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GCSE MATHS

Ratio, proportion and rates of change

Edexcel 1MA1 | Subtopic collection Topic 32

Percentages and reverse percentages

Foundation tier

Answers and examiner comments

199	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 11

The full source mark scheme begins on page 294. Use the original paper code, tier and question number shown above.

Original question 15

The full source mark scheme begins on page 310. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
7	$\frac{25}{100} \times 200 = 50$ $\frac{1}{5} \times 200 = 40$ 200 - 50 – 40 OR 25 + 20 = 45 100 – 45 = 55 $\frac{55}{100} \times 200$ OR $\frac{1}{4} + \frac{1}{5} = \frac{5}{20} + \frac{4}{20} = \frac{9}{20}$ $\frac{11}{20} \times 200$	110	3	M1 for $\frac{25}{100} \times 200$ or 200 ÷ 4 (= 50) or $\frac{1}{5} \times 200$ or 200 ÷ 5 (= 40) M1 (dep) for 200 – ‘50’ – ‘40’ OR M1 for 25 + “20” (= 45) or 100 – “45” or $\frac{"45"}{100} \times 200$ (= 90) M1 (dep) for $\frac{"55"}{100} \times 200$ or $200 - \frac{"45"}{100} \times 200$ OR M1 for $\frac{1}{4} + \frac{1}{5}$ or $\frac{"9"}{20}$ or $\frac{"9"}{20} \times 200$ (= 90) M1 (dep) for $\frac{"11"}{20} \times 200$ or $200 - \frac{"9"}{20} \times 200$ A1 cao

9	(a)		0.25	1	B1 cao
	(b)		80%	1	B1 cao
	(c)		1:3	1	B1 cao

9	(a)	$\frac{15}{100} \times 240$	36	2	M1 for 15 ÷ 100 or 10% + 5% attempted with correct values of 24 and 12 seen or 24 and 12 seen or 0.15 seen A1 cao
	(b)	240 ÷ 3	80	1	B1 cao
	(c)	80 : 60 = 8 : 6	4 : 3	2	M1 for any correct ratio eg 80:60, 40 : 30, 8 : 6 or 4 gap 3 seen without ratio sign or 4 dot 3 A1 for 4 : 3 or 4 to 3 **SC** B1 for an answer of 3:4 or 3 to 4 if M1 not scored

5MB2F_01

Original question 13

The full source mark scheme begins on page 326. Use the original paper code, tier and question number shown above.

Original question 17

The full source mark scheme begins on page 339. Use the original paper code, tier and question number shown above.

Question		Working	Answer	Mark	Notes
20		$250 - 0.42\times250 - 250\div5\times2$ $= 250 - 105 - 100$ **OR** $250\times\left(1-\left(\frac{42}{100}+\frac{2}{5}\right)\right) =$ $250\times\frac{9}{50}$ **OR** $250\times\left(\frac{100-42-40}{100}\right) =$ $250\times\frac{18}{100}$ **OR** $250-250\times\left(\frac{42}{100}+\frac{2}{5}\right) =$ $250-250\times\frac{41}{50} = 250-205$ **OR** $250-250\times\left(\frac{42}{100}+\frac{40}{100}\right) =$ $250-250\times\frac{82}{100} = 250-205$	45	4	M1 for $\frac{42}{100}\times250$ oe (=105) M1 for $\frac{2}{5}\times250$ oe (=100) M1 for 250 – '105' – '100' A1 cao **OR** M1 for $\frac{42}{100}+\frac{2}{5}\left(=\frac{82}{100}\right)$ or $\left(=\frac{41}{50}\right)$ M1 for $1-'\frac{82}{100}'$ or $1-'\frac{41}{50}'$ M1 for $'\frac{9}{50}'\times250$ A1 cao **OR** M1 for $\frac{2}{5}\times100$ or $\frac{2}{5}=\frac{2\times20}{5\times20}$ or 2 × 20 M1 for 100 - 42 - '40' (= 18) M1 for '0.18' × 250 A1 cao (continued overleaf)

1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
					OR M1 for $\frac{42}{100}+\frac{2}{5}\left(=\frac{82}{100}\right)$ or $\left(=\frac{41}{50}\right)$ M1 for $'\frac{41}{50}'\times 250$ M1 for 250 - '205' A1 cao **OR** M1 for $\frac{2}{5}\times 100$ or $\frac{2}{5}=\frac{2\times 20}{5\times 20}$ or 2 × 20 M1 for '(42 + '40)'/100 × 250 M1 for 250 - '205' A1 cao

1MA0_2F

7		$50 \div 10$ or $\frac{10}{100} \times 50 =$	£5	1	B1

5MB2F_01

20	(a)	650 × 1.2 OR 650 × 0.2 (=130) 650 + 130 = 780	780	3	M2 for 650 × 1.2 oe (M1 for 650 × 0.2 oe (=130)) A1 cao
	(b)	$\frac{39}{260} \times 100$	15	2	M1 for $\frac{39}{260} \times 100$ oe A1 cao
	(c)	44.79 ÷ 3 × 8	119.44	2	M1 for 44.79 ÷ 3 (=14.93) or 44.79 × 8 (=358.32) A1 cao

5MB3F_01

3	(a)		43	1	B1 cao
	(b)	3 + 10	13	1	B1 cao
	(c)		7.1 – 7.9 inc.	1	B1 for answer in the range 7.1 – 7.9 inc

7	(a)		$\frac{3}{5}$	2	B2 cao (B1 for $\frac{9}{15}$ oe) [SC: B1 for an answer of $\frac{2}{5}$]
	(b)		0.9	1	B1 for 0.9 or 0.90 or .9
	(c)		No + reason	1	B1 for no and 0.75 or 80% or $\frac{75}{100}$ and $\frac{80}{100}$

5		$180\times\frac{10}{100}=18$ or $\frac{20}{180}\times100=11.\dot{1}$	No	3	M1 for $180\times\frac{10}{100}$ oe or 180 × 1.1 oe or $\frac{20}{180}\times100$ $(=11.\dot{1})$ oe A1 for (£)18 or (£)198 or 11% C1 (dep M1) for comparison of increases or total pay or percentage increases leading to a correct deduction

1MA0_2F

16		Paint R Us 6 × 2.19 (= 13.14) Deco Mart 9× 1.80 (= 16.20) 16.20 × 0.9 (= 14.58)	Paint R Us	6	Paint R Us M1 for '9 − 3'× 2.19 A1 for 13.14 Deco Mart M2 for $\frac{90}{100}$ × '16.20' oe (M1 for $\frac{10}{100}$ × '16.20' oe) A1 for 14.58 C1 (dep M1) for comparison of cost of 9 tins at Paint R Us with cost of 9 tins at Deco Mart leading to a correct deduction

1MA0_2F

Original question 19

The full source mark scheme begins on page 359. Use the original paper code, tier and question number shown above.

6	(a)		3 sectors shaded	1	B1 for 3 sectors shaded oe
	(b)		60	1	B1 cao
	(c)		4	1	B1 cao
	(d)	40 ÷ 8 × 3	15	2	M1 for 40 ÷ 8 × 3 oe A1 cao
	(e)		13 or 17	1	B1 13 or 17

Original question 15

The full source mark scheme begins on page 371. Use the original paper code, tier and question number shown above.

Original question 17

The full source mark scheme begins on page 371. Use the original paper code, tier and question number shown above.

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

1MA0_1F

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

1MA0_1F

Original question 15

The full source mark scheme begins on page 388. Use the original paper code, tier and question number shown above.

7	(a)		$\frac{41}{100}$	1	B1 cao
	(b)		16	2	M1 for 20 ÷ 100×80 oe or 80 ÷ 5 or 8 + 8 (=16) A1 cao

Original question 21

The full source mark scheme begins on page 400. Use the original paper code, tier and question number shown above.

Original question 25

The full source mark scheme begins on page 417. Use the original paper code, tier and question number shown above.

Original question 27

The full source mark scheme begins on page 437. Use the original paper code, tier and question number shown above.

9			5%	2	**(uses percentages)** M1 for 30 – 25 (= 5) or 25 – 30 (= −5) A1 for 5% oe OR **(uses decimals)** M1 for or 0.3 – 0.25 or 0.25 – 0.3 (= −0.05) A1 for 0.05 OR **(uses fractions)** M1 for $\frac{30}{100} - \frac{1}{4}$ or $\frac{1}{4} - \frac{30}{100}$ $(= -\frac{5}{100})$ A1 for $\frac{5}{100}$ oe OR **(uses trial value, eg 60)** M1 for 0.3×60 – 0.25×60 (=3) or 0.25×60 – 0.3×60 (= −3) A1 for $\frac{3}{60}$ oe
*10			diagram or chart	4	B1 for a key or suitable labels to identify Kitty and George B1 for diagram(s) or chart(s) set up for comparison, showing data for at least 3 months, eg dual bar chart, line graph etc B1 for correct heights for Kitty **or** George, dependent on a linear scale C1 for a fully correct diagram or chart to include 4 months labelled and eg 'cars' or ‘frequency’ axis correctly scaled and labelled

PAPER: 1MA0_2F

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

Question		Working	Answer	Mark	Notes
21	(a)		2.70	3	M1 for 2 × 1.40 + 2.10 + 2.40 (= 7.30) M1 (dep) for 10 – '7.30' or 2.7(0) A1 for 2.70 in correct money notation OR M1 for subtracting at least 2 different correct costs from (£)10 M1 for 10 – 1.40 – 1.40 – 2.10 – 2.40 A1 for 2.70 in correct money notation [SC B1 for 4.10 in correct money notation]
	(b)		2.21	3	M1 for 2.60×0.15 (= 0.39) or 260×0.15 (=39p) M1 (dep) for 2.60 – '0.39' or 260–39 (=221p) A1 cao OR M1 for 1 – 0.15 (=0.85) or 100 – 15 (=85) M1 (dep) for 2.60 × 0.85 oe A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			Not enough mincemeat since 600<700 OR Only able to make 38 mince pies since insufficient mincemeat	4	M1 for 45 ÷ 18 (= 2.5) M1 for 2.5 used as factor or divisor A1 for 562.5 and 875 and 250 and 700 and 2.5 (accept 2 or 3) OR for availables as 400 and 400 and 200 and 240 and 2.4 (accept 2 or 3) C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence) OR M1 for a correct method to determine the number of pies one ingredient could produce M1 for a correct method to determine the number of pies **all** ingredient could produce A1 for 80 and 51 and 90 and 38 and 108 C1 ft (dep on at least M1) for identifying and stating which ingredient is insufficient for the recipe (with some supportive evidence)

9	(a)		$\frac{7}{10}$	1	B1 for $\frac{7}{10}$ oe
	(b)		30	1	B1 cao
	(c)		$\frac{2}{3}$	1	B1 cao

PAPER: 5MB2F_01

Question		Working	Answer	Mark	Notes
13			90	4	M1 for 200 ÷ 5 (=40) M1 for correct method to find 35% of 200 (=70) M1 (dep on M1) for 200 – "40" – "70" A1 cao OR M1 for 35(%) + 20(%) (=55%) M1 for a correct method to find "55%" of 200 (=110) or 100(%) − 55% (=45%) M1 (dep on M1) for 200 – "110" or a correct method to find "45%" of 200 A1 cao OR M1 for correct fractions with common denominator $\frac{35}{100}+\frac{20}{100}$ oe M1 for a correct method to find "$\frac{55}{100}$" oe of 200 (=110) or 1−"$\frac{55}{100}$"= "$\frac{45}{100}$" oe M1 (dep on M1) for 200−"110" or a correct method to find "$\frac{45}{100}$" oe of 200 A1 cao

PAPER: 5MB2F_01

21			550	5	M1 for a correct method to find 20% of an amount eg 3500×0.2 oe (=700) M1 for a correct method to increase an amount by 20% eg 3500×1.2 oe (=4200) M1 for subtracting 900 M1 for division by 6 A1 for 550 NB : Operations may occur in any order as long as they could lead to the correct answer. Award marks until a breakdown of method occurs

PAPER: 5MB3F_01

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

Original question 24

The full source mark scheme begins on page 457. Use the original paper code, tier and question number shown above.

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** $2 \times 120\ (=240)$ **or** $\frac{2}{3} \times 120$ oe A1 cao

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.

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

Original question 14

The full source mark scheme begins on page 475. Use the original paper code, tier and question number shown above.

4	(a)		Squares shaded	1	B1 for any 6 squares shaded
	(b)		$\frac{1}{5}$	2	M1 $\frac{20}{100}$ or equivalent fraction A1 cao

17			4500	5	M1 for splitting the shape (or show the recognition of the "absent" rectangle) and using a correct method to find the area of one rectangle M1 for a correct method to find the area of a 2nd rectangle M1 for a complete and correct method to find the total area M1 (dep on at least one prevM1) for a correct method to find 90% of their total area A1 cao

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:			
Question		**Modification**	**Notes**
Q1		Diagram is size × 2.	Standard mark scheme
Q3		'eight' inserted into 1st line.	Standard mark scheme
Q4		2cm squares.	Standard mark scheme
Q7		Map removed and replaced with a table giving places in alphabetical order	Standard mark scheme
Q9		No picture.	Standard mark scheme
Q10		2cm squares. Shading is dotty. 'grey' changed to 'shaded' throughout.	Standard mark scheme
Q11		Just scale given.	Standard mark scheme
Q13		Just information given with no box.	Standard mark scheme
Q15		MLP only: *x* changed to *y*, arrows removed, information written in.	Standard mark scheme (*x* changed to *y*)

PAPER:			
Question		**Modification**	**Notes**
Q16		Model for part (a) has no dimensions written on it. Models for part (b) – dimensions of 2 × 4 × 6 given. Wording given below	
Q16a		Look at the model or at the diagram for Question 16(a). They show a cuboid. For the cuboid (i) write down the number of faces, (ii) write down the number of edges, (iii) write down the number of vertices. (2 marks)	B2 All answers correct (B1 at least one correct answer given)
Q16b		Look at the two models or at the diagram for Question 16(b). They are NOT accurate. A different box has been made to hold cubes. This box is in the shape of a cuboid. A cube is also shown. Each cube has edges of length 2 cm Work out the largest number of cubes that can fit into the box. (2 marks)	Standard Mark Scheme

Question		Working	Answer	Mark	Notes
14	(a)		$\frac{75}{200}$	1	B1 for $\frac{75}{200}$ or equivalent fraction
	(b)		6	2	M1 for $\frac{81}{1350} \times 100$ oe A1 cao

Question		Working	Answer	Mark	Notes
19			58.05	4	B1 for identifying 19.5(0) and 15(.00) M1 for a correct method to find the total cost of their identified tickets for the family, or for a correct method to find the discounted cost of at least one of the identified tickets M1 (dep) for a correct method to find the total discounted cost of their 1 adult and 3 child tickets A1 cao

Question		Working	Answer	Mark	Notes
21		65% is 5473 $\frac{1}{5}$ is 1684 85% is 7157 15% is 1263	1263	4	M1 for a correct method to find 65% (= 5473) of the customers M1 for a correct method to find $\frac{1}{5}$ (= 1684) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao OR M1 for a correct method of adding 65% and $\frac{1}{5}$ when both correctly written as percentages (= 85%) or decimals (= 0.85) or fractions (= $\frac{85}{100}$ oe) M1 ft for a correct method to find the percentage or decimal or fraction of the customers (= 7157) M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
21 (cont)					OR M1 for a correct method of adding 65% and $\frac{1}{5}$ when both correct percentages (= 85%) or decimals (= 0.85) or fractions (= $\frac{85}{100}$ oe) M1 ft for a correct method to find the remaining percentage (= 15%) or decimal (= 0.15) or fraction ($\frac{15}{100}$ oe) of the customers M1 (dep on M2) for a correct method to find the remaining number of customers A1 cao

PAPER: 5MB3F_01

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)

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

Paper: 5MB2F_01

Question		Working	Answer	Mark	Notes
11	(a)		40	1	B1 cao
	(b)		18000 - 22000	2	M1 simplification of one number eg 110, 100, 180, 190, 200 A1 answer in the range 18000 – 22000 excluding 20905

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.

