Chhetri Academy

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GCSE MATHS

Ratio, proportion and rates of change

Edexcel 1MA1 | Subtopic collection Topic 35

Speed, density, pressure and best buys

Foundation tier

Answers and examiner comments

133	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.

Original question 14

The full source mark scheme begins on page 196. Use the original paper code, tier and question number shown above.

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 ÷ 18 oe or 40 minutes seen A1 for correct graph SC: B2 for the correct straight line translated to left or right

5MB2F_01

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14	6.50 × 36 = 234 234 + 320 =554 36 ÷ 4 = 9 26.50 × 9 = 238.50 36 × 7.50 = 270 270 + 238.5 = 508.5 OR 320 ÷ 36 = 8.88(9) 8.88(9) + 6.50 = 15.38(9) 26.50 ÷4 = 6.62(3) 6.62(3) + 7.50 = 14.12(3) 14.12(3) × 36 = 508.50	£508.50	5	M1 for using 36 × correct entrance price, 36 × 7.50 or 36 × 6.50 M1 for using correct travel cost, 320 or "36÷4" × 26.50 (238.50) [condone 320 for concert and "36÷4" × 26.50 (238.50) for theme park] A1 for 554 cao A1 for 508.5 cao C1 ft for identifying, in words, the cheaper venue from 2 calculated amounts. One amount must for the theme park and one amount must be for the concert [Note: the 2 calculated amounts must each be of ticket plus travel costs] OR M1 for 320 ÷ 36 [= 8.88(9)] or 26.50 ÷4 = [6.62(3)] A1 for 15.38(9) or 14.12(3) M1 for "14.12(3)" × 36 A1 for 508.5 C1 ft for identifying, in words, "the cheaper cost per student gives the least total cost".

5MB1F_01

Original question 19

The full source mark scheme begins on page 212. Use the original paper code, tier and question number shown above.

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)

Question		Working	Answer	Mark	Notes
19		1,96 × 2.25 = 4.41 **OR** 4.23 ÷ 9 = 0.47 1.96 ÷ 4 = 0.49 **OR** 4.23 × 4 = 16.92 1.96 × 9 = 17.64 **OR** 4.23 ÷ 9 = 0.47 0.47 × 4 = 1.88 **OR** 1.96 ÷ 4 = 0.49 0.49 × 9 = 4.41 **OR** 9 ÷ 4.23 = 2.12 4 ÷ 1.96 = 2.04	Pack of 9	3	M2 for a fully correct method to enable a conclusion eg 1.96 × 2¼ **OR** M1 for 4.23 ÷ 9 or 423 ÷ 9 **or** 0.47 seen **or** 47 seen M1 for 1.96 ÷ 4 or 196 ÷ 4 or 0.49 seen or 49 seen **OR** M1 for 4.23 × 4 **or** 423 × 4 **or** 16.92 seen **or** 1692 seen M1 for 1.96 × 9 **or** 196 × 9 **or** 17.64 seen **or** 1764 seen **OR** M1 for 4.23 ÷ 9 **or** 423 ÷ 9 **or** 0.47 seen **or** 47 seen M1 for 0.47 × 4 **or** 47 × 4 **or** 1.88 seen **or** 188 seen **OR** M1 for 1.96 ÷ 4 **or** 196 ÷ 4 **or** 0.49 seen **or** 49 seen M1 for 0.49 × 9 **or** 49 × 9 **or** 4.41 seen **or** 441 seen **OR** M1 for 9 ÷ 4.23 **or** 2.12(...) seen **or** 2.13 seen M1 for 4 ÷ 1.96 **or** 2.04(...) seen A1 for Pack of 9 and fully correct calculations **NOTE:** B0 for an answer of 9 not supported by working.

Question		Working	Answer	Mark	Notes
23			Farm shop	4	M1 for 12.5 ÷ 2.5 (=5) M1 for '5'×1.83 or '5' × 183 A1 for (£)9.15 or 915(p) C1 for decision ft working shown dep on at least M1 **OR** M1 for 12.5 ÷ 2.5 (=5) M1 for 9 ÷ 5 or 900 ÷ '5' A1 for (£)1.8(0) or 180(p) C1 for decision ft working shown dep on at least M1 **OR** M1 for 9 ÷ 12.5 (=0.72) **or** 1.83 ÷ 2.5 (=0.732) M1 for 9 ÷ 12.5 (=0.72) **and** 1.83 ÷ 2.5 (=0.732) A1 for 72(p) and 73.(2)(p) or (£)0.72 and (£)0.73(2) C1 for decision ft working shown dep on at least M1 **OR** M1 for 12.5 ÷ 9 (= 1.388...) oe M1 for 2.5 ÷ 1.83 (= 1.366.)oe A1 for 1.38.... **and** 1.36... truncated or rounded to at least 3SF C1 for decision ft working shown dep on at least M1

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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

Original question 11

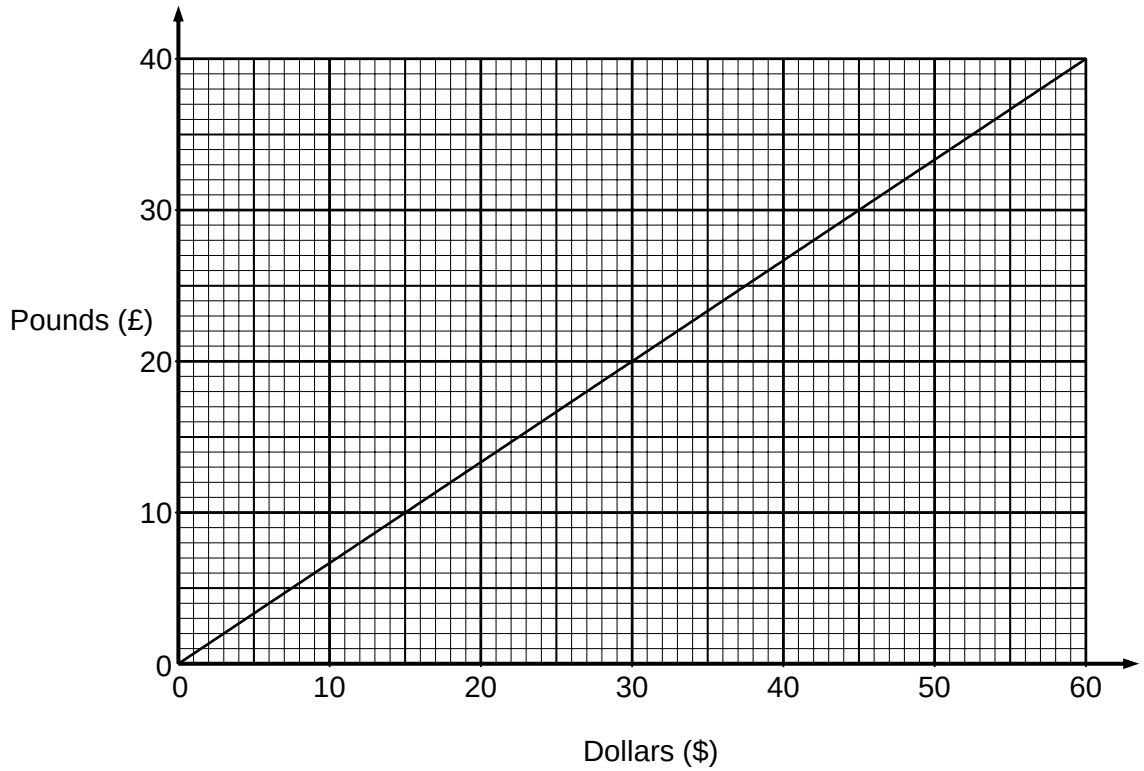
The full source mark scheme begins on page 225. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
12		**Using 1000g = 5 × 200g** 2.50 × 5 = 12.50 or 10.50 ÷ 5 = 2.10 10.50 < 12.50 or 2.10 < 2.50 **Alternative (using cost per n grams)** $250 \div (\frac{200}{n}) = 1.25n$ $1050 \div (\frac{1000}{n}) = 1.05n$ 1.05n < 1.25n **Alternative method (using 800 = 4 × 200g)** 2.50 × 4 = 10.00 10.50 – 10.00 = 0.50 0.50 < 2.50 **Alternative (using grams per 1p)** 200 ÷ 250 = 0.8g 1000 ÷ 1050 = 0.95...g 0.95 >0.8	1000g packet	3	**(Using 1000g = 5 × 200g)** M2 for £2.50 × 5 (= £12.50) or £10.50 ÷ 5 (= £2.10) oe (M1 for 1000 ÷ 200 = 5 or 5 × 200 = 1000 oe) C1 for 1000g packet and 2 correct comparable values **Alternative method (using cost per n grams)** M2 for $250 \div (\frac{200}{n})$ (= 1.25n) and $1050 \div (\frac{1000}{n})$ (= 1.05n) oe (M1 for 250 ÷ (200) (= 1.25) or 1050 ÷ (1000) (=1.05) oe) C1 for 1000g packet and 2 correct comparable values **Alternative method (using 800 = 4 × 200g)** M1 for £2.50 × 4 (=£10) M1 for identifying the extra 200g costs 50p C1 for 1000g packet and 2 comparable values £2.50 and 50p **Alternative method (using grams per 1p)** M2 for 200 ÷ 250 (= 0.8g) and 1000 ÷ 1050 (= 0.95...g) oe (M1 for 200 ÷ 250 (= 0.8g) or 1000 ÷ 1050 (= 0.95...g)oe) C1 for 1000g packet and 2 correct comparable values (Throughout, candidates may work in £ or pence)

5MB2F_01

Question		Working	Answer	Mark	Notes
21		1.89÷2 (=0.945) 4.30÷5 (=0.86) 8.46÷9 (=0.94) OR 2÷1.89 (=1.058..) 5÷4.30 (=1.162..) 9÷8.46 (=1.063…)	5kg box	**4**	M2 for all of 1.89÷2 (=0.945), 4.30÷5 (=0.86) and 8.46÷9 (=0.94) (M1 for a method to compare at least two values) A1 for 0.945/0.94/0.95 and 0.86 and 0.94 or 94/95/94.5 and 86 and 94 C1 (dep M1) for a comparison of their 3 values leading to a correct deduction. OR M2 for all of 2÷1.89 (=1.058..), 5÷4.30 (=1.162..) , 9÷8.46 (=1.063…), allow values rounded or truncated to 3 dp (M1 a method to compare at least two values) A1 for 1.058...and 1.162... and 1.063.. oe C1 (dep M1) for a comparison of their 3 values leading to a correct deduction

Q11(a)



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]

19		180÷30 = 6 9 + 6 + 0.5+0.5 = 16	16:00 or 4pm	3	M1 for 180÷30 (= 6) or 30 + 30 +…to a total of between 150 and 210 exclusive M1 for 9 + '6' + 0.5 + 0.5 A1 for 16:00 or 4pm (accept 4 o'clock) OR M1 for 60 bricks used or 120 bricks left at 11 am M1 for 45 bricks used between 11 30 am and 1 pm or 75 bricks left at 1 pm A1 for 16:00 or 4pm (accept 4 o'clock) (SC B1 for 3 pm or 3 30pm if M0 scored) (SC B1 for 7 hours needed if M0 scored)

23		25 ÷ 50 = 0.5 h = 30 min 25 ÷ 60 = 0.416 h = 25 min	5	3	M1 for 25 ÷ 50 **or** $\frac{60}{50}\times 25$ **or** 30 (min) **or** 0.5(h) **or** 25 ÷ 60 **or** $\frac{60}{60}\times 25$ **or** 25 (min) **or** 0.41(6)(h) M1(dep) '0.5' –'0.41(6)'**or** '30' – '25' A1 cao OR M1 for 60 ÷ 25 (= 2.4) and 60 ÷ "2.4" **or** 50 ÷ 25 (= 2) and 60 ÷ "2" M1(dep) for '30' – '25' A1 cao

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Original question 19

The full source mark scheme begins on page 239. Use the original paper code, tier and question number shown above.

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

Original question 5

The full source mark scheme begins on page 251. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
8		24 + 24 + 15 = 63 63 – 60	3	4	M2 for 24 + 24 + 15 or 63 (M1 for 24 + 24 or 24 + 15) M1 (dep on at least M1) for “63” – 60 or 60 – “63” A1 **SC** B2 for £18 (using 2 adults and 2 children) or for £4 (using £16 for child ticket)

Question		Working	Answer	Mark	Notes
10		$(1\times18+12+2\times18)$ + $(10+15+1\times18+5)$ = 66 + 48 = 114 OR 12 + 10 + 15 + 5 = 42 1 + 2 + 1 = 4 4 × 18 = 72 42 + 72	Yes they have raised enough money	5	M1 for 1×18 + 12 + 2×18 (=66) or Jamie's form completed with correct 18 and 36 and a final total. M1 for 10 + 15 + 1×18 + 5 (=48) or Lily's form completed with correct 18 and a final total. M1 "66" + "48" (dep on M1) A1 for 114 C1 (dep on M1) for clear comparison and conclusion using their answer for the total raised OR M1 for 12 + 10 + 15 + 5 (=42) seen separately from any other total M1 for (1 + 2 + 1) × 18 or 72 M1 for "42" + "72" (dep on 2nd M1) A1 for 114 C1 (dep on M1) for clear comparison and conclusion using their answer for the total raised.

Original question 15

The full source mark scheme begins on page 251. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
13	(a)		32	2	M1 for $4 \times 5 + 12$ 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 $12 + 7 \times 4$ 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

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

5MB2F_01

Original question 11

The full source mark scheme begins on page 268. Use the original paper code, tier and question number shown above.

Original question 24

The full source mark scheme begins on page 268. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
19	(a)		40	3	M1 for 120 × 100 (=12 000) or 20 × 15 (=300) M1 (dep) for '12 000' ÷ '300' A1 cao OR M1 for 120 ÷ 15 (= 8) or 100 ÷ 20 (= 5) M1 (dep) for '8' × '5' A1 cao OR M1 for 120 ÷ 20 (=6) or 100 ÷ 15 (=6.66…) M1 (dep) for '6'×'6.66…' (=40) or '6'×'6' (=36) or '6'×'7' (=42) A1 cao
	(b)		10.40	2	M1 for $\frac{20}{100}$ × 52 oe A1 for 10.4(0) [SC B1 for 62.4(0) or 41.6(0)]

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*20		**(Method 1)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) Angle *ABC* = 180 – 70 – 45 (=65) (sum of angles in a triangle = 180 (*x* =) 180 – 65 (=115) (sum of angles on a straight line = 180) OR **(Method 2)** Angle *ACB* = 180 – 135 (= 45) (sum of angles on a straight line = 180) (*x* =) 70 + 45 (=115) (exterior angle = sum of interior opposite angles) OR **(Method 3)** Angle DAB = 180 – 70 = 110 (sum of angles on a straight line = 180) (*x* =) 360 – 135 – 110 (sum of exterior angles of a polygon = 360)	*x* = 115	5	M1 for correct method to find angle *DAB* or angle *ACB* or angle *ABC* (may be implied by correct angle marked in diagram) M1 for complete correct method to find *x* A1 for *x* = 115 C2 (dep on M1) for fully correct reasons for chosen method no extras (C1 (dep on M1) for one correct reason for chosen method) [NB *x* = 115 must be stated explicitly, 115 only scores A0]

PAPER: 1MA0_2F

3	(a)		65	1	B1 accept 64 to 66
	(b)		1.7	2	M1 for 3.4 ÷ 2 A1 cao

8			4.20	4	B1 for using 7.55, 5.65 and 6.05 M1 for adding 2 adult identical price tickets, and 2 child tickets (=26.8(0)) M1(dep on M1) for “26.80” – 22.60 or “26.80” – 19.00 A1 4.20 or 4.20p

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

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

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

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

PAPER: 1MA0_1F

Original question 15

The full source mark scheme begins on page 288. Use the original paper code, tier and question number shown above.

Original question 19

The full source mark scheme begins on page 288. Use the original paper code, tier and question number shown above.

Original question 28

The full source mark scheme begins on page 288. Use the original paper code, tier and question number shown above.

8	(a)		320	2	M1 for 80×4 A1 cao
	(b)		65	2	M1 for $130 \div 2$ A1 cao

PAPER: 5MB3F_01

Original question 26

The full source mark scheme begins on page 305. Use the original paper code, tier and question number shown above.

9			4.80	3	M1 for 3.50 × 12 (= 42) M1 for "42" − 37.20 A1 for 4.8(0) **OR** M1 for 37.20 ÷ 12 (= 3.10) M1 for (3.50 − "3.10") × 12 A1 for 4.8(0) **Or** M1 for 37.20 ÷ 12 (= 3.10) M1 for 3.50 − "3.10" A1 for 0.4(0) or 40p

PAPER: 1MA0_2F

20			237 600	4	M1 for one multiplication involving two numbers from (1500 or 8 or 60) **or** 90 000 or 480 or 12 000 given M1 for 1500 × 8 × 60 (= 720 000) M1 for multiplying their number of cans by 330 **and** dividing by 1000 A1 cao **Note** these operations can be applied in any order **SC** B2 if M0 scored for digits 2376

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
*21			$\frac{2}{3}$	3	M1 for attempting to write at least two fractions expressed with a common denominator with at least one of the two fractions correct A1 for three correct fractions with suitable common denominator C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for writing at least two of the fractions as decimals ie $\frac{2}{3}$ as 0.66(…) or 66(.6…)%, $\frac{7}{8}$ as 0.87(5) or 87.(5)%, $\frac{3}{4}$ as 0.75 or 75% A1 for three correct decimals or percentages C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for finding two fractions of the same number e.g. $\frac{2}{3}$ of 48 or $\frac{7}{8}$ of 48 (may be implied by shading a fraction of a rectangle divided into e.g. 48 parts) A1 for three correct values or three correct diagrams with shading C1 (dep M1) for correct conclusion from comparison of their three **OR** M1 for attempting to find the difference between $\frac{3}{4}$ and $\frac{2}{3}$ **and** between $\frac{3}{4}$ and $\frac{7}{8}$ at least one pair of fractions expressed with a suitable common denominator and at least one of the two fractions correct A1 for $\frac{1}{12}$ and $\frac{1}{8}$ or 0.08(333...) and 0.12(5) C1 (dep M1) for correct conclusion from comparison of the 2 differences.

PAPER: 1MA0_2F

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
22			Graph completed	2	B1 for line from (2.5, 45) to (3.5, 45) B1 ft line of correct gradient to axis (after 1½ hour)

Original question 8

The full source mark scheme begins on page 324. Use the original paper code, tier and question number shown above.

13	(a)		31.25	2	M1 for complete method eg 125 ÷ 4 or 25 + 12.5 ÷ 2 A1 cao
	*(b)		France with comparison	3	M1 for method to convert €100 to pounds eg 20 × 4 A1 for (£)80 C1 (dep M1) for correct comparison with correct units OR M1 for method to convert £90 to Euros eg (£90=)125 − 12.5 (=112.5) A1 for (€)112.5(0) C1 (dep M1) for correct comparison with correct units

Paper: 5MB3F_01

Original question 21

The full source mark scheme begins on page 337. Use the original paper code, tier and question number shown above.

Original question 13

The full source mark scheme begins on page 351. Use the original paper code, tier and question number shown above.

Original question 19

The full source mark scheme begins on page 364. Use the original paper code, tier and question number shown above.

Original question 8

The full source mark scheme begins on page 380. Use the original paper code, tier and question number shown above.

Original question 18

The full source mark scheme begins on page 380. Use the original paper code, tier and question number shown above.

4	(a)		Gulf	1	B1 cao
	(b)		Avris	1	B1 cao
	(c)		19 200	1	B1 cao

PAPER: 1MA0_1F

Original question 16

The full source mark scheme begins on page 396. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
16		1.50	4	M1 for 11.4 ÷ 3 (=3.8) M1 for 0.53 × 10 (=5.3) M1 for "5.3" – "3.8" A1 for 1.5(0) cao OR M1 for 11.4 ÷ 30 (=0.38) M1 for 0.53 – "0.38" (=0.15) oe M1 for "0.15" ×100 oe A1 for 1.5(0) cao OR M1 for 0.53 × 10 × 3 (=15.90) M1 for "15.90" − 11.40 (=4.50) M1 for "4.50" ÷ 3 A1 for 1.5(0) cao Accept consistent work in £ or pence, 100g or 1kg units

1MA0 1F November 2015

Question		Working	Answer	Mark	Notes
8	(a)		(£) 5.20	3	M1 for 8 × 0.6 (=4.8) or 8 × 60 (=480) M1 for 10 – "4.8" (=5.2) or 1000 – "480" (=520) A1 cao SC B2 for (£)8.87
	(b)*		Correct comparison	3	M1 for 10 × 0.85 (=8.5) or 5 × 1.13 (=5.65) A1 for 8.5 and 5.65 oe C1 (dep on M1) for correct comparison **OR** M1 for 10 × 85 (=850) or 5 × 113 (=565) A1 for 850 and 565 oe C1 (dep on M1) for correct comparison

Original question 27

The full source mark scheme begins on page 416. Use the original paper code, tier and question number shown above.

17			50	2	M1 for 200 ÷ 4 A1 cao

5MB2F_01 November 2015

Original question 22

The full source mark scheme begins on page 433. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_2F

Question	Working	Answer	Mark	Notes
4	30×8p + 40×4p = 400p 30×3p + 40×2p = 170p 400 – 170 = 230 OR (8 – 3) × 30 = 150p (4 – 2) × 40 = 80p 150 + 80 = 230	2.30	3	M1 for a complete method to find the cost for one company M1 for a complete method to find the cost for both companies and finding the difference A1 cao OR M1 for a complete method to find the differences in cost for calls or texts M1 for a complete method to find the amount saved and finding the sum A1 cao **SC:** B2 for an answer with digits 23

Original question 22

The full source mark scheme begins on page 449. Use the original paper code, tier and question number shown above.

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
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 ÷ $\frac{50}{60}$ (= 24 mph) M1 (dep) for stating speed as 24 mph C1 for yes with supporting calculations showing speed as 24 mph

Original question 24

The full source mark scheme begins on page 471. Use the original paper code, tier and question number shown above.

Original question 10

The full source mark scheme begins on page 487. Use the original paper code, tier and question number shown above.

Original question 18

The full source mark scheme begins on page 487. Use the original paper code, tier and question number shown above.

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

Original question 7

The full source mark scheme begins on page 499. Use the original paper code, tier and question number shown above.

Original question 19

The full source mark scheme begins on page 499. Use the original paper code, tier and question number shown above.

