gaining at least 1 mark. In part (b) a small number of students were able to give a correct factorisation. Some students who gained B0 were able to give a pair of brackets with the product of the constants being -16, such as $(x + 2)(x - 8)$.

Summary

Based on the performance on this paper, students/centres should work on:

- measuring angles accurately.
- improving numeracy skills, including division skills for integers and decimals, multiplication skills for decimals.
- the interpretation of problems involving ratio.
- the formation of algebraic equations and solving them along with subsequent substitution to apply to problems in context.
- drawing a straight line graph by correctly calculating a table of values.
- using equilateral, isosceles and right-angled triangles to solve angle questions.
- encouraging students to show a full method for percentage calculation, noting that before method marks can be awarded a full explanation of each step has to be shown. If the answer is just stated then process marks will be lost if there are any arithmetic errors.
- encouraging students to set out their working using logical steps.
- encouraging students to read the question carefully so that they understand what they are required to do and what format the answer should be stated in.
- encouraging students to use approximations to check if their answers are sensible.
- encouraging students to set their work out in an orderly fashion.
- improving the expertise and accuracy required in geometric constructions.

and

- in questions requiring finding the prime factors of a number, encourage a more structured approach of dividing the number by the smallest prime numbers successively until the result was a prime number.
- ensure students know common metric equivalents from the specification, from one unit to another.
- practise arithmetic processes involving negative numbers.

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