Original question 11

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

11			195	2	M1 for 300 × 0.65 oe A1 cao

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

Original question 19

The full source mark scheme begins on page 500. Use the original paper code, tier and question number shown above.

Original question 9

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

3	(a)		0.7	1	B1
	(b)		45	1	B1 cao
	(c)		$\frac{3}{10}$	2	M1 for $\frac{30}{100}$ or equivalent fraction A1 cao
	(d)		2.74	1	B1 cao

PAPER: 1MA0_2F

Original question 24

The full source mark scheme begins on page 532. Use the original paper code, tier and question number shown above.

2	(a)		50	1	B1 cao
	(b)		$\frac{3}{8}$	1	B1 cao
	(c)		2 squares shaded	1	B1 cao
	(d)		$\frac{2}{8}$ and $\frac{5}{20}$	2	B2 for both correct (B1 for one correct)

Original question 24

The full source mark scheme begins on page 549. Use the original paper code, tier and question number shown above.

Original question 27

The full source mark scheme begins on page 549. Use the original paper code, tier and question number shown above.

PAPER: 1MA0_2F

Question		Working	Answer	Mark	Notes
9	(a)		12.5	1	B1 cao
	(b)		500	2	M1 for a complete method to find $\frac{5}{6}$ of 600 or 600 ÷ 6 (= 100) A1 cao

10	(a)		$\frac{68}{105}$	1	B1 oe
	(b)		22	2	M1 for 105 – 15 – 68 oe A1 cao
	(c)		14.3	2	M1 15 ÷ 105 × 100 oe A1 for answer in range14.2 – 14.3

20			4	3	M1 for method to find 6% of 2000 (= 120) M1 (dep) for 480 ÷ '120' or for repeated addition of '120' to 480 A1 cao

11	(a)		10:55	2	M1 for one time calculation correct e.g. 12 45 or "12 45" – 1 hr 50 min A1 accept in any form
	(b)		32.35	3	M1 $109 \times \frac{15}{100}$ (= 16.35) or 0.85 oe M1 (dep) 109 – "16.35" or $109 \times \frac{85}{100}$ or 125 – "92.65" A1 cao

5MB1F/01 June 2015

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

17			69	4	M1 for finding 15% of £720 (=108) M1 (dep) for finding total of £720 plus interest (=828) or 115% of 720 M1 (dep on previous M1) for dividing by 12 A1 cao **OR** M1 for finding 720 ÷ 12 (=60) M1 (dep) for finding 15% of 60 (=9) M1 (dep on previous M1) for adding, eg 60 + 9 (=69) A1 cao

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")

PAPER: 1MA0_2F

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

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

Original question 15

The full source mark scheme begins on page 571. Use the original paper code, tier and question number shown above.

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

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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Original question 22

The full source mark scheme begins on page 585. Use the original paper code, tier and question number shown above.

2	(a)		0.5	1	B1 cao
	(b)		$\frac{3}{10}$	1	B1 for $\frac{3}{10}$ or equivalent fraction
	(c)		80	1	B1 cao
	(d)		57.6	1	B1 cao
	(e)		$\frac{1}{3}$	2	M1 for writing over a single denominator eg $\frac{7-3}{12}$ or for $\frac{4}{12}$ A1 cao

16	(a)		30	1	B1 cao
	(b)		120	2	M1 for $\frac{15}{100} \times 800$ oe A1 cao

PAPER: 1MA0/1F

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

10			63	2	M1 for $\frac{30}{100} \times 210$ or 0.3×210 or $21 + 21 + 21$ oe A1 cao

PAPER: 5MB3F/01

Question		Working	Answer	Mark	Notes
1	(a)		0.25	1	B1 cao
	(b)		$\frac{7}{10}$	1	B1 for $\frac{7}{10}$ oe
	(c)		$\frac{21}{25}$	2	M1 for $\frac{42}{50}$ oe A1 cao
	(d)		50	1	B1 cao

PAPER: 5MB3F/01

Question		Working	Answer	Mark	Notes
20			161.50	5	M2 for a correct method to decrease 6720 by 20%, eg 6720 × 0.8 (= 5376) or 6720 × 0.2 (= 1344 and 6720 – 1344(= 5376)) (M1 for a correct method to find 20% of 6720 eg 6720 × 0.2 or $\frac{20}{100}$ × 6720 (= 1344)) M1 for subtracting 1500 (= 3876) after a percentage calculation M1 "3876" ÷ 24 after the subtraction of 1500 A1 for 161.5(0)
*21			Conclusion (supported)	4	M1 for π × 120² (= 45 216 – 45 249) M1 for "π × 120²" ÷ 1800 A1 for 25.1 – 25.2 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for π × 120² (= 45 216 – 45 249) M1 for 20 × 1800 A1 for 36 000 and 45 216 – 45 249 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for π × 120² (= 45 216 – 45 249) M1 for "π × 120²" ÷ 20 A1 for 2260 – 2263 C1 ft (dep on M2) for appropriate conclusion from their figures OR M1 for 1800 × 20 M1 for 36000 ÷ π (=11 457 – 11465) A1 for 107(.0…) C1 ft (dep on M2) for appropriate conclusion from their figures

PAPER: 5MB3F/01

Question	Working	Answer	Mark	Notes
12 (a)		Correct explanation	2	M1 for working out area of triangle (=6) and area of rectangle (=24) **or** for dividing rectangle into eighths or other comparable areas A1 for explaining that that 24 ÷ 6 is 4 **or** $\frac{2}{8} = \frac{1}{4}$ **or** that ½ × ½ = ¼ from symmetry of shape
(b)		75	1	B1 cao

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

Original question 24

The full source mark scheme begins on page 601. Use the original paper code, tier and question number shown above.

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

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

Original question 16

The full source mark scheme begins on page 620. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes	Type
1 (a)		9 squares shaded	1	B1 cao	C
(b)		$\frac{75}{100}$	1	B1 for $\frac{75}{100}$ oe eg $\frac{3}{4}$	C
(c)		4	1	B1 cao	C
(d)		$\frac{3}{8}$	1	B1 cao	C

Question	Working	Answer	Mark	Notes	Type
17		74	4	M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for "180" ÷ (1 + 2 + 7) (= 18) M1 for "18" × (1 + 2) + 20 A1 cao OR M1 for $200 - \frac{10}{100} \times 200$ (=180) M1 for $\frac{70}{100} \times 180$ (=126) M1 for 180 – '126' + 20 A1 cao	E

Original question 18

The full source mark scheme begins on page 631. Use the original paper code, tier and question number shown above.

2	(a)		5	1	B1 cao
	(b)		$\frac{7}{10}$	1	B1 accept any equivalent vulgar fraction
	(c)		0.03	1	B1 cao
	(d)		16	2	M1for a method to work out 20% of 80 e.g. 80 ÷ 10 × 2 or 2 × 8 oe A1 cao

Original question 19

The full source mark scheme begins on page 643. Use the original paper code, tier and question number shown above.

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

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 $1295 \times \frac{3}{7}$ oe or (1295 – 185) ÷ 2 or $1295 \times \frac{10}{7}$ oe (=1850) A1 cao

Paper: 1MA0/2F

26		23	3	M1 for method to find difference in cost, eg $23\times24 - 425$ (= 127) or for $425 \div (23\times24)$ (= 0.7699...) or $24 - (425 \div 23)$ (=5.52…) M1 for $\frac{"127"}{"552"} \times 100$ oe or $100 -$ "0.7699"×100 or $\frac{"5.52"}{24}\times100$ A1 for answer in range 23 – 23.01

4		80	B1	cao

5		42	M1 A1	for showing method to work out 60% of 70, eg 0.6 × 70 **or** (70 ÷ 10) × 6 (= 42) cao

20		1545	M1 A1	shows a method to find 3% eg 1500 × 0.03 (=45) cao

Paper: 1MA1/1F

Original question 18

The full source mark scheme begins on page 664. Use the original paper code, tier and question number shown above.

Question	Working	Answer	Mark	Notes
18		68	P1	for a process to find the number of vanilla cakes, eg 420 × 2 ÷ 7 oe (= 120)
			P1	for a process to find the number of banana cakes, eg 420 × 0.35 oe (= 147)
			P1	(dep P1) for a full process to find the number of lemon/chocolate cakes eg 420 – (vanilla cakes) – (banana cakes) (= 153)
			P1	(dep on previous P1) for a process to find the number of lemon cakes eg "153" ÷ 9 × 4 oe (= 68)
			A1	cao
				OR
			P1	for writing two proportions in the same format
			P1	for combining the proportions of vanilla and banana cakes eg 2/7 + 7/20 (= 89/140)
			P1	(dep P1) for a full process to find the proportion or number of lemon/chocolate cakes eg 1 – "89/140" (= 51/140)
			P1	(dep on previous P1) for a process to find the number of lemon cakes eg "51/140" × 420 ÷ 9 × 4 (= 68)
			A1	cao

Paper: 1MA1/3F

Question	Working	Answer	Mark	Notes
23 (a) (i)		155 000	B1	cao
(ii)		165 000 or 164 999 or 164 999.99	B1	165 000 or 164 999 or 164 999.99
(b)		200 000	M1	for recognising that 210 000 = 105% or a full method to find the original price eg 210 000 ÷ 1.05 oe (= 200 000)
			A1	cao

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

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

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

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
6		Wording 'seven' added to the first line	Standard mark scheme
10		Diagram enlarged.	Standard mark scheme
12	(a)	Models provided for all candidates. Diagram enlarged and also provided for MLP. Question wording changed to 'Look at the diagram for Question 12 or at the six cubes provided. Each cube has a side length of 2 cm.	Standard mark scheme
12	(b)	Question wording changed to 'Remember: Each cube has a side length of 2 cm. Use the six cubes provided to make a cuboid. Write down the dimensions of your cuboid.' One answer line provided.	Standard mark scheme, but accept an answer without a drawing, but showing the dimensions of 2×2×12 or 4×6×2 (oe)
15		Diagram enlarged. Braille only: will label the circles 'Set A' and 'Set B' and will label all the places which need to be answered (i) to (iv).	Standard mark scheme accept for Braille award C2 for a fully correct diagram.
19		Diagram enlarged.	Standard mark scheme
21		Diagrams enlarged. The smaller triangle on the right has been rotated so it is facing the opposite triangle. Braille only: will give information about the triangles in written form.	Standard mark scheme

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
22	(a)	The table has been turned to vertical format and left aligned. Wording added 'There are five spaces to fill.'	Standard mark scheme
22	(b)	Diagram has been enlarged.	Standard mark scheme with additional tolerance on plotting.

15		45	M1 A1	for a correct first step eg $\frac{9}{7+4+9}$ ($=\frac{9}{20}$) **or** $\frac{100}{7+4+9}$ (=5) **or** a full method for one of the other colours cao

Paper 1MA1: 1F

Question	Working	Answer	Mark	Notes
16 (a)		Explanation	C1	eg States over-estimated for both values
(b)		182.7(0)	P1	for a process to find 10% of a value stated in the question eg $\frac{10}{100}$ ×5.80 (=0.58) **or** $\frac{10}{100}$ × 35 (=3.5) oe **or** 35 × 5.80 (=203), allow 30 × 5.80 (=174) **or** 35 × [reduced price]
			P1	for a process to find 90% of a value stated in the question eg 35 – "3.5" (=31.5) **or** 0.9 × 5.80 (=5.22) oe **or** $\frac{10}{100}$ × "203" (=20.3) **or** $\frac{10}{100}$ × "174" (=17.4) oe
			P1	for a complete process to find actual cost of 35 eg 0.9 ×5.80 × 35 oe
			A1	cao
				SC B2 156.6(0)

30		4	M1 A1	for a complete method eg 2.80 × 100 ÷ (100−30) oe **or** 2.80 ÷ 0.7 oe **or** for build up method but must show all intermediate steps unless all figures are correct eg 2.8 ÷ 7 = 0.4 and “0.40” × 10 (=4) cao

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

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

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

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
4		Boxes enlarged	Standard mark scheme
6		Diagram enlarged. Braille only: the letter a has been changed to the letter r	Standard mark scheme but read a and r for braille.
7		Diagram enlarged. Cross changed to a solid dot. Wording added "It shows a grid".	Standard mark scheme
8		Diagram enlarged. Wording added 'It shows a grid of squares.' Wording changed to 'Draw the rectangle on the grid of squares. Each square on the grid represents a one centimetre square.'	Standard mark scheme.
10	(b)	Key moved above and to the left of the diagram. A horizontal line has been added to the bottom row of the stem and leaf diagram	Standard mark scheme.
12		Wording added 'There are nine spaces to fill.' Braille only: answer spaces have been labelled from (i) to (ix): Long hair: (iv), (viii), (vii) Short hair: (v), (iii), (vi) Total (ii), (ix), (i)	Standard mark scheme.

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
17		Wording added 'It shows two boxes, Box A and Box B.' Diagram enlarged. Boxes have been made into a rectangle and the cards have been placed inside the rectangles horizontally. Braille only: the diagram has been removed and replaced with information about the diagram.	Standard mark scheme
25		Diagram enlarged. Angles moved outside the angle arcs and the angle arcs made smaller. Arrow heads made longer and more obvious. Wording added 'AD is parallel to BC. AB is parallel to EC.'	Standard mark scheme
26		Diagram enlarged. Cross changed to a solid dot. Shading changed to dotty shading.	Standard mark scheme
27		Frequency column has been extended to allow for working	Standard mark scheme
28		Diagram enlarged. Wording added 'All marked angles are right angles.' MLP only: x changed to e, y changed to f. Braille only: will label the corners of the rectangle A to D and will give information about the rectangle.	Standard mark scheme, except for MLP in the mark scheme read e for x, and f for y.
29		Diagram enlarged. Crosses changed to solid dots.	Standard mark scheme

8 (a)		Statement	C1	States one thing wrong eg vertical scale is not linear oe
(b)		Trend described	C1	eg the trend is upwards, positive (trend) oe

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

17	£6 − £5.64 = 36p or 50p – 47p = 3p 6.3829787…%	6.4	P1 P1 A1	for a strategy to compare the same number of bottles e.g. £5.64 ÷ 12 (= 47 or 0.47) or 12 × 50p (= 6 or 600) or 36 or 0.36 or 3 or 0.03 for start of process to find percentage profit e.g. $\frac{"36"}{564}$ or $\frac{"3"}{"47"}$ or $\frac{"6"}{5.64}$ or $\frac{50}{"47"}$ oe with consistent units for answer in the range 6.3 to 6.4

Paper: 1MA1/2F

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

3	$\frac{20}{100}$	B1	$\frac{20}{100}$ oe, eg $\frac{2}{10}$ or $\frac{1}{5}$	Ignore any incorrect simplification of $\frac{20}{100}$ oe and award the mark if $\frac{20}{100}$ oe is seen

14	Isabel (supported)	P1	for process to work with $\frac{3}{4}$ eg $1-\frac{3}{4}$ $(=\frac{1}{4})$ oe, eg 25% or $\frac{25}{100}$ **or** $\frac{3}{4}$ = 75% or $\frac{75}{100}$ **or** value of salary (say 1000) × 3 ÷ 4 (= 750)	
		P1	for process to work with ratio 3 : 7 eg $\frac{3}{3+7}$ oe **or** $\frac{7}{3+7}$ oe **or** value of salary (say 1000) ÷ (3+7) (= 100)	
		A1	for (28(%)), 25(%) and 30(%) **or** 72(%), 75(%), 70(%) **or** 0.28, 0.25, 0.3 **or** for using value of salary (say 1000) giving 280, 250, 300 **or** 720, 750, 700	
		C1	(dep P2) for Isabel or ft their comparative values	"Isabel" alone without supported evidence, gets 0 marks.