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)

9		126	P1	for working with time,eg 10 – 8(=2) **or** 12 × 8(=96) **or** 12 × 10(=120)
			P1	for working with overtime, eg 12 ÷ 4(=3) **or** 1.25 × "2" (=2.5) **or** 0.25 × "2" (=0.5) **or** 1.25 × 12(=15)
			P1	for a complete process, eg (10 – 8) × overtime rate + 12 × 8 **or** 12 × 10 + "0.5" × 12
			A1	cao

Original question 20

The full source mark scheme begins on page 516. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
20		1.01	P1	fruit syrup 15 × 1.4 (= 21) or water 280 × 0.99 (= 277.2) or apple juice 25 × 1.05 (= 26.25)
			P1	(dep P1) for complete process to find the total mass e.g. "277.2" + "26.25" + "21" (= 324.45) or a weighted density eg 15 × 1.4 ÷ 320 (= 0.065625) or 280 × 0.99 ÷ 320 (= 0.86625) or 25 × 1.05 ÷ 320 (= 0.08203125)
			P1	(dep P2) for complete process to find the density eg "324.45" ÷ 320 (=1.01..) or "0.065625" + "0.86625" + "0.08203125" (= 1.0139..)
			A1	1.01 to 1.014

Question	Working	Answer	Mark	Notes
13		Shown	M1	for method started to find comparable amounts, eg 17 × 46 (=782) or 17 × 0.46 (=7.82) or 17 × 35 (=595) or 266 ÷ 35 (=7.6) or 26600 ÷ 35 (=760)
			M1	for complete method to find comparable figures eg 17 × 46 (=782) or 17 × 0.46 (=7.82) AND 266 ÷ 35 (=7.6) or 26600 ÷ 35 (=760) eg 17 × 46 × 35 (=27370) or 17 × 0.46 × 35 (=273.7)
			C1	Shows correct comparable figures eg 7.82 and 7.6(0), 782 and 760 OR 273.7(0)

Question	Working	Answer	Mark	Notes
15		988	P1	for a process to find the amount of oil bought in November, eg 750 ÷ 0.5 (=1500) or 75000 ÷ 50 (=1500)
			P1	for a process to find the amount of oil ordered in February, eg “1500” +1000 − 600 (= 1900)
			P1	(indep) for a process to calculate a 4% increase of their amount of oil, eg or “1900” × 1.04 (=1976) or increase in price eg 1.04 × 50 (=52 or 0.52) or 1.04 × 750 (=780)
			P1	for a complete process to find the total cost of the calculated amount of oil eg “52” × “1900” or “780” × “1900” ÷ “1500”
			A1	Cao

4	(a)	5.80 × 3 + 7.80 = 25.20	90p or £0.90	M1 M1 A1	for a correct first step from which a complete method could be developed, eg. 5.8(0) × 3 (= 17.4(0)) or 24.3(0) – 7.8(0) (= 16.5(0)) for complete method, eg. 7.8(0) + 5.8(0) × 3 − 24.3(0) (= 0.9(0)) for answer in correct notation with correct units, eg. 90p or £0.90 (accept £0.90p and £0.9) [SC: B1 for an answer of £2.90]
	(b)		8.27pm	M1 A1	for using 60 mins = 1 hour in the conversion of 102 minutes, eg. 1 h 42 mins or 1.42 or 1.7 or (60 + 42) mins or 102 − 60 or 102 ÷ 60 or for an answer of 8.27am or 08.27 for 8.27(pm) oe

Question	Working	Answer	Mark	Notes
11		Offer 1	P1	for a process to find the cost of a number of lessons in Offer 1, eg. 24 × (12 – 1) (= 264) or for a process to find 5% (or 95%) of an appropriate amount, eg. 24 × 0.05 (= 1.20) or 24 × 0.95 (= 22.80) in Offer 2
		(supported)	P1	for a complete process leading to values to be used for comparison, eg. 24 × (12 – 1) (= 264) and 24 × 0.95 × 12 (= 273.60)
			C1	Offer 1 and correct values, eg. (£)264 and (£)273.6(0) used for comparison

Question	Working	Answer	Mark	Notes
20		New York (supported)	P1	for changing between £ and $, eg 1.089×1.46 (= 1.58(9.)) or 2.83÷1.46 (= 1.93(8.)) or between litres and gallons, eg 1.089×3.785 (= 4.12(1.)) or 2.83÷3.785 (= 0.74(7.))
			P1	for a complete process to give values that can be used for comparison, eg "1.938..." ÷ 3.785 (= 0.51(2.)) **or** "1.589..."...× 3.785 (= 6.01(7.)) **or** 1.089 × 3.785 = (4.12(1.)) and 2.83 ÷ 1.46 (= 1.93(8.))
			C1	for New York and correct comparative values.

21		648	M2 [M1 A1	a complete method, eg 12.5 × 1000 ÷ 19.3 for using volume = mass/density, eg 12500 ÷ 19.3 (condone inconsistent units or incorrect conversions) may be implied by digits 647... or 648...] for answer in range 647 to 648

Question	Answer	Mark	Mark scheme	Additional guidance
22 (a)	Estimated value	P1	for using a rounded value in a correct process eg 3000 ÷ 15 **or** 15 × 8 **or** 20 × 8	Their rounded value must be used in a calculation Rounding may appear after a correct process eg 15.12 × 8 = 120.96 ≈ 100 followed by eg 3069.25 ÷ 100
		P1	for a full process to find the number of days eg “3000” ÷ “15” ÷ “10” (= 20) **or** “3000” ÷ “15” ÷ 8 (= 25)	Accept 3069.25 ÷ 15.12 ÷ 8 oe
		A1	for a correct answer following through their rounded values	
(b)	Explanation	C1	eg less days required **or** it doesn’t affect the answer because I would still round 16.27 down to 15 (or up to 20)	Refers to time taken

Paper: 1MA1/1F

9	(a)	62	M1 A1	for distance ÷ time eg 186 ÷ 3 **or** 186 ÷ (3× 60)(=1.03..) cao	May use hours or minutes at this point
	(b)	232	M1 A1	for speed × time eg 58 × 4 **or** 58 × 4 × 60 (=13920) cao	May use hours or minutes at this point

Paper: 1MA1/2F

Question		Answer	Mark	Mark scheme	Additional guidance
25		No (supported)	P1	For a process to calculate the initial or new pressure, eg (70 +10) ÷ (20+10) (=2.6 to 2.7) **or** 80 ÷ 30 (=2.6 to 2.7) **or** 70 ÷ 20 (=3.5)	Accept any value in the range 2.6 to 2.7 if unsupported by working
			P1	For a complete process to make a comparison eg. 0.8 × "3.5" (=2.8) **OR** $\frac{("3.5"-"2.6")}{"3.5"}$ ×100 (=22 to 26) **OR** "3.5" × 0.2 (=0.7) **and** 80 ÷ 30 (=2.6 to 2.7) **OR** $\frac{"2.6"}{"3.5"}$ (× 100) (=0.74 to 0.78 **or** 74 to 78)	
			A1	for a correct conclusion supported by accurate figures eg 2.8 **and** 2.6(6…) **OR** decrease is 24% (or 22% to 26%) **OR** 0.7 **and** 2.6 to 2.7 **and** 3.5 **OR** 0.7 **and** 0.9 **OR** 0.76 (or 0.74 to 0.78) **OR** 76% (or 74% to 78%)	Allow truncation or rounding of figures

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
10	Shows earnings	M1	for a method to start to work out earnings eg 11.2 × 8 (= 89.6) **or** 20 – 8 (= 12) **or** 8.4 × 12 (= 100.8)	Accept calculations in pence, or £ written in decimal form.
		M1	for a complete method eg 11.2 × 8 + 8.4 × (20 – 8) **or** "89.6" + "100.8" **or** 200 – "89.6" – "100.8" (= 9.6)	
		C1	Shows earnings eg 190.4(0) **or** 9.6(0) with fully correct arithmetic	Conclusion in figures; ignore written conclusion.

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
18	Jan's store (supported)	P1	process to reduce £5 by 20% (= £4) **or** increase 400 by 30% (= 520)	May work in pence throughout Accept any correct appropriate percentage process
		P1	process to reduce £5 by 20% (= £4) **and** increase 400 by 30% (= 520)	
		P1	(dep P2) process to find comparable values, eg 400 ÷ "4" **and** "520" ÷ 5	May use £/g or any other comparable values
		C1	'Jan's store' fully supported by correct comparative values, eg 100 (g/£) and 104 (g/£)	Do not award without correct comparable values and full working.

24	(a)	16 to 20	P1	for using time = $\frac{\text{distance}}{\text{speed}}$, eg $\frac{1}{200}$ or $\frac{1}{213}$ **or** for 1 hour = 60 × 60 (= 3600) seconds	
			P1	complete process, eg $\frac{1}{200} \times 60 \times 60$ oe or $\frac{1}{213} \times 60 \times 60$	Calculation could be done in stages.
			A1	for answer in range 16 to 20	
	(b)	decision with reason	C1	(dep on correct use of time = $\frac{\text{distance}}{\text{speed}}$) for reason related to their response to part(a), eg overestimate as speed rounded down	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
24 (a)	2 mins 48 secs	P1	for an appropriate first step eg 700 ÷ 475 (=1.47..) **or** 475 ÷ [time] (= 4.16.. m/s) **or** [time] ÷ 475 (= 0.24 s/m)	[time] what candidate indicates as time of first race Units are not needed and can be ignored if given
		P1	for a complete process to find the required time eg 700 ÷ 475 × [time] (=168) **or** 700 ÷ (475 ÷ [time]) (=168) **or** [time] ÷ 475 ×700 (=168)	Allow calculation in stages and appropriate rounding.
		A1	cao	
(b)	Statement	C1	eg takes less time **Acceptable examples** Quicker time Faster time Reduces my answer to part (a) **Not acceptable examples** It is an underestimate The amount of time could/may increase Laura goes faster	

Paper: 1MA1/3F

9	(a)	6	M1	for method to find distance, eg 4 × time difference **or** 30 mins = 2 miles	10.30 am – 9 am may be seen as 1.5(hr) or 1(hr) 30 (min) or 90 (min) or $\frac{3}{2}$(hr) or $1\frac{1}{2}$ (hr)
			A1	cao	
	(b)	12 35 pm	M1	for method to add time using consistent units eg 11 20 **or** 50 + 75 **or** 2 hours 5 mins	
			A1	12 35 pm or 12 35 (h)	Allow 12 35 but not 12 35 am

11	(a)	241.56	P1	for difference for 1 parcel eg 35.38 – 15.25 (= 20.13) **OR** for total cost for 12 parcels by either service eg 35.38 × 12 (= 424.56) **or** 15.25 × 12 (= 183)	
			P1	for a complete process eg "20.13" × 12 **or** "424.56" – "183"	
			A1	cao	
	(b)	Explanation	C1	for explanation **Acceptable examples** both figures rounded down (refers to both figures) 20 is less than 21 and 15 is less than 15.25 **Not acceptable examples** both figures rounded (up); rounded down either 20 is less than 21 or 15 is less than 15.25 (refers to just one figure) the cost is 320.25 (more than 300); multiplying with bigger numbers	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
22	79.76	P1	process to find number of gallons eg 560 ÷ 34.5 (=16.23…) OR finding the miles per litre eg 34.5 ÷ 4.55 (=7.582…)	For P marks allow use of truncated/rounded values
		P1	process to convert from gallons to litres eg "16.23" × 4.55 (=73.855….) OR to work out the cost per gallon eg 4.55 × 1.08 (=4.914) OR finding the number of litres eg 560 ÷ "7.582…." (=73.859…)	
		P1	(dep P2) for a complete process to work out the cost using the operations (560 ÷ 34.5) × 4.55 × 1.08 eg "73.855…" × 1.08 (=79.763…) or "4.914" × "16.23…" (=79.763…) or "73.859…" × 1.08 (=79.763....)	
		A1	for 79.69 to 79.79	To 2 dp but accept 79.7

16	(a)	45	B1	cao	
	(b)	50	M1	for an attempt to find the gradient eg “25” ÷ “0.5” ft their readings from the travel graph; use of speed-time formula eg 25 ÷ 30 (ignore units if shown)	could be shown in working or on the graph using any acceptable triangle; could be shown by multiples of 25, 0.5 or multiples of ft figures
			A1	cao	

27	(i)	Distance in the range 20 to 23	P1	for a process to draw a bearing of 070°, eg. a line drawn 70° from the North line at *P*	Accept a line of any length as long as the intention is clear.
	(ii)	Bearing in the range 317 to 330	P1	for a process to work out the distance *PQ*, eg. 12 × 1.5 (= 18)	
			P1	(dep previous P1) for the process to use the given scale eg. "18" ÷ 4 (= 4.5 cm)	Award P3 for Q shown in the correct place on the diagram. 4.5 scores 2 marks provided there is a link to 12 × 1.5 (= 18)
			A1	(dep P3) for distance in the range 20 to 23	Award no marks if no supportive processes
			A1	(dep P3) for bearing in the range 317 to 330	Award no marks if no supportive processes Award A0A0 if *Q* is not in the correct place

Paper: 1MA1/1F

14	40 litres (supported)	P1 P1 C1	for finding a cost linked to the correct volume for one offer eg 120 litres = 3 × 3.50 (= (£)10.5(0)) **or** 120 litres = (£)9 **OR** for finding cost per litre or litres per £ for one offer eg 3.50 ÷ 40 (= 0.0875) **or** 9 ÷ 120 (= 0.075) **or** 40 ÷ 3.50 (= 11.4…) **or** 120 ÷ 9 (= 13.3…) **OR** for working with bags in the ratio 2 : 1 for finding costs linked to the same volume for both offers eg 120 litres = 3 × 3.50 (= (£)10.5(0)) **and** 120 litres = (£)9 **OR** for finding cost per litre or litres per £ for both offers eg 3.50 ÷ 40 (= 0.0875) **and** 9 ÷ 120 (= 0.075) **or** 40 ÷ 3.50 (= 11.4…) **and** 120 ÷ 9 (= 13.3…) **OR** for a complete process to inform decision '40 litre bags' supported by correct comparable values	<table><tr><td>120 *l*</td><td>£10.50</td><td>£9</td></tr><tr><td>80 *l*</td><td>£7</td><td>£6</td></tr><tr><td>40 *l*</td><td>£3.50</td><td>£3</td></tr><tr><td>20 *l*</td><td>£1.75</td><td>£1.50</td></tr></table> Clear indication that the 40 litre bags are better value for money supported by correct values for comparison

27	50	B1	for finding the time difference, eg, 1hr 18 mins or 78 mins oe	Allow 1.18 for this mark 118 scores B0
		P1	for correct process to convert minutes to hours, eg 18 ÷ 60 (=0.3) **or** 78 ÷ 60 (=1.3) **or** for a correct process to convert speed in miles per minute to mph eg "0.833..." × 60	For a conversion of time or speed
		P1	for using speed = distance ÷ time eg, 65 ÷ [time] **or** 65 ÷ 78 (=0.833...)	[time] is what the candidate clearly indicates as time difference
		A1	cao SCB2 for 83(.333…) seen as the answer	

Answer 86 | Mark scheme

Paper: 1MA1/3F

27	450	M1 M1 A1	for 18 ÷ 3(=6) for substitution eg. $75 = \frac{F}{"6"}$ or 75 × "6" cao	Ignore units

24	2 hours 45 minutes	P1 P1 A1	for 30 ÷ 24 (= 1.25) or 12 ÷ 8 (= 1.5) for finding the sum of their two times eg “1.25” + “1.5” (= 2.75) or 165 (minutes) cao	May be written in hours and/or minutes or 3 h 15 min or 2 h 75 min

29	96	M1 M1 A1	for a complete process to find the volume eg $6 \times 4 \times 10 \div 2$ (= 120) for a complete process, eg $(6 \times 4 \times 10 \div 2) \times 0.8$ cao SC B1 for 192	

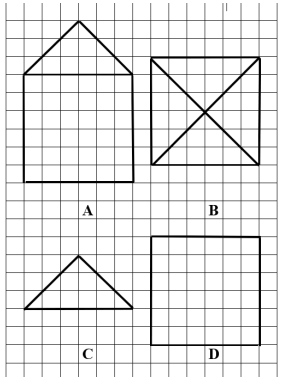
Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 3F

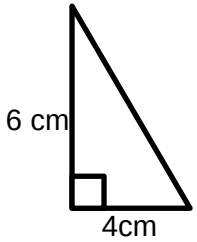
Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

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**
5		The wording "Write the following numbers…" removed and replaced by "Write the following seven numbers…".	Standard mark scheme
6		Wording added 'Look at the diagram for Question 6 in the Diagram Book. It is a graph which shows...'. Diagram enlarged; bars made wider. Axes labels moved above the vertical axis and to the left of the horizontal axis. An extra column added and the right axis labelled. Braille only: diagonal shading on the bars.	Standard mark scheme
7		Wording added 'Look at the diagram for Question 7 in the Diagram Book. It shows a shape.' Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
10		Wording added 'Look at the diagram for Question 10 in the Diagram Book. It is a graph which shows…'. Diagram enlarged; graph line made thicker. Right axis labelled. Small squares removed. Axis labels moved above the vertical axis and to the left of the horizontal axis.	Standard mark scheme
11		Wording added 'Look at the diagram for Question 11 in the Diagram Book'; 'Angle PQR = 130°, Angle QRS = 65°, Angle SPQ = 95°, Angle RST = y°' Angle labels moved outside angle arcs and angle arcs made smaller. Shape enlarged.	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
13		Wording added 'Look at the diagram for Question 13 in the Diagram Book. It shows a shape. Four sides of the shape are labelled 4 cm, 5 cm, 10 cm and 7 cm. All five marked angles are right angles'. Shape enlarged. Arrows removed. Braille only: Label shape ABCDEF. Wording added 'AB = 4cm, BC = 5cm, EF = 10cm, FA = 7cm.'	Standard mark scheme
14	(a)	The letter *x* changed to the letter *w*.	Standard mark scheme but note the change in letter
15		Wording added 'Look at the information for Question 15 in the Diagram Book'. Diagram enlarged to fit the text.	Standard mark scheme
17		Wording added 'Look at the diagram for Question 17 in the Diagram Book.' Braille: The wording 'of length 8 cm, 6 cm and 6 cm' removed and replaced by 'of length 9 cm, 7 cm and 7 cm' to make the question accessible.	M1 for drawing a side of length 6 cm (±5mm) A1 for correct triangle with two added sides each of length 6cm (±5mm) Braille: applies to 7 cm lengths.
18		Graph line moved to go through (15, 20), (30,40) and (45,60). Wording added 'Look at the diagram for Question 18 in the Diagram Book.' Wording 'This graph…' changed to 'It shows a graph that…' Diagram enlarged. Axis labels moved above the vertical axis and to the left of the horizontal axis. Right axis labelled. Open headed arrows. Small squares removed.	Standard mark scheme but for A1 allow answers in the range 245 to 275
19		Wording added 'Look at the information for Question 19 in the Diagram Book. It shows the four types…'. Left align the sandwiches.	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
22		Model provided for all candidates with a base. Wording added 'Look at the diagram for Question 22 in the Diagram Book. You may be provided with a model.' Wording 'Here is a solid…' changed to 'They show a solid…' Diagram enlarged. The wording 'On the centimetre grid, draw the plan of this solid' removed and replaced by 'Now look at the three shapes labelled A, B, C and D in the Diagram Book. Which shape represents the plan of the solid? One square length on the grid represents 1 cm on the solid'. Grid provided with the four different plans.  	B2 for shape B (B1 for shape D)
23	(b)	The letter *c* changed to *p*. The letter *d* changed to *q*.	Standard mark scheme but note the change in letters.
27		Wording added 'Look at the diagrams for Question 27 in the Diagram Book.' Diagrams enlarged. Spinner headings moved above the spinners. Spinners straightened, stick replaced with black dot. Wording added 'There are six spaces to fill.'	Standard mark scheme

PAPER: 1MA1/3F			
Question		**Modification**	**Mark scheme notes**
28	(a)	Wording added 'Look at the diagram for Question 28(a) in the Diagram Book. It shows the graphs of $5x - 9y = -46$ and $y = -2x$' Diagram enlarged and turned landscape. Label '$y = -2x$' moved to the other end of the graph line.	Standard mark scheme
28	(b)	Wording added 'Look at the diagram for Question 28(b) in the Diagram Book. It shows the graph of $y = x^2 - 4x + 2$.' Diagram enlarged. Grid cut at y=8. Small squares removed. Graph line made thicker.	Standard mark scheme but for answers in the ranges 0.5 to 0.7 and 3.3 to 3.5
29		Wording added 'Look at Diagram 1 and Diagram 2 for Question 29 in the Diagram Book. You may be provided with a model'. Wording 'The diagram shows…' changed to 'Diagram 1 shows…' Diagrams enlarged. g changed to grams. Wording added 'Diagram 2 shows one of the triangular faces.' Diagram 2 created as shown:  	Standard mark scheme

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	80	M1	for a complete method eg $\frac{20}{15} \times 60$ **or** 20×4 **or** $20 \div \frac{1}{4}$	
		A1	cao	
(b)	Travel graph	M1	for method to find distance travelled in last 20 minutes, eg $75 \times \frac{20}{60}$ (= 25)	Can be implied by a distance of 25km drawn on the graph
		C2	for a fully correct travel graph	
		(C1	for horizontal straight line from (10 15, 20) to (10 25, 20) **or** for a line of the correct length and gradient to indicate a speed of 75km/h eg straight line from (10 25, 20) to (10 45, 45))	

11	(a)	3 hrs 16 mins	P1	196 − 60 − 60 − 60 (=16) oe **or** 196 ÷ 60 (= 3.26.. or 3.27…) **or** states 3 hours in their answer (with an incorrect number of minutes or minutes left blank)	
			A1	3 hours 16 minutes	
	(b)	$\frac{x}{2}$	B1	$\frac{x}{2}$ oe	

Question	Answer	Mark	Mark scheme	Additional guidance
24	260	P1	conversion to common units of capacity eg 2.2 × 4.54 (= 9.988) **or** 8 ÷ 4.54 (= 1.76...) **OR** **for company A** 2400 ÷ 4.54 (= 528.63...) **OR** 2400 ÷ 8 (= 300) **OR** a rate per minute 8 ÷ [time for Company A] (= 4.8…) oe	[time for Company A] could be 1 min 40 sec or 1.66… or 1.6 or 1.40 etc as long as it is clear it relates to 1 min 40 sec Results of calculations may be truncated or rounded.
		P1	for a complete process to find the time for one water rate in minutes. eg in litres Company A 2400 ÷ "4.8.." (= 500) or "300" × [1 min 40 sec] (= 500) **or** Company B 2400 ÷ "9.988" (= 240.28...) **OR** eg in gallons Company A "528.63.." ÷ ("1.76. .." ÷ [1 min 40 sec]) (= 500) **or** Company B "528.63…" ÷ 2.2 (= 240.28…)	
		P1	for complete processes to find the times for both company A and company B in minutes. Company A eg in litres 2400 ÷ "4.8…" (= 500) or "300" × [1 min 40 sec] (= 500) or in gallons "528.63.." ÷ ("1.76. .." ÷ [1 min 40 sec]) (= 500) **AND** Company B eg in litres 2400 ÷ "9.988" (= 240.28...) or in gallons "528.63…" ÷ 2.2 (= 240.28…)	
		A1	for an answer in the range 259 to 260	If the answer is given within the range but then rounded incorrectly award full marks.

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	(0)8 45	P1	for 50 ÷ 40 (= 1.25) oe or (time =) (0)8 30 (after travelling for) 40 miles	
		P1	for a process to convert their time to minutes or hours and minutes, eg "1.25" × 60 (= 75 mins = 1 hr 15 mins) **or** for $\frac{10}{40} \times 60$ (= 15 mins)	May be seen as a build-up method and may state 1 hour 15 mins
		A1	for (0)8 45 oe	SC: B2 for answer of (0)8 55 (= 7.30 + 1.25)
(b)	Explanation	C1	**Acceptable examples** It will be earlier Time will be reduced He will get there quicker/faster He will arrive at a different time The journey will be shorter so he will arrive earlier **Not acceptable examples** He will arrive later The time will increase	Explanations must be unambiguous

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
29	3 : 2	P1	for a process to find either volume eg 3^3 (= 27) or 4^3 (= 64)	
		P1	for showing density **A** = 81 ÷ "27" (= 3) or density **B** = 128 ÷ "64" (= 2)	
		A1	for 3 : 2 oe	Ignore units quoted

26	600.74	M1 M1 A1	works out decrease for one year, eg 679 × 4 ÷ 100 (=27.16) oe **or** 679 × (100 – 4) ÷ 100 (= 651.84) oe for compound method, eg 679 × "0.96"^{t}, $t \geq 2$ **or** "651.84" × "0.96" (= 625.76..) or "651.84" × "0.04" (=26.07) **or** for answers in the range 600.71 to 600.74 exclusive accept 600.71 **or** 600.72 **or** 600.73 **or** 600.74	Implied by 679× 0.12 (=81.48) or 679 × 0.88 (=597.52) Values may be rounded or truncated If the correct answer is seen and the difference found award M1M1A0

Answer 95 | Mark scheme

Paper: 1MA1/2F

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
27	No (supported)	P1	for a conversion with litres and gallons, eg 18 ÷ 4.5 (= 4) or 8 × 4.5 (= 36)	See page at end of mark scheme
		P1	for a conversion with £ and euros, eg 27 × 0.85 (= 22.95) or 40.8 ÷ 0.85 (= 48)	
		P1	for finding the unit price, eg 27 ÷ 18 (= 1.5) **OR** finding proportionality for fuel eg ("36" ÷ 18) (= 2)	May compare cost per gallon or cost in euros May be seen in a calculation or given in a description
		C1	for No with comparative figures, eg No with 20.4 **and** 22.95 **or** No with 1.275 **and** 1.133..	Accept comparative figures rounded or truncated No is implied by eg Wales is cheaper

27	10	P1 P1 P1 A1	for a process to use distance = speed × time for either of the parts of Jessica's journey, eg. $6\times\frac{15}{60}$ (= 1.5) or $9\times\frac{40}{60}$ (= 6) or 6 × 15 (= 90) or 9 × 40 (= 360) for a process to add the 2 distances for Jessica, eg $6\times\frac{15}{60}+9\times\frac{40}{60}$ (= 7.5) or 6 × 15 + 9 × 40 (= 450) for complete process to find Amy's average speed, eg. "7.5" ÷ "0.75" oe or "450" ÷ 45 cao	Must be consistent units at this stage.