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
15	24	M1	for method to find 15% of 160, eg $160 \times \frac{15}{100}$ oe (= 24) **or** 10% = 160 ÷ 10 (= 16) plus 5% = "16" ÷ 2 (= 8) (= 24)	When using partitioning methods, the method to find individual %s must be clear including the need to show an intention to sum eg. 10% = 16 + 5%=8
		A1	cao SC B1 for answer of 136 or 184 if M0 scored	

21	30	P1	for full process to find the number of bags sold eg 5 × 1000 ÷ 250 (= 20) **OR** for process to find selling price of 1 kg of sweets eg 0.65 × 4 (= 2.60)	This could be by repeated addition Calculations can be in £ or pence
		P1	for [number of bags] × 0.65 **or** "20" × 0.65 (= 13) **or** "2.60" × 5 (= 13) **OR** for 10 ÷ "20" oe (= 0.50) **OR** for 0.65 × 4 (= 2.60) **and** 10 ÷ 5 (= 2)	[number of bags] can only come from 5 × 10 ÷ 250 (= 0.2) or 5 × 100 ÷ 250 (= 2) or 5 ÷ 250 (= 0.02)
		P1	(dep on previous P1) for a process to find the percentage profit eg ("13" – 10) ÷ 10 × 100 **or** (0.65 – "0.50") ÷ "0.50" × 100 **or** ("2.60" – "2") ÷ "2" × 100 **OR** "13" ÷ 10 ×100 (= 130) oe	3/10 or 0.3 is not enough but should be awarded 2 marks Award P3 for 130(%)
		A1	cao	

Paper: 1MA1/1F

Question		Answer	Mark	Mark scheme	Additional guidance
1		8	B1	cao	

Question		Answer	Mark	Mark scheme	Additional guidance
23		3 : 5	P1	for process to find 20% **or** 120% of the cost, eg 8500 × 0.2 (= 1700) oe **or** 8500 × 1.2 (= 10 200) oe	When partitioning all figures quoted must be correct or a full method shown eg 10% = 8500 ÷ 10 (=850) and 20% = "850" + "850" (=1700)
			P1	for process to find total cost of payments, eg 12 × 531.25 (= 6375)	
			P1	for complete process to find value of deposit, eg "10 200" – "6375" (= 3825) **or** 8500 – "6375" (=2125) **and** "2125" + "1700" (=3825) **OR** the deposit as a proportion of the total cost, eg $1 - \frac{"6375"}{"10200"}$ $(=\frac{3}{8})$	May be seen as a fraction of the total eg $\frac{3825}{10200}$ $(=\frac{3}{8})$
			P1	for finding a correct un-simplified ratio, eg "3825" : "6375" oe **or** 5:3 **or** $1.\dot{6} : 1$ **or** $\frac{5}{3} : 1$	Figures at this stage must be expressed as part of a ratio eg 51:85, $\frac{3}{8} : \frac{5}{8}$
			A1	Accept $1 : 1.\dot{6}$, $1 : \frac{5}{3}$	Ignore consistent units

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

2	30	B1	cao	Accept 30.0

2	60	B1	cao	

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.

Question	Answer	Mark	Mark scheme	Additional guidance
22	No (supported)	P1	for start to process, eg $2100 \times \frac{40}{100}$ (= 840) **or** 100 – 40 (= 60)	May compare bonus shares of a single salesman or total bonus share for all 7 salesmen.
		P1	for process to find the 7 salesmen's share of bonus, eg 2100 – "840" (= 1260) **or** $2100 \times \frac{"60"}{100}$ (= 1260)	
		P1	for process to find bonus amount each salesman gets eg "1260" ÷ 7 (= 180) **OR** process to find the total bonus for all salesmen if shared equally, eg $\frac{2100}{10} \times 7$ (= 1470)	
		P1	for process to compare what a single salesman gets under each scheme, eg "180" × $\frac{25}{100}$ (= 45) and "$\frac{2100}{10}$" – "180" (= 30) **or** "180" × $\frac{25}{100}$ (= 45) and "180" + "45" (= 225) oe and $\frac{2100}{10}$ (= 210) **or** ($\frac{2100}{10}$ – "180") ÷ "180" × 100 (= 16.6...) **OR** process to compare what all salesmen gets under each scheme, eg "1260" × $\frac{25}{100}$ (= 315) and "1470" – "1260" (= 210) **or** "1260" × $\frac{25}{100}$ (= 315) and "1260" + "315" (= 1575) oe and "1470" **or** ("1470" – "1260") ÷ "1260" × 100 (= 16.6...)	
		A1	'No' supported by correct figures, eg 45 and 30, 225 and 210, 315 and 210 **or** 1575 and 1470 **or** 16.(6...)(% and 25%)	Do not award unless correct figures have been shown to support a statement made that the salesman was not correct.

Paper: 1MA1/1F

11	4	M1 M1 A1	for $\frac{30}{100}\times 80$ (=24) oe or for 104 (dep) for 28 – "24" or 108 – 104 for 4 or –4	 Numbers in subtraction may be reversed

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
15	2.5	M1	for $(R =)\frac{100I}{PT}$ **or** 600×5 (= 3000) **or** 75 × 100 (= 7500) **or** 75 ÷ 5 (= 15) **or** 75 ÷ 600 (= 0.125)	
		M1	for $\frac{75\times100}{600\times5}$ oe **OR** $\frac{"15"}{600}$ (= 0.025) **or** "0.125" ÷ 5 (= 0.025) **or** 1.025	Calculations may be done in stages. May work in decimals or in percentages
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
18 (a)	explanation	C1	explanation eg should be 1.03, this is 30% (not 3%) **Acceptable examples** Because 1.3 is 130% He is increasing it by 30% 1.3 means 1.30, not 1.03 He needs to put a 0 in front of the 3 1.3 is the wrong decimal He should multiply by 0.03 3% is 0.03, (not 1.3) His answer should be 154.5 He is meant to increase it by 4.5, not by 45 **Not acceptable examples** Because he is increasing by 130%, not 3% He needs to find 1% and then times it by 3	
(b)	(150 ×) 0.97 = 145.5	B1	for 0.97 (or $\frac{97}{100}$ or 97%) and 145.5	

2	$\frac{3}{100}$	B1	cao	

11	40	P1 P1 A1	for $100 - 30$ (=70) **or** $1 - 0.3$ (=0.7) **or** $1 - \frac{3}{10}$ $(= \frac{7}{10})$ **or** $28 \div 7 \times 3$ (=12) for a complete process eg $28 \div$ ("70" $\div 10) \times 10$ oe **or** $28 +$ "12" cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
18	1204	P2	for a full process to find 120% of 14200 eg, 1.2 × 14200 (=17040) **or** (0.2 × 14200) + 14200 (=17040)	
		(P1	for process to find 20% of 14200 eg, 0.2 × 14200 (=2840) oe)	
		P1	for [cost] − 5000	[cost] must be greater than 14200
		A1	cao	
			SCB1 for answer of 920 if P0 scored	

21	260 to 260.5	M1 M1 A1	for 883 – 245 (=638) **or** 883 ÷ 245 (=3.60..) **or** 883 ÷ 245 × 100 (=360(.408..)) oe for a complete method to find the percentage increase eg "638" ÷ 245 × 100 (=260(.408..)) **or** 883 ÷ 245 × 100 − 100 (=260(.408..)) oe Accept answers in the range 260 to 260.5	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
23 (a)	5	M1	"2" ÷ 40 × 100	"2" comes from their reading of the height of the 20 to 24 column
		A1	cao	
(b)	9.5 shown	M1	for frequencies of 11, 8, 13, 6 and 2 (allow one error) **or** for midpoints 2, 7, 12, 17 and 22	May be seen on chart
		M1	for finding at least 4 products *fx* consistently within interval (including end points)	
		M1	for Σ"*fx*" ÷ ("11" + "8" + "13" + "6" + "2") **or** (11×2 + 8×7 + 13×12 + 6×17 + 2×22) ÷ 40 **OR** Σ"*fx*" (=380) **and** 9.5 × ("11" + "8" + "13" + "6" + "2") (=380)	Evidence of two different calculations that should lead to 380 are required for this mark
		C1	for correct figures showing the answer or accurate figures to compare from correct working eg 380 from two calculations	

Paper: 1MA1/3F

2	73	B1	cao	

20	12.5	P1 P1 A1	starts to process the problem, eg assigns lengths of sides to squares **A** and **B** in the ratio 1 : 2 oe **and** calculates at least one area **OR** fits 4 of square **A** into square **B** **OR** for ratio of areas of squares eg 1 : 4 oe for process to express relationship between area of shaded triangle and area of square B, eg 1 : 8, $\frac{1}{8}$ **OR** 0.125 for 12.5 oe	May be seen in a diagram May be seen in a diagram with figure given

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
15	3240	P1	for 90 × 60 (= 5400) **OR** 40 ÷ 100 × 90 (= 36) **OR** 40 ÷ 100 ×60 (= 24)	
		P1	for a process to work out area that is flowers eg. 40 ÷ 100 × "5400" (= 2160) **OR** "36" × 60 (= 2160) **OR** 90 × "24" (= 2160)	
		P1	for a full process to find the area that is grass eg. "5400" – "2160" (=3240)	
		A1	cao	
			ALTERNATIVE	
		P1	for 100 – 40 (= 60)	
		P1	(indep) for 90 × 60 (=5400) **OR** 90 × 60 ÷ 100 (= 54) or 60 × 60 ÷ 100 (= 36)	
		P1	for a full process to find the area that is grass eg. "60" ÷ 100 × "5400" (=3240) **OR** "54" × 60 (= 3240) or "36" × 90 (= 3240)	
		A1	cao	

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)(i)	B	B1	for B, accept 0.033 on the answer line	
(ii)	C	B1	for C, accept $\frac{1}{3}$ on the answer line	
(b)	Statement	C1	eg No with $\left(\frac{1}{3}\right)$ and $\frac{2}{3}$ or No, probabilities would need to be $\frac{1}{2}$ or No since $\frac{1}{3} + \frac{1}{3}$ does not equal 1 or No since tails is 67% (or 0.67)	Accept rounded conversions **seen** to decimals or percentages if the reasoning is correct
(c)	132	M1	for 4000×0.033 **OR** $\frac{132}{4000}$	
		A1	cao	132 out of 4000 is an acceptable answer

Paper: 1MA1/2F

5	$\frac{19}{100}$	B1	or any other equivalent fraction.	

6	16	M1 A1	for a complete method to find 20% of 80 eg 80 × 0.2 oe cao SC B1 for an answer of 64 or 96	

23	612	P1 P1 P1 P1 A1	Alan: for 100 − 32 – 40 (= 28) or for finding “28”% of 400 eg 400 × 0.28 (=112) Beryl: for $1-\frac{3}{10}-\frac{1}{10}\left(=\frac{6}{10}=60\%\right)$ or for finding $"\frac{6}{10}"\times 500$ (=300) Charlie: for starting to use the ratio 3 : 4 eg 150 ÷ 3 (=50) for complete ratio process eg $"\frac{150}{3}"\times 4$ (=200) cao	Answers only (without working) award 0 marks.

Paper: 1MA1/3F

5	0.15	B1	cao	

3	23	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
16	243	M1 A1	for 1.8 ÷ 100 × 4500 oe (= 81) **or** for a complete method eg 4500 ×1.8 × 3 ÷ 100 oe **or** for 4743 **or** 4257 cao	Award M1 for 4500×1.018^n

Question	Answer	Mark	Mark scheme	Additional guidance
20	Shown (supported)	M1	for substitution eg $4 \times 110 + 12$	
		A1	for 452	
		M1	(dep M1) for method to find value(s) needed for comparison eg $\frac{"452" - 442}{442} \times 100$ **OR** $\frac{5}{100} \times 442$ oe (= 22.1) **and** "452" – 442 (= 10) **OR** $\frac{5}{100} \times 442 + 442$ oe (= 464.1) **and** "452"	
		C1	shown with correct comparable values eg 2.2(6...)(%) **OR** 22.1 **and** 10 **OR** 452 **and** 464.1	

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
15	72	P1	for a correct process to find the number of boys or girls, eg boys = 0.55 × 800 (=440) **or** girls = 0.45 × 800 (=360) **or** process to find proportion that are boys having packed lunch, eg 0.55 × 0.4 (=0.22)	
		P1	for a correct process to find the total number of school dinners or packed lunches, eg SD = 800 × 0.69 (=552) **or** PL = 800 × 0.31 (=248) **or** process to find proportion that are girls having packed lunch, eg 0.31 – "0.22" (=0.09) **or** process to find the number of boys having school dinner, eg "440" × 0.6 (= 264) **or** number of boys having packed lunch, eg "440" × 0.4 (=176)	
		P1	for a correct process to find the number of girls having packed lunches, eg "800" × "0.31" – (440 × 0.4) **or** "0.45" × "800" – ("800" × "0.69" – "440" × 0.6) **or** "0.09" × 800	
		A1	cao	

	PL	SD	Total
Boys	176	264	440
Girls	72	288	360
Total	248	552	800

Paper: 1MA1/3F

21	8	M1 M1 A1	for 158220 – 146500 (=11720) **or** 158220 ÷ 146500 (=1.08) for complete method, eg (158220 – 146500) ÷ 146500×100 oe **or** 1.08×100 – 100 cao	0.08 as an answer implies M1

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
17	Conclusion (supported)	P1	for process to find 1/10 of 500 eg. 500 ÷ 10 (= 50) **or** 1 – 0.1 (= 0.9) oe	
		P1	(dep) for process to reduce 500 by 1/10 eg. 500 – "50" **or** 500 × "0.9" (= 450)	
		P1	for process to calculate 20% of [Monday sale price] eg. "450" × $\frac{20}{100}$ (= 90) oe **or** for use of 100 – 20 (= 80) or 1 – 0.2 (= 0.8) in relation to [Monday sale price]	
		P1	(dep on P3) for a fully correct process to find the cost of the TV on Tuesday eg. "450" – "90" (= 360) or "450" × "0.8" (= 360)	
		C1	for conclusion (Yes) supported by correct figures.	eg Yes, the TV will cost 360 Yes, he will have 40 over left

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
24	20	P1	for process to find SP of 24 chocolate bars, eg. 0.50 × 24 (= 12) oe **or** for process to find the overall profit eg (24 × 0.5) – 10 (=2) **or** for process to find CP of one chocolate bar, eg. 1000 ÷ 24 (= 41.66…) oe	Working can be carried out in either pounds or pence.
		P1	(dep) for start to a process to find percentage profit, eg. using $\frac{"12"-10}{10}$ **or** $\frac{"12"}{10}$ **or** $\frac{50-"41.66.."}{"41.66..."}$ oe with consistent units	
		A1	cao	

4	25	B1	cao	

16	58	P1 P1 P1 A1	for a correct process to find the pass mark for the exam or either paper eg (60 + 90) ÷ 3 × 2 oe (= 100) **or** 60 ÷ 3 × 2 oe (= 40) **or** 90 ÷ 3 × 2 oe for a process to find 70% of 60 eg $\frac{70}{100} \times 60$ oe (= 42) for a complete set of processes to find the required mark "100" – "42"(=58) or "40"+ "60" – "42" (=58) cao SC B2 for an answer of 48	It is possible to award P0P1 on this question Accept 66% or better used for $\frac{2}{3}$ May be seen in parts

Paper: 1MA1/2F

23	No (supported)	P1 P1 P1 P1 C1	for 3000 ÷ (2 + 3) (= 600) for “600” × 2 (= 1200) **or** “600” × 3 (= 1800) **or** “600” ÷ 6 (= 100) **or** “600” ÷ 20 (= 30) for “1200” ÷ 6 (= 200) **or** “1800” ÷ 20 (= 90) **or** “100” × 2 (= 200) **or** “30” × 3 (= 90) for “90” ÷ (“200” + “90”) × 100 (= 31.0...) oe **or** “90” ÷ (“200” + “90”) (= 0.31...) **or** 0.3 × (“200” + “90”) (= 87)oe correct conclusion **and** fully correct calculations with accurate figure eg No and 87 **or** No and 31% **or** No and 0.31	 Full method to compare No may be implied by a statement No working, answer only no marks

Paper: 1MA1/2F

3	$\frac{40}{100}$	B1	for $\frac{40}{100}$ or any equivalent fraction	

19	(a)	140	M1	for complete method eg $56 \div 40 \times 100$	May be seen in different ways, eg 2.5×56
			A1	cao	
	(b)	32	M1	for method to find percentage, eg $\frac{18}{56} \times 100$ (=32.14…)	
			A1	for an answer in the range 32 to 32.2	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
1	30	B1	cao	

19	30	M1 M1 A1	for 80 – 56 (= 24) **or** for $\frac{56}{80} \times 100$ (=70) **or** (loss of) 10% = 80 ÷ 10 (= 8) for a complete method, eg “24” ÷ 80 × 100 **or** 100 – “70” **or** (80 – 56) ÷ “8” × 10 cao	

Paper: 1MA1/1F

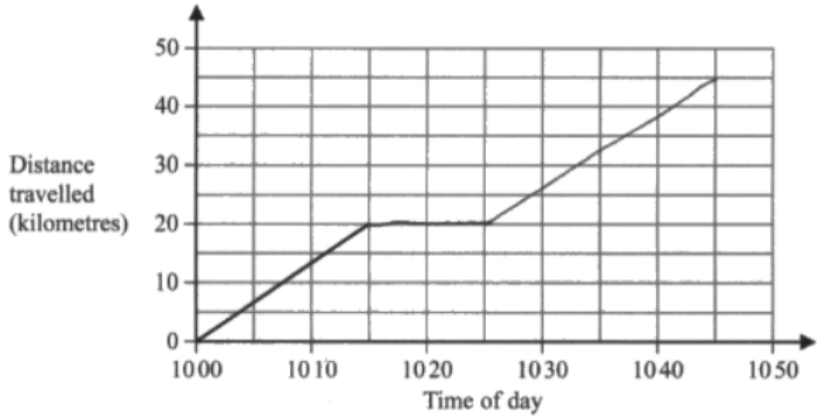
Question	Answer	Mark	Mark scheme	Additional guidance
23	Rahim (supported)	P1	for start to the process to find 20% for Tamara, eg 220000 × 0.2 oe (= 44000) **or** 30% for Rahim, eg 160000 × 0.3 oe (= 48000) **OR** for 1 – 0.2 (= 0.8) **or** 100 – 20 (= 80) **or** 1 + 0.3 (= 1.3) **or** 100 + 30 (= 130)	Build up processes are acceptable but must be complete and correct
		P1	for a complete process to find at least one new value, eg 220000 – "44000" (= 176 000) **or** 160000 + "48000" (= 208000) **OR** 220000 × "0.8" (=176000) **or** 160000 × "1.3" (=208000)	
		A1	for one correct value, 176 000 or 208 000	
		C1	for correct conclusion supported by correct figures eg Rahim, 176 000 and 208 000	Award 0 marks for a correct answer with no supportive working.

Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{31}{100}$ oe	B1	for $\frac{31}{100}$ or any equivalent fraction	Ignore any attempt at simplification of $\frac{31}{100}$

Question	Answer	Mark	Mark scheme	Additional guidance
17	7 22 15 38 29 9	C1 M1 M1 M1 A1	for correctly placing one of the given values in the diagram eg 38 women or 15 men email for 60 – 38 (=22) **or** 22 (men) correctly placed in the diagram **or** 60 – 38 – 15 (=7) **or** 7 (men texting) correctly placed in the diagram for a method to find 60% of 60, eg. 60 × 0.6 (= 36) for calculating with 60% of 60 eg "36" – ("22" – 15) (= 29) **or** "36" – "7" (=29) **or** (60 – "36") – 15 (= 9) for a fully correct frequency diagram	 May be implied by the total number of texts in the frequency diagram being 36 9 or 29 on the diagram (women branch) gets the two M marks for finding and calculating with 60% of 60 If probabilities used instead of frequencies then maximum of C1M1M1M1A0 can be awarded

28	320 000	M1 A1	for a complete method eg $272\,000 \div \left(\frac{100-15}{100}\right)$ cao	

Question 23



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.

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 'Write the following four numbers…'.	Standard mark scheme
5		Wording added 'Look at the diagram and the grid for Question 5 in the Diagram Booklet.' Wording added 'The diagram shows a rectangle with length 35 metres and width 20 metres.' Diagram enlarged. Wording 'On the centimetre grid below…' removed and replaced with 'On the grid in the Diagram Booklet, draw an accurate scale drawing of the rectangle.' Wording 'Use a scale of 1 cm…' removed and replaced with 'Use a scale of 1 square length on the grid represents 5 metres.' Braille has chosen to use some alternative wording: 'The diagram shows a rectangle and a grid of squares. The rectangle has a length of 35 m and a width of 20 m. Each square on the grid represents a one centimetre square.'; 'Use a scale of 1 cm to represent 5 m'; a spare diagram is also provided, with Wikki Stix and drawing film,	Standard mark scheme
6		Wording added 'Below is a list of ten whole numbers.' For Braille this is: 'Look at the list of ten whole numbers from 21 to 30 shown below.'	Standard mark scheme
8		Wording added 'Look at the diagram for Question 8 in the Diagram Booklet. It shows a vertical line graph.' The number 5 changed to the word 'five'. Diagram enlarged. The graph lines made slightly thicker. Right axis labelled. Axes labels moved to the top of the vertical axis and to the left of the horizontal axis.	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
11		Wording added 'Look at the diagram for Question 11 in the Diagram Booklet. It shows shape **A** on a grid.' The shape of the triangle changed to a 2 × 2 right-angled triangle. Diagram enlarged. Shading changed to dotty shading. 'mirror line' labelled on both sides of the diagram. A shape may be provided. Wording added 'A cut out shape may be available if you wish to use it.'	Standard mark scheme
13		Wording added 'Look at the diagram for Question 13 in the Diagram Booklet. It shows the straight line *RST*.' For Braille the levels *U* and *V* have been added to the ends of the unmarked lines. Wording added 'The angles x^o, 75° and 84° are marked on the straight line.' Diagram enlarged. Angles moved outside of the angle arcs and the angle arcs made smaller. Also for Braille: 'In the diagram, angle *VST* = 84° angle *VSU* = 75° angle *USR* = x^o'	Standard mark scheme
14		Wording added 'Look at the diagram for Question 14 in the Diagram Booklet. Nazima uses the graph…'. Diagram enlarged. Right axis labelled. Small squares removed. Open headed arrows. Axes labels moved to the top of the vertical axis and to the left of the horizontal axis.	Standard mark scheme
15		Wording added 'Write the following four fractions…'.	Standard mark scheme
16		Wording added 'Look at the diagram for Question 16 in the diagram book. It shows a pie chart which gives…'. Wording added 'There are black cars, white cars and cars in other colours.' Diagram enlarged. Right angle made more obvious. Angle moved outside of the angle arc and the angle arc made smaller. Also for Braille: 'The black sector makes a right angle at the centre. The white sector makes an angle of 80° at the centre.'	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
17		Wording added 'Look at the diagram for Question 17 in the Diagram Booklet. It shows an incomplete frequency tree.' Wording added 'Complete the frequency tree in the Diagram Booklet for this information. There are six spaces to fill.' Diagram enlarged. The labels moved above the circles. Braille: Alternative sentence "The diagram shows an incomplete frequency tree." Letters added: (i), (ii), (iii), (iv), (v) & (vi) in the blank spaces. 'Ans: (i) __ (ii) __ (iii) __ (iv) __ (v) __ (vi) __'	Standard mark scheme.
18		Wording added 'Look at the incomplete table for Question 18 in the Diagram Booklet. It gives…'. The 'Number of planks' column widened if candidate wants to use it for working out space. Table enlarged. Braille: Alternative wording "The incomplete table below gives…" Letters added: (i) in the blank space on the table. 'Ans: (i) __ planks'	Standard mark scheme
20	(a)	The letter *c* changed to *p*.	Standard mark scheme but note change of letter
20	(b)	The letter *d* changed to *q*.	Standard mark scheme but note change of letter
21	(a)	Wording added 'Look at the diagram for Question 21(a) in the Diagram Booklet. It shows a number line.' Wording 'shown on this number line' removed and replaced with 'shown on the number line.' Diagram enlarged. The scale cut at −3, but −3 still marked. Axis label moved to the right. Scale markings moved above and below. Open headed arrows and shortened at the end of the scale.	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
21	(b)	Wording added 'Look at the diagram for Question 21(b) in the Diagram Booklet. It shows a blank number line.' Diagram enlarged. The scale cut at −4, but −4 still marked. Open headed arrow and shortened at the end of the scale. Axis label moved to the right. Scale markings moved above and below. Braille: a spare diagram is provided with 4 round bumpons, 4 square bumpons, Wikki Stix and drawing film.	Standard mark scheme
23		Wording added 'Look at the diagram for Question 23 in the Diagram Booklet.' Wording added 'The travel graph for the first 15 minutes of his journey is shown in the Diagram Booklet.' Diagram enlarged. Right axis labelled. Open headed arrows. Axes labels moved to the top of the vertical axis and to the left of the horizontal axis. In (b) Wording added 'On the grid in the Diagram Booklet,…'. Braille: time shown with colons. Braille alternative wording: 'The diagram shows an incomplete travel graph for Sam's car journey.' 'The first 15 minutes of his journey is represented on the graph.' In part (b) for Braille a spare diagram is provided with 6 round bumpons and Wikki Stix.	Standard mark scheme
24	(a)	Table enlarged and turned vertical. Wording added 'There are four spaces to fill.' Braille: In the table (i), (ii), (iii), & (iv) in the blank spaces, then 'Ans: (i) __ (ii) __ (iii) __ (iv) __'	Standard mark scheme
24	(b)	Wording added 'Look at the diagram for Question 24(b) in the Diagram booklet. It shows a grid.' Diagram enlarged. Small squares removed. Open headed arrows. Axes labels moved to the top of the vertical axis and to the right of the horizontal axis. Braille: a spare diagram is provided with 16 round bumpons and Wikki Stix.	Standard mark scheme but in part (c) answers in the ranges 2.6 to 2.9 **and** –0.6 to –0.9

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
25		Wording added 'Look at Diagram 1 and Diagram 2 for Question 25 in the Diagram Booklet. Diagram 1 shows a right-angled triangle labelled shape A with a base length of 10 mm and a vertical height of 8 mm.' Diagrams enlarged. Right angles made more obvious. Wording added 'Diagram 2 is a shaded shape made from two shape A triangles.' 'shape A' wording added inside the triangles. Wording 'Work out the perimeter of the shaded shape in Diagram 2.'	Standard mark scheme
26	(a)	Wording added 'Look at the diagram for Question 26(a) in the Diagram Booklet. It shows a right-angled triangle, *ABC*.' Wording added: '*AC* = 12 cm, Angle *BAC* = 56º, Angle *CAB* is a right angle.' Diagram enlarged. Right angle made more obvious. Angle moved outside of the angle arc and the angle arc made smaller.	Standard mark scheme
26	(b)	Wording added 'Look at the diagram for Question 26(b) in the Diagram Booklet. It shows a right-angled triangle, *PQR*.' Wording added: '*PR* = 18 cm, *RQ* = 15 cm , Angle *PQR* is a right angle , Angle *PRQ* is marked *x*' Diagram enlarged. Right angle made more obvious. Angle moved outside of the angle arc and the angle arc made smaller.	Standard mark scheme

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
1	0.45	B1	cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
13 (a)	40	M1	$2 \div (2+3) \times 100$ (=40) or build up to (and shows) 40:60 oe **or** for sight of $\frac{2}{5}$ oe **or** $100 \div 5$ (=20)	
		A1	cao	
(b)	20 : 80	M1	$100 - 20$ (=80) or 80 : 20 oe	
		A1	20 : 80 oe	Accept any equivalent ratio; award full marks if an acceptable ratio is given and then incorrectly simplified.

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

19	288	M1 M1 A1	for a method to find 20% eg 240 × 20 ÷ 100 (= 48) **or** shows a multiplier of 1.2 oe **or** 120% for a complete method eg 240 + "48" **or** 240 × 1.2 oe **or** 240 × 120 ÷ 100 cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
25	30	P1	for $160 \div (3+7)$ (= 16) **or** $\frac{3}{3+7}$ (= $\frac{3}{10}$)	
		P1	for "16" × 3 (= 48) **or** "$\frac{3}{10}$" × 160 (= 48)	
		P1	for a correct step using 48 eg "48" ÷ 8 (= 6) **or** "48" × 25 ÷ 100 (= 12) **or** (indep) for combining $\frac{1}{8}$ and 25%, eg $\frac{1}{8} + \frac{1}{4}$ (=$\frac{3}{8}$) or "0.125" + "0.25" (= 0.375) or "12.5"(%) + 25(%) (= 37.5(%))	
		P1	for a complete process to find the number of petrol cars, eg "48" – "6" – "12" oe **or** (1 – "$\frac{3}{8}$") × "48" oe **or** $\frac{3}{10}$ × (1 – "$\frac{3}{8}$") × 160 oe	
		A1	cao SC B2 for an answer of 100 if P0 scored	Award no marks for a correct answer with no supportive working

5	40	B1	cao	

19	1.19	P1	process to find number of small bags that can be filled, eg [3kg] ÷ 150 (= 20) oe		[3kg] must be 3 and zeros only eg 300 Build up methods are allowed to imply process
		P1	for starting a process to work with percentage for cost of box, eg $17.60 \times \frac{35}{100}$ (= 6.16) **or** 100 + 35 (= 135)	works with starting cost per small bag, 17.60 ÷ "20"	Cost per small bag given as £0.88 will imply P1P1
		P1	for full process to work with percentage increase, eg $17.60 \times \frac{"135"}{100}$ (= 23.76)	begins process to work with percentage for a small bag, eg "0.88" $\times \frac{35}{100}$ (= 0.308)	
		P1	full process to find selling price for small bag, eg "23.76" ÷ "20" (= 1.188)	full process to find selling price for small bag, "0.88" $\times \frac{135}{100}$ (= 1.188) oe	
		A1	cao		

Paper: 1MA1/2F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{35}{100}$	B1	for $\frac{35}{100}$ oe	

Question	Answer	Mark	Mark scheme	Additional guidance
19	42	P1	for process to find number of red counters, eg. 400 ÷ 8 × 3 (= 150) **or** process to convert both to percentages: 3/8 as 37.5 and 82/400 as 20.5 **or** process to convert both to fractions with common denominator: eg 3/8 as 75/200 and 82/400 as 41/200 oe	NB could use other decimals eg 0.375, 0.205 or % or fractions
		P1	for process to find number of green counters, eg 400 – "150" – 82 (=168) **or** process to find the percentage of red and yellow counters eg "37.5" + "20.5" (=58) or ("150" + 82) ÷ 400 × 100 (=58)	
		P1	for complete process to find the percentage of counters that are green, eg "168" ÷ 400 × 100 or 100 – (37.5 + 20.5) or 100 – "58"	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
25	Chic Decor (supported)	P1	for process to find cost of 15 rolls from Chic Decor, eg $\frac{15}{3}\times 36$ (= 180) or for process to find cost of 15 rolls from Style Papers at normal price, eg $\frac{15}{5}\times 70$ (= 210) or for process to find cost of 1 roll from Chic Decor, eg 36 ÷ 3 (= 12) or for process to find cost of 1 roll from Style Papers, eg 70 ÷ 5 (= 14) or for process to find the cost of 5 rolls from Chic Decor, eg $\frac{36}{3}\times 5$ (= 60)	Could compare the costs for any number of rolls
		P1	for any first step in using the discount at Style Papers, eg 0.12 × "210" (= 25.2(0)) or 0.12 × "14" (= 1.68) or 0.12 × 70 (= 8.4(0)) **or** 1 – 0.12 (= 0.88)	
		P1	for full process to find cost from Style Papers, eg. "210" – "25.2" oe (=184.8(0)) or "0.88" × "210" or for "14" – "1.68" oe (= 12.32) or "0.88" × "14" or for 70 – "8.4(0)" oe (= 61.6(0)) or "0.88" × 70	
		C1	for Chic Decor with fully correct figures eg 180 and 184.8(0) or 12 and 12.32 or 60 and 61.6(0)	

Paper: 1MA1/3F

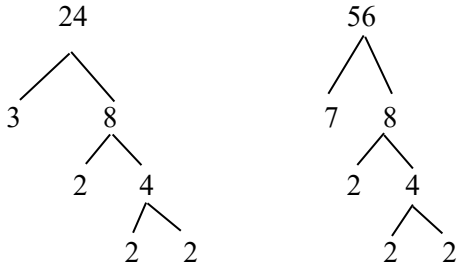
30	16 000	M1 A1	for 13600 ÷ 0.85 (= 16000) oe cao	

Notes for question 21.