Paper: 1MA1/3F

29	108	M1 A1	for 30 × 60 × 60 (108000 metres per hour) **or** 30 ÷ 1000 (= 0.03 kilometres per second) **or** 60 × 60 ÷ 1000 (=3.6 scale factor) cao	

14	(a)	81	M1	for 54 × [time] eg 54 × $1\frac{1}{2}$ oe, **or** 54 + 54 ÷ 2 oe	[time] could be $1\frac{1}{2}$ oe or any other time that has been changed from $1\frac{1}{2}$, eg 90 (mins) or 1.30 or 130
			A1	cao	
	(b)	1.5	P1	for use of scale eg 6 × 25 000 (= 150 000) **or** for 25 000 ÷ 100 000 (= 0.25) or 25 000 ÷ 100 (= 250) or 25 000 ÷ 1000 (= 25)	
			P1	for "150 000" ÷ 100 000 (= 1.5) or "150 000" ÷ 100 (= 1500) or "150 000" ÷ 1000 (= 150) **or** for [0.25] × 6 (= 1.5)	[0.25] could be found by dividing 25 000 by 100 (= 250) or dividing 25 000 by 1000 (= 25)
			A1	for 1.5 oe	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
25	1250	P1	for process to use area of base in the formula, eg $\frac{10000}{2\times4}$	
		A1	cao	

7	49.01	P1	for process to work with the number of miles, eg 12845 – 12468 (= 377) **or** 12845 × 13 (= 166985) **or** 12468 × 13 (= 162084)	
		P1	for process to find the cost, eg "377" × 13 (= 4901) **or** "166985" – "162084" (= 4901)	
		B1	(indep) for converting from pence to pounds, eg "4901" ÷ 100 **or** 13 ÷ 100 **or** miles divided by 100 eg "377" ÷ 100 (= 3.77) or 12845 ÷ 100 (= 128.45) **and** 12468 ÷ 100 (= 124.68)	This mark can be awarded at any stage in the process
		A1	49 or 49.01	

13	4 pint with correct figures	P1	for a process to find the price for one deal, eg 6 pints on 1st deal, 75 × 2 (= 150) **or** 8 pints on 2nd deal, 128 × 1.5 (= 192) oe	
		P1	for a process to find the price for both deals, eg 6 pints on 1st deal, 75 × 2 (= 150) **and** 8 pints on 2nd deal, 128 × 1.5 (= 192) oe	
		P1	for a process to find the cost per pint for both deals, eg "150" ÷ 6 (= 25) **and** "192" ÷ 8 (= 24) **or** for prices for a consistent number of pints for both deals eg for 2 pints "1.5" ÷ 3 (=0.5) **and** "1.92" ÷ 4 (= 0.48) **or** a comparison using a unit price eg "150" ÷ 6 × 8 (= 200) **and** 128 × 1.5 (= 192) oe	Accept in mixed units of pence and pounds Might look at a price difference for a consistent number of pints
		C1	"4 pint" with two correct comparative costs calculated making full use of both offers	"4 pint" can be indicated in words or other indication

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
19 (a)	15	B1	cao	
(b)	4.6	B1	for an answer in the range 4.4 to 4.8	
(c)	12	M1	for a method to calculate speed eg distance ÷ time (could be implied from figures used) eg 4 ÷ 20 (= 0.2) oe, 4 ÷ 0.33(...) oe or 4 ÷ 1/3 oe	Accept readings from the graph as an indication at this stage
		A1	cao	

27	(a)	0.008	B1	for 0.008 or 8×10^{-3}	May be awarded at any stage
	(b)	50	M1	for conversion from km to m eg 180×1000 (= 180 000) **or** for conversion from hours to seconds eg $180 \div (60 \times 60)$ (= 0.05) **or** for conversion from km per hour to metres per second, eg $1000 \div (60 \times 60)$ (= 0.277...) (Accept $(60 \times 60) \div 1000$ (= 3.6))	
			M1	for a complete process eg $180 \times 1000 \div 3600$	
			A1	cao	

27	3	P1 P1 A1	for process to find area of base, eg 1200 ÷ 40 (= 30) for process to find pressure, eg 90 ÷ "30" cao	

16	98	M1 M1 A1	for method to use speed, distance and time, eg 56 × [time] or 56 × 105 (= 5880) **or** 56 ÷ 4 × 3 (= 42) **or** 56 ÷ 60 (= 0.933...) **OR** for method to convert decimal time, eg (60 + 45) ÷ 60 (= 1.75) or 45 ÷ 60 (= 0.75) for a complete method using decimal time, eg 56 × "1.75" **or** "5880" ÷ 60 **or** "0.933..." × 105 **or** 56 + "42" or 56 + "28" + "14" for 97.65 to 98.3	For this mark accept [time] written unconventionally eg as 1.45, 145, 175, 75

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)(i)	30	B1	cao	
(ii)	10	B1	cao	
(b)	Drawn	M1	for a line from (1330 , 35) to (1500 , 35) **or** a line to the *x* axis from a point on *y* = 35 to 1600 on the *x* axis	
		A1	fully correct graph	
(c)	35	B1	for 35 or ft their graph	ft must be 35 ÷ time duration for their line

14	1.3	M1	for working with boxes or bags eg 600 ÷ 120 (= 5) or 1000 ÷ 270 (= 3.7(037..)) 6 ÷ 120 (=0.05) or 10 ÷ 270 (= 0.037(037..))	Cost ÷ quantity For the M marks allow working in £ instead of p.
		M1	for working with bags and boxes where they are working to the same quantities of boxes and bags eg 600 ÷ 120 (= 5) **and** 1000 ÷ 270 (= 3.7(037..)) 6 ÷ 120 (=0.05) **and** 10 ÷ 270 (= 0.037(037..))	Other values are possible where they are using alternative quantities of boxes and bags, but these must be the same quantities of each.
		M1	for finding the difference eg "5" – "3.7(037..)" (= 1.29.. to 1.3) or "0.05" – "0.037(037..))" (= 0.0129.. to 0.013)	Must have consistent units for this mark.
		A1	for answer in the range 1.29 to 1.3	If an answer is given in the range in working and then rounded incorrectly award full marks.

Paper: 1MA1/3F

25	65	P1 P1 A1	for a correct process to find the number of seconds, eg 67 205 600 ÷ 11.9 (= 5 647 529.4...) **or** for a correct process to convert between seconds and days, eg 24 × 60 × 60 (= 86 400) oe, may be seen in stages or 11.9 × 60 × 60 × 24 (= 1 028 160) for a complete process, eg "5 647 529.4..." ÷ "86 400" or 67 205 600 ÷ "1 028 160" accept answers in the range 65 to 65.4 or 66	Note that this mark may be awarded at any stage in the working. If a correct answer within the range is shown in working but incorrectly rounded award full marks.

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
27	648	M1 A1	for substitution into density formula eg 9×72 or $9 = \frac{m}{72}$ cao	

25	2.7	M1 A1	for use of density = mass ÷ volume eg 27 ÷ 10 oe	

Paper: 1MA1/1F

6	12.5(0)	M1 A1	for 50 ÷ 4 cao	

12	111	M1 A1	for a complete method, eg 37 × 3 oe cao	

Paper: 1MA1/2F

28	65	P1 P1 P1 A1	for a full process to find the volume of the container, eg $\pi \times 15^2 \times 43$ (= 30 394.9…) for a process to convert between cm^3 and litres, eg "30 394.9…" ÷ 1000 (= 30.39…) **or** [volume] ÷ 1000 **or** 0.47 × 1000 (= 470) for a complete process to find the time taken, eg [volume] ÷ 0.47 **or** [volume] ÷ "470" answer in the range 64.6 to 65	These steps may be completed in a different order Accept 9675π Accept 9.675π or $\frac{387}{40}\pi$ [volume] can be any value they believe to be the volume that might have been incorrectly converted (or not at all) If an answer is given in the range in working and then rounded incorrectly award full marks.

Paper: 1MA1/2F

17	No (supported)		Working per week	Working per hour	Throughout units and trailing 0s need not be given. Accept rounded or truncated figures throughout unless ambiguous.
		M1	for 26.4 × 32 (= $844.80)	for 473.28 ÷ 32 (= £14.79)	
		M1	for "844.8" ÷ 1.796 (= £470.37…) or for 473.28 × 1.796 (= $850....)	for "14.79" × 1.796 (= $26.56….) or for 26.4 ÷ 1.796 (= £14.699…)	
		C1	for No and correct figures (850… **and** 844.8) **or** 470.37…	for No and correct figures (14.79… **and** 14.699..) **or** 26.56…	"No" may be expressed in words eg "Australia pay is less"

Question	Answer	Mark	Mark scheme	Additional guidance
26	7 hours 56 minutes	P1	for process to begin to work with speed, eg 143 ÷ 55 (= 2.6)	May work in minutes or hours and minutes
		P1	for process to work in minutes, eg "2.6" × 60 (= 156 mins) **and** 5 × 60 + 20 (= 320 mins) **or** for 476 (mins) **or** for process to work in hours eg "2.6" **and** $5\frac{20}{60}$ (= 5.33...)...or for 7.93... **or** for process to work in hours and minutes, eg "2" + ("0.6" × 60) (= 2 hrs 36 mins)	Accept 2 or more decimal places for this mark
		A1	cao	

27	Shown	M1	for substitution to find area of face, eg $3.5 = \frac{504}{\text{area}}$ or $3.5 \times \text{area} = 504$ or $\text{area} = 504 \div 3.5$ (= 144) **or** for working from surface area eg $900 \div 6$ (= 150)	Other equivalent methods should be credited accordingly
		M1	for method to find comparable figures, eg "144" × 6 (= 864) or "150" × 3.5 (= 525) or 504 ÷ "150" (= 3.36…) **or** 504 ÷ 3.5 (= 144) **and** 900 ÷ 6 (= 150) **or** 900 ÷ 144 (= 6.25) **and** 6	
		C1	for correct comparable figures, eg 864 (and 900) **or** 144 and 150 **or** 525 (and 504) **or** 3.36… (and 3.5) **or** 6.25 and 6	Condone incorrect units given.

Paper: 1MA1/3F

Paper: 1MA1/1F

<table>
<tr><th>Question</th><th>Answer</th><th>Mark</th><th>Mark scheme</th><th>Additional guidance</th></tr>
<tr><td>16</td><td>Pack of 8
(supported)</td><td>P1</td><td>for a process (for at least 2 packs) of division of price by quantity
eg at least 2 of 180 ÷ 4 (= 45) or 320 ÷ 8 (= 40) or 600 ÷ 12 (= 50)

OR any other process that could lead to a comparison of 2 packs
eg 180 × 2 (= 360)
or 320 ÷ 8 (= 40) and “40” × 12 (= 480)</td><td>Calculations could be in pounds or in pence

<table>
<tr><td></td><td>4 pack</td><td>8 pack</td><td>12 pack</td></tr>
<tr><td>1</td><td>0.45</td><td>0.40</td><td>0.50</td></tr>
<tr><td>2</td><td>0.90</td><td>0.80</td><td>1.00</td></tr>
<tr><td>4</td><td>1.80</td><td>1.60</td><td>2.00</td></tr>
<tr><td>8</td><td>3.60</td><td>3.20</td><td>4.00</td></tr>
<tr><td>12</td><td>5.40</td><td>4.80</td><td>6.00</td></tr>
<tr><td>16</td><td>7.20</td><td>6.40</td><td>8.00</td></tr>
<tr><td>24</td><td>10.80</td><td>9.60</td><td>12.00</td></tr>
</table></td></tr>
<tr><td></td><td></td><td>P1</td><td>for a complete process to give values that can be used for comparison of all 3 packs
eg 180 ÷ 4 (= 45) and 320 ÷ 8 (= 40) and 600 ÷ 12 (= 50)
OR
3.20 ÷ 8 (= 0.40) and “0.40” × 4 (= 1.60) and “0.40” × 12 (= 4.80)
OR
1.80 × 6 (= 10.80) and 3.20 × 3 (= 9.60) and 6.00 × 2 (= 12.00)</td><td>Condone incorrect units.

Pairwise comparison are possible, but check to see that this allows for a decision to be made. Check process.
Assuming correct figures found:
<table>
<tr><td colspan="2">Comparisons</td><td>Conclusion possible</td></tr>
<tr><td>4 vs 8</td><td>8 vs 12</td><td>Yes</td></tr>
<tr><td>4 vs 8</td><td>4 vs 12</td><td>Yes</td></tr>
<tr><td>4 vs 12</td><td>8 vs 12</td><td>No</td></tr>
</table></td></tr>
<tr><td></td><td></td><td>A1</td><td>for ‘pack of 8’ and correct values that can be used to compare all 3 packs</td><td>Correct answer with no supportive working scores 0 marks.

Do not allow A mark where inconsistent units would prevent comparison e.g. 0.40p and 45p</td></tr>
</table>

Paper: 1MA1/1F

14	(a)	12	M1	for method to find speed, eg $36 \div 3$ or $\frac{36}{3}$	Condone $36 \div (3 \times 60)$
			A1	cao	
	(b)	Yes with supporting figures	P1	for process to find time, eg $36 \div 16$ (= 2.25) or $36 \div 16 \times 60$ (= 135)	
			P1	for full process to find figures to compare, eg 3 + "2.25" (= 5.25) or 3 hours + "2 hours 15 mins" (= 5 hours 15 mins) **or** 5 hours 20 mins – "2 hours 15 mins" (= 3 hours 5 mins) **or** 5 hrs 20 mins – 3 hours (= 2 hrs 20 mins) **and** $36 \div 16$ (= 2.25)	
			C1	Yes with correct supporting figures, eg 5.25(hours) (and 5.33.. hours) or 5 hours 15 mins **or** 3 hours 5 mins **or** 2 hrs 20 mins **and** 2 hrs 15 mins oe	If units are provided they must be correct for their figures for the C mark

Question	Answer	Mark	Mark scheme	Additional guidance
9	Shown	P1	for a start to process of finding the total cost, eg 5 × 26 (= 130) or 4 × 45 (= 180) or 8 × 23.50 (= 188) or 26 + 45 + 23.50 (= 94.5(0)) **or** for a start to process of finding money left after paying costs, eg 500 – 26 (= 474) or 500 – 45 (= 455) or 500 – 23.50 (= 476.5(0)) or 500 – 5 × 26 (= 370) or 500 – 4 × 45 (= 320) or 500 – 8 × 23.50 (= 312)	
		P1	for complete process, eg “130” + “180” + “188” (= 498) **or** 500 – “130” – “180” – “188” (= 2)	
		C1	Shown with a complete process and correct figures.	

Question	Answer	Mark	Mark scheme	Additional guidance
25	29 775	P1	for evidence of using a correct first step eg 25 000 × 0.06 (= 1500) or 25 000 × 1.06 (= 26 500)	
		P1	for evidence of a "compound interest" process eg "26 500" × 0.06 (= 1590) or "26 500" × 1.06 (= 28 090) **or** 25 000 × 1.06^t, $t \geq 2$	
		P1	for a complete process eg 25 000 × 1.06^3 (= 29 775.4)	P3A0 is implied by 4775 or 4776 or 4780 or 4800
		A1	for 29 775 or 29 776 or 29 780 or 29 800 SCB1 for 3000 or 4500 or 28000 or 29500 seen if P0 scored	

26	2	P1 P1 P1 A1	for process to find volume of tin eg 600 ÷ 0.6 (= 1000) for process to find volume of salt eg "1000" – 700 (= 300) for a process to find density of the salt eg 600 ÷ "300" **or** 0.6 × ("1000" ÷ "300") **or** 600 ÷ [volume] cao	Award P1 for 600 ÷ 0.6 (= 1000) even if not used [volume] can be 700 or from a seen calculation using "1000", "300", 700 or identified as volume by label or formula or units A correct answer with no supportive working gets 0 marks

Paper: 1MA1/3F

28	63	P1 P1 P1 A1	for process to find volume, eg $\pi \times 100^2 \times 30$ (= $300\,000\pi$ or 942 477(.796...)) for process to find time in seconds, eg "942 477(.796...)" ÷ 250 (= 1200π or 3769(.911...)) **or** [volume] ÷ 250 **or** for converting rate to minutes, eg 250 × 60 (= 15 000) for complete process, eg "3769(.911...)" ÷ 60 (= 20π) **or** "942 477(.796...)" ÷ "15 000" (= 20π) for answer in the range 62 to 63	(volume =) 942 478 implies P1 (time =) 3770 implies P2 [volume] ≠ 30, 60, 100, 250 A correct answer with no supportive working gets 0 marks If an answer is shown in the range in working and then incorrectly rounded award full marks

Paper: 1MA1/3F

22	(a)	Estimated time	P1	for rounding of distance = 5 (miles) or speed = 30 (mph)	
			P1	(dep) for using time = distance / speed eg 5 ÷ 30 **or** for a complete process, eg 30 ÷ 60 (= 0.5) **and** 5 ÷ "0.5" or 30 ÷ 5 (= 6) **and** 60 ÷ "6" or $4.96 \times \frac{60}{30}$	
			A1	for a correct answer following through their correct rounded distance and/or speed	
	(b)	Overestimate with reason	C1	ft from (a) for decision with correct reasoning, eg overestimate as dividing a larger number by a smaller number or overestimate as miles rounded up and speed rounded down	Ft the rounding and process from (a) Must relate to estimation and not rounding of their final answer and they must have a final answer to part (a)

Paper: 1MA1/1F

14	(a)	2	B1	cao	
	(b)	Graph completed	M1	for straight line from (3, 5) to (5, 5) **or** for a straight line from (5, 5) to (6 30, 0) **or** line drawn from (3, 5) to (4 30, 0) **or** a line drawn from (x, 5) to (x + 1 30, 0) where $x \geq 3$	Accept hand drawn, ruler not required but intention clear
			A1	cao	

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
22	Zurich (supported)	P1	for one process to compare, eg eg Currency conversion, 3.5 × 1.25 (= 4.375) **or** 7.20 ÷ 1.25 (= 5.76) **or** finds 1g in one place £3.50 ÷ 200 (= 0.0175) **or** 7.20 ÷ 360 (= 0.02) **or** finds 200g in Zurich, 7.2 ÷ 360 × 200 (= 4.0) **or** finds 360g in London, 3.5 ÷ 200 × 360 (= 6.30) **or** finds grams per unit cost, 200 ÷ 3.50 (= 57.1..) **or** 360 ÷ 7.20 (= 50**)**	Accept figures rounded or truncated to 2sf throughout
		P1	for a complete process to find comparable figures in the same currency, eg comparing 200g in £ or francs 3.5 × 1.25 (= 4.375) **and** 7.2 ÷ 360 × 200 (= 4.0) **or** "4.0" ÷ 1.25 (= 3.20) **OR** comparing 360g in £ or francs "6.30" × 1.25 (= 7.875) **or** 3.5 ÷ 200 × 360 (= 6.30) **and** 7.20 ÷ 1.25 (= 5.76) **OR** comparing 1g in £ or francs "0.0175" × 1.25 (= 0.0218…) **and** 7.20 ÷ 360 (= 0.02) **or** £3.50 ÷ 200 (= 0.0175) **and** "0.02" ÷ 1.25 (= 0.016) **OR** comparing quantity per unit cost in £ or francs 200 ÷ 3.50 (= 57.1…) **and** 360 ÷ "5.76" (= 62.5) **or** 200 ÷ "4.375" (= 45.7…) **and** 360 ÷ 7.20 (= 50**)**	Accept working in pence Ignore incorrect units for P marks Award of this mark implies the previous mark
		C1	for Zurich supported by correct comparable values, eg 4.3(75 F) **and** 4(.0 F) **or** (£)3.2(0) **or** 7.8(75 F) **or** (£)6.3(0) **and** (£)5.76 **or** 0.021(8… F) **and** 0.02 (F) **or** (£)0.017(5) **and** (£)0.016 **or** 57(.1… g/£) **and** 62(.5 g/£) **or** 45(.7… g/F) **and** 50 (g/F)	Clear indication that bar is better value for money in Zurich supported by correct values for comparison Units not needed but if stated must be correct. Table with examples at end of mark scheme

Paper: 1MA1/2F

28	7.96	M1 M1 A1	for method to find volume of cylinder, eg $\pi \times 3^2 \times 10$ (= 90π or 282.74…) for method to find density, eg 2250 ÷ "282.74…" **or** 2250 ÷ [volume] for answer in the range 7.95 to 7.96	[volume] is any value they clearly think is the volume of the cylinder but must come from a calculation and must not be 3 or 10

Question 22 additional guidance

	London	Zurich
100g	3.5 ÷ 2 = **£1.75** 1.75 × 1.25 = **2.1875 F**	7.2 ÷ 360 = **2.00 F** 2.00 ÷ 1.25 = **£1.60**
200g	**£3.50** 3.5 × 1.25 = **4.375 F**	7.2 ÷ 360 × 200 = **4.0 F** 4.0 ÷ 1.25 = **£3.20**
360g	3.5 ÷ 200 × 360 = **£6.30** 6.30 × 1.25 = **7.875 F**	**7.20 F** 7.20 ÷ 1.25 = **£5.76**
1g	£3.50 ÷ 200 = **£0.0175** × 1.25 = **0.021875 F**	7.20 ÷ 360 = **0.02 F** ÷ 1.25 = **£0.016**
40g	£3.50 ÷ 5 = **£0.70** 0.7 × 1.25 = 0**.875 F**	7.20 ÷ 9 = **0.8 F** 0.8 ÷ 1.25 = **£0.64**
By weight	350 ÷ 200 = **1.75 p/g** 350 × 1.25 = 4.375 4.375 ÷ 200 = **0.021875 F/g**	720 ÷ 360 = **0.02 F/g** 720 ÷ 1.25 = 576 576 ÷ 360 = **1.6 p/g**
By cost	200 ÷ 350 = **0.571 g/p** 350 × 1.25 = 437.5 200 ÷ 437.5 = **45.7 g/F**	360 ÷ 720 = **50 g/F** 720 ÷ 1.25 = 576 360 ÷ 576 = **0.625 g/P**

Modifications to the mark scheme for Modified Large Print (MLP) papers: 1MA1 2F

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_2F			
Question		**Modification**	**Mark scheme notes**
3		Wording added: 'four'	Standard mark scheme
4		Wording 'this polygon' removed and replaced with 'the polygon below'. Diagram enlarged and left aligned.	Standard mark scheme
7	(c)	Wording added: 'Look at the diagram for Question 7(c) in the Diagram Booklet. It shows a probability scale.' Word 'below' removed and replaced with 'in the Diagram Booklet'. Wording removed: 'with a cross (x)'. Diagram enlarged. For Braille: sentence added 'Bumpons are provided if you wish to use them.'	Standard mark scheme
10		Wording changed: 'Look at the diagram for Question 10 in the Diagram Booklet. It shows a square and shape A.' Wording 'the shape below' removed and replaced with 'shape A as shown in the Diagram Booklet.' Wording 'this shape' removed and replaced with 'shape A'. Diagrams enlarged. Wording added to the diagrams 'Diagrams NOT accurately drawn' Shapes labelled 'square' and 'shape A'.	Standard mark scheme
11	(a) (b)	Letter changed: 'x' to 'w'. Letters changed: 'd' to 'p' and 'e' to 'q'.	B1 for $6wy$ M1 for $5p$ **or** $-3q$ A1 for $5p - 3q$

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
13		Wording changed: 'Look at the diagram for Question 13 in the Diagram Booklet. It shows triangle ABC' Wording added: 'The reflex angle BAC = 310° Angle ACD = 115°' Diagram enlarged. Angles moved outside of angle arcs and angle arcs made smaller.	Standard mark scheme
14	(b)	Wording added: 'Look at the diagram for Question 14 in the Diagram Booklet. It shows an incomplete travel graph.' Wording 'below' removed and replaced with 'in the Diagram Booklet'. Diagram enlarged. Graph cropped at 7pm on the horizontal axis. Open headed arrows. Wording added: 'in the Diagram Booklet.' For Braille: sentence added 'Bumpons and drawing film are provided if you wish to use them.'	Standard mark scheme
18		Wording added: 'Look at the diagram for Question 18 in the Diagram Booklet. It shows triangle A and triangle B on a grid.' Diagram enlarged. Open headed arrows. Shading changed. Shapes labelled 'triangle A' and 'triangle B'	Standard mark scheme
19	(b)	Wording added: Look at the diagram for Question 19(b) in the Diagram Booklet. It shows a number line. Wording 'below' removed and replaced with 'in the Diagram Booklet'. Diagram enlarged. Open headed arrow. For Braille: sentence added 'Bumpons and drawing film are provided if you wish to use them.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
21		Wording changed: 'Look at the diagram for Question 21 in the Diagram Booklet. It is a scatter graph showing information about some ships.' Diagram enlarged. Crosses changed to dots. Vertical axis cropped so it starts at 15. Open headed arrows. m changed to metres.	
	(b)	Wording added: 'in the Diagram Booklet' For Braille: sentence added 'Drawing film is provided if you wish to use it.'	Standard mark scheme
	(c)	Value '194' changed to '190'.	Standard mark scheme
22		Information in boxes removed. g changed to gram.	Standard mark scheme
23		Wording added: 'Look at the diagram for Question 23 in the Diagram Booklet. It shows a Venn diagram.' Wording 'Here is his answer.' removed and replaced with 'His answer is shown in the Diagram Booklet.' Diagram enlarged. Numbers arranged in two rows.	Standard mark scheme
24	(a)	Word added 'below'. Wording added 'There are five spaces to fill.' Table enlarged, turned vertically and left aligned. For Braille: missing values labelled (i), (ii), (iii), (iv) and (v)	Standard mark scheme
	(b)	Wording added: 'Look at the diagram for Question 24(b) in the Diagram Booklet. It shows a grid.' Diagram enlarged. Open headed arrows. Vertical axis cropped at -5. For Braille: sentence added 'Bumpons and drawing film are provided if you wish to use them.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
25		p changed to pence.	Standard mark scheme
26		Wording changed: 'Look at the diagram for Question 26 in the Diagram Booklet. It…' Wording added: 'AC = 2x + 11 AB = 2x + 5 BC = 4x – 4' Diagram enlarged. Lines on the sides made longer.	Standard mark scheme
28		Wording added: 'Look at Diagram 1, Diagram 2 and Diagram 3 for Question 28 in the Diagram Booklet. You may be provided with a model. They are NOT accurate. Diagram 1 and the model show a solid cylinder with base radius 3 cm and height 10 cm. Diagram 2 shows the base of the cylinder. Diagram 3 shows the side of the cylinder.' g changed to grams. Model provided. Diagram enlarged. 2 additional 2D diagrams added. Open headed arrows.	

Question	Answer	Mark	Mark scheme	Additional guidance
14	324	P1	for a process to work out daily pay on a weekday, eg 8 × 6 (= 48) **or** a process to work out the number of hours of pay for weekdays, eg 6 × 5 (= 30) **or** the number of hours of pay for Saturday and Sunday, eg (4 + 3) × 1.5 (= 10.5) **or** a process to work out rate of pay for Saturday or Sunday, eg 8 × 1.5 (= 12)	
		P1	for a process to work out the total pay from Monday to Friday, eg “48” × 5 (= 240) **or** “30” × 8 (= 240) **or** for a process to work out the total pay from Saturday and Sunday, eg “10.5” × 8 (= 84) **or** “12” × (4 + 3) (= 84) **or** a process to work out the total number of hours of pay, eg “30” + “10.5” (= 40.5)	
		P1	for a complete process, eg “240” + “84” **or** “40.5” × 8	
		A1	cao	

Paper: 1MA1/3F

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
11 (a)	Shown	M1	for a correct first step, eg method to convert, 4 × 60 (= 240) or 75 ÷ 60 (= 1.25) or 150 ÷ 60 (= 2.5) **or** accurate converted time shown, eg 1(hr) 15(mins) oe or 2(hrs) 30(mins) oe **or** adding the two required times 150 + 75 (=225)	Units not required but if stated they must be correct.
		C1	for accurate figures to compare, eg 240 **and** 225 (mins) **or** 3.75(hrs) **or** 3(hrs) 45(mins) **or** 15 mins spare (from 240 – 150 – 75)	Units not required but if stated they must be correct. An incorrect conversion will score C0, eg 3.75 incorrectly converted to 3hrs 75mins Figures are enough and a direct comparison to 4 hrs is not needed
(b)	130	M1	for 2 × 65 oe	Condone 65 × "120"
		A1	cao	

16	(a)	70	M1	for a method to work with distance ÷ time, eg 35 ÷ (30 ÷ 60) or 35 ÷ 30 × 60 or 35 × (60 ÷ 30) **or** 35 ÷ 30 (= 1.16…) **or** [distance] ÷ [time]	May use other readings from graph for [distance] and [time] but must be accurate
			A1	answer in the range 69.6 to 70.2	
	(b)	Graph drawn	C1	for a line from (30, 35) to (45, 35)	

27	25	P1 P1 A1	for working with density, eg 8 ×1500 (= 12 000) **or** [density] ×1500 for a correct conversion, eg "12 000" ÷ 1000 (= 12) or $\frac{8}{1000}$ $(= 0.008)$ **or** 300 × 1000 (= 300 000) **or** [mass] ÷ 1000 cao	P marks can be awarded in either order [density] is 8×10^n Condone 8×1500×300 for this mark only P marks can be awarded in either order [mass] must be what they believe to be mass following a calculation that uses 8 and 1500 but not 300

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
25	New York (supported)	P1	for a conversion between kg and lbs, eg 2 × 2.2 (= 4.4) **or** 5 ÷ 2.2 (= 2.27...)	See page at end of mark scheme
		P1	for a conversion between pounds and US dollars, eg 3.75 × 1.2(0) (= 4.50) **or** 4.9(0) ÷ 1.2(0) (= 4.08...)	
		P1	for a process to find figures to compare, eg 3.75 ÷ "4.4" (= 0.85...) **and** "4.08…" ÷ 5 (= 0.81(6…)) **or** "4.50" ÷ 2 (= 2.25) **and** 4.9(0) ÷ "2.27..." (= 2.15(6...)) **or** "4.4" ÷ 3.75 (= 1.17…) **and** 5 ÷ "4.08" (= 1.22…) **or** 2 ÷ "4.5" (= 0.44…) **and** "2.27" ÷ 4.9(0) (= 0.46 …)	£ per lb US dollars per kg lbs per £ kg per US dollar Condone the incorrect assignment of units for all 3 P marks
		C1	for New York with correct comparable figures, eg 0.85 **and** 0.81(6…) **OR** 2.25 **and** 2.15(6...)	Final comparable values can be truncated or rounded, they just need to be accurate enough to allow a comparison

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
27	630	M1	for converting time, eg 24 minutes = $\frac{24}{60}$ (= 0.4 (hours)) oe eg $\frac{2}{5}$ (hours) **or** 2 hours 24 minutes = 2 + $\frac{24}{60}$ (= 2.4 (hours)) oe eg $2\frac{2}{5}$ (hours) **or** 2 hours 24 minutes = 2 × 60 + 24 (= 144 (minutes)) oe **or** 2 hours 24 minutes = 2 × 60 × 60 + 24 × 60 (= 8640 (seconds)) oe **OR** for using distance ÷ time, eg 1512 ÷ [time] oe **or** [distance] ÷ [time] oe	10.5 or 0.175 imply M1 [distance] can be 1512 or the result of an attempt to convert 1512 km to a different unit, it must have the digits 1512 eg 151.2 or 1 512 000 [time] can be any value they believe to be the time the plane takes to fly
		M1	for a complete method using distance ÷ time, eg 1512 ÷ "2.4" **or** 1512 ÷ "$2\frac{2}{5}$" **or** 1512 ÷ "144" × 60 oe **or** 1512 ÷ "8640" × 60 × 60 oe	
		A1	cao	

Paper: 1MA1/3F

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Mark Scheme (Results)

November 2010

GCSE

GCSE Mathematics (Modular) 5MB1F
Unit 1 - Foundation

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GCSE MATHEMATICS 2MB01

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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.

GCSE MATHEMATICS 2MB01

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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.
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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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
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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.

GCSE MATHEMATICS 2MB01

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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

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GCSE MATHEMATICS 2MB01

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8	1	B1 cao
	(b)		5	1	B1 cao
	(c)			1	B1 cao
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

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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
4	(a)		unlikely	1	B1 cao
	(b)		even	1	B1 cao
	(c)		impossible	1	B1 cao
	(d)		e.g. blue, blue, blue	1	B1 for two or three ‘blue’ and no ‘red’
5	(a)		Walk	1	B1 cao
	(b)		5	1	B1 cao
	(c)	$4+6+9+5+1=25$	25	2	M1 for adding the frequencies 4,6,9,5,1 or adding 5 frequencies allow one misread error Ie 4+6+9+6+1 A1 cao

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5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		6	1	B1 cao
(b)		4, 4, 7	2	M1 for identifying two of the numbers as 4 or the sum as 15 (may be implied by three numbers that sum to 15) A1 for 4, 4 and 7 in any order
7*		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, ie if different colours are used to shade in the graph. Give benefit to candidate. B1 for 5 correct labels for days clearly in the appropriate place B1 for a 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 diagrams, pie charts, pictograms, etc C1 fully correct diagram or chart to include all axes labeled. QWC: Fully correct diagram or chart and all labelling is correct and clear.

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5MB1F_01					
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
9			Types Tally Frequency	3	B3 for correct table with all three aspects Aspect 1:'method of travel' or for at least 3 of bus, car, walk, ,other etc. Aspect 2: 'tally' or tally marks or 'frequency' or 'number of people' Aspect 3: 'frequency' or frequencies or 'total' or totals or 'number of people' B2 for two aspects B1 for one aspect

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GCSE MATHEMATICS 2MB01

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		3	1	B1 cao
	(b)	$0\times4+1\times5+2\times4+3\times7+4\times4=50$	50	2	M1 for *fx* calculated (could be implied by at least 2 correct) A1 cao
	(c)	$360°\div24=15$ Sector angles: W=150; D=90; L=120	Angles drawn, labelled	3	M1 for $360\div24$ or 15 seen or one angle correct in pie chart ($\pm2°$), ignore all labels, or one correct angle in the table A1 for any two angles correct in pie chart. Ignore labels A1 for fully correct and labelled pie chart All angles ±2º

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GCSE MATHEMATICS 2MB01

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
11*	714 × 2 =1428 714 × 0.95 = 678.30 678.30 × 2 = 1356.60 1428 + 1356.60 = 2784.60 802 × 2 = 1604 802 × 0.85 = 681.70 681.70 × 2 = 1363.40 1604 + 1363.40 = 2967.40	Comparison	5	B1 for identifying 714 and 802 M1 for $\frac{95}{100}\times'714'$ oe or $\frac{85}{100}\times'802'$ oe M1 for 2 × 'adult' + 2 × 'child' oe for at least on e holiday A1 for 2784.6(0) and 2967.4(0) or 2785 and 2967 C1 for comparing the costs of their two holidays for 2 adults and 2 children and clearly indicating which is cheaper. Conclusion must clearly follow from working. QWC: Decision and justification should be clear with working clearly presented and attributable. (allow full marks for a candidate who has calculated the cost per day for each holiday (397.8(0) and 211.95(7..)) and compares these costs accordingly.)

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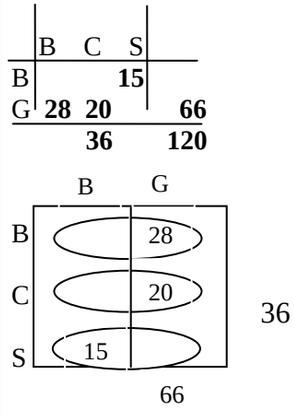
GCSE MATHEMATICS 2MB01

5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12 (a)		67	1	B1 cao
(b)	$84-58=26$	26	2	M1 for $84-58$, accept 58 to 84 and $58-84$ A1 cao
(c)		Two comparisons	2	Ft B1 for heart rates faster after walking , bigger median, median increase by 11 Ft B1 for heart rates more spread out after walking, bigger range, range increases by 11 Statements must be entirely true and not contradictory
13		51	4	M1 for a two-way table or Venn diagram with bowling, cinema, skating, boys and girls labelled or a list of at least two combinations clearly labelled. M1 for attempt to find an unknown eg 66 – 28 – 20, 120 – 66, 36 – 20 A1 for 16 or 18 or 54 or 23 or 33 A1 cao (Note: 36 + 15 = 51 scores no marks)

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5MB1F_01					
Question		Working	Answer	Mark	Notes
14*		13.55 × 1.65 = 22.3575 3.10 ÷ 160 × 1000 = 19.375 OR 13.55 × 1.65 = 22.3575 22.3575 ÷ 1000 × 160 = 3.5772 OR 3.10 ÷ 1.65 = 1.8787… 1.8787…÷ 160 × 1000per kg OR $1355 \div 1000 = 1.355$ p/g 3.10 ÷ 1.65 = 187.87…p 187.87…÷ 160 = 1.1742…p/g OR 3.10 ÷ 160 = 0.019375 SF/g 13.55 × 1.65 ÷ 1000 =0.0223575SF/g	Switzerland, with correct explanation	4	M1 for a correct method to obtain two comparable weights e.g. cost of 1kg in Switzerland, ÷ 160 × 1000, × 6.25 (cost of 1 kg in England given) or cost of 160g in England, ÷ 1000 × 160 (cost of 160g in Switzerland given) or cost per gram in each country, ÷ 160 and ÷ 1000 or cost of 800g in each country M1 for converting £ to Swiss francs or Swiss francs to £ (other than £1=1.65 SFr) A1 for two correct values (using same units) for comparison C1 for Country identified from a clear attempt to use comparable weights and prices. QWC: Decision must be stated, with calculations clearly attributable

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Mark Scheme (Results)

June 2011

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

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PMT

5MB2F_01					
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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
4	(a)		$4d$	1	B1 accept $4 \times d, d \times 4, d4$
	(b)		$f + 10$	2	M1 for f or $1f$ or 10 or for $3f$ $2f$ and $4 + 6$ A1 for $f + 10$ (accept $1f + 10$)
5			Circle radius 5 cm drawn	2	M1 for an accurately drawn circle with radius other than 5cm ± 2mm OR any attempt to draw a circle that has any 2 points lying at opposite ends of any diameter within the overlay for circumference. A1 within overlay 5cm ± 2mm (any centre may be used)

5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		>> on 2 parallel lines	1	B1
	(b)		A on acute angle	1	B1
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
8	(a)		3 or 15	1	B1
	(b)		12 or 24	1	B1
	(c)		2 or 3	1	B1
9	(a)		0.25	1	B1 cao
	(b)		80%	1	B1 cao
	(c)		1:3	1	B1 cao
10	(a)	$80 + 70 = 150$ $180 - 150$	30°	2	M1 for $180-(80+70)$ A1 cao
	(b)	$40 + 122 + 90 = 252$ $360 - 252$	108°	2	M1 for $360 - 252$ or $360 - (40 + 122 + 90)$ A1 cao

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5MB2F_01					
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"
12		$5 + 5 + 5 + 3 + 2 + 6 = 26$ $26 \div 4 = 6.5$ 7 $2 + 3 = 5$, 5m needs 1.25, 6m needs 1.5 1.25 + 1.25 + 1.25 + 1.25 + 1.5 = 6.5 7	7	4	M1 Start to find perimeter adding at least 3 of the six side lengths 2, 3, 5, 5, 5, 6 M1 for adding at least 5 of 6 side lengths or total perimeter p where $24 < p \leq 26$ M1 (dep on first M1) for "26" ÷ by 4 or 6(.5) seen A1 7 cao OR M1 for linking sufficient number of rolls with a least 1 side (this may be indicated on diagram). M1 for linking sufficient number of rolls with a least 5 sides (this may be indicated on diagram). M1 (dep on first M1) Add their number of rolls for all 6 side lengths or 6(.5) seen. A1 7 cao
13	(a)		49	1	B1 cao
	(b)		5	1	B1 for 5
	(c)		8	1	B1 cao

PMT

5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)(i)		16	1	B1 cao
(ii)		Reason	1	B1 add 3 or 3×5+1or 3n+1
(b)		25	1	B1 cao
(c)		Yes with reason	1	B1 for "Yes" and "keep adding 3" oe 3×11+1 or 11th term or multiple of 3 plus 1
15*	$6 \times 2 + 3 \times 2 = 12 + 6 = 18$ or $2 \times 5 + 4 \times 2 = 18$ or $6 \times 5 - 4 \times 3 = 18$ $18 \div 2.5 = 7.2$ or $2.5 \times 7 = 17.5$ or $2.5 \times 8 = 20$	8 packs	4	M2 for a complete correct method for finding total area. (can be implied by 18) (M1 for attempt to calculating at least one area, 6×2(=12) or 3 × 2 or 2 × 5 (=10) or 4×2(=8) or 2 × 2 or 6×5 (=30) or 3×4 (=12)) M1for their area ÷ 2.5 or repeated addition of 2.5 of their area or equivalent repeated subtraction. C1 for clear communication that 8 full packs are required supported by their calculations provided at least 1 of the first 2 method marks awarded. SCB3 for 8 identified as answer.

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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)

PMT

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
18	Table of values x = -1 0 1 2 3 y = -2 2 6 10 14 OR Using $y= mx + c$, gradient = 4, y intercept = 2	Line from (-1,-2) to (3,14)	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 -1 and 3 **(No table of values)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y= 4x + 2$ 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 -1 and 3 **(Use of $y= mx + c$)** M2 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 4x + 2$ drawn (ignore any additional incorrect segments) (M1 for line drawn with gradient 4 OR line drawn with a y intercept of 2) A1 for correct line between -1 and 3

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5MB2F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
19*	$24 \times 2 = 48$ $56 \div 8 \times 5 = 35$ OR $24 \times 2 = 48$ $48 \div 5 \times 8 = 7.68$	Monday	4	M1 for a correct method to obtain two comparable time periods or speeds. eg 24×2 (= 48 miles), $56 \div 2$ (= 28 km) M1 for a correct method to convert between miles and km or mph and km/h eg $24 \times \frac{8}{5}$, $48 \times \frac{8}{5}$, $56 \times \frac{5}{8}$, $28 \times \frac{5}{8}$ A1 for two correct values (using same units) for comparison C1 for day identified from a clear attempt to use comparable time periods and speeds/distances Note: day alone scores zero

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Mark Scheme (Results)

June 2012

GCSE Mathematics (2MB01) Foundation
Paper 5MB1F_01 (Calculator)

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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.

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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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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.

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)		Mary, 5, blue, dog	1	B1 cao
	(b)		2	1	B1 for 2 or ft from their table
	(c)		cat	1	B1 for cat or ft from their table
2	(a)	2 × 12	24	1	B1 cao
	(b)	e.g. 12 + 6	18	2	M1 for 4.5 × 12 – 3 × 12 or (4.5 – 3) × 12 or 12 + 6 or 6 seen "54" – "36" oe A1 cao
	(c)	2.75 × 12 × 8	2.64	3	M2 for complete method seen, "2.75×12"×8 or "12+12+9"×8 or "2.75 × 8"×12 or "33"×8 "96" + "96" + "72" or the digits 264 seen (M1 for 2.75×12 or 12+12+9 or 24+9 or "33" or 2.75×8 or 12×8 or 24×8 or 9×8 or 192 seen or 96 seen or 72 seen) A1 cao (SC M1 (12+12+8)×8 but not 32×8) Note: The method marks can also be awarded if the candidate uses 0.08
3	(i)		Impossible	3	B1 cao
	(ii)		$\frac{1}{2}$		B1 for cross marked at $\frac{1}{2}$
	(iii)		$\frac{1}{6}$		B1 for $\frac{1}{6}$ oe

<table>
<tr><th colspan="5">5MB1F_01</th></tr>
<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>

PMT

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		Thursday	1	B1 cao
	(b)		45	1	B1 cao
	(c)		Bar chart completed	2	B2 for bars of correct length, correctly shaded (condone Sophie's bar left unshaded) (B1 for one correct length bar with correct shading or two correct length bars with incorrect or no shading)
	(d)		Comparison	1	B1 for one correct comparison, e.g. Sophie spent more time (on the Internet) at the beginning of the week than Zach (Note: if candidates quote total amounts of time spent on the internet they must be correct or support by evidence of how they got them. Sophie: 215min or 3h35min Zach: 240min or 4h)

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
***6**		e.g. £25 = $40, so £100 = $160 £20 = $32, so £40 = $64 £100 + £40 = $160 + £64 = $224 (London) $220 (New York)< $224(London)	New York is less expensive	4	B1 for stating a correct conversion fact from the graph $40 ≡ £25oe M1 (indep) ft for a complete method to convert £ to $ using their conversion fact e.g. 40÷25×140 oe A1 ft for $224 C1 ft (dep on M1) for more (expensive) in London oe OR B1 for stating a correct conversion fact from the graph £25 ≡ $40 oe M1 (indep) ft for a complete method to convert $ to £ using their conversion fact e.g 25÷40×220 oe A1 ft for £137.5(0) C1 ft (dep on M1) for less (expensive) in New York oe
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**
8	(a)		3, 7, 5, 4, 2, 3	2	M1 for at least one correct frequency or tally A1 for 3, 7, 5, 4, 2, 3 cao (B2 for correct frequencies without the use of tallies)
	(b)		2	1	B1 for 2 or ft from their frequency table
	(c)		Diagram or chart	3	M1 (ft from their frequency table) for a diagram or chart, e.g. bar chart, stick graph, pictogram, pie chart, showing correct data for at least 3 scores M1 (indep) for correct scale and label on vertical axis or fully correct labelling on horizontal axis or a suitable key A1 (ft from their frequency table) for fully correct diagram or chart (to include all axes labelled)
9			15, **17**, 12, 44 **18**, 22, **16**, **56** **33**, **39**, 28, 100	3	B3 fully correct table (B2 for 4 or 5 correct entries) (B1 for 2 or 3 correct entries)
10	(a)		$b - a$	1	B1 cao
	(b)		$\frac{(a + b)}{2}$	1	B1 for $\frac{(a+b)}{2}$ oe

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
***11**		2×39.50 + 3×23.75 = 150.25 2×40.25 + 3×21.85 = 146.05	Seawagon	4	M1 for 2×39.50 + 3×23.75 or 150.25 or 2×40.25 + 3×21.85 or 146.05 or 2*a* + 3*b*, where *a* and *b* are consistent values from table or sight of 39.50 and 23.75 or 40.25 and 21.85 M1 for 2×39.50 + 3×23.75 and 2×40.25 + 3×21.85 A1 for (£)150.25 and (£)146.05 C1 (dep on M1) for Seawagon or ft from their answers and condone stating an incorrect difference
12	(a)		(5, 300) plotted	1	B1 for point plotted at (5, 300) allow ± ½ square tolerance
	(b)		The greater the age the less the value	1	B1 for the greater the age the less the value (price, cost etc.) Accept negative correlation but "negative" or "negative relationship" gets B0
	(c)		500 to 800 inc.	2	B2 for an answer in the range 500 to 800 (inc.) OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit A1 ft from their line of best fit [SC: B1 ft reading from their single straight line with negative gradient at Age = 4 if M0 scored]

PMT

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)	1 – (0.15 + 0.32 + 0.27) 1 – (15 + 32 + 27) $1 - (\frac{15}{100} + \frac{32}{100} + \frac{27}{100})$	0.26 26% $\frac{26}{100}$ (oe)	2	M1 for 1 – "(0.15 + 0.32 + 0.27)" oe or 26 seen A1 for 0.26 or $\frac{26}{100}$ (oe) or 26% (must include the % sign) [Note: 0.26 seen in the table and contradicted by an incorrect answer on the answer line gets M1A0]
	(b)	0.15 × 300	45	2	M1 for 0.15 × 300 (=45) oe A1 accept 45 out of 300

5MB1F_01

Question		Working	Answer	Mark	Notes
14	(a)		5 | 9 6 | 3 5 6 6 7 | 1 2 5 5 6 7 9 9 8 | 3 9 Key: eg, 7/2 represents 72	3	M1 for at least 2 correct 'rows' with correct stem and correct ordered or unordered leaf A1 for a fully correct ordered stem and leaf diagram B1 for a key [Ignore spacing on leaves provided the order is` correct]
	(*b)	Gill: HV 95 >; LV 75 >; Mean 80 >; Range 20 < Jamal: HV 89; LV 59; Mean 73; Range 30	Comparisons	5	M1 for '72+59+76+...'÷15 or 1095 ÷ 15 (= 73) M1 for 95 – 75 (=20**) or** '89' – '59' (= 30) or '89' and '59' seen ft from their stem and leaf diagram in (a) A1 for mean of Jamal's scores is 73 cao or for ranges of 20 and 30 cao C1 (dep on first M1) ft for a correct comparison of mean scores, e.g. Gill's mean score > Jamal's mean score oe C1 ft for a correct comparison of ranges, (dep on M1 awarded for correct method to find range) e.g. The range of Gill's scores < The range of Jamal's scores **or** a correct comparison of both end values (dep on M1 awarded for '89' and '59' seen) , e.g. Gill's lowest score > Jamal's lowest score and Gill's highest score > Jamal's highest score. oe [For the award of C2, the word 'score' must be explicitly stated. If not deduct 1 mark]

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November 2012

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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

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		white	1	B1 cao
	(b)		medium	1	B1 cao
	(c)		43	1	B1 cao
2	(a)		24	1	B1 for 24
	(b)		6	1	B1 for 6
	(c)	Wed = 12 Thurs = 12 + 6 = 18 or 6 more = 3 extra circles		2	M1 for identifies 6 bunches as 3 circles or '12' + 6 or gives an answer of 9 circles A1 for 9 circles in two clusters of 4 and an additional circle
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
4		**Colour** / **Tally** / **Frequency** red black white silver	Data collection sheet	3	B3 for a correct data collection sheet that has at least 3 colours: the tally column and frequency column must have headings (B2 for any 2 of these aspects) (B1 for any 1 of these aspects)

5MB1F_01					
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
6	(a)		cross	1	B1 for cross placed less than 1 cm from 0
	(b)		cross	1	B1 for cross placed between 1 cm and 4 cm from 1
7*		Girls: 8 – 2 = 6 Boys: 6 – 1 = 5	correct with explanation	3	M1 for girls' range = 8 – 2 or boys' range = 6 – 1 or comparison of largest and smallest scores A1 for girls' range = 6 and boys' range = 5 C1 (dep on M1) ft for correct interpretation from candidate's working and where the two ranges have been correctly linked with girls and boys
8		(S, L), (S, B), (S, C), (P, L), (P, B), (P, C)	List all 6 choices	2	B2 for all 6 with no extras or repeats (B1 for at least 3 correct)
9	(a)		13	1	B1 cao
	(b)		12	2	M1 for ordering at least 16 of the original values and identifying the middle of the ordered list or indicating at least one of the middle two numbers for n =16 or 18 and the middle number for n = 17 A1 cao
10	(a)	(6+8+6+4+5+5+6+7+4+6) ÷10 = 57 ÷ 10	5.7	2	M1 for adding all the numbers and dividing by 10 A1 cao
	(b)	(3×1)+(1×2)+(4×3)+(0×4) +(2×5) = 3+2+12+0+10	27	2	M1 for (3×1)+(1×2)+(4×3)+(0×4)+(2×5) allow 1 error A1 cao

5MB1F_01

Question		Working	Answer	Mark	Notes
11	(a)		10	1	B1 cao
	(b)		15	1	B1 14.8 - 15.2
	(c)	(a) ÷ 6 × 64 or Read from graph and ×	103 to 110	2	M1 for valid method eg Read from £8 and × answer by 8 £ | £ | Calc | CHF 8 | | 8 × 13 | (104) 6 | 4 | 6 × 16.5 + 6.5 | (104.5) 16 | | 4 × 26.5 | (106) 20 | 4 | 3 × 33 + 6.5 | (105.5) A1for 103 - 110
12		 **H** | **T** | **F** | **G** **M** 3 | 8 | 15 | 9 **W** 6 | 14 | 7 | 1	Diagram or chart	4	B1 for a key or suitable labels to identify the men and women. The key may be ignored if unclear provided the graph is clear, ie if different colours are used to shade in the graph. Give benefit to candidate. B1 for a diagram(s) or chart(s) set up for comparison, showing data for at least 3 sports e.g. dual bar chart, composite bar charts, etc (or frequency polygons) B1 for correct heights for men or women or totals C1 for a fully correct diagram or chart to include 'frequency' oe

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13			**10** **10** (3) **23** (18) **4** (9) (31) **28** (14) **12**(54)	3	B3 for all 6 correct (B2 for 4 or 5 correct) (B1 for 1 or 2 or 3 correct)
14			$\frac{3}{12}$	2	B2 for $\frac{3}{12}$ or $\frac{1}{4}$ or 0.25, or 25% (B1 for $\frac{x}{12}$, $x < 12, x \neq 3$ or $\frac{3}{x}$, $x > 3$)
15	(a)		positive	1	B1 Accept with 'positive' valid extra words eg strong positive
	(b)		46 – 54	2	B2 46 – 54 Or M1 for a single line segment with positive gradient that could be used as a line of best fit or a vertical line from 44 A1 for given answer in the range 46 – 54

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			18 | 9 9 19 | 0 3 5 8 20 | 0 5 6 7 7 21 | 1 2 8 22 | 3 Key	3	B2 for a correct ordered diagram (B1 for an unordered diagram with at most1 error or omission OR for an ordered diagram with 1 or 2 errors or omissions Note: 1 error can look like 2 in the diagram when 1 value is misplaced B1 (indep) for a correct key eg Key: 18| 7 represents 187 (g) NB for an ordered diagram of the form 1 | 89 89 90 93 95 98 2 | 00 05 06 07 07 11 12 18 23 award a maximum of B1 for an ordered diagram with 1 or 2 errors or omissions The B1 for a key can still be earned.
17			2 statements	2	B1 for overlapping numbers oe B1 for not exhaustive oe
18	(a)		Yes with valid reason	1	C1 for Yes with it can be cancelled to 1 in 6 oe, eg 15 out of 90 is the same as 1 out of 6 or 90 ÷ 6 = 15 or No with as this survey only has 90 cats oe or Can't tell with we do not know how many cats in the survey
	(b)	Top Cat = 35 × 4 = 140° Katkins = 30 × 4 = 120° Coolkat = 15 × 4 = 60°	Pie chart	3	M1 for 360 ÷ 90 or 4 seen or one angle (TC or Ka or Co) correct in pie chart ± 2° ignore labels, or one correct angle calculated A1 for any two angles (TC or Ka or Co) correct in pie chart. ± 2° ignore labels A1 for fully correct and labelled pie chart. All angles ±2°

<table>
<tr><th colspan="6">5MB1F_01</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>19*</td><td></td><td>A = (78 + 52 + 165) × 2 + 236
= 295 × 2 + 236 = 590 + 236
= 826

826 × 0.95 = 784.70

B = (68 + 48 + 160) × 2 + 242
= 276 × 2 + 242 = 552 + 242
=794
794 × 0.97 = 770.18

<table><tr><th>Shop</th><th>A</th><th>B</th></tr><tr><td>Skis</td><td>156</td><td>136</td></tr><tr><td>Boots</td><td>104</td><td>96</td></tr><tr><td>S & B</td><td>260</td><td>232</td></tr><tr><td>Lift(Ch)</td><td>330</td><td>320</td></tr><tr><td>Lift (Ad)</td><td>236</td><td>242</td></tr><tr><td>Lift total</td><td>566</td><td>562</td></tr><tr><td>Total</td><td>826</td><td>794</td></tr><tr><td>%age off</td><td>41.3</td><td>23.82</td></tr></table></td><td>Shop B</td><td>5</td><td>M1 for finding the total cost for 1adult and 2 children for lift passes for 6 days in either shop A or shop B
e.g 236 + 2 × 165 or 242 + 2 or 2× 160 or 236 + “330” or 242 + “320” or 566 seen or 562 seen
or the total cost of 2 children only for ski hire and boot hire for 6 days in either shop A or shop B
e.g. 2× 78 + 2 × 52 or 2× 68 + 2 × 48 or “156” + “104” or “136” + “96” or 260 seen or 232 seen

M1 for a complete calculation of cost for shop A or shop B
Eg (78 + 52 + 165) × 2 + 236 or (68 + 48 + 160) × 2 + 242 or “295” × 2 + 236 or “276” × 2 + 242 or 826 or 794 seen
M1 for a correct method to find the reduced cost for shop A or for shop B
e.g. “826” × 0.95 or “794” × 0.97
A1 for (€)784(.70) or (€)785 and (€)770(.18)
C1 (dep on M1 scored) ft for ‘cheaper shop’ identified</td></tr>
</table>

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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.
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.

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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

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		0.25	1	B1 cao
	(b)		$\frac{3}{4}$	1	B1 oe
	(c)		20	1	B1 cao
2	(a)		hexagon	1	B1 hexagon
	(b)		pentagon	1	B1 pentagon
	(c)		A and H	1	B1
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
4			reflected shape	2	B2 correct T shape drawn in correct position (B1 correct reflection in a line parallel to the mirror line)

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*5		18× 5.78 = £104.04 20× 5.64 = £112.80 104.04 > 112.80	Fred's DIY Store 104.04 > 112.8(0)	3	M1 18 × 5.78 or 20 ×5.64 A1 (£)104.04 and (£)112.8(0) or £8.76 C1 (dep on M1) for correct conclusion based on comparison of their two answers. (Accept working in £ or p)
6	(a)	150 – 10 + 25 = 165 165 – 5 + 16 Or 150 – 5 + 16 = 161 161 – 10 + 25 OR 150 – 15 =135 135 + 41 Or 150 + 41 = 191 191 – 15 OR 10 + 5 = 15 25 + 16 = 41 41 – 15 = 26 150 + 26	176	3	M1 150 – 10 + 25 or 165 M1 "165" – 5 + 16 A1 cao Or M1for 150 – 5 + 16 or 161 M1 for or "161" – 10 + 25 A1 cao OR M1 150 – 10 – 5 or 150 – 15 or 135 M1 "135" + 25 + 16 or "135" + 41 A1 cao Or M1 for 150 + 25 + 16 or 150 + 41 or 191 M1 for "191" – 10 – 5 or "191" – 15 A1 cao OR M1 10 + 5 or 15 or 25 + 16 or 41 25 + 16 – 10 – 5 or 26 M1 for 150 + "41" – "15" or 150 + "26" A1 cao

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(b)	$\frac{80}{240} = \frac{1}{3}$	$\frac{1}{3}$	2	M1 $\frac{80}{240}$ oe A1 cao SC B1 for $\frac{2}{3}$
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**
8		24 + 24 + 15 = 63 63 – 60	3	4	M2 for 24 + 24 + 15 or 63 (M1 for 24 + 24 or 24 + 15) M1 (dep on at least M1) for "63" – 60 or 60 – "63" A1 **SC** B2 for £18 (using 2 adults and 2 children) or for £4 (using £16 for child ticket)
9	(a)	25 × 9 + 10	235	2	M1 25 × 9 + 10 A1 cao
	(b)	360 – 10 = 350 350 ÷ 25	14	3	M1 360 – 10 (=350) or 360 ÷ 25 (=14.4) M1 for correct order of operations – 10 then ÷ 25 A1 cao OR M1 reverse flowchart for inverse operations with either – 10 or ÷ 25 M1 reverse flowchart for inverse operations with both – 10 and ÷ 25 in correct order A1 cao OR M1 14 × 25 M1 350 + 10 or 14 × 25 + 10 A1 cao

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10		(1×18+12+2 ×18) + (10+15+1 ×18+5) = 66 + 48 = 114 OR 12 + 10 + 15 + 5 = 42 1 + 2 + 1 = 4 4 × 18 = 72 42 + 72	Yes they have raised enough money	5	M1 for 1×18 + 12 + 2 ×18 (=66) or Jamie's form completed with correct 18 and 36 and a final total. M1 for 10 + 15 + 1 ×18 + 5 (=48) or Lily's form completed with correct 18 and a final total. M1 "66" + "48" (dep on M1) A1 for 114 C1 (dep on M1) for clear comparison and conclusion using their answer for the total raised OR M1 for 12 + 10 + 15 + 5 (=42) seen separately from any other total M1 for (1 + 2 + 1) × 18 or 72 M1 for "42" + "72" (dep on 2nd M1) A1 for 114 C1 (dep on M1) for clear comparison and conclusion using their answer for the total raised.
11			Correct net	2	B2 any correct net (B1 3 or 4 faces including at least one triangle, but no more than 2 triangles, and one rectangle)
12	(a)		120	1	B1 120 ± 2
	(b)	5.5 × 10	55	3	B1 5.5 ± 0.2 M1 "5.5" × 10 A1 55 ± 2

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5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		12	1	B1 oe
	(b)		14	1	B1 cao
	(c)	$6y = 42$	7	2	M1 $6y$ or attempting to add y terms, $3y + 3y$ or $y + 5y$ A1 cao
	(d)	$5p = 25$	5	2	M1 for attempt to add 4 to both sides or divide both sides by 5 as the first step. A1 cao
14			diagram	2	B2 8 shapes drawn that tessellate with no gaps (B1 at least 4 shapes drawn, no gaps anywhere)

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15*		1.22 + 0.96 + 2.42 = 4.60 1.15 + 0.86 + 2.28 = 4.29 4.60 × 0.95 = 4.37 4.37 > 4.29 OR 1.22 ×0.95 = 1.159 0.96 × 0.95= 0.912 2.42 × 0.95 = 229.9 1.159 + 0. 912 + 2.299 = 4.37 OR 1.22 ×0.95 = 1.159 0.96 × 0.95= 0.912 2.42 × 0.95 = 229.9 1.159>1.15 and 0.912>0.86 and 2.229>2.28	no 5% reduction will not be enough	3	M1 1.22 + 0.96 + 2.42 or 4.60 or 1.15 + 0.86 + 2.28 or 4.29 A1 4.37 and 4.29 C1 (dep on M1) ft clear statement of comparison based on their answers OR M1 1.22 ×0.95 oe or 0.96 × 0.95 oe or 2.42 × 0.95 oe A1 4.37 and 4.29 C1 (dep on M1) ft clear statement of comparison based on their answers OR M1 1.22 ×0.95 oe or 0.96 × 0.95 oe or 2.42 × 0.95 oe A1 115.9 or 116 or 115 **and** 91.2 or 91 or 92 **and** 229.9 or 229 or 230 C1(dep on M1) ft clear statement of comparison based on their answers NB Allow working throughout in pence or pounds
16			overlay	2	B2 within overlay guidelines (B1 for construction arcs 8cm away from each end of given line but point of intersection not joined to this line.)

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
17*		Paint for You 7.5 ÷ 2.5 = 3 tins 3 × 8.35 = £25.05 25.05 × 1.20 = £30.06 Paul's paints 7.5 ÷ 0.75 = 10 tins 10 × 3.15 = £31.50 OR Paint for You 8.35× 1.20 = £10.02 10.02 ÷ 2.5 = £4.008 per litre Paul's Paints 3.15 ÷ 0.75 = £4.20 per litre There is no wastage	Paint for You (2.5 litre tins)	4	M1 7.5 ÷ 2.5 or 3 seen or 7.5 ÷ 0.75 or 10 seen M1 8.35× 1.2(0) oe or 10.02 or "25.05 × 1.2(0)"oe M1 "3" × 8.35 or "3" × "10.02" **and** "10" × 3.15 C1 for both 30.06 and 31.5(0) and correct conclusion OR M1 7.5 ÷ 2.5 or 3 seen or 7.5 ÷ 0.75 or 10 seen M1 8.35× 1.2(0) oe or 10.02 or 8.25÷2.5 × 1.2(0)oe or 3.34 × 1.2(0) oe M1 "10.02" ÷ 2.5 or 4.008 or 4.01 **and** 3.15 ÷ 0.75 or 4.20 C1 for both 4.008 (or 4.01) and 4.2(0) and correct conclusion OR M1 7.5 ÷ 2.5 or 3 seen or 7.5 ÷ 0.75 or 10 seen M1 8.35× 1.2(0) oe or 10.02 M1 2.5 ÷ 0.75 **and** "10.02" ÷ 3.15 C1 for both 3.3(3.. and 3.1(8...) and correct conclusion OR any equivalent process using correct methods which leads to two values that can be compared

5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
18		$x + x + 4 + x - 2 = 26$ $3x + 2 = 26$ $3x = 24$ $x = 8$ OR $26 - 4 = 22$ $22 + 2 = 24$ $24 \div 3$	8	4	M1 $x + x + 4$ or $x + x - 2$ or $x + 4 + x - 2$ or "expression in x" + $x + 4 = 26$ or "expression in x" + $x - 2 = 26$ M1(dep) "3"x + "2" = 26 M1 "3"x = 26 - "2" A1 cao OR M1 $26 - 4$ or $26 + 2$ M1 "22" + 2 or "28" - 4 M1 "24" ÷ 3 A1 cao OR M3 6 + 8 + 12 seen (M2 three ages that meet the criteria x, $x + 4$ and $x - 2$) (M1 two trials of three ages added or a set of three ages that would add to 26) A1 cao
19		$\pi \times 20$	62.8 cm	3	M1 $\pi \times 20$ or $\pi \times 19.5$ or $\pi \times 19.95$ A1 62.8 – 63 B1(indep) for units consistent with answer

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 ≥ in place of >) B1 ft OR M1 $(16 - 5) \div 3$ A1 $\frac{11}{3}$ or 3.6(66..) or 3.7 B1 ft
21		$9^2 + 14^2 = 81 + 196 = 277$ $AB = \sqrt{277}$	16.6	3	M1 $9^2 + 14^2$ or 81 + 196 or 277 M1 $\sqrt{277}$ or $\sqrt{81+196}$ or A1 16.6 -16.643

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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 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

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

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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)

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

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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

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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)

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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})

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

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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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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.

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_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
2	(i)		Hexagon	1	B1 for (regular) hexagon
	(ii)		Decagon	1	B1 for (regular) decagon
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
4	(a)(i)		Acute	2	B1 for acute
	(ii)		65		B1 for 63 – 67
	(b)(i)		53	2	B1 cao
	(ii)		Reason		B1 for 'Angles on a straight line add up to 180°

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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 × 4.5 oe (eg by addition/subtraction method) A1 cao
6 (a)(i)		25, 22	2	B1 cao
(ii)		Subtract 3		B1 for correct description Eg. 'subtract 3' **or** 'goes down by 3' oe **or** 'take-away 3' **or** -3 **or** $43 - 3n$ seen
(b)		23	2	M1 for +5 seen **or** for continuing sequence for at least 2 terms (condone one arithmetic error) **or** $5n - 17$ A1 cao
7 (a)		$\frac{5}{9}$	1	B1 for $\frac{5}{9}$ oe
(b)		3 squares shaded	1	B1 for any 3 squares shaded
(c)		80	2	M1 for $120 \div 3$ (= 40) **or** 2×120 (= 240) **or** $\frac{2}{3} \times 120$ oe A1 cao

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PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*8		Correct chart or diagram	4	B1 for a key or suitable labels to identify bicycles and motorbikes or clear differentiation between categories B1 for 5 correct labels for days clearly in the appropriate place B1 for a diagram(s) or chart(s)(combined or separate) set up for comparison, correctly showing data for at least three days e.g. dual bar chart, line graphs, pie charts, pictograms, etc C1 fully correct diagram or chart to include all axes labelled.
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
10		(12) 10 80 (27)	1 1	B1 cao B1 cao
11 (a)		(8, 1)	1	B1 cao
(b)		Coordinate shown	2	B2 for N at (5, k) where $k \geq 6.2$) **or** (2, 7) **or** (8,7) (B1 for N at (5, k) where $k < 6.2$)
12 (a)		1	1	B1 cao
(b)		26	1	B1 cao
(c)		144	2	M1 for 16 × 9 A1 cao
13		eg. 18, 4, 5	3	M1 for two different factors of 40 M1 for 3 numbers where the sum lies between 20 and 30 **AND** (where one is 9 or 18 **or** two are different factors of 40 A1

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PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
14 (a)		2	1	B1 cao
(b)		4	2	M1 for showing a clear intention to add all ten numbers **and** to divide by 10 A1 cao
(c)		55	2	M1 for evidence of at least 4 attempts to multiply number of birds by frequency eg. 0×3 , 2×1 , 3×2 , 4×3 , 5×4 , 3×5 A1 cao
*15		34 or 33	4	M1 for one operation e.g. 12 × 4.5 (= 54) **or** 12 × 5 (= 60) **or** 4.5 × 5 (= 22.5) **or** ÷8 M1 for two operations e.g. 12 × 4.5 × 5 (= 270) **or** 12 × 4.5 ÷ 8 (= 6.75) **or** 4.5 × 5 ÷ 8 (= 2.8125) **or** 12 × 5 ÷ 8 (7.5) M1 for a complete method e.g. 12 × 4.5 × 5 ÷ 8 (=33.75) C1 for 34 accept 33 clearly identified from correct calculations and correct figures
16 (a)		Evens	1	B1 cao
		Certain	1	B1 cao
(b)		4	2	M1 for 14 **or** $\frac{3+7}{n}=\frac{5}{7}$ **or** any fraction equivalent to $\frac{2}{7}$ or $\frac{5}{7}$ A1 cao
17		Triangle at (4, 2) (2, 2) (4, 5)	2	B2 for triangle at (4, 2) (2, 2) (4, 5) (B1 for correct reflection in the *x* axis or for a reflection in any line parallel to *y* axis)
18	80 litres ≈ 18 gallons or 16 gallons ≈ 72 litres	A with correct figures	3	M1 for reading from the graph eg. 8 gallons = 36 litres; 20 litres = 4.4 gallons M1 for a complete method to convert either 80 litres into gallons or 16 gallons into litres e.g. 80 litres = "4.4" × 4 gallons or 16 gallons = "36" × 2 litres A1 for car A with correct figures in range 17.5 –18.5 gallons or 64 – 72 litres

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Small with correct figures for comparison	4	M1 for one calculation e.g. 6.5 ÷ 30 (=0.216...) **or** 8.95 ÷ 40 (=0.22375) **or** 10.99 ÷ 50 (=0.2198) M1 for all three calculations e.g. of 6.5 ÷ 30 (=0.216...) **and** 8.95 ÷ 40 (=0.22375) **and** 10.99 ÷ 50 (=0.2198); A1 for 0.216... **and** 0.22375 **and** 0.2198... can be rounded or truncated as long as they remain different C1 (dep on M1) for conclusion ft from three comparable figures [could use different figures relating to 30, 40, 50] **OR** M1 for one calculation e.g 6.5 × 20 (=130) **or** 8.95 × 15 (=134.25) **or** 10.99 × 12 (=131.88) M1 for three calculations e.g. 6.5 × 20 (=130) **and** 8.95 × 15 (=134.25) **and** 10.99 × 12 (=131.88) A1 for 130 **and** 134.25 **and** 131.88 can be rounded or truncated as long as they remain different C1 (dep on M1) for conclusion ft from three comparable figures [or any other calculations leading to comparable figures e.g. cost of 600 plants or comparing small and medium and small and large e.g. 120 plants and 150 plants separately] **Or** M1 for one calculation e.g 30 ÷ 6.5 (= 4.615…) **or** 40 ÷ 8.95 (= 4.469…) **or** 50 ÷ 10.99 (= 4.549…) M1 for three calculations e.g. 30 ÷ 6.5 (= 4.615…) **and** 40 ÷ 8.05 (= 4.469…) **and** 50 ÷ 10.99 (= 4.549…) A1 for 4.615… **and** 4.469… **and** 4.549… can be rounded or truncated as long as they remain different C1 (dep on M1) for conclusion ft from three comparable figures [or any other calculations leading to comparable figures]
20 (i)		$x + 4$	1	B1 for $x + 4$ oe
(ii)		$2x$	1	B1 for $2x$ oe

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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
22 (a)		34.81	1	B1 cao
(b)(i)		35.1606....	2	B1 for 35.1606(7977...)
(ii)		35.2		B1 ft from (i) provided (i) has more than one decimal place
23 (a)		9	1	B1 cao
(b)		5	1	B1 cao
(c)		17	2	M1 for clear intention to expand bracket or divide both sides by 2 as the first step eg. $2y - 2\times5 = 24$ **or** $y - 5 = 24 \div 2$ A1 for 17
(d)		$5(3p + 8)$	1	B1 cao

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PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
24		115	4	M1 for 360 − 4 × 25 (=260) M1 (dep) for "260"÷ 4 (= 65) M1 for 180 – "65" **or** (360 −2 × "65") ÷ 2 A1 for 115 with working **OR** M1 for 360 ÷ 4 (= 90) M1 (dep) for "90" − 25 (=65) M1 for 180 – "65" **or** (360 – 2 × "65") ÷ 2 A1 for 115 with working
25		6.45	5	M1 for 110 + 12 × 16.80 (= 311.6) M1 for 0.15 × 359 oe (= 53.85) M1 (dep on previous M1) for 359 – "53.85" oe (= 305.15) M1 (dep on M3) for "311.6" – "305.15" A1 for 6.45 from correct working
26		19	4	M1 for 130 − 96 (=34) M1 for 73 − 55 (=18) M1 for"34" − 9 – "18" + 12 A1cao **OR** M1 for. 96 − 55 − 12 (=29) M1 for 9 + "29" (=38) M1 for 130 − 73 – "38" A1 cao

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PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
27		440	2	M1 for 140 × π or 439 A1 for 439.6 – 440
*28		No with correct figure	3	M1 for a calculation which uses the Time × Speed = Distance relationship **OR** a conversion of units eg between hours & minutes or between mph & miles per min M1 for a calculation involving both of the above C1 for "no" with a correct calculation, with units, from working: 25.2 – 25.8 minutes, 30.1 – 30.8 miles, 69 – 69.3 mph Distance ÷ speed: 30 ÷ 70 (= 0.42 - 0.43); Distance ÷ time: 30 ÷ 26 (= 1.15…); Speed × time: = 70 × 26 (=1820 mins) Mph to miles/min 70 ÷ 60 (=1.16-1.67); Minutes to hours is 26 ÷ 60 (= 0.43…) **NB** 70 ÷ 26 × 30 as a single stage calculation gets 0 marks

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Question 26:

	F	S	G	
W	12	55		96
M	**7**	**18**	9	**34**
	19	73		130

	F	S	G	
W	12	55	**29**	96
M			9	
	19	73	**38**	130

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_2F			
Question		**Modification**	**Notes**
Q2		Polygons labelled polygon (i) and polygon (ii).	Standard mark scheme
Q3		Table – 2nd line (Sonsang A220) and 'camera' column removed.	Standard mark scheme
Q4		Angle arms – 10cm long	Standard mark scheme
Q7		2cm squares. Shading is dotty.	Standard mark scheme
Q8		Top 2 rows and last column removed. 1½cm grid.	Standard mark scheme
Q10		Braille (i) and (ii) in empty boxes.	Standard mark scheme
Q11		2cm grid. *x* changed to filled in circles.	Standard mark scheme

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PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q12		1st line 'square grid' instead of 'centimetre grid'. 2cm grid. Shading is dotty.	Standard mark scheme
	(b)	insert (Each square on the grid represents a one centimetre square).	Standard mark scheme
Q14	(c)	Frequency column widened to allow working space.	Standard mark scheme
Q17		2cm grid. Shading is dotty.	Standard mark scheme
Q18		2cm grid.	Standard mark scheme
Q24		*a* changed to *x*. Shading is dotty. MLP and braille.	Standard mark scheme

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Mark Scheme (Results)

Summer 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

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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. 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

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
2	(a)		red	1	B1 cao
	(b)		unlikely	1	B1 cao
	(c)		impossible	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					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		19	1	B1 cao
	(b)		203	1	B1cao
	(c)		Explanation	1	B1 for any correct reason, e.g. terms are all odd but 372 is even or use of *n*th term $4n - 1$ or not 1 less than a multiple of 4
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					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		Pentagon	1	B1 cao
	(b)		Parallel lines marked	1	B1 cao
	(c)		Acute	1	B1 cao
	(d)		10 cm^2	2	B1 for 10 B1 (indep) for cm^2
*9			Diagram or chart	4	M1 for key or suitable labels to identify Majorca and Crete M1 for 5 correct month labels OR a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least three months C1 for fully correct diagram or chart to include all axes correctly scaled and labelled
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

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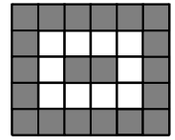
PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
11	(a)		$\frac{7}{15}$	2	M1 for $\frac{14}{30}$ oe A1 cao
	(b)		2	1	B1 cao
	(c)			2	M1 for at least 3 of the 5 rows correct A1 cao SC if M0 scored: B1 for a symmetrical pattern with more than 6 squares shaded but not all shaded.
12	(a)		$3ac$	1	B1 cao
	(b)		p^3	1	B1 cao
	(c)		$8x - 7y$	2	M1 for $8x$ or $\pm 7y$ A1 cao

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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					
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
15			200	3	M1 for 20 × 40 × 20 (=16000) or 5 × 8 × 2 (=80) M1 (dep) for "16000" ÷ "80" A1 cao OR M1 attempt one division (eg 20 ÷ 5), may be implied by marks or number on one edge of diagram M1 (dep) for "(20 ÷ 5)" × "(40 ÷ 8)" × "(20 ÷ 2)" A1 cao

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16		base angles of isosceles triangle are equal **and** angles on a straight line add up to 180° **and** angles in a triangle add up to 180° OR base angles of isosceles triangle are equal **and** angles in a triangle add up to 180° OR base angles of isosceles triangle are equal **and** exterior angle of a triangle is equal to the sum of the interior opposite angles	60° with reasons	4	B1 for angle *ADB* =25 can be shown on the diagram M1 for a complete method to find *x* C2 (dep 2 previous marks) for 60 with full reasoning seen (C1 (dep 1 previous mark) for one reason) QWC: Reasons must be appropriate to the method shown.
17			168, 72, 120	4	M1 for evidence of method for at least one angle (could be implied by working or one correct angle on pie chart or in table) A2 for all angles drawn correctly ±2° (A1 for at least one angle drawn correctly or all angles correct in table) B1 for sectors labelled with results (dependent on at least one angle drawn correctly and exactly three sectors)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18	(a)		-7	2	M1 for 3×-5 (= -15) **and** 4×2 (=8) A1 cao
	(b)(i)		$10p$	2	B1 for $10p$ oe
	(b)(ii)		$10p - 7$		B1ft for "$10p$" – 7 Note "$10p$" MUST be an algebraic expression
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
20		<table><tr><td></td><td>Sq</td><td>G</td><td>S</td><td>Tot</td></tr><tr><td>F</td><td>**2**</td><td>**4**</td><td>**15**</td><td>21</td></tr><tr><td>M</td><td>6</td><td>**14**</td><td>9</td><td>**29**</td></tr><tr><td>Tot</td><td>8</td><td>18</td><td>**24**</td><td>50</td></tr></table>	4	4	M1 for a correct first step which results in a value that could be in the table: eg. 50 – 18 – 8 (= 24) or 50 – 21 (= 29) or 8 – 6 (= 2) M1 for correct method to find a second value that could be in the table using their first value eg "29"-9-6 (=14) or "24"-9 (=15) M1 for a fully correct and complete method. A1 cao
21			25.60	4	M1 for a correct method to find $\frac{1}{3}$ of 24 (=8) or $\frac{2}{3}$ of 24 (=16) M1 for a correct method to find 60% (= 7.2) or 40% (= 4.8) of 12 or 60% (= 14.4) or 40% (= 9.6) of 24 M1 (dep on at least M1) for a method to find the sum of their discounted adult ticket + 2 × their discounted child ticket A1 25.6(0)
22			Question given	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**
23	(a)		$2m^2 + 6m$	1	B1 cao
	(b)		$3xy(y - 2)$	2	B2 for $3xy(y - 2)$ (B1 for $3x(y^2 - 2y)$ or $3y(xy - 2x)$ or $xy(3y - 6)$ or $3xy$(a two term algebraic expression))
*24			3	4	M1 for attempt to calculate at least one area eg 10×7 (=70) or 16×10 (=160) M1 for a method to find the total area (=124) M1 (dep on M1) for "124" ÷ 36 C1 (dep on M3) for 3 (pigs) clearly identified and supported by correct calculations Or M1 for an area of 36m² drawn with dimensions shown M1 for 3 areas of 36m² drawn with dimensions shown M1 for method to find the area left (=16) C1 (dep on M3) for 3 (pigs) clearly identified and supported by correct calculations
25			Shape drawn	2	B2 for shape with vertices at (0, –1), (–1, –3), (–2, –3), (–2, –1) (B1 for rotation of 180° about the wrong centre)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*26		1.18 ÷ 4 = 0.295 (118 ÷ 4 = 29.5) 1.74 ÷ 6 = 0.29 (174 ÷ 6 = 29) 1.18 ÷ 2 = 0.59 1.74 ÷ 3 = 0.58 1.74 × 4 = 6.96 1.18 × 6 = 7.08 1.74 × 2 = 3.48 1.18 × 3 = 3.54 1.18÷2×3=1.77 1.74÷3×2=1.16 4÷1.18=3.3(....) 6÷1.74=3.4(…)	6 pints	3	M1 for division of price by quantity for both bottles or division of quantity by price for both bottles or a complete method to find the price of the same quantity of milk. A1 for two correct values that could be used for a comparison C1 ft (dep on M1) for comparison of their values with a correct conclusion.

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q07		scales are simplified	Standard mark scheme
Q08	(a)	dotted grid kept but made a 2 cm grid	Standard mark scheme
Q08	(d)	2 cm solid grid. Wording added “Each square on the grid represents a one centimetre square”.	Standard mark scheme
Q09		1 ½ cm grid. 14 x 14 squares	Standard mark scheme

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q11	(a)	2 cm squares – dotty shading	Standard mark scheme
	(b)	2 cm squares – dotty shading – same as part (a). A shape is provided.	Standard mark scheme
	(c)	2cm squares – dotty shading	Standard mark scheme
Q13		Table size 1: 60mm x 20mm size 4: 90mm x 120mm	
	(b)	Changed to 90mm by 120mm rectangle	Apply mark scheme to the drawing of this size of rectangle
Q13	(c)	The box for David's advert is 60mm by 20mm – no writing inside	Standard mark scheme
Q15		2 models as well as a diagram	Standard mark scheme

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q17		Frequencies changed: 25, 15, 20 Pie chart 9cm radius marked off in 10 degree sections on the circumference.	Angles are now 150°, 90°, 120°
Q18	(a)	x changed to e, y changed to f	Standard mark scheme
Q24		Braille only: diagram labelled A – F clockwise from the top left	Standard mark scheme

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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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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.

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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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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

PMT

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

PMT

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"

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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

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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)

Summer 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Unit 3: 5MB3F_01 (Foundation)

PMT

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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
2	(a)		A and E	1	B1 cao
	(b)		D	1	B1 cao
3	(a)		pentagon	1	B1 for pentagon
	(b)		hexagon drawn	1	B1 for a sketch of an hexagon
	(c)		5cm by 3cm rectangle drawn	2	B2 for a rectangle with two perpendicular sides with correct lengths (B1 for a rectangle with one side of correct length or a quadrilateral with a pair of adjacent sides of correct lengths)

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
5			5	2	M1 for 58 ÷ 12 (= 4.8...) or 58 – 12 – 12 – 12 …or adding at least 12 + 12 + 12 + ... or counting up multiples of 12 with at least 12, 24, 36… A1 cao
6	(a)		April	1	B1 cao
	(b)		June and August	1	B1 cao
	(c)		8	2	M1 for 14 – 6 or 6 – 14 A1 cao
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
8	(a)		reflection	2	B2 cao (B1 for reflection with correct orientation)
	(b)		2	1	B1 for 2
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					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		graph drawn	2	B2 for correct straight line from 0 to 8 gallons (B1 for at least 4 points plotted accurately or line through at least 4 of the points from the table)
	(b)		22 – 24	1	B1 for 22 – 24 or ft from graph in (a)
	(c)		7.0– 7.4	1	B1 for 7.0 – 7.4 or ft from graph in (a)
11	(a)		2	1	B1 for 2 (or +2)
	(b)		−9	1	B1 cao
	(c)		−3	1	B1 cao
12			14	2	M1 for 4 + 2 × 5 A1 cao
13	(a)		31.25	2	M1 for complete method eg 125 ÷ 4 or 25 + 12.5 ÷ 2 A1 cao
	*(b)		France with comparison	3	M1 for method to convert €100 to pounds eg 20 × 4 A1 for (£)80 C1 (dep M1) for correct comparison with correct units OR M1 for method to convert £90 to Euros eg (£90=)125 − 12.5 (=112.5) A1 for (€)112.5(0) C1 (dep M1) for correct comparison with correct units

Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		4	1	B1 cao
	(b)		6	1	B1 cao
15			tessellation	2	B2 for at least 6 correct shapes, including initial shape, correctly tessellating. (B1 for at least 4 correct shapes, which may include initial shape, correctly tessellating, ignore the rest of the diagram)
16	(a)		118 - 122	1	B1 for 118 – 122
	(b)		17.5	2	M1 for 2.5 × "7" where "7" is 6.8 – 7.2 A1 for 17 - 18
	(c)		Position marked	2	B1 for school marked due North of church B1 for distance of 6cm
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
19			3cm×6cm rectangle drawn	2	B2 cao (B1 for a rectangle with one correct side)
20			226.80	3	M1 for method to find 5% of 54 (= 2.7) or 5% of "54×4" (=10.8) or 105% of 54 (= 56.7) M1 for a complete method to find the total amount A1 for 226.8(0)

Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*21		**Examples** **£ per bag** 2.15÷50 = 0.043 (4.3) 3.29÷80 = 0.0411.. (4.11..) 5.17÷125 = 0.0413..(4.13..) **Bags per £ (or p)** 50÷2.15 = 23.2(5...) 80÷3.29 = 24. 3(1...) 125÷5.17 = 24.1(7...) **Price per 400 bags** S: 2.15×8 = 17.2 M: 3.29×5 = 16.45 **Price per 1000 bags** M: 3.29×12.5 = 41.125 L: 5.17×8 = 41.36	Medium	4	M1 for division of price by quantity for at least 2 boxes **or** division of quantity by price for at least 2 boxes **or** a complete method to find price of same quantity for at least 2 boxes **or** to find quantity of same price applied to at least 2 boxes M1 for a complete method to give values that can be used for comparison of all 3 boxes. A1 for correct values that can be used for comparison for all 3 boxes C1 ft (dep on M2) for comparison of their values with a correct conclusion.
22	(a)		$5x - 3 = 52$	3	M1 for $2x$ or $2x - 3$ seen M1 for x and $2x$ and $2x - 3$ A1 for $5x - 3 = 52$ from correct working
	(b)		11	2	M1 for intention to either add 3 to both sides or divide all terms by 5 as a first step A1 cao
23			enlargement scale factor 3 centre O	3	B1 for enlargement B1 for scale factor 3 B1 for (centre) O oe NB: B0 for any combination of transformations

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Paper: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
24			77 – 77.2	4	M1 for $\pi \times 40^2 \times 90$ (= 452389. ..) M1 for "452389" – 65000 (= 387389. …) M1 (dep on at least M1) for "387389. .." ÷ ($\pi \times 40^2$) A1 for answer in the range 77 to 77.2 OR M1 for $\pi \times 40^2$ (= 5026. ..) M1 for 65000 ÷ "5026. .." (= 12.93....) M1 (dep on at least M1) for 90 – "12.93" A1 for answer in the range 77 to 77.2
25			$h = \frac{x-8}{5}$	2	M1 for intention to either subtract 8 from both sides or divide each term by 5 as a first stage of working A1 for $h = \frac{x-8}{5}$ oe

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PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q02		Shapes G, H and I removed	
Q03	(b)	six polygons with 3, 4, 5, 6, 7, 8 sides labelled A to F "Which polygon is a hexagon?"	
	(c)	5cm and 3cm changed to 10cm and 6cm. Base line given	
Q06		Bars: May up to 15, Jun and August up to 5, July up to 7.5 2cm squares	
Q08		2cm grids	
Q10	(c)	2cm grid 33 litres changed to 30	
Q15		5 shapes not 6 1 shape provided for all candidates last 2 columns removed from grid	

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Mark Scheme (Results)

November 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Non-Calculator) Unit 2

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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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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

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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: 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
2	(a)		Sketch	1	B1 cao
	(b)		Chord	1	B1 cao
	(c)		Cylinder	1	B1 cao
3	(a)		5	1	B1 cao
	(b)		Line drawn	1	B1 for line of symmetry drawn
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					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		square, rectangle	1	B1 cao
	(b)		square, rhombus	1	B1 cao
6	(i)		obtuse	2	B1 cao
	(ii)		125		B1 accept 123 - 127
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
8	(a)		Diagram drawn	1	B1 appropriate diagram drawn
	(b)		71	2	M1 for generating a series beyond 4th term, adding on 7s, adding to diagrams, etc. or any other equivalent method A1 cao
9	(a)		$4d$	1	B1 cao
	(b)		$3ef$	1	B1 cao
	(c)		$5x + 2y$	2	M1 for $5x$ or $2y$ A1 cao

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PAPER: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10			100	4	M1 identifying the triangle as isosceles or gives other base angle as 50° M1 for 180 – 50 – 50 (= 80) M1 for 360 – 90 – 90 – "80" A1 cao
11			195	2	M1 for 300 × 0.65 oe A1 cao
12	(a)		35 – 35.5	1	B1 for answer in range 35 – 35.5
	(b)		6.5 – 7.0	1	B1 for answer in range 6.5 – 7.0
	*(c)		No	4	M1 for adding the four weights (= 1280) M1 for a correct method to convert using graph or other means A1 for 2810 – 2825 for converted weight C1 ft (dep on M1) for a correct conclusion for their converted total weight OR M1 for a correct method to convert each weight using graph or other means [792, 660, 616, 748] M1 for adding converted weights A1 for 2810 – 2825 for converted weight C1 ft (dep on M1) for a correct conclusion for their converted total weight OR M1 for adding the four weights (= 1280) M1 for a correct method to convert 2800 pounds to kg using graph or other means A1 for 1270 – 1275 C1 ft (dep on M1) for a correct conclusion for their converted maximum weight NB: answers from (a) or (b) could be used in part (c)

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PAPER: 5MB2F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*13			Cheaper by tram	4	M1 for 3.40 × 4 (= 14.00) M1 for 2.20 + 1.20×10 (= 14.20) A1 for (£)14 and (£)14.20 C1 (dep on at least M1) for correct conclusion based on their calculations OR M1 for 2.20 + 1.20×10 (= 14.20) M1 for "14.20" ÷ 4 A1 for (£)3.50 and (£)3.55 C1 (dep on at least M1) for correct conclusion based on their calculations
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
15			108	5	M1 for a method for finding the dimensions e.g. length + width = 12 or 2 × length + width = 21 A1 for length = 9 (could be shown on diagram) A1 for width = 3 (could be shown on diagram) M1 for area = "9" × "3" × 4 A1 cao

PAPER: 5MB2F_01					
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

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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 $5w$ or $2y$ A1 for $5w + 2y$
10		Insert 'Two angles are marked as 50° and x°'	

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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	
17		Model given – MLP also have diagram Wording inserted 'The box is 100 cm long, 40 cm wide and 60 cm high'	

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Mark Scheme (Results)

November 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

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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 $\sqrt{43}$ 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]

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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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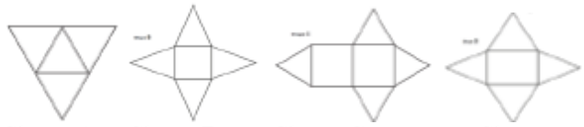
PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
2	(d)	Remove triangle H	
4	(b)	Grid enlarged. 'mirror line' repeated on the left	
5		Road given as straight line	
8	(a) (b)	MLP x changed to y t changed to e	
10		Given line 7 cm	
12		No picture – just information given	
15		Model given and a diagram 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)

November 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

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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.
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_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

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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]

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

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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	

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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 B (2MB01)
Foundation (Non-Calculator) Unit 2

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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.

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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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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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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

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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

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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

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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

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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

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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)

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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

PMT

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

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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

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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 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.

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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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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(i)		Cylinder	1	B1 cao
	(ii)		Cuboid	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					
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
4	(a)		32 9	2	B1 cao B1 cao
	(b)		+7 or $\times\frac{10}{3}$	1	B1 for +7 or $\times\frac{10}{3}$
5	(a)		5	1	B1 cao
	(b)		2.8	1	B1 oe
	(c)		1.5	2	M1 for the intention to subtract 3 from both sides or divide each term by 4 as a first step A1 1.5 oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*6			Diagram or chart drawn	4	M1 for key or suitable labels to identify Tyler and Fletcher M1 for 4 correct month labels OR a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least three months C1 for fully correct diagram or chart to include all axes correctly scaled and labelled
7	(a)		Diagram	1	B1 cao
	(b)		15	2	M1 sequence written out and continued or diagram drawn or $2n+1$ given as the nth term A1 cao
	(c)		Explanation	1	B1 explanation eg answer must be odd or use of $2n + 1$ or pattern 17 has 35 circles
8	(a)		$\frac{3}{7}$	1	B1 cao
	(b)		2 squares shaded	1	B1 cao
	(c)		150	2	M1 $200 \div 4 \times 3$ or 0.75×200 oe A1 cao
	*(d)		Explanation	2	C2 for a full explanation, eg answer given as 4/35 or "He subtracted 3/5 from a fraction less than 1 so the answer must be less than 1" (C1 for a partial explanation, eg use of a suitable common denominator or " He should have used a common denominator")

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		Plus Power	1	B1 cao
	(b)		TMF Energy	1	B1 cao
	(c)		2.9	2	M1 for 11.1 – 8.2 or 8.2 – 11.1 or 8.2 to 11.1 A1 cao
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
12	(a)		4	1	B1 cao
	(b)		3	2	M1 for listing the numbers in order or an answer of 5 A1 cao
	(c)		2	2	M1 for adding the numbers and dividing by 11 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Odd	1	B1 cao
	(b)		$5n$	1	B1 cao
	(c)		$\frac{t}{4}$	1	B1 oe
14	(a)		Angle drawn	1	B1 cao
	(b)		Triangle drawn	2	M1 intersecting arcs of radii 6 cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
15			19	2	M1 for $2 \times 6.5 + 3 \times 2$ **or** 13 and 6 A1 cao
16			Data collection sheet	3	B3 for a **table** with all 3 aspects: column/row heading 'sport' or list of at least 3 sports column/row heading 'tally' or tally marks (or key) 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: 0 marks for questionnaires and graphs

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			3.2 m - 5 m	3	M1 man's height seen as 1.6 m - 2 m oe or 5 ft 3 in - 6 ft 7 in oe M1 for 2 to 2.5 × 'man's height' A1 for 3.2 m - 5 m oe or 10 ft 6 in - 16 ft 6 in oe (units needed)
18			11.25	3	M1 for 40 ÷ 8 (= 5) M1 (dep) for finding the area of the triangle eg "5" × 4.5 ÷ 2 A1 cao
19	(a)		3.5	1	B1 cao
	(b)		8	2	B2 cao (B1 for 17.68 or 2.21)
20	(a)(i)		Shapes completed	2	B1 for correct shape
	(ii)				B1 for correct shape
	(b)		Shape enlarged	2	B2 correct enlargement drawn (B1 for correct enlargement in one direction or a correct enlargement with scale factor other than 2)
21	(a)		2:3	1	B1 cao
	(b)		$\frac{3}{5}$	2	M1 ft for adding the numbers in their ratio to get an acceptable total AND using this as their denominator eg 4 + 6 = 10 or 2 + 3 = 5 A1ft $\frac{3}{5}$ oe

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)		Point plotted	1	B1 cao
	(b)		positive	1	B1 cao
	(c)		18 - 22	2	M1 for a single line segment with positive gradient that could be used as a line of best fit or a vertical line from 10 or a point plotted at (10, y) where y is in the range 18 - 22 A1 18 - 22
	(d)		45	1	B1 cao
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
24		$0.65 \times 80 = 52$ $\frac{5}{8} \times 80 = 50$ $\frac{5}{8} = 0.625, 62.5\%$ $0.65 - 0.625 = 0.025$ 0.025×80	2	4	M1 for method to calculate the time Celina sings M1 for method to calculate the time Zoe sings M1 (dep on at least M1) for finding the difference between two times A1 cao Or M1 for a conversion to all decimals, fractions or percentages M1 for finding their difference in their chosen system M1 (dep on at least M1) for using their proportional difference multiplied by 80 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		n^2	1	B1 cao
	(b)		a^7	1	B1 cao
*26			No not enough	5	M1 for substituting into Pythagoras' theorem M1 for complete correct use of Pythagoras' theorem M1 for a complete method to find the perimeter of the trapezium A1 51.(20655..) C1 (dep on first two Ms) for correct conclusion dependent upon supporting calculations
*27			125m*l*	4	M1 for a complete method to find the cost per m*l* or the number of m*l* per £1 for one tube or for a method that results in at least two values that can be used to compare two tubes M1 for a complete method to find all three equivalent figures A1 3 correct figures suitable for comparison C1(dep on M2) for stating the correct tube size from their calculations

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Q27	Per 25ml	Per ml	Per £
50ml	54.5	2.18	45.87155...
75ml	56	2.24	44.64285...
125ml	53.8	2.152	46.46840...

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**
Q01		Models are provided for all candidates. Diagram also provided for MLP	
Q03		Wording added: "There are two spaces to fill."	
Q04	(a)	MLP only: x changed to y Diagram is enlarged. Wording added: "There are two spaces to fill."	
Q05	(c)	MLP only: x changed to y.	
Q06		Grid enlarged. Last 3 columns removed.	
Q07		Patterns placed vertically with the start of no. 4 put below no.3. Wording changed. "Pattern number 4 has been started below pattern number 3. Complete pattern number 4."	
Q08	(a)	Diagrams enlarged Dotty shading added	
Q09		"Local gas" row removed.	

PAPER: 1MA0_2F			
Question		**Modification**	**Notes**
Q14	(a)	Line given is 10 cm.	
Q14	(b)	Base line of 6 cm given.	
Q15		MLP only: g changed to f.	
Q17		Outline and wheels of bus given. "Bus" written inside. Dashed line from man's head over to bus – labelled "height of man." Dashed line from top of bus stretching to the right and labelled "height of bus." "ground" labelled. Diagram enlarged.	
Q18		Diagram enlarged, measurement arrows removed.	
Q20	(a)	Diagram is enlarged.	
Q20	(b)	Transformation drawn on diagram. Wording changed: "The diagram shows triangle P and triangle Q on a grid. Describe the single transformation that maps triangle P on to triangle Q." Diagram enlarged. Answer lines added.	
Q22		Grid enlarged. Crosses changed to filled in circles. Right axis labelled.	
Q25	(b)	All candidates: a changed to y.	
Q26		Diagram enlarged and labelled ABCD. Measurement lines removed. Information given in text.	
Q27		Diagram removed.	

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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					
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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

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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)

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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.	

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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 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

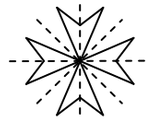
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

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)		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
2	(a)		8	1	B1 cao
	(b)		Tuesday, Thursday	2	M1 for method to find total number of apples sold eg 4 + 6 + 8 + 9 + 3 (=30) A1 cao
3	(a)		2	1	B1 cao
	(b)			2	M1 for any 2 correct lines of symmetry, allow extras A1 for all 4 lines and no extras

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		30×8p + 40×4p = 400p 30×3p + 40×2p = 170p 400 – 170 = 230 OR (8 – 3) × 30 = 150p (4 – 2) × 40 = 80p 150 + 80 = 230	2.30	3	M1 for a complete method to find the cost for one company M1 for a complete method to find the cost for both companies and finding the difference A1 cao OR M1 for a complete method to find the differences in cost for calls or texts M1 for a complete method to find the amount saved and finding the sum A1 cao **SC:** B2 for an answer with digits 23
5	(a)		$\frac{7}{10}$	1	B1 cao
	(b)		12 squares shaded	1	B1 for 12 squares shaded
	(c)		64	3	M1 for 80 ÷ 5 (= 16) M1 (dep) for 80 – "16" or "16" × 4 A1 cao OR M1 for $1 - \frac{1}{5}$ $(=\frac{4}{5})$ M1 (dep) for "$\frac{4}{5}$"× 80 A1 cao

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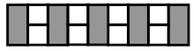
PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
6 (a)		35	1	B1 cao
(b)		30	1	B1 cao
(c)		50	2	M1 for 35 – 10 (= 25) or 40 – 15 (= 25) or 35 + "30" – 15 oe A1 for 50 or f.t. from (b) + 20
7 (a)		24	3	M1 for using 1 kg = 1000 g M1 for dividing "5.4kg" by 450g or 10 × 450 + 900 = 5400 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
8 (a)		1, 5	1	B1 cao
(b)		Point D marked	1	B1 cao
9 (a)		2.7	1	B1 cao
(b)		9261	1	B1 cao

PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
10	(a)		19	1	B1 cao
	(b)		21.5	2	M1 for evidence of adding all 10 numbers and dividing by 10 eg (20+14+21+19+27+31+19+19+24+21)÷10 or 215 ÷10 or $x \div 10$ seen where $205 \leq x \leq 225$ A1 cao
	(c)		96	3	M1 for 320×2.4 (= 768) or for $1000 \div 2.4$ (= 416.6 or 416) M1 for $(1000 - 320 \times 2.4) \div 2.4$ or for $1000 \div 2.4 - 320$ or an answer of 96.6(66....) or 96.7 or 97 A1 cao
11	(a)		drawing	1	B1 cao
	(b)		9	1	B1 cao
	(c)		Yes (supported)	1	C1 for Yes with reason eg "the number of squares is always even (and 50 is even)" oe
	(d)		38	1	B1 cao
12	(a)		$\frac{1}{6}$	1	B1 for $\frac{1}{6}$ oe
	(b)		1	1	B1 cao

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PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		1270 or 1320	2	M1 for adding the six lengths or an answer of digits 127(0) or digits 132(0) A1 for 1270 or 1320
(b)		32 mm or 3.2 cm	1	B1 for answer in range 30 mm to 34 mm or in range 3 cm to 3.4 cm
(c)		Drawing	3	M1 for at least one right angle M1 for 10cm line or 12.5cm line A1 for fully correct drawing
14 (a)		$5m$	1	B1 cao
(b)		$4pr$	1	B1 cao
(c)		$7x + 3y$	2	B2 for $7x + 3y$ oe (B1 for $7x$ or $3y$ seen)
15		21	2	M1 for $ACD = 180 - 90 - 58$ oe (= 32) or for $CDB = 180 - 58$ (= 122) or for $x = 58 - 37$ A1 cao

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PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*16		Bag A (supported)	3	M1 for $\frac{3}{7}$ or $\frac{5}{12}$ M1 (dep) for method to compare the two probabilities, e.g using a common denominator, eg $\frac{3}{7}=\frac{36}{84}$; $\frac{5}{12}=\frac{35}{84}$ or writing as decimals eg $\frac{3}{7}=0.428571...$ and $\frac{5}{12}=0.416666...$ C1 (dep on M2) for Bag A and correct method of comparison with correct figures using $\frac{3}{7}$ and $\frac{5}{12}$
17	**34** 44 78 42 **28** 70 76 **72** **148**	Complete table	3	B3 all correct (B2 for 5, 6, 7 or 8 correct) (B1 for any 2 of the 4 given correctly placed)
18		drawing	2	M1 for (quadrilateral with) at least 2 correct sides A1 cao

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
19 (a)		45	2	M1 for 60 + 60 + 60 oe (= 180) or 0.75 × 60 oe A1 cao
(b)		48	3	M1 for 120 ÷ 30 (= 4) or 720 ÷ 60 (= 12) M1 (dep) for "4" × "12" A1 cao OR M1 for 120 ÷ 60 (= 2) or 720 ÷ 30 (= 24) M1 (dep) for "2" × "24" A1 cao OR M1 for 720 × 120(= 86400) or 60 × 30 (= 1800) M1 (dep) for "86400" ÷ "1800" A1 cao
20 (a)		32.5	2	M1 for median value is 10.5th evidenced by 10th and 11th seen or "31, 34" written or (31 + 34) ÷ 2 (condone missing brackets) or both 31 and 34 identified in the stem and leaf diagram or in a fully ordered list A1 for 32.5 (accept $32\frac{1}{2}$)
(b)		32	2	M1 for 47 – 15 or 15 – 47 A1 cao
(c)		7	1	B1 cao

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
21		9.25	3	M2 for $x + x + 4 + x + x + 4 = 45$ oe or $x + x + 4 = 22.5$ oe (M1 for $x + x + 4 + x + x + 4$ oe) A1 for 9.25 or $\frac{37}{4}$ oe OR M1 for $45 - 8$ (= 37) or $22.5 - 4$ (= 18.5) M1 for $(45 - 8) \div 4$ or $(22.5 - 4) \div 2$ A1 for 9.25 or $\frac{37}{4}$ oe
*22	400 ÷ 18 = 22(.2) 499 ÷ 20 = 24(.95) or 25 600 ÷ 26 = 23(.07…) (or equivalent in £) 18 ÷ 4 = 4.5 20 ÷ 4.99 = 4(.008…) 26 ÷ 6 = 4.3(333…)	18 pack (supported)	4	M1 for a method that would result in at least two values that could be used to compare two packs M1 for a method that would result in values that could be used to compare all three packs A1 for all fully correct figures suitable for comparison C1 ft (dep on M2) for comparison of their values with a correct conclusion from their figures

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
23 (a)		20.3	2	M1 for $\frac{50}{1.57^2}$ oe A1 for answer in range 20.2 to 20.3
(b)		68.04	2	M1 for (m =) $1.8^2 \times 21$ oe A1 cao
(c)		2.61	3	M2 for a complete method to find 145% of 1.8, eg. $\frac{145}{100} \times 1.80$ oe (M1 for a method to find 45% of 1.8, eg. $\frac{45}{100} \times 1.80$ (= 0.81) or for a multiplication factor of 1.45) A1 cao
24		Polygon drawn	2	B2 for correct frequency polygon (B1 for points plotted at correct midpoints of intervals or joining points at correct heights consistently within intervals including plotting at end values or correct frequency polygon with one point incorrect or correct frequency polygon with first and last points joined directly) NB ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

PAPER: 1MA0_2F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*25		124° with reasons	4	M1 for a method to find any angle eg. angle *DEF* = 180 – 70 – 54 (= 56) or angle *AEB* = 70 or angle *EAB* = 54 or angle GEB = 180 – 70 (= 110) A1 for *x* =124 NB: Angles may be shown on the diagram C2 for full reasons, appropriate to their given method, with no additional reasons (C1 for one appropriate reason relating to parallel lines) Possible reasons: corresponding angles are equal; alternate angles are equal co-interior (allied)angles add up to 180; angles on a straight line add up to 180; angles in a triangle add up to 180 vertically opposite angles are equal; the exterior angle of a triangle is equal to the sum of the interior opposite angles; angles at a point add up to 360;

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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

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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

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Mark Scheme (Results)

November 2016

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Calculator) Paper 2F

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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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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: 1MA0/2F					
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.

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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November 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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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=36x+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)

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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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Mark Scheme (Results)

Summer 2017

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. 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 QWC is 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.

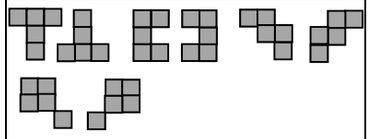
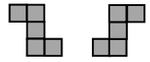
11 Linear equations
Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any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

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

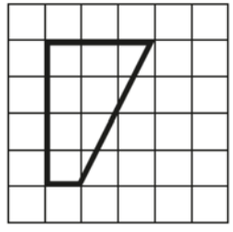
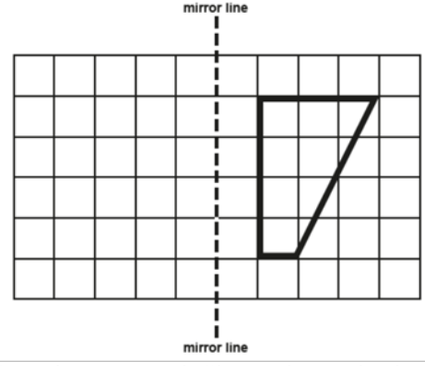
Modifications to the mark scheme for Modified Large Print (MLP) papers.

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 9

In part (a) most students managed to use a time difference and multiply it by 4. Those students who used a method starting with 4miles in 1 hour and 2 miles for the 30 minutes were generally successful although 4.5 instead of 6 was seen on some occasions.
In addition, doing $1.5 \times 4 = 6$ was usually successful however far too many students tried to work in minutes and used $90 \times 4 = 36$; they then seemed to realise that this answer was too big and divided by 100 to get 3.6.

Many students had trouble manipulating the speed-distance-time formula choosing to divide rather than multiply, with $90 \div 4 = 22.5$ being seen often.
The use of time in calculations still remains an area that students find difficult and centres are advised to revise this topic well with students.
For part (b) most students gained one mark as they could work with time well enough to reach the time when Ruth left the library. Some students could not convert 1 and 1/4 hours correctly

often using 1 hour 25 minutes, hence giving an answer of 12:45. Some students gave the final answer as 12:35am losing the accuracy mark.

Question 11

This was very much a question of two halves. Part (a) was well understood and many saw it through to an accurate conclusion. A small minority chose to do this by multiple addition, presumably without a calculator, and usually lost the final mark due to arithmetic error. Some just found the difference between the given costs. Too many mis-copied the figures from the table.

In part (b) few gained the mark as their explanation was frequently incomplete: reference must be made to both the number of parcels and the cost. Just working out the accurate calculation was also insufficient. The crucial feature was that both figures had been rounded down.

Question 22

This was a question where students were very happy rounding and truncating figures, sometimes at every stage of their calculations, sometimes inducing a level of inaccuracy that left their final answer well away from what was expected. There was also evidence of mis-copying either the figures in the question, or their own figures from a calculation. The most common method was to find the number of gallons (560 ÷ 34.5) followed by conversion of gallons to litres (16.23 × 4.55); most then multiplied by 1.08 to find the cost, but some just gave their litres conversion as the final answer. The most common error after scoring the first two process marks was to divide by 1.08 instead of multiplying. Many gained process marks, but it was important that their working was clear and unambiguous. There were some good attempts at this question, which is evidence of the increased work that centres are doing on proportion and rates.

Question 16

About three quarters of students gave a correct answer to part (a) of this question.

A fully correct answer to part (b) was seen much more infrequently. However, a fair proportion of students could score at least one mark for either an attempt to find the gradient of the line representing Steve's journey home or for using the speed, distance, time formula correctly. Students often scored a mark for $\frac{25}{30}$ but could then not convert this to a speed in km/h. Those students who did give the correct answer, 50, had usually argued that 25 km in half an hour was equivalent to an average speed of 50 km/h. Other common errors included multiplying 25 by 30 and dividing 25 by 2 instead of by $\frac{1}{2}$.

Question 27

Fully correct answers to this question were hardly ever seen. Only about one third of students were able to get at least one mark for drawing a correct bearing and/or for calculating the distance travelled by the boat and using the scale of the diagram. Examiners were able to award three marks to students who plotted the position of Q accurately on the diagram. Those who did plot Q correctly were often able to use the scale to give an accurate distance from L to Q but were unable to measure the bearing, often giving the angle measured anticlockwise from the north line. Weaker students often started their working by multiplying 90 by 12 but seemingly with little purpose evident. There was a disappointing number of students who measured the length of one or more of the north lines on the diagram.

Question 14

Students that interpreted the two offers correctly were frequently able to find comparable values on which to base a decision. Many students found the cost of the same amount of compost for each offer, most often for 120 litres or for 40 litres. It was much less common to see students working out the cost per litre or the number of litres per £ for each offer. Having found comparable values students were usually able to make the correct decision. Those who worked with the number of litres per £ sometimes made the wrong decision. Some students interpreted the two offers correctly, for example 40 litres = £3.50 and 120 litres = £9, but gained only one mark because they did not find comparable values to support their decision. The offers were often not interpreted correctly. The first offer, for example, was often interpreted as 20 litres for £3.50 or 20 litres for £7. Some students simply worked out the cost of one bag for each offer and did not take the volume into account. Students should be encouraged to set out working clearly for questions like this one as it will be helpful to them if they can follow their own calculations and working when making their conclusion.

Question 27

Questions involving time and conversion of time are always a challenge and this problem solving question was no exception. A good number of students were able to gain the first mark for finding the time difference of 1 hour 18 minutes, or 78 minutes. The next two processes were interchangeable. A calculation of speed was required, but unfortunately in many cases could not be awarded as the division was often completed the wrong way round. The other mark was for a conversion of either time (if done before the speed calculation) or speed. It was this step that students found most challenging with many either not completing it at all, or often multiplying by 100.

Question 27

Only a few students correctly found the area of the base by dividing the volume by the height of the prism. The formula was often incorrectly used with the area as 18 or 54 (18 × 3). Those who correctly found the area of the base usually went on to complete a fully correct solution.

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.

Question 23

Part (a) of this question was not often correctly answered. Many students were able to correctly identify that they needed to divide distance by time to arrive at the answer but very few went on to convert minutes into hours. Common incorrect responses were often 1.3 or 20. Those students that obtained the correct answer of 80 often did so by scaling ie multiplying 20 by 4.

It would be beneficial for centres to ensure students are confident answering questions involving compound measures.

Part (b) was often awarded part marks with only a few students scoring all the marks for a fully correct graph. Those who scored one mark often did so by drawing the correct horizontal line for the stop in Sam's journey. A few students scored two marks for drawing a line representing the correct distance travelled in the last 20 minutes but forgot to show the stopping time on the graph.

Rarely was 25 seen as part of calculations and a common error seen was for students to continue their line to (1050,50).

Question 11

In part (a) most students used a non-calculator method and obtained the correct answer. It was obvious when calculators were used where an answer of 196 ÷ 603 = 3 h 26 min was seen. Many gained 1 mark for getting as far as 3 hours.
In part (b) it was very rare to see any correct answers. Some wrote down the formula triangle for speed distance but could not relate this to an algebraic expression. The closest many students got was $2x$, the most common incorrect algebraic answer.

Question 24

Many students made a correct first step of 2400 ÷ 8 = 300 but then misunderstood the subsequent value as 300 minutes rather than 300 lots of 1 minute and 40 seconds. Conversions involving time caused problems for the majority of students who went on to multiply 300 by 1.4 rather than multiplying by 1.666666 to reach the value of 500. A few struggled to work with 2.2 gallons, even on calculator paper. A significant number multiplied 4.54 by 2 (instead of 2.2), some then trying to adjust their answers by adding on values such as 0.2, but by this stage marks were lost. Use of 2 rather than 2.2 was incorrect processing as this figure was given in the question. The different types of units involved within the question often overwhelmed students who were then unsure of the resultant units they were dealing with. Solutions to this problem were often very disorganised; examiners found it quite difficult to follow the working whist searching to see if credit could be given.

Question 16

Distance, speed and time formulae were understood by many students and 50 ÷ 40 was often seen in part (a). Poor arithmetic then often followed with results such as 1.1 or 1.2 hours. Very few students were then able to convert the part hours to minutes and 1 hour 10 mins or 1 hour 20 mins were the usual results. When a correct division giving 1.25 was found, this was then incorrectly converted to 1 hour 25 mins by many students giving a final answer of 08:55.

Build up methods were common for this question, with 1 hour associated with 40 miles. However, most of those who used this approach were unable to reconcile the remaining 10 miles with a correct time.

Weaker students often wrote 50 ÷ 40 and then proceeded to divide 40 by 50 and many worked out 50 × 40. Others used 7.30 as the 'time' in the formula. A small minority of students clearly didn't read the question carefully and gave an answer of 1hr 15mins for the time taken rather than the time of arrival.

More students had success in part (b), realising that if the average speed was greater then the time of arrival would be earlier.

Question 29

Only the more able students, appreciating the need to find the volumes of the given cubes, made any progress in this question. Some multiplied the mass by the volume and then tried to simplify their ratio. Some did divide the masses by the volumes but left the un-simplified ratio $\frac{81}{27} : \frac{128}{64}$

The most common error was to divide the masses by the length of an edge, leaving a ratio of 27:32. Also common was to multiply the 81 and 128 by 3 and 4 to get 243:512

Question 26

Most students scored at least one mark in this question for working out the value of 4% of £679. Some used 12% and only considered simple interest, students are reminded to read the questions carefully as the second mark could not be achieved unless compound interest was used. A very few students used the approach of 679×0.96^3, others listed each the value for each year. Students should be encouraged to write down all their processes when using a calculator to make their intention clear as some inaccuracies or rounding can occur during working. Unfortunately, some students typed 679 - 4% into their calculator, to give 678.96. It was also common to see students find 4% and add on or use the formula with a decimal multiplier for increasing.

Question 27

It is very pleasing to see that the modal score for this question was 4 marks. This question involved two conversions, the use of proportionality, and a conclusion. For those students who did not score full marks it was pleasing to note that many could correctly convert both the monetary and the fuel terms correct. This gained two of the marks available. However, they then failed to use the proportionality element which often meant doubling one commodity or halving or to find comparable unit prices.

Of the many different approaches to answer this question, comparing the cost of 8 gallons in pounds with the cost of 8 gallons in euros and cost of 18 litres in pounds to the given value of 18 litres in euros were the most popular and most successful. The most common error was connected with incorrect use of currency conversion with many attempting to divide by 0.85 rather than multiply by 0.85 when converting euros to pounds.

To improve outcomes students need exposure to different conversions in a variety of situations and need to think more about the units presented to them. Students would also benefit from improving their presentation of their calculations when answering these types of question. Systematic approaches were often always successful and when students split their working into two sections, one for Spain and one for Wales, they were often able to complete the processes required and often gained at least 3 or 4 marks, depending upon arithmetic accuracy and the final decision.

Question 27

The most common method for this question was to find the distance of 7.5 by working out the two parts of the journey and adding them together. The difficulty came when trying to find the average speed for Amy and using the time converted to a decimal. Other students used the other method to get to the final answer of 10 by doing 450 ÷ 45 but this was not as common. Students who were successful in following this question through, often worked in minutes using 15, 40 and 45 which gave the correct answer without having to convert them first. Very few students converted the times into hours and when they did, a common issue was the use of 0.6 for $\frac{40}{60}$. A good proportion of students scored full marks for this question though many students just found the average of the two speeds.

Question 29

Most found this question challenging. Many students just offered the wrong answer of 3000 or 30000 or 300 on the answer line. One of the most common errors was converting metres to km by multiplying by 1000. A significant proportion divided by 1000, correctly, to convert metres to kilometres and thought they had finished. The majority of the marks given were for seeing 0.03 or 108000.

Question 7

Generally this question was answered well with the vast majority of responses gaining some marks and the modal score was full marks.

While 49.01 or 4901, forgetting to convert to pounds was often seen, the most popular incorrect approach was to divide by 13 rather than multiply. Another error seen was to add the two mileage figures.

Even students that did not know how to interpret the real life setting of the question often gained the B mark, many with the use of 0.13 in a calculation.

Another issue seen was arithmetic errors due to students trying to work without a calculator. Please encourage students to use calculators on papers 2 and 3 as they are designed for calculator use.

Question 13

Students attempted this best buy problem with varying levels of success. Two marks was the modal score. As such, partial marks were often awarded for using one or both of the special offers correctly, with many also gaining the third mark for finding a comparable number of pints. This was often for adding the cost of another 2 pint bottle to find the cost of 8 pints in total or, more commonly seen, for finding the difference in cost between the two offers and making a comment about being able to buy an extra 2 pints for only 42p more. However, this type of comparison did not make full use of both offers and so was not a full consideration of the best value offer.

When full marks were awarded, it was often due to finding the unit price of a pint or by finding the cost of 48 pints, but these were less frequently seen. A small number of learners calculated the alternative comparable figure of the pints that could be bought per pound but were unable to select the correct offer due to misinterpreting that the lowest amount was the best value.

Students should be encouraged to use a systematic way of using each type of offer, including to write down the number of items being bought, and ensure that they have used each offer fully before finally calculating a unit price rather than calculating at the difference in cost.

Question 19

The axes scaling proved challenging for some candidates in this question and thus they were unable to correctly read off values from the graph. Though the majority of candidates gave the correct answer of 15 for part (a), a significant number gave the incorrect answer of 20 instead.
In part (b) the majority of candidates gave a value within the acceptable range. The most common answer was 4.5 and the most common incorrect answer was 7. Candidates who drew guidelines on the graph had greater success.
In part (c) candidates were less successful and a multitude of errors were seen stopping many candidates from scoring all or some of the marks. These included not knowing or being able to substitute correctly into the speed/distance/time formula, being unable to convert minutes into hours or even reading the correct values from the graph. It was common to see answers of 5 and 0.2 from 20 ÷ 4 (no marks) and 4 ÷ 20 (1 mark). It was rare to see a correct answer of 12, but when it was seen it was often due to a scaled approach to this question rather than 20 minutes being converted to a fraction of an hour or attempting to convert 0.2km per minute.

Question 27

Part (a) was poorly answered; it was rare to see a correct answer with 80, 800, 0.8, 0.08 all appearing more regularly than the correct answer of 0.008
In part (b) conversion between km and m remains a weakness; in too many cases candidates showed a division operation instead of multiplication, even worse with 100 instead of 1000. The proportional factor of 1000 was almost always correct. Conversion between hours and minutes was, perhaps predictably, less effectively completed overall with many attempts dividing by 60 once rather than by 60 × 60.

Question 27

Inability to find the area of the cross-section of the cylinder prevented any chance of success in this question, rarely was1200 divided by 40 correctly, 300 being a common incorrect result but that did lead to the possibility of picking up another mark by attempting to divide it into 90. Some tried to use the formula for the volume of a cylinder in an attempt to find the radius of the circular base and then its area.

Question 16

A single mark was often awarded in this question. Whilst a mark was often awarded for multiplying speed by time, frequently using minutes or an unconventionally written time, many students struggled to efficiently work with decimal time. Converting to minutes and calculating 56 ×105 was a popular start to the question, but this was often left as 5880 or divided by 100 rather than being divided by 60. Errors with decimal time were common with conversion to 145 min or 1.45 hours seen regularly. There were successful attempts by students who chose to use a partitioning approach by adding 56, 28 and 14 after splitting 56 in half and then in half again. However, a small number choosing this method then didn't add the correct quantities together to show a complete method and gained only 1 method mark. A substantial number did not know the formula for speed, distance and time and some who drew the correct formula triangle for speed were still unable to rearrange or apply this successfully.

Question 13

Both parts of (a) were generally answered well with candidates demonstrating that they were able to read the initial information from the graph, though a significant minority struggled to read the scale on the graph correctly, sometimes reading the wrong scale and giving the answer 10 in (i). Others offered nothing close to 30, with 65 and 95 not uncommon.
In part (b) many candidates were able to draw a horizontal line at the correct length to indicate Daniel resting and most went on to draw a diagonal line back to the *x*-axis with a ruler. Candidates who did not use a ruler were not penalised provided that their line appeared straight. Those who had not drawn a horizontal line or drew a horizontal line of incorrect length were still able to understand that the diagonal line should be drawn to 1600 on the *x*-axis.
In part (c) candidates used their correct diagonal line OR the information provided to correctly arrive at the average speed of 35 miles per hour. It was rare to see a candidate use "their" incorrect diagonal line to try and calculate the average speed, however the few candidates that were able to do this were rewarded for demonstrating this correct process. In this final part, there were some candidates who were able to write the formula, but were unable to substitute their values correctly, and others who were unable to manipulate it correctly or were confused with the concept of time and/or units.

Question 14

Failing to understand what the question was asking and a lack of working both contributed to this being a poorly answered question. Many candidates started the process with quantity divided by cost, thus finding 20 boxes per £1 and 27 bags per £1. They were then unable to progress any further, usually calculating 27 – 20 to arrive at the common incorrect answer of 7p. Those who started with cost divided by quantity nearly all gained a mark for showing 0.05 or 5 for one box. For the bag, when candidates failed to show working and only gave the figure 0.03 or 0.04 their penalty was the eventual loss of an accuracy mark, at the very least. Examiners needed to be able to see where the 0.03 or 0.04 came from in order to award marks for working. Those who did show their calculations up to this stage often did not show the subtraction and struggled with using the correct units, getting no further than 0.01296, 0.013, 0.02, 2, 0.01 or 1p thus losing the accuracy mark.

Question 25

There was mixed success with this question. The majority of students successfully started this question by dividing 67205600 by 11.9 to find the number of seconds, thereby gaining P1, but were then unable to convert this to days. Few students calculated $60 \times 60 \times 24$ separately and the minority of students who successfully went on to find the correct answer often did the conversion to days in stages. Common errors in the time conversion were to omit one or more of the numbers, or to multiply when they should have divided and vice versa. Some students saw the m^3 and incorrectly surmised that they needed to cube 11.9.

Question 27

A significant number of students started with the formula density = mass/volume or showed a correct formula triangle but then were unable to rearrange to make mass the subject. Of those who arrived at the correct formula, mass = density × volume, and could substitute the values required correctly, most gained full marks for 648, with very few gaining just the method mark for 72 × 9. The most common incorrect answer was 8 coming from the division 72 ÷ 9. A significant number of candidates were confused by the units cm^3 and cubed the 9 and the 72. Overall, it was encouraging to see so many gaining marks in this question, so late in the paper.

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 6

The majority of students were able to score full marks for finding the amount paid per hour. The final answer was often presented in a variety of ways including £12.5, £12.50 and £12.50p, all of which gained full marks. A small number of students lost the accuracy mark by writing 12.40, 12.45 or 12.05, however these students often still scored 1 mark for showing a correct method. There were a significant number who did not show any method and potentially risked both marks had they evaluated incorrectly. The most common incorrect response was to multiply rather than divide.

Question 12

This simple speed/distance/time question produced a lot of fully correct responses, with most students demonstrating they were able to multiply the speed and time to gain the correct answer. The most common incorrect method involved dividing 37 by 3 or doing an extra step such as dividing by 2 or multiplying by 60. Sometimes, students incorrectly believed that they needed to convert one or more of the figures by multiplying or dividing by 60.

Question 28

This multi-step question required the use of a variety of skills being combined to solve a problem and appeared to be very challenging to a large number of students. Whilst many students knew they needed to find the volume, only a very few students were able to correctly

calculate this, with many simply multiplying the radius by the height or the circumference by the height. Converting cm^3 to litres or 0.47 litres to cm^3 was generally only seen in fully correct responses. The final skill of working with a flow rate was often the only mark being awarded, namely for [volume] ÷ 0.47 to find the time taken. However, a large number multiplied by the flow rate rather than divided.

Question 17

Most candidates made a start on this and gained at least one mark by calculating how many Australian dollars were earned in a week, or the UK rate per hour.
Frequently candidates then went on to compare unlike values. Few gained all 3 marks because candidates often swapped between rates per week and rates per hour. If they did get to comparable figures they occasionally lost the accuracy mark since they had prematurely rounded figures earlier in their working.

Question 26

Many candidates were able to recall the formula for speed (mainly seen as a formula triangle) and use it to successfully find the time by dividing distance (143 miles) by speed (55 mph) to get 2.6 (1 mark). Unfortunately, most candidates were unable to convert this to hours and minutes, often stating 2 hour 6 mins (leading to a final answer of 7 hours 26 mins) or 2 hours and 60 mins (being changed to 3 hours and leading to 8 hours 20 mins) or 2 hours 40 mins (interpreting 2.6 hours as $2\frac{2}{3}$ hour).

The build up method to try to find the time for travelling 143 miles often broke down.
2 hours = 110 miles was correct but candidates struggled to find the time for the remaining 33 miles often just writing 33 minutes giving a final answer of 7 hours 53 minutes.

Question 27

Some candidates scored 1 mark for correctly substituting the values correctly into the equation or were able to gain the mark for 144. Very few scored marks beyond this point. The most common error was to rearrange the formula into a multiplication instead of a division. Most did not substitute the values into the equation as a first step and hence missed out on the method marks. Most of the candidates showed a lack of understanding of pressure and where an object presses onto another. Once they found the area of one face, they often made no further progress as they failed to understand this was one face of the cube and not the whole cube. Several candidates divided 900 by 144 (area of one face) = 6.25 but did not then show the 6 to compare it to, failing to realise they had demonstrated that 900 cm^2 was more than enough to cover 6 faces. Sometimes 3.5 was substituted as 3.5^2 as candidates sometimes confuse the square on the units and apply it to the numbers also.
The candidates that answered successfully for full marks understood that a cube has 6 faces. 864 was the most common correct answer.

Question 16

This question on best value based on comparison of the three pack sizes of batteries was well answered by the majority of students with many able to give the correct conclusion of '8 pack' together with correct supporting values. The most common approach seen was to find the cost of one battery from each of the pack sizes, but other approaches were also commonly seen with finding the cost of 12 or 24 batteries using each pack size being other popular approaches. There were also a significant number of pairwise comparisons seen which in many cases allowed candidates to conclude the best value pack, although some pairwise comparisons did not give the information needed to reach the required decision.
Where candidates did not have a fully correct response this was sometimes due to errors in arithmetic or calculation process (such as attempts to divide by 3 by halving and halving again) meaning that the correct values to compare the packs were not obtained. Some candidates wrote their divisions the wrong way around and, for example, would calculate 12 divided by 6 instead of 6 divided by 12 for the value of one battery from the 12-pack.
In a minority of cases, students who found the cost of one battery for each pack could not be awarded all three marks due to inconsistency of units (i.e. 0.45p, 40p and 50p). In other cases candidates only had sufficient working to be able to compare two of the packs. A common mistake was to double the cost of the 8 pack, thinking this was comparable to the 12 pack.
There were also a minority of candidates who stated the pack that they considered to be the best value without supporting working, sometimes offering a worded description of why they believed that this was the best value option. Others simply multiplied each cost by the number of batteries in the pack to come to their conclusion or merely added or subtracted the costs of the different packs.

Question 14

Both parts of this question required students to use knowledge of the relationship between speed, distance and time, with many students making good use of a formula triangle and many obtaining correct answers in part (a) and partially correct answers in part (b) as a result.

The majority gained both marks in part (a) and very few only gaining one mark. Students gaining no marks often multiplied instead of dividing, with many not considering the large magnitude and not realising that 108km/hr is fast for a bike ride. Only some students felt the need to work in minutes and not hours, despite no need for converting units of time.

Part (b) was answered less well, with only a small proportion giving a fully correct answer. Partial marks were often awarded, with students often gaining one mark for 2.25 and most then continuing to find 5.25 to gain the second mark. The third mark was often lost for an inability to correctly convert the decimal to minutes, with 5 hours and 25 minutes along with the wrong decision being made due to this. Some successfully converted fully to minutes and then compared but this approach was rarely seen.

Converting time from decimal form to hours and minutes continues to be an area of weakness for students on this tier. Ensuring students are confident with converting to and from time base 60 to decimal base 10 and developing understanding of compound measure skills involving speed distance and time with a calculator would be beneficial at all grades.

Question 9

This question was answered very well with almost the entire cohort scoring full marks. The most common process seen was to calculate the total for 5 days of ski hire, 4 days of lift passes and 8 hours of ski lessons and find the sum of the 3 totals, leading to an answer of 498. Of those that did not gain full marks, the most common errors were usually related to digits, e.g. writing down $23.5 \times 8 = 180$ instead of 188, presumably copying down incorrectly from the calculator. Some students opted to use a repeated addition method e.g. $26 + 26 + 26 + 26 + 26 = 130$; this was a successful, although not efficient, process for some students; but led to errors for the majority who used it.

Question 25

A majority of this cohort gained 0 or 1 mark on this ‘compound interest’ question. Many of those who gained 1 mark worked with ‘simple interest’ and therefore gained a mark for finding 6% of 25 000 or for one of the Special Cases in the mark scheme. Some students did work with ‘compound interest’ correctly and it was pleasing to see a good number of those students, once they had reached 29 775.4, understand that the answer must be an integer and give a correct answer, usually 29 775. Some students worked with both ‘simple interest’ and ‘compound interest’ figures, and chose the simple interest answer. The majority of correct answers came from using the traditional compound interest formula, marks only being lost for failing to round to a whole number. Some students arrived at the correct answer by using repeated percentage change (rather than a multiplier with power of 3), but more often than not this process led to mistakes, particularly in the last stage. A few students used the wrong multiplier e.g. 1.006 or 1.6.

Question 26

The majority of students were not able to make any progress on this question. Of those that did, one mark was often gained, usually for the 1st P1 600 ÷ 0.6 = 1000 or the 3rd P1 600 ÷ [volume], with [volume] usually being 700. A small number of students were able to work through the complete process correctly and gain a correct answer of 2; it should be noted that an answer of 2 without supportive working gained 0 marks. Some students used an incorrect formula for Density e.g. Mass × Volume.

Question 28

A significant number of this cohort gained 0 marks on this question. It is clear that many did not know the formula for the volume of a cylinder. Of those that did not gain 0 marks, gaining 1 mark for [volume] ÷ 250 was often seen, with the most common incorrect volume used being 3000. Success beyond 1 mark was rarely seen and a minority of students were able to go on and gain 4 marks for a correct answer in the range 62 to 63.

Question 22

The first part of this question asked learners to use a given distance and speed to work out an estimate for the time taken by a car. There were relatively few fully correct answers, however many learners were able to start the process by rounding one or both of distance and speed. Following on from the rounding it was common to see incorrect calculations with 30×5 and $30 \div 5$ being common. There were a significant number of learners who attempted to work with the exact values rather than rounding and others who rounded incorrectly. In some cases learners showed very little process for their calculation of the estimate. For those that did gain the second mark for dividing distance by speed ($5 \div 30$), many incorrectly calculated this to be 6.

In part (b) learners were asked whether their answer to (a) was an over- or under-estimate. This was not well answered. Some learners only referenced rounding of one value in their answer, however they had rounded both and the nature of the calculation (division) meant that both needed to be considered in giving a decision. Many of the answers were not consistent with the rounding and process that had been used in (a). There were also a number of learners who incorrectly indicated that their answer to (a) was both an under- and over-estimate. Several just wrote over/under-estimate without an attempt at explanation. Learners need to be aware that it is ok to say I can't tell whether it is an over or under estimate as long as they justify their answer.

Question 14

This question assessed the ability to interpret and complete a travel graph, with responses to part (a) typically being correct to gain a mark. A large number of good responses were seen in part (b), with many learners able to draw a horizontal line of the correct length, followed by a correct straight line back down to the time axis. Sometimes only one of the two was correct, which gained just 1 mark. In responses where the horizontal part was incorrect, it was usually either the wrong length or completely missing, rather than being drawn at an angle. For the part representing the journey home, some learners incorrectly drew an upwards-sloping line, and others drew lines to the incorrect time on the x-axis or drew lines which were either not a single line or were curved rather than straight, which were not acceptable.

Question 22

A large range of approaches to find comparable figures were possible and seen in this best value for money involving a currency conversion question, and quite often learners lost track of what they were doing and did not complete the processes required and responses gaining full marks were rarely seen. Partial marks, commonly 1 mark, was very common for a correct starting calculation and this was most often for a process to perform a currency conversion. Despite correct use of the conversion factor, the majority of learners were not able to use direct proportion effectively or at all in order to find the cost for the same weights in both places. The most successful weight comparisons made were learners who used a unitary method to find comparative figures for either 1 gram, 100 grams or 1800 grams. Some learners attempted to convert the price and then simply double the cost in London to compare 400 grams to 360 grams but this kind of comparison was often insufficient to gain full credit. Units were not required for the final answer, but if stated they did need to be correct to gain the last mark.

It should also be noted that the working for this question was often presented in a very messy and unstructured way that was often difficult to follow, particularly when a variety of approaches were shown in a single response with no clear indication as to which method the candidate wished to be marked as their final answer. In such cases, the general marking guidance is to mark each method and then award the lower number of marks. Premature rounding or truncation was also evident but was not penalised if correct to 2 significant figures.

Question 28

Although it was the last question on the paper, many learners attempted it and very few blank responses were seen. The majority were not able to calculate the volume of the cylinder correctly, with a wide variety of wrong attempts, mainly calculating the area or circumference of the circle instead, seen. However, when marks were awarded, it was often a single mark for realising the need to divide the mass by the volume, and they were able to gain the second mark for showing this even when the first mark was not awarded. Work on finding volumes of cylinders and prisms would be helpful for future exam practice.

Summary

Based on their performance on this paper, learners should:

- ensure they are well-practised in efficient use of their calculator, especially unfamiliar functions such as standard form
- read questions carefully, including checking whether the magnitude of an answer is sensible, units are appropriate, and the level of accuracy required is shown
- show every stage of working, particularly if the question specifically requests this
- practice questions involving percentage change
- practice questions requiring learners to form algebraic expressions
- use formal methods when working with percentages
- remember to cross out incorrect work or positively identify their chosen method when using a range of approaches to avoid losing marks due to choice.

Question 14

A good number of this cohort gained 4 marks on this question and a variety of processes were seen in achieving this. The most common process seen was to find the total pay for Monday to Friday and find the rate of pay per hour for the weekend and therefore total pay for Saturday and Sunday, and then add these two together. A common error seen was to incorrectly calculate $8 \times 1\frac{1}{2}$ as 4, presumably coming from incorrect use of the calculation, writing $1\frac{1}{2}$ without using the mixed number button, or from reading it as one half of 8. Another common error was to work out the weekend rate of pay as 8 + 8 + 4 = 20. The majority of learners could find £240 for the weekdays and then were not sure how to deal with the rate of pay for Saturday and Sunday. It is also evident from this real life question that learners are not familiar with pay rates.

Question 11

There were several ways of answering part (a), with credit being given for showing a correct first step of either converting a time or adding two required times, which could be via showing a relevant calculation or any of the accurate figures shown on the mark scheme. Units of time were not required, but if included, they had to be correct to avoid contradiction. While many candidates received the method mark for attempting a time conversion, this step often led to confusion. A common error was misinterpreting 1.25 hours as 1 hour 25 minutes, or 3.75 hours as 3 hours 75 minutes. These mistakes meant the final accuracy mark (C mark) could not be awarded, as the incorrect conversion affected the final answer.

The most successful responses used minutes throughout, working with 150 minutes and 75 minutes, and converting 4 hours into minutes. This approach required only one conversion and reduced the risk of errors at the final stage.

In part (b) a mark was often given for the correct method of 2×65, and if this was correctly evaluated to reach 130 then 2 marks were awarded. Some learners converted the time to 120 minutes, and this gained the first mark for showing an understanding of speed, distance and time relationships. These did not gain the accuracy mark unless then converted back to give a correct final answer.

Question 16

Both parts of this question required learners to use a travel graph. In part (a) the first mark was often awarded for showing a method to work with distance and time after reading from the graph. Many responses found an accurate answer of 70, but a range of values was accepted to allow for the use of 1.16 or 1.17 due to early rounding or truncation after dividing 35 by 30 before multiplying by 60. A common misconception was for learners to not attempt to convert between minutes and hours, for example reaching 1.16…. and stopping there rather than giving their answer in miles per hour as asked in the question. Other responses converted incorrectly, for example by using 100 instead of 60.

In part (b), learners were required to complete the travel graph to show the period of time that the train was at the train station via a straight-line segment between (30, 35) and (45, 35). Some learners then wanted to show us further motion of the train after the stop in Sheffield, commonly by drawing diagonal lines continuing up or down from (45, 35), which was condoned provided the horizontal line segment was otherwise correct.

Question 27

There were very few successful responses to this question involving density, mass and volume. The two process marks were independent of each other and could be awarded in either order. The first mark was for working correctly with density, which was often seen before a conversion. This mark could also be awarded for [density] multiplied by 1500 if they had converted the 8 in the question incorrectly but used a power of 10. The second mark was for a conversion, such as multiplying a mass in kg by 1000, dividing a mass in grams by 1000 or for dividing the given value 8 by 1000 to convert the density units. As with the first mark, learners were allowed to use what they thought was a mass to gain this mark and it was more common for the mark for converting to be awarded than the mark for correct use of the density relationship. Some responses showed an uncertainty of how to work with density with incorrect working such as dividing 1500 by 8 rather than multiplying. The most common errors seen in the attempts at conversion involved the use of 100 instead of 1000.

Question 25

There were multiple valid approaches to reaching comparable values, with 12 examples listed at the end of the mark scheme. The most common correct method involved comparing the cost per pound in US dollars.

Where 4 marks were not awarded, some responses gained 3 marks by calculating correct comparable values but making an incorrect decision or rounding prematurely, resulting in inaccurate final values despite a complete process. The first two process marks were typically awarded for converting between kilograms and pounds (commonly using 2kg = 4.4lbs) and converting between pounds and US dollars (commonly using £3.75 = $4.50), although a range of conversions were seen for both weight and currency.

Further progress was limited in some responses due to uncertainty about how to scale 4.4lbs to 5lbs or vice versa. In these cases, some attempted to approximate or use differences, which did not lead to a complete correct method and therefore did not result in comparable values.

Question 27

To gain 3 marks, the correct method involved converting 2 hours 24 minutes to 2.4 hours and dividing 1512 by this value to reach an answer of 630. An alternative method, converting 2 hours 24 minutes to 144 minutes, dividing 1512 by 144, and then multiplying by 60, was valid but rarely seen. Some responses gained 1 mark for correctly converting to 144 minutes.

Where time was not converted accurately, 1 mark could still be awarded for dividing 1512 by a value the respondent believed represented the flight time. This approach was frequently observed.



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, "nth 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 × 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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