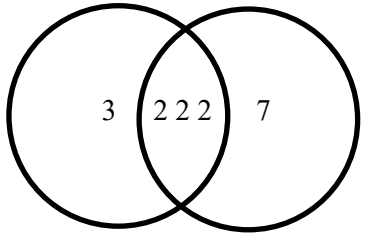
Multiples of 24: 24, 48, 72, 96, 120, 144, 168, 192…

Multiples of 56: 56, 112, 168, 224…

Factor trees:



Venn Diagram



Condone display of 1 as a factor

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

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

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

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
6		Wording added 'Look at the diagram for Question 6 in the Diagram Booklet. It shows a blank grid.' Diagram enlarged.	Standard mark scheme
7		Wording added 'Look at the table for Question 7 in the Diagram Booklet. It shows…' Braille: Add "The table below shows …"; the table turned vertical	Standard mark scheme
8		Wording added 'Below are the…'. Braille: Sentence changed to "Look at the list of numbers below. The list shows the first five terms of a number sequence."	Standard mark scheme
9		Wording added 'Look at the diagram for Question 9 in the Diagram Booklet. You may be provided with a model. They show a…'. Diagram enlarged. Dashed lines made longer and thicker. Model may be provided. Braille: Sentence changed to " The model represents a solid triangular prism."	Standard mark scheme
10		Wording added 'Below is a list…'. In part (a) wording added 'Look at the diagram for Question 10(a) in the Diagram Booklet. It shows a probability scale. On the probability scale, mark the probability…'. Diagram enlarged. The numbers moved above the scale. In part (b) wording added 'Look at the diagram for Question 10(b) in the Diagram Booklet. It shows a probability scale. On the probability scale, mark the probability…'. Diagram enlarged. The numbers moved above the scale.	Standard mark scheme

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
13		Wording added 'Look at the diagram for Question 13 in the Diagram Booklet. It is an accurately drawn map which shows…'. The north lines made 9 cm and the line AC made 14 cm so that specialist equipment can be used. The distance between AB made 10 cm and BC made 8 cm so that they can be measured accurately. The angle between AC and the north line on the right made 70° so that it can be measured accurately. Open headed arrows. Frame removed. Scale moved above the diagram and changed from 150 metres to 75 metres. Dashed lines added between each of the points AC, AB and BC.	M1 for a correct method to measure and convert one line to a distance in metres, eg. (AB =) 10 × 75 (= 750 or in the range 735 to 765) or (BC =) 8 × 75 (= 600 or in the range 585 to 615) or (AC =) 14 × 75 (= 1050 or in the range 1035 to 1065) or for 10 + 8 – 14 (=4) or figures in the ranges 9.5 to 10.5, 7.5 to 8.5, 13.5 to 14.5, 3.5 to 4.5 M1 for a complete method, eg. "750" + "600" – "1050" or ("10" + "8" – "14") × 75 A1 for answer in the range 225 to 375 (b) B1 for answer in the range 285 to 295
14		Wording added 'Below is the shoe size…'.	Standard mark scheme
16		Wording added 'Look at the diagram for Question 16 in the Diagram Booklet. It shows a blank grid. On the grid, draw…'; Diagram enlarged. Wording '1 square length on the grid represents 1 cm.' added to the Question Paper and the Diagram. Braille: Add "The diagram is a grid of squares. Each square represents a 1 cm square." Remove the word 'centimetre'	Standard mark scheme
20		Wording added 'Look at the diagram for Question 20 in the Diagram Booklet.' Diagram enlarged. Open headed arrows. The angle moved outside of the angle arc and the angle arc made smaller.	Standard mark scheme
22		Wording added 'Look at the diagram for Question 22 in the Diagram Booklet. It shows a right-angled triangle, ABC.' Diagram enlarged. The diagram labelled ABC. Wording added: 'AB = 4 cm AC = 8.5 cm BC = x cm'. Wording added 'Angle ABC is a right angle.' The right angle made more obvious.	Standard mark scheme

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
23	(b)	The letter ‘d’ changed to ‘n’	Standard mark scheme but note the change of letter
24		Wording added ‘Look at the information for Question 24 in the Diagram Booklet.’ Wording added ‘as shown in the ratio.’	Standard mark scheme
25		Wording added ‘Look at the information for Question 25 in the Diagram Booklet.’ Wording added ‘The information in the Diagram Booklet shows the cost…’. Diagram enlarged. The information stacked vertically.	Standard mark scheme
26		Wording added ‘Look at the diagram for Question 26 in the Diagram Booklet. It shows a frequency polygon.’ Wording added ‘The table below…’. Wording added ‘Amos draws the frequency polygon in the Diagram Booklet…’. Diagram enlarged. Open headed arrows. Change the crosses to dots. The axes labels moved to the top of the vertical axis and to the left of the horizontal axis.	Standard mark scheme
28		The letter x changed to y. Wording added ‘Look at the diagram for Question 28 in the Diagram Booklet. It shows…’. Wording added: ‘TQ = 2y cm, TS = 4y cm, SR = 3y cm, RV = 5 cm’ Wording added ‘The trapezium QUVR is shaded.’ Diagram enlarged. Open headed arrows. The text moved out of the arrows. Shading changed.	Standard mark scheme

Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	26	P1	for process to find $\frac{1}{6}$ of 120 minutes, eg $\frac{1}{6} \times 120$ (= 20)	
		P1	for process to find 20 % of 120 minutes, eg $\frac{20}{100} \times 120$ (= 24)	
		P1	(dep on P2) for a complete process to find the time remaining, eg 120 – 50 – "20" – "24"	May be seen in stages
		A1	cao	
(b)	No (supported)	C1	for No with reason or ft (a) **Acceptable examples** she was (at least) 4 minutes late she did not arrive until (at least) 3 04 pm it took her more than 90 minutes doing the activities **Not acceptable examples** Yes ….. she arrived after 3pm	The 'No'(or 'Yes') may not be required if it is clear from the reasoning that Elena did not (did) get to the café by 3pm

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
18	60	P1	for 240 ÷ (5 + 3 + 2) (= 24)	
		P1	for complete process to find the number of cans of each drink eg 5 × "24" (= 120) and 3 × "24" (= 72) and 2 × "24" (= 48)	
		P1	for process to find the number of cans removed eg "72" ÷ 2 (= 36) and "48" ÷ 12 (= 4)	
		P1	for process to find percentage eg $\frac{"120"}{240-("36"+"4")} \times 100$ or $\frac{"120"}{"120"+("72"-"36")+("48"-"4")} \times 100$	
		A1	cao	
			Alternative	
		P1	for process to find proportion of lemonade and orange cans removed, eg $3 \times \frac{1}{2}$ (= $1\frac{1}{2}$) and $2 \times \frac{1}{12}$ (= $\frac{1}{6}$)	
		P1	for process to find proportion of lemonade and orange cans remaining, eg $3 - "1\frac{1}{2}" + 2 - "\frac{1}{6}"$ (= $3\frac{1}{3}$)	
		P1	for $5 + "3\frac{1}{3}"$ (= $8\frac{1}{3}$)	
		P1	for process to find percentage eg $(5 \div "8\frac{1}{3}") \times 100$	
		A1	cao	

Paper: 1MA1/1F

2	$\frac{37}{100}$	B1	oe fraction	

11	130	P1 P1 P1 A1	process to find the total number of children, eg 214 – 14 (= 200) process to find the number of children wearing a hat, eg “200” × 35 ÷ 100 (= 70) **or** process to find the multiplier for the percentage of children not wearing a hat, eg (100 – 35) ÷ 100 (= 0.65) for full process to find the number of children not wearing a hat, eg “200” – “70” **or** “200” × “0.65” **or** 214 – “70” – 14 cao	

Paper: 1MA1/2F

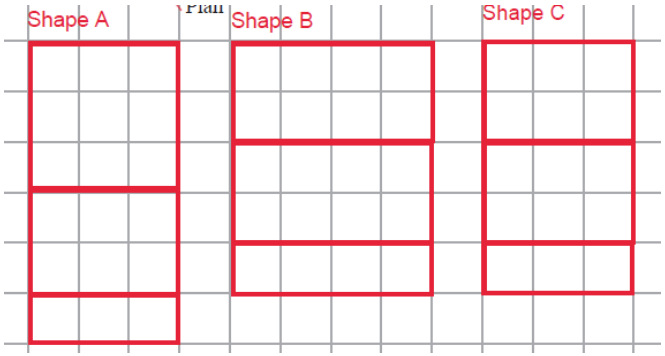
Question	Answer	Mark	Mark scheme	Additional guidance
26	152000	M1 A1	for a complete method eg 165680 ÷ 109 × 100 or 165680 ÷ 1.09 oe cao	

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**
1		The wording 'following numbers' removed and replaced with 'five numbers below'. Numbers left aligned.	Standard mark scheme
5		Wording added 'Look at the diagram for Question 5 in the Diagram Booklet.' The wording 'Here are' removed and replaced with 'It shows'. Diagram enlarged.	Standard mark scheme
6		Wording added 'Look at the diagram for Question 6 in the Diagram Booklet. It is accurately drawn.' The wording 'Here is' removed and replaced with 'It shows'. Wording added 'Angle ADC is marked x.' Diagram enlarged to allow for use of specialist equipment. Angle moved outside the arc. Angle arc made smaller.	(a) accept answers in the range 8.0 to 9.0 (b) accept answers in the range 105 to 115
7		The word 'Here' removed and replaced with 'Below'. Boxes removed and information presented as statements.	Standard mark scheme
8		Frame removed and information left aligned	Standard mark scheme
9		Wording added 'Look at the diagram for Question 9 in the Diagram Booklet.' Table enlarged. Wording added 'in the Diagram Booklet'. Diagram enlarged and cut on top row and right column.	Standard mark scheme
10		Wording added 'Look at the table for Question 10 in the Diagram Booklet.' The wording 'Here is' removed and replaced with 'It shows'. Table enlarged. The fifth row and third column removed.	Standard mark scheme
12	(b)	The wording 'following fractions' removed and replaced with 'four fractions below'. Fractions left aligned.	Standard mark scheme
13		Diagrams removed. Wording added 'Offer 1: 2 pints cost 75p. Pay for 2 bottles, get 1 free. Offer 2: 4 pints cost £1.28. Pay for 1 bottle, get 1 bottle half price.'	Standard mark scheme
14		Values changed: c to p; d to q	Standard mark scheme but note change of letters
15		Wording added 'Look at the diagram for Question 15(a) in the Diagram Booklet.' The word 'her removed and replaced with 'seventeen'; 'Here' removed and replaced with 'Below'. Line added to the top of the diagram. Then in part (a): Wording added 'in the Diagram Booklet'. Diagram enlarged. Key box enlarged, moved above the diagram and left aligned. Bottom line added to the diagram.	Standard mark scheme
17		Wording added 'Look at the table for Question 17 in the Diagram Booklet.' Diagram enlarged. Frequency information left aligned and column widened.	Standard mark scheme

PAPER: 1MA1_2F			
Question		**Modification**	**Mark scheme notes**
18		Wording added 'Look at the diagram for Question 18 in the Diagram Booklet.' Diagram enlarged and intermediates marked. Crosses changed to dots. Axes labels moved above the vertical axis and left on the horizontal axis. Open headed arrows. Small squares removed.	Standard mark scheme but in part (c) widen the range to consider 2.5 to 4.5
19		Wording added 'Look at the diagram for Question 19 in the Diagram Booklet. It shows a grid with shapes.' The wording 'and the plan of a solid are shown on the grid' removed and replaced with 'of a solid is shown in the Diagram Booklet.' The wording 'On the grid, draw the' removed and replaced with 'Choose which of the shapes A to C shows the side elevation of the solid from the direction of the arrow. 'Front elevation' and 'Plan' labels moved above. Shapes labelled 'Shape A' to 'Shape C'. Grid and diagrams enlarged. Shape outlines made thicker. Open headed arrow. Arrow made thicker. Model provided. 	Shape C is the correct shape for 2 marks. The dotted line was removed to avoid confusion to visually impaired candidates.
20		The wording 'Here' removed and replaced with 'Below'. Terms left aligned.	Standard mark scheme
21		Wording added 'Look at the diagram for Question 21 in the Diagram Booklet.' Diagram enlarged. Dashed lines made longer and thicker. Right angles made more obvious. Wording added: 'All the marked angles are right angles.' 'AB = 11 metres'; 'BC = 7 metres'; 'DE = 7 metres'; 'EF = 9 metres'	Standard mark scheme

22		Wording added ‘Look at the diagram for Question 22 in the Diagram Booklet. It shows shape ABC.’ Shape labelled with A, B and C. Wording added: ‘ABC is the right angle’; ‘AC = 14.5 cm’; ‘BC = x cm’; ‘angle ACB = 53º Diagram enlarged. Right angle made more obvious. Angle moved outside smaller angle arc.	Standard mark scheme
24		Wording added ‘Look at the diagram for Question 24 in the Diagram Booklet.’ The wording ‘Here is’ removed and replaced with ‘It shows’. Diagram enlarged and intermediates marked. Axes labels moved above the vertical axis and right on the horizontal axis. Open headed arrows. Small squares removed.	Standard mark scheme

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
1	0.38	B1	cao	

14	(a)	27	B1	cao	
	(b)	$\frac{2}{7}$	B1	or any equivalent fraction	
	(c)	No (supported)	P1	for method to find the number of children on Friday eg 0.7×500 oe (= 350)	
			P1	for method to find the number of children on Saturday eg $720 \div 8 \times 5$ oe (= 450)	
			C1	for No with correct figures, eg No **and** 350 **and** 450 **or** No **and** 100 more on Saturday	Award 0 marks for a correct answer with no supportive working.

Paper: 1MA1/1F

17	27.5	P1 P1 P1 A1	for process to find number of yellow and green counters, eg 200 – 38 – 52 (= 110) **OR** for process to express red and blue counters as a percentage of 200, eg $\frac{38+52}{200} \times 100$ oe (= 45) for process to find number of yellow counters and/or the number of green counters eg "110" ÷ 2 (= 55) **OR** for process to express the sum of the yellow and green counters as a percentage of 200, eg $\frac{"110"}{200} \times 100$ (= 55) **or** 100 – "45" (= 55) for a complete process to express the number of yellow counters as a percentage, eg $\frac{"55"}{200} \times 100$ **or** "55" ÷ 2 for 27.5 oe	

Paper: 1MA1/1F

26	1200	M1 A1	for a fully correct method, eg 240 ÷ 0.2 or 240 × 5 oe cao SC B1 for an answer of 960 or 1440 if M0 scored	

19	(a)	150 45 105 90 65 25	B3 (B2 (B1	for a fully correct frequency tree for at least 4 figures correctly placed) for at least 1 figure correctly placed)	If probabilities used instead of frequencies award a maximum of B2
	(b)	30	M1 A1	for eg $\frac{45}{150}$ oe or $45 \div 150$ (= 0.3) **or** for $\frac{\text{[number of car owners who own a bicycle]}}{\text{[total number of people who own a car]}}$ ft diagram oe for 30 **or** ft diagram	Must be values from their diagram with numerator < denominator

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
25	168	P1	for a start to the process, eg $\frac{57}{100} \times 800$ (= 456) or $57 \div (12 + 7)$ (= 3) **or** $800 \div (12 + 7)$ (= 42.1...) **or** [amount] $\times \frac{57}{100}$ or [amount] $\times \frac{7}{12 + 7}$	May be seen as part of other calculations, eg $\frac{7}{12 + 7} \times 57$ (= 21) or $\frac{7}{12 + 7} \times 800$ (= 294.7...) [amount] can be any figure considered as being 57% of 800 or 43% calculated incorrectly or a figure calculated from using full or partial ratio incorrectly as a first step
		P1	for a complete process to find the weight of glass, eg $\frac{57}{100} \times 800 \times \frac{7}{12 + 7}$ oe	
		A1	for an answer in the range 167.9 to 168 SCB2 for an answer of 288	

2	30	B1	cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
19	2.5	P1	for $450 \div 6$ (= 75) **or** statement $450 = \frac{3000 \times 6 \times y}{100}$ oe **or** $\frac{450}{3000}$ (= 0.15) or $\frac{450 \times 100}{3000}$ (= 15)	
		P1	for "75" ÷ 3000 (= 0.025) **or** (y =) $\frac{450 \times 100}{3000 \times 6}$ oe **or** $\frac{"0.15"}{6}$ (= 0.025) or $\frac{"15"}{6}$ **or** $\frac{3000 + "75"}{3000}$ (= 1.025)	
		A1	cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
21 (a)	11533	P1	for working with 68%, eg 800 × 0.68 (= 544 people) oe or "16960" × 0.68 oe	Percentage calculation could be done at any stage
		P1	for a correct process, other than that of finding a %, eg "544" × 2 (= 1088) or 10.6 × 2 (= 21.2) or 800 × 2 (= 1600) or "544" × 10.6 (= 5766.4) or 800 × 10.6 (= 8480)	
		P1	for full process to find amount of coffee required eg "1088" × 10.6 or "544" × "21.2" or "5766.4" × 2 (= 11532.8) or for an answer of 11532	
		A1	for answer in the range 11532.5 to 11533	If a correct answer within the range is shown in working but incorrectly rounded award full marks.
(b)	Statement	C1	for a correct statement **Acceptable examples** the amount will be more; he will need more coffee it is an underestimate my answer in part (a) means there would not be enough for everyone he will need 12211(.2); needs 678(.4) more **Not acceptable examples** amount will decrease, amount of coffee will change	If figures are given as part of the answer they must be correct, but can allow ft.

Paper: 1MA1/3F

15	450	P1 P1 P1 A1	for working with percentage eg 12000 × 25 ÷100 (= 3000) oe **OR** for splitting the cost of the car over 20 months eg 12000 ÷ 20 (= 600) for finding the amount to pay in instalments eg 12000 – [deposit] (= 9000) **OR** for splitting the cost of the deposit over 20 months eg [deposit] ÷ 20 (= 150) **OR** for finding 25% of the monthly cost eg "600" × 25 ÷ 100 (= 150) oe for finding the amount required eg "9000" ÷ 20 **or** (12000 – [deposit]) ÷ 20 **OR** "600" – "150" cao	[deposit] can be 3000 or any figure that is identified by them as the deposit or 25% of 12000 calculated incorrectly.

Paper: 1MA1/1F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
16	Explanation (supported)	M1	for method to find comparable figures eg 60 × 70 ÷ 100 **or** 45 ÷ 60 ×100 **or** 0.7 **or** 0.75	
		C1	for conclusion eg shows 42 (marks) **or** 75 (%) **or** 0.7 **and** 0.75	Figures need not be supported by words but must not be contradicted.

5	120	B1	cao	

15	60.48	P1 P1 A1	for a beginning process, eg 72 ÷ 100 × 120 (= 86.4) **OR** 72 ÷ 100 × 30 ÷ 100 (= 0.216) for process to use both percentages, eg [86.4] – ([86.4] × 30 ÷ 100) **or** [86.4] × ((100 – 30) ÷ 100) **or** [86.4] × 30 ÷ 100 (= 25.92) **OR** 72 ÷ 100 × ((100 – 30) ÷ 100) (= 0.504) **OR** 120 × “0.216” (= 25.92) cao	[86.4] must be a value less than 120

Question	Answer	Mark	Mark scheme	Additional guidance
23	35	P1	for process to work out income and outgoings, eg 7.5(0) × 54 (= 405) **and** 100 + 120 + 80 (= 300)	
		P1	for process to find the profit, eg "405" **–** "300" (= 105) **OR** "405" ÷ "300" (= 1.35) **or** "405" ÷ "300" × 100 (= 135)	
		P1	for a full process to find percentage profit, eg ("105" ÷ "300") ×100 **or** ("1.35" – 1) × 100 **or** "135" – 100	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
1	0.35	B1	cao	

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

2	30	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
26	7.5	P1	for process to find the number of empty jars eg $3 \div 8 \times 400$ oe (= 150)	
		P1	for start of process to deal with ratios eg 3 : 4 and 4 : 8 **or** 3 : 4 : 8 oe	
		P1	for process to find the number of empty small jars eg $\frac{3}{3+4+8}\times$ "150" oe (= 30) **or** 30 : 40 : 80	
		P1	for process to find percentage, eg $\frac{"30"}{400}\times 100$ oe or $\frac{"7.5"}{100}$	
		A1	for 7.5 or $7\frac{1}{2}$ oe	
			OR	
		P1	for start of process to deal with ratios eg 3 : 4 and 4 : 8 **or** 3 : 4 : 8 oe	
		P1	for process to find the proportion of the empty jars that are small eg $\frac{3}{3+4+8}$ $(=\frac{1}{5})$	
		P1	for process to find the proportion of Kasim's jars that are empty small jars eg $\frac{3}{8}\times "\frac{1}{5}"(=\frac{3}{40})$	
		P1	for process to find percentage, eg $"\frac{3}{40}"\times 100$ oe or $\frac{"7.5"}{100}$	
		A1	for 7.5 or $7\frac{1}{2}$ oe	

Paper: 1MA1/1F

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
27	400	M1 A1	for 280 ÷ 0.7 oe cao	

18	12	P1 P1 A1	for a beginning process, eg 1800 – (1800 × 0.56) oe or 1800 × (1 – 0.56) (= 792) or 1800 ÷ 100 × 56 ÷ 66 (= 15.272…) **or** 1800 ÷ 66 (=27.272…) **or** [44%] ÷ 66 for a complete process, eg “792” ÷ 66 **or** “27.272…” × (1 – 0.56) oe **or** “27.272…” – “15.272…” cao	[44%] is the value they clearly believe to be 44% of 1800

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
25	Yes, supported by correct figures	P1	for a process to find the number of sweets Tina gives to Andy, eg $14 \div 7 \times 3 (=6)$ **or** for a process to work with fractions of the total to find fraction given to Andy, eg $\frac{14}{21} \times \frac{3}{7} \left(= \frac{2}{7}\right)$ **or** for dividing a given number (eg 441) in the ratio 1 : 6 : 14 (= 21 : 126 : 294)	May work with an equivalent ratio, eg 21 : 126 : 294 and do $294 \div 7 \times 3 (=126)$ as a first step May work in multiples of *x* for all marks
		P1	for a process to find number for Andy and Tina after first exchange, eg A = 1 + "6" (=7) **and** T = 14 – "6" (=8) **or** for a process to find the number of sweets Tina gives to Luke eg ("14" – "6") $\times \frac{12.5}{100}$ (= 1) **or** for a process to work with fractions of the total to find fraction given to Luke, eg for $\frac{(14 - "6")}{21} \times \frac{12.5}{100}$ **or** process to work out the number of sweets given to Andy **and** Luke for their total, eg "294" ÷ 7 × 3 (= 126) **and** ("294" – "126") $\times \frac{12.5}{100} (= 21)$	
		P1	for a process to find the final amounts or final shares for at least **two** of Andy, Luke and Tina eg two of 1 + "6" (= 7) , 6 + "1" (= 7) , 14 – "6" – "1" (= 7) **or** $\frac{1}{21} + \frac{"2"}{7} \left(= \frac{7}{21}\right), \frac{6}{21} + "\frac{1}{21}" \left(= \frac{7}{21}\right), \frac{14}{21} - "\frac{2}{7}" - "\frac{1}{21}" \left(= \frac{7}{21}\right)$ **or** "21" + "126" (= 147) , "126" + "21" (= 147) , "294" – "126" – "21" (= 147)	
		C1	Yes, supported by full working and accurate figures for Andy, Luke and Tina	Accurate figures with no supportive working scores 0

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{23}{100}$	B1	oe	

Question	Answer	Mark	Mark scheme	Additional guidance
15	15% of 88 from correct figures	P1	for first step towards finding comparable figures, eg $\frac{15}{100} \times 88$ (= 13.2) oe **or** $\frac{20}{100} \times 62$ (= 12.4) oe **OR** 15 × 88 (= 1320) **or** 20 × 62 (= 1240)	
		P1	for process to find two comparable figures, eg $\frac{15}{100} \times 88$ (= 13.2) oe **and** $\frac{20}{100} \times 62$ (= 12.4) oe **OR** 15 × 88 (= 1320) **and** 20 × 62 (= 1240)	
		C1	15% of 88 from 13.2 oe **and** 12.4 oe **OR** 15% of 88 from 1320 **and** 1240	Must have correct figures. Ignore an incorrect difference after a correct decision from correct figures unless it contradicts.

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
1	0.25	B1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{17}{100}$	B1	for $\frac{17}{100}$ or any other equivalent fraction	

12	15	P1 P1 P1 A1	for process to find number of child tickets, eg 180 ÷ 100 × 60 (= 108) oe for process to find total cost of child tickets, eg "108" × 8 (= 864) **or** [108] × 8 **OR** for process to find number of adult tickets, eg 180 – [108] (= 72) or 180 ÷ 5 × 2 (= 72) oe or $180 \times \frac{100-60}{100}$ for a complete process, eg (1944 – "864") ÷ "72" **or** (1944 – [108] × 8) ÷ (180 − [108]) cao	Where [108] is what they clearly think is 60% of 180 but can't be greater than 180

Paper: 1MA1/2F

Question	Answer	Mark	Mark scheme	Additional guidance
17 (a)	265.05	M1	for 285 × (7 ÷ 100) (= 19.95) oe **or** (100 – 7) ÷ 100 (= 0.93)	
		M1	for 285 – "19.95" **or** 285 × "0.93" oe	
		A1	cao	Accept £265.05p
(b)	8000	P1	for start of process, eg 2100 – 1700 (= 400)	
		P1	for using "400" = 5%, eg (1% =) "400" ÷ 5 (= 80) or (10% =) "400" × 2 (= 800) or (50% =) "400" × 10 (= 4000) **or** "400" ÷ 5 × 100	
		A1	cao	

25	Yes (supported)	P1	for start to a process to find a percentage increase, eg $85-76\,(=9)$ or $66-65\,(=1)$ **or** $\frac{85}{76}\,(=1.118...)$ or $\frac{66}{65}\,(=1.015...)$	Accept use of rounded and truncated figures for all marks.
		P1	for process to find a % increase, eg $\frac{"9"}{76}\times 100\,(=11.84...)$ or $\frac{"1"}{65}\times 100\,(=1.53...)$ **or** $\frac{85}{76}\times 100-100\,(=11.84...)$ oe or $\frac{66}{65}\times 100-100\;\;(=1.53...)$ oe	May work in decimals or equivalent proportions throughout
		P1	for processes to find both % increases, eg $\frac{"9"}{76}\times 100\,(=11.84...)$ **and** $\frac{"1"}{65}\times 100\,(=1.53...)$ **or** $\frac{85}{76}\times 100-100\,(=11.84...)$ oe **and** $\frac{66}{65}\times 100-100\;\;(=1.53...)$ oe	
]		C1	for Yes supported by correct figures, eg 11(.842…) ÷ 1.5(38…) = 7.3 to 8 **or** 11(.842...) **and** 1.5(38…) × 7 = 10(.766…) **or** 11(.842…) ÷ 7 = 1.57 to 1.7 **and** 1.5(3…) **or** 0.11(842…) **and** 0.10(766…)	

Paper: 1MA1/2F

9	118	P1 P1 P1 A1	for a correct first step, eg 200 × 2 ÷ 5 (= 80) **or** 200 × 3 ÷ 5 (= 120) **or** $1-\frac{2}{5}\left(=\frac{3}{5}\right)$ oe eg 100 – 40 (= 60(%)) for a process to find the number of child vegetarians or number of child non-vegetarians, eg "80" × 0.35 (= 28) **or** "80" × (1 – 0.35) (= 52) for a process to find the number of adult vegetarians or number of adult non-vegetarians, eg (200 – "80") × 0.45 (= 54) **or** (200 – "80") × (1 – 0.45) (= 66) for a complete process to find the total number of non-vegetarians, eg 200 – "28" – "54" **or** ("80" – "28") + (200 – "80" – "54") oe eg "52" + ("120" − "54") **or** "80" × (1 – 0.35) + (200 – "80") × (1 – 0.45) cao	Answer of $\frac{118}{200}$ is P4A0

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
21	45.6	P1	for a process to start to work with the ratio, eg 240 ÷ (3 + 5) (= 30) **or** pens = 3n and pencils = 5n where n is a positive integer	Can work in £ or pence but must be consistent, 90 or 150 imply P1 This mark can be awarded at any stage
		P1	for a complete process to find the number of pens and pencils, eg "30" × 3 (= 90) **and** "30" × 5 (= 150)	
			OR for process to find one cost or amount to sell for one item eg [pens] × 9 (= 810) **or** [pens] × 11 (= 990) **or** [pencils] × 6 (= 900) **or** [pencils] × 10 (= 1500)	[pens] could be "30" × 3 or their number of pens [pencils] could be "30" × 5 or their number of pencils
			OR for process to find the profit for one pen or one pencil eg 11 – 9 (= 2) or 10 – 6 (= 4)	[pens] , [pencils] ≠ 1
		P1	for a process to find the total cost to buy or the total amount to sell for both, eg [pens] × 9 + [pencils] × 6 (= 1710) **or** [pens] × 11 + [pencils] × 10 (= 2490)	180 or 600 or 780 implies P3 [pens] could be "30" × 3 or their number of pens [pencils] could be "30" × 5 or their number of pencils
			OR process to find the profit for one item eg [pens] × 11 – [pens] × 9 (= 180) or [pens] × (11 – 9) (= 180) **or** [pencils] × 10 – [pencils] × 6 (= 600) or [pencils] × (10 – 6) (= 600)	[pens] , [pencils] ≠ 1
		P1	for a complete process to find the profit as a percentage or a decimal, eg $\frac{[2490]-[1710]}{[1710]}\times 100$ **or** $\frac{[2490]-[1710]}{[1710]}(=0.456...)$ **or** for a process to find the amount to sell as a percentage of the cost eg $\frac{[2490]}{[1710]}\times 100$ $(=145.6...)$	[2490] is their amount to sell for both pens and pencils [1710] is their cost of pens and pencils [2490] – [1710] may be [180] + [600]
		A1	answer in the range 45.6 to 45.62	If an answer is given in the range in working and then rounded incorrectly award full marks. A correct answer with no supportive working gets 0 marks

Paper: 1MA1/3F

3	70	B1	cao	

10	1 : 4	M1 A1	for 20 : 80 oe ratio **or** 4 : 1 1 : 4	eg 10 : 40, 5 : 20, 2 :8, 20% : 80% or 0.2 : 0.8 oe Condone 1% : 4% but not 0.01 : 0.04 Accept 0.25 : 1 or $\frac{1}{4}$:1

Paper: 1MA1/2F

17	1350	P1 P1 A1	for working with percentage, eg 85 ÷ 100 × 9000 (= 7650) **or** (100 – 85) ÷ 100 (= 0.15) oe for a complete process, eg 9000 – "7650" **or** (100 – 85) ÷ 100 × 9000 cao	Allow $\frac{15}{100}$ and 15% but not 15 alone 15% × 9000 is not acceptable unless correctly evaluated

Paper: 1MA1/2F

3	$\frac{19}{100}$	B1	oe eg $\frac{190}{1000}$	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
15 (a)	$\frac{87}{200}$	B1	for $\frac{87}{200}$ oe fraction	
(b)	12	B1	cao	

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
18	Yes (supported)	P1	for process to decrease 12 000 by 20%, eg 12 000 – 12 000 × 0.2 oe (= 9600) or 12 000 × 0.8 oe (= 9600) **or** for process to find the value of 24 monthly payments of £450, eg 450 × 24 (= 10 800) **or** for process to split the cost of the car over 24 months, eg 12 000 ÷ 24 (= 500)	Build up processes are allowed. Condone one error in the build-up process.
		P1	for process to find comparable values, eg "9600" ÷ 24 (= 400) **or** eg 12 000 × 0.8 oe (= 9600) **and** 450 × 24 (= 10 800) **or** 12 000 – "10 800" (= 1200) **or** "9600" ÷ 450 (= 21…) **or** "10 800" + 12 000 × 0.2 oe (= 13 200) **or** eg "500" × 0.8 (= 400) oe	Award P0 for 1200 coming from 12 000 × 0.1 oe
		C1	for Yes **and** correct comparable value(s), eg Yes **and** 400 **or** Yes **and** 9600 **and** 10 800 **or** Yes **and** 10% = 1200 where 1200 comes from 12 000 – "10 800" **or** Yes **and** 21… **or** Yes **and** 13 200	Award no marks for correct decision with no supportive working 'Yes' may be implied by an equivalent statement eg 'Amy is right' or 'She is correct'

Paper: 1MA1/3F

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
24	60	P1	for process to find SP of 200 oranges or number of bags, eg $200 \div 5$ (= 40) oe **or** for process to find the overall profit, eg $200 \div 5 - 25$ (= 15) oe **or** for process to find CP of 1 orange, eg $25 \div 200$ (= 0.125) oe **or** SP of 1 orange, eg $1 \div 5$ (= 0.2) oe **or** for process to find CP of 5 oranges, eg $25 \div (200 \div 5)$ (= 0.625) oe **or** for process to find number of oranges bought per £, eg $200 \div 25$ (= 8)	Working can be in either pounds or pence SP = Selling Price CP = Cost Price 1.6 implies P1
		P1	(dep) for start to a process to find percentage profit, eg $\frac{"40"-25}{25}$ (= 0.6) oe **or** $\frac{"15"}{25}$ (= 0.6) oe **or** $\frac{"40"}{25} \times 100$ (= 160) oe **or** $\frac{"0.2"-"0.125"}{"0.125"}$ (= 0.6) oe **or** $\frac{1}{"0.625"} \times 100$ (= 160) oe **or** $\frac{1-"0.625"}{"0.625"}$ (= 0.6) oe **or** $\frac{"8"-5}{5}$ (= 0.6) oe **or** $\frac{"8"}{5} \times 100$ (= 160) oe **or** $\frac{"8" \times "15"}{200}$ (= 0.6) oe	
		A1	cao	

Paper: 1MA1/3F

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November 2010

GCSE

GCSE Mathematics (Modular) 5MB1F
Unit 1 - Foundation

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GCSE MATHEMATICS 2MB01

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.

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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.
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.

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

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

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

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

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1011

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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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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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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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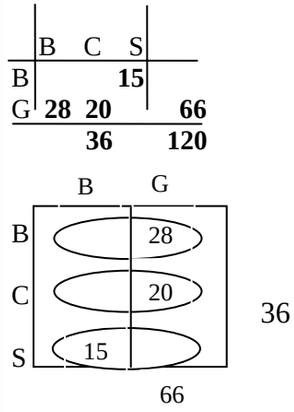
5MB1F_01					
Question		Working	Answer	Mark	Notes
12	(a)		67	1	B1 cao
	(b)	$84-58=26$	26	2	M1 for $84-58$, accept 58 to 84 and $58-84$ A1 cao
	(c)		Two comparisons	2	Ft B1 for heart rates faster after walking , bigger median, median increase by 11 Ft B1 for heart rates more spread out after walking, 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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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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GCSE MATHEMATICS 2MB01

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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

5MB2F_01
1011

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GCSE MATHEMATICS 2MB01

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

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

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

GCSE MATHEMATICS 2MB01

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

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GCSE MATHEMATICS 2MB01

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

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GCSE MATHEMATICS 2MB01

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

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GCSE MATHEMATICS 2MB01

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

GCSE MATHEMATICS 2MB01

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

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Mark Scheme (Results)

March 2012

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

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		42	1	B1 cao
	(b)		81	1	B1 cao
2	(a)		14	1	B1 cao
	(b)		Bus	1	B1 cao
	(c)	8 + 2 + 14 + 6 + 3 + 7	40	2	M1 for (8+) 2+14+6+3+7 or ft from (a) A1 for 40 or ft from (a) SC: award B1 for 32
3*			diagram or chart	4	B1 for suitable labelling or key to differentiate Alexa and Ryan B1 for 5 correct day labels OR a linear scale B1 for accurately representing the data C1 for fully correct diagram or chart with correct and clear labelling and linear numerical scale
4	(a)		Ka	1	B1 cao
	(b)		1	1	B1 cao
	(c)		Fusion	1	B1 cao

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		unlikely	1	B1 cao
	(b)		impossible	1	B1 cao
	(c)		cross at 0	1	B1 for cross at 0 (tolerance 2mm)
	(d)		$\frac{2}{11}$	2	B2 for $\frac{2}{11}$ oe (B1 for $\frac{x}{11}$, $x < 11$, $x \neq 2$ or $\frac{2}{x}$, $x > 2$, $x \neq 11$) NB: ignore probabilities given in words.
6	(a)(i)		12	2	B1 cao
	(ii)		450		B1 cao
	(b)	£12 ÷ 200	6p	2	M1 for correct use of cost ÷ number of units (eg £12 ÷ 200 or '6' or '0.06') A1 for 6p or £0.06 [units important] oe or ft "12"
	(c)	1300 × 6p	£78	2	M1 for 1300 × "b" or correct use of graph with suitable multiplier or '78' or '7800' A1 ft for £78 oe (accept £78 to £80) NB: penalise a lack of monetrary units once (at the first error)

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
7		13.68 +2 × 8.10 + 6.99 36.87 ÷ 3 36.87 − 12.29 40 − 24.58 OR (13.68 ÷ 3) × 2 = 9.12 (8.10 ÷ 3) × 2 = 5.40 (6.99 ÷ 3) × 2 = 4.66 9.12 + 5.40 + 5.40 + 4.66 = 24.58 40 − 24.58	15.42	4	M1 for 13.68 + 2 × 8.10 + 6.99 oe (=36.87) M1 for (“36.87” ÷ 3) × 2 oe or ”36.87” – (”36.87”÷3) oe M1 for 40 − “24.58” A1 cao **OR** M1 for (13.68 ÷ 3) × 2 or (8.10 ÷ 3) × 2 or (6.99 ÷ 3) × 2 oe M1 for “9.12” + 2 × “5.40” + “4.66” M1 for 40 − “24.58” A1 cao **OR** M1 for (13.68 ÷ 3) × 2 or (8.10 ÷ 3) × 2 or (6.99 ÷ 3) × 2 M1 for subtracting the special offer cost of at least one of each item from 40 M1 for successively subtracting costs of all 4 items A1 cao
8		Complete answer: time at: leaving home leaving Sudbury arrival at Chelmsford arrival at meeting	Schedule planned	3	B1 for leaves home at 0750 or earlier B1 for catches the 0800 train or earlier train OR the next train is consistent with home departure time B1 ft showing arrival time in Chelmsford at 0844 AND arrival time at meeting at 0904 ft (dep on meeting arrival time by 9.30)

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)(i)		2.23	4	B1 cao
	(ii)	2.19+3×2.23+2.26+2.28+2×2.29+2.31+2.33 22.64 ÷ 10	2.264		M1 for summing heights and dividing by 10 A1 for 2.26(4)
	(iii)		0.14		B1 accept – 0.14
	(b)		mean for men is greater and range for women is greater	2	B1 ft for comparison of means B1 ft for comparison of ranges
10	(a)	299 – 140	159	1	B1 cao
	(b)	140 − 45 – 37 or 140 – 82 58 + 47	105	2	M1 for 140 − 45 − 37 or 58 seen A1 cao
	(c)		(T,T) (T,C) (T,S) (C,C) (C,S) (S,S)	2	B2 All 6 combinations present with no incorrect combinations (B1 at least 3 different combinations) Ignore repeated combinations for B1 or B2

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
11		360 ÷ 60 Apple = 18 × 6 = 108 Banana = 23 × 6 = 138 Orange = 9 × 6 = 54 Pear = 10 × 6 = 60	108, 138, 54, 60	4	M1 for evidence of method for at least one angle (could be implied by one correct angle on pie chart or working or in table) A2 for all angles drawn correctly (±2°) (A1 for at least one angle drawn correctly or all angles correct in the table) B1 for sectors labelled with fruit names (dependent on at least one angle drawn correctly and exactly 4 sectors)
12	(a)	0.10 + 0.25 + 0.30 or 1 − (0.15 + 0.20)	0.65	2	M1 for 0.10 + 0.25 + 0.30 or 1 − (0.15 + 0.20) A1 for 0.65 oe SC B1 for 0.85
	(b)	200 × 0.30	60	2	M1 for 200 × 0.30 A1 cao

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13*		2329×0.9 =2096.1 2147×0.95 =2039.65 OR 4658×0.9 =4192.2 4294×0.95 =4079.3	Royal European	5	M1 for use of 2329 or 2147 (or sight of 4658 or 4294) ie selection of correct column M1 for attempting to calculate the discount for both their figures eg 2329×0.1 (=232.90) oe AND 2147×0.05 (=107.35) oe; 4658×0.1 (=465.8) oe AND 4294×0.05 (=214.7) oe) OR for attempting to find the discounted price for one eg 2329×0.9 (=2096.1) oe or 2147×0.95 (=2039.65) oe or 4658×0.9 (=4192.2) oe or 4294×0.95 (=4079.3) oe M1 for attempting to find the discounted price for both eg 2329×0.9 (=2096.1) oe AND 2147×0.95 (=2039.65) oe; 4658×0.9 (=4192.2) oe AND 4294×0.95 (=4079.3) oe A1 for 2096(.1) and 2039(.65) OR 4192(.2) and 4079(.3) figures rounded or truncated. C1 (dep on at least M1) for a statement deducing the cheapest company, but figures used for the comparison must also be stated somewhere, and a clear association with the name of each company.

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)		7 | 1 3 8 8 | 1 4 4 7 8 9 | 1 2 3 5 6 6 6 8 10 | 0 1 3 4 Key: 7 | 1 means 71cm	3	B2 for fully correct diagram Accept a stem of 70, 80, 90, 100 (The order of the numbers in the stem may be reversed) (B1 for ordered leaves or unordered leaves (with one error or omission)) B1 for a correct key (units may be omitted)
	(b)	104 − 71	33	1	B1 for 33 or ft from diagram
	(c)		92.5	1	B1 for 92.5 or ft from diagram if ordered.

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Summer 2012

GCSE Mathematics (Linear) 1MA0
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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.

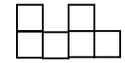
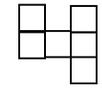
12 Parts of questions
Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

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

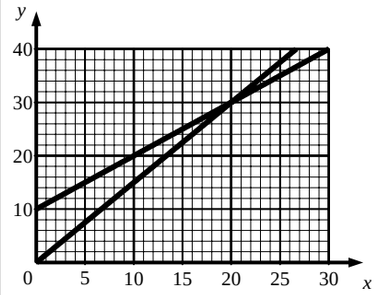
1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		380	1	B1 cao
	(b)		6.2	1	B1 cao
	(c)		Arrow at 34	1	B1 cao
2	(a)		8	1	B1 for 8 ± 0.2
	(b)		35	1	B1 for 35 ± 2°
	(c)		Circle drawn	1	B1 for all parts within ± 2mm, (use overlay)
3	(a)		4, 7, 4, 3, 2	2	M1 for at least 3 correct tallies **or** at least 3 correct frequencies A1 for all frequencies correct
	(b)		7	1	B1 for 7 **or** ft from frequencies in (a) or tallies if no frequencies
	(c)		Diagram drawn	3	M1 for bar chart or other suitable chart with at least 3 correct heights for their scale (can f.t.) A1 for all 5 bars correctly labelled and vertical axis correctly scaled A1 for fully correct **or** ft frequencies in (a) **OR** M1 for pictogram with at least 3 correct rows (can f.t.) A1 for correct labels on all 5 rows and correctly key A1 for fully correct **or** ft frequencies in (a) **OR** M1 for pie chart with at least 3 correct sectors ± 2° (can f.t.) A1 for all 5 sectors correctly labelled A1 for fully correct **or** ft frequencies in (a)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4		£1.18 + 94p = £2.12 £5 – £2.12 – 30p = £2.58 £2.58 ÷ 2 =	1.29	3	M2 for (5 – 1.18 – 0.94 – 0.30) ÷ 2 oe **or** digits 129 (M1 for 1.18 + 0.94 **or** 2.12 seen **or** 1.18 + 0.94 + 0.30 oe **or** 2.42 seen **or** 5 – 1.18 – 0.94 oe **or** 2.88 seen **or** (5 – 1.18 – 0.94) ÷ 2 **or** 1.44 seen **or** 5 – 1.18 – 0.94 – 0.30 oe **or** 2.58 seen) A1 cao **NOTE**: Accept working in £ or pence
5	(a)(i) (ii) (b)		(2, 3) (–3, 1) Point plotted at (3, –4)	2 1	B1 cao B1 cao B1 cao
6	(a) (b) (c)		– 5 6 3	1 1 1	B1 cao B1 for 6 or – 6 B1 cao
7			(P, B), (P, S), (P, L) (M, B), (M, S), (M, L) (H, B), (H, S), (H, L)	2	M1 for any 3 combinations with no incorrect combinations A1 for all 9 combinations with no duplicates or extras
8	(a) (b)	 24 ÷ 4 =	Walk 6	1 2	B1 cao M1 for 24 ÷ 4 oe or ¼ oe seen A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		Isosceles triangle	1	B1 for isosceles triangle
	(b)		Rectangle with area 12 cm^2	2	M1 for rectangle drawn A1 cao
10	(a)		A marked at 0	1	B1 for A marked at 0 (within overlay)
	(b)		B marked at 1/4	1	B1 for B marked at 1/4 (within overlay)
11	(a)		9	1	B1 cao
	(b)		33	2	M1 for 5 × 5 **or** 25 seen in the working **or** 2 × 2 × 2 **or** 8 seen in the working A1 cao
12	(a)		20	2	M1 3 × 3 × 3 oe seen or drawn or 27 seen or use of 3 layers A1 cao
	(b)			2	B2 for correct view (B1 for  or )
13	(a)(i)		07 29	2	B1 for 07 29
	(ii)		36		B1 for 36 or ft difference between (i) and 06 53
	(b)		07 51	1	B1 cao
	(c)		09 55	1	B1 for 09 55 or 9 55 or five to ten

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14		2 + 8 + 2 + 8 = 20 20 ÷ 4 =	5	4	M2 for 2 + 8 + 2 + 8 oe **or** 20 seen **or** (2 + 8) ÷ 2 oe (M1 for the sum of 3 sides of the rectangle) M1 (dep) for the sum of 3 or 4 sides of the rectangle ÷ 4 **or** an attempt to evaluate (2 + 8) ÷ 2 oe to get the length of one side A1 cao **SC**: B1 for an answer of 4 coming from $\sqrt{2\times 8}$ oe
15	(a)		4	1	B1 cao
	(b)	9.5 – 4.75 = **OR** 9.5 ÷ 2 =	4.75	2	M1 for 9.5 – 4.75 **or** 9.5 ÷ 2 **or** 4.75 – 9.5 A1 cao
	(c)		6	1	B1 cao
	(d)	12 × 4 =	48	2	M1 for × 4 seen **or** identifying + 0.5 for every 2 inches **or** 12 + 12 + 12 + 12 oe **or** build up method eg 12, 24, 36, 48 allow one error A1 cao
16	(a)		trapezium	1	B1 for trapezium or isosceles trapezium
	(b)			2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes (including initial shape) correctly tessellating)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
17*		S: $35 \div 100 \times 40 = 14$ W: $40 \div 8 \times 3 = 15$ **OR** D: $16 \div 40$ $(\times 100)$ $= 0.4$ (40%) W: $3 \div 8$ $(\times 100)$ $= 0.375$ (37.5%) **OR** D: $\frac{16}{40} = \frac{80}{200}$ S: $\frac{35}{100} = \frac{70}{200}$ W: $\frac{3}{8} = \frac{75}{200}$	Debbie and correct calculations	4	**Compares Marks out of 40 or fractions with denominator of 40** M1 for $35 \div 100 \times 40$ oe **or** 14 seen (or 14/40 seen) M1 for $40 \div 8 \times 3$ **or** 15 seen (or 15/40 seen) A1 for 14 and 15 **or** $\frac{14}{40}$ and $\frac{15}{40}$ C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable marks: Decision and justification should be clear with working clearly presented and attributable. **OR Decimals (or Percentages)** M1 for $16 \div 40$ $(\times 100)$ oe **or** 0.4 (or 40) seen M1 for $3 \div 8$ $(\times 100)$ oe **or** 0.375 (or 37.5) seen A1 for 0.4 and 0.375 (**or** 40 and 37.5) C1 (dep on M1) for correct conclusion for their working QWC: with 3 comparable decimals (or percentages: Decision and justification should be clear with working clearly presented and attributable. **OR Compares Fractions with denominator other than 40** M1 for attempt to convert all to fractions with a common denominator other than 40 M1 for at least 1 correct A1 for $\frac{80}{200}$ and $\frac{70}{200}$ and $\frac{75}{200}$ oe C1 (dep on M1) for correct conclusion for their working QWC with 3 comparable fractions: Decision and justification should be clear with working clearly presented and attributable.

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18*	(a)		10	1	B1 cao
	(b)	 **Miles** 0 10 20 30 40 50 **Ed** 0 15 30 45 60 75 **Bill** 10 20 30 40 50 60	Ed is cheaper up to 20 miles, Bill is cheaper for more than 20 miles	3	M1 for correct line for Ed intersecting at (20,30) ±1 sq tolerance **or** $10 + x = 1.5x$ oe C2 (dep on M1) for a correct full statement ft from graph eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles (C1 (dep on M1) for a correct conclusion ft from graph eg. cheaper at 10 miles with Ed ; eg. cheaper at 50 miles with Bill eg. same cost at 20 miles; eg for £5 go further with Bill **or** A general statement covering short **and** long distances eg. Ed is cheaper for shorter distances **and** Bill is cheaper for long distances) **OR** (continued on next page)

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
18 (contd)					**OR** M1 for correct method to work out Ed's delivery cost for at least 2 values of n miles where $0 < n \leq 50$ **or** for correct method to work out Ed and Bill's delivery cost for n miles where $0 < n \leq 50$ C2 (dep on M1) for 20 miles linked with £30 for Ed and Bill with correct full statement eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles (C1 (dep on M1) for a correct conclusion eg. cheaper at 10 miles with Ed; eg. cheaper at 50 miles with Bill eg. same cost at 20 miles; eg for £5 go further with Bill **or** A general statement covering short **and** long distances eg. Ed is cheaper for shorter distances **and** Bill is cheaper for long distances) SC: B1 for correct full statement seen with no working eg. Ed cheaper up to 20 miles **and** Bill cheaper for more than 20 miles QWC Decision and justification should be clear with working clearly presented and attributable

1MA0_1F					
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.
20	(a)		6	1	B1 cao
	(b)		44	1	B1 cao
	(c)		31	2	M1 for 60 – 29 **or** 29 – 60 **or** any correct method that is attempting to find the difference between 29 and 60 (allow 1 arithmetic error) A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
21*		Angle *DBC* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal Angle *ABD* = 180 – 65 Angles on a straight line add up to 180 *x* = 180 – 20 – 115 Angles in a triangle add up to 180 **OR** Angle *DBC* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal *x* = 65 – 20 Exterior angle of triangle is equal to sum of interior opposite angles **OR** Angle *DCB* = (180 – 50) ÷ 2 Base angles of isosceles triangle are equal *x* = 180 – 50 – 20 – 65 Angles in a triangle add up to 180	45 with reasons	4	M1 for (180 – 50) ÷ 2 oe **or** 65 seen M1 for 180 – 20 – (180 – "65") **or** "65" – 20 or 180 – 50 – 20 –'65' oe C2 for *x* identified as 45 with full reasons QWC: Reasons clearly laid out with correct geometrical language used (C1 (dep on M1) for one reason QWC: Reasons clearly laid out with correct geometrical language used) NOTE: *x* = 45 with no working or without any correct angles marked on the diagram cannot score.

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(a)	360 ÷ 60 = 6 300 ÷ 60 = 5 6 × 5 =	Yes and 30	3	M1 for dividing side of patio by side of paving slab eg 360 ÷ 60 **or** 300 ÷ 60 **or** 3.6 ÷ 0.6 **or** 3 ÷ 0.6 **or** 6 and 5 seen **or** 6 divisions seen on length of diagram **or** 5 divisions seen on width of diagram M1 for correct method to find number of paving slabs eg (360 ÷ 60) × (300 ÷ 60) oe **or** 6 × 5 **or** 30 squares seen on diagram (units may not be consistent) A1 for Yes **and** 30 (or 2 extra) with correct calculations **OR** M1 for correct method to find area of patio **or** paving slab eg 360 × 300 **or** 108000 seen **or** 60 × 60 **or** 3600 seen **or** 3.6 × 3 **or** 10.8 seen **or** 0.6 × 0.6 **or** 0.36 seen M1 for dividing area of patio by area of a paving slab eg. (3.6 × 3) ÷ (0.6 × 0.6) oe (units may not be consistent) A1 for Yes **and** 30 (or 2 extra) with correct calculations **OR** M1 for method to find area of patio and area of 32 slabs eg. 60 × 60 × 32 **or** 360 × 300 M1 for method to find both areas eg. 60 × 60 × 32 **and** 360 × 300 (units may not be consistent) A1 for Yes **and** 115200 **and** 108000 **OR** Yes **and** 11.52 **and** 10.8 **NB :** Throughout the question, candidates could be working in metres or centimetres

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22	(b)	1726 25890 27616 **8 6 3** **2** 2 4 1 8 9 **3** **7** 1 6 1 2 6 **2** 6 1 6 800 60 3 30 24000 1800 90 2 1600 120 6 24000 + 1800 + 90 + 1600 + 120 + 6 = 27616	276.16	3	M1 for complete correct method with relative place value correct. Condone 1 multiplication error, addition not necessary. **OR** M1 for a complete grid. Condone 1 multiplication error, addition not necessary. **OR** M1 for sight of a complete partitioning method, condone 1 multiplication error. Final addition not necessary. A1 for digits 27616 A1 ft (dep on M1) for correct placement of decimal point after addition (of appropriate values) (SC: B1 for attempting to add 32 lots of 8.63)
23	(a)		30	2	M1 for 25 ÷ 10 **or** 2.5 seen **or** 10 ÷ 25 **or** 0.4 seen **or** 12+12+6 oe **or** a complete method eg. 25×12÷10 oe A1 cao
	(b)	1000 ÷ 200 × 12	60	2	M1 for 500 ÷ 50 **or** 1000 ÷ 200 **or** 500 ÷ 10 **or** correct scale factor clearly linked with one ingredient eg 10 with sugar or 5 with butter or flour or 50 with milk **or** an answer of 120 or 600 A1 cao

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24		Acton after 24, 48, 72, 96, .. Barton after 20, 40, 60, 80, .. LCM of 20 and 24 is 120 9:00 am + 120 minutes **OR** Acton after 24, 48, 1h 12 min... Barton after 20, 40, 1 h LCM is 2 hours 9:00 am + 2 hours **OR** Times from 9:00 am when each service leaves the bus station Acton at 9:24, 9:48, 10:12.. Barton at 9:20, 9:40, 10:00.. **OR** 20 = 2 × 2 × 5 24 = 2 × 2 × 2 × 3 2 × 2 × 2 × 3 × 5 = 120	11:00 am	3	M1 for listing multiples of 20 and 24 with at least 3 numbers in each list ; multiples could be given in minutes or in hours and minutes (condone one addition error in total in first 3 numbers in lists) A1 identify 120 (mins) **or** 2 (hours) as LCM A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock **OR** M1 for listing times after 9am when each bus leaves the bus station, with at least 3 times in each list (condone one addition error in total in first 3 times after 9am in lists) A1 for correct times in each list up to and including 11:00 A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock **OR** M1 for correct method to write 20 and 24 in terms of their prime factors 2, 2, 5 and 2, 2, 2, 3 (condone one error) A1 identify 120 as LCM A1 for 11:00 (am) **or** 11(am) **or** 11 o'clock

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		$6y - 15$	1	B1 cao
	(b)		$4x(2x + y)$	2	B2 cao (B1 for $x(8x + 4y)$ **or** $2x(4x + 2y)$ **or** $4(2x^2 + xy)$ **or** $4x(ax + by)$ where a, b are positive integers **or** $ax(2x + y)$ where a is a positive integer **or** $4x(2x \quad y)$)
	(c)	$10t = gh$ $h = \frac{10t}{g}$	$\frac{10t}{g}$	2	M1 for clear intention to multiply both sides of the equation by 10 (eg. ×10 seen on both sides of equation) **or** clear intention to divide both sides of the equation by g (eg. ÷ g seen on both sides of equation) **or** $10t = gh$ **or** $\frac{t}{g} = \frac{h}{10}$ **or** fully correct reverse flow diagram eg. ← ×10 ← ÷g ← A1 for $\frac{10t}{g}$ oe

1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26	(a)	$2 \times 5 \times 2 = 20$ $300 \div 20 =$	15	3	M2 for $300 \div (2 \times 5 \times 2)$ oe (M1 for $2 \times 5 \times 2$ **or** 20 seen **or** $300 \div (2 \times 5)$ **or** 30 seen A1 cao
	(b)	$c = \frac{30 \times 40}{150}$ =	8	2	M1 for $\frac{30 \times 40}{150}$ **or** 1200 seen A1 cao
27		$3x - 15 = 2x + 24$ $x = 39$ **OR** $2x + 3x - 15 + 2x + 2x + 24 = 360$ $9x + 9 = 360$ $9x = 351$ $x = 39$ **OR** $2x + 2x + 24 = 180$ $4x + 24 = 180$ $4x = 156$ $x = 39$ **OR** $2x + 3x - 15 = 180$ $5x - 15 = 180$ $5x = 195$ $x = 39$	39	3	M1 for forming an appropriate equation eg $3x - 15 = 2x + 24$ **or** $2x + 3x - 15 + 2x + 2x + 24 = 360$ oe **or** $2x + 2x + 24 = 180$ oe **or** $2x + 3x - 15 = 180$ oe **or** $2x + 3x - 15 = 2x + 2x + 24$ M1 (dep) for correct operation(s) to isolate x and non-x terms in an equation to get $ax = b$ A1 cao **OR** M2 for $\frac{351}{9}$ **or** $\frac{195}{5}$ **or** $\frac{156}{4}$ oe A1 cao

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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.
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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

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

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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

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

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)

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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.)

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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

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

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

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

7 With working

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.
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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.

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It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: e.g. incorrect cancelling of a fraction that would otherwise be correct
It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
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Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
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If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

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

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

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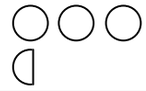
5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		4	1	B1 cao
	(b)		5	1	B1 cao
	(c)			2	B1 cao for Match 6 B1 cao for Match 7
5	(a)		1.45	1	B1 cao
	(b)	1.15 + 2.49	3.64	2	M1 for 1.15 + 2.49 A1 cao
	(c)		B and D	2	M1 for adding two of the prices or 3.94 – 'any price' A1 for B and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

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8			Comparison leading to £4.32	3	M1 for a method to work out the cost of 36 pencils M1 for a process that leads to a comparison C1 dep on a previous M1 for a clear statement/indication that Oliver spends £4.32 or that it is cheaper to buy the pencils singly with £4.32 seen NB Working can be in pounds or pence
9	(a)		2.5	1	B1 cao
	(b)		2008	1	B1 cao
	(c)		Correct statement	1	B1 for a correct statement, e.g. profit increased, profit went up by 2 million pounds
10			7	3	M1 for 4 × 6 (= 24) or 4 + 6 + 7 (= 17) M1 (dep) for "24" – "17" A1 cao
11			C,H C,A C,S P,H P,A P,S F,H F,A F,S	2	B2 for all 9 correct combinations with no incorrect combinations or duplicates (B1 for at least 4 correct combinations, i.e. (C, H) and 3 more)

5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*12			Diagram or chart	4	B1 for a key, or suitable labels, to identify minimum and maximum temperatures. B1 for diagram(s) or chart(s) set up for comparison, showing data for at least 4 months, e.g. dual bar chart, line graph, etc B1 for correct heights for minimum temperatures or maximum temperatures, dependent on a linear scale C1 for a fully correct diagram or chart to include 5 months labelled and temperature axis correctly scaled and labelled
13			490	4	M1 for $\frac{1}{10} \times 700$ (= 70) M1 for $\frac{1}{5} \times 700$ (= 140) M1 (dep on M1) for 700 – ("70" + "140") A1 cao OR M1 for $\frac{1}{10} + \frac{1}{5}$ or $\frac{3}{10}$ oe M1 for $1 - \frac{3}{10}$ or $\frac{7}{10}$ or $\frac{3}{10} \times 700$ or 210 M1 (dep on M1) for "$\frac{7}{10}$"$\times 700$ or 700 – "210" A1 cao

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5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
14		$2x$ $x+3$ $x+2x+x+3$	$x+2x+x+3$	2	M1 $2x$ or $x+3$ A1 $x+2x+x+3$ oe
*15			Yes	6	B1 283 or 285 M1 for working out the total cost of 2 adults one way or 1 adult both ways M1 for a correct method for calculating a child fare as 75% of an adult fare for one or both journeys M1 for working out the total cost for 2 adults and 1 child A1 for 1562 or 38 C1 dep on a previous M1 for correct conclusion ft for their total cost (identified) provided it is written with a £ sign.

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

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GCSE Mathematics (2MB01) Foundation
5MB3F (Calculator) Paper 01

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

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

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

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

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

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

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

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

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

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

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PMT

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

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

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

PMT

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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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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If a probability answer is given on the answer line using both incorrect and correct notation, award the marks.
If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

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

12 Parts of questions

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

13 Range of answers

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

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

PMT

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

PMT

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)

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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})

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

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

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

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

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

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

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

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

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

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

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

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

PMT

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

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

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

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

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

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

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

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

PMT

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

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Mark Scheme (Results)

November 2013

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

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NOTES ON MARKING PRINCIPLES

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

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

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

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

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

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

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

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

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

7 With working

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

8 Follow through marks

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

9 Ignoring subsequent work

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

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			157.50	3	M1 50 × 3 (=150) or 2.5 × 3 (=7.5) or 50 + 2.5 (=52.5) M1 "150" + "7.50" or 3 × "52.5" oe (=157.5) A1 cao SC B1 for final answer of 152.5(0) if M0 awarded
2	(a)		8	1	B1 cao
	(b)		10	1	B1 cao
	(c)		$1\frac{3}{4}$ circles	1	B1 cao
3	(a)(i)		8 40 oe	2	B1 for 8 40 oe
			9 40 oe		B1 for 9 40 oe
	(ii) (b)		15 20	1	B1 cao
4			26	2	M1 for correct substitution into expression 4×5 + 2 ×3 A1 cao
5	(a)(i)		23	2	B1 cao
	ii)		284		B1 cao
	(b)(i)		71+95 or 91+75	2	B1 for showing addition of 71 and 95 **or** 91 and 75
	(ii)		166		B1ft for the sum of their two numbers given provided they used only the digits 5, 1, 7 and 9 exactly once each

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
6	(a)		Cross at $\frac{1}{4}$	1	B1 for cross in correct position
	(b)		Cross at $\frac{1}{2}$	1	B1 for cross in correct position
	(c)		Cross at 0	1	B1 for cross in correct position
7	(a)(i)		6	3	B1 cao
			12		B1 cao
	(ii)		8		B1 cao
	(iii)				
	(b)		120	2	M1 10 × 3 × 4 A1 cao
8	(a)		10	1	B1 cao
	(b)		16	1	B1 cao
	(c)		-11	1	B1 cao
	(d)		17	1	B1 cao
	(e)		12-2×(3+1)	1	B1 cao
	(f)		Explanation/ reason	1	B1 Correct explanation of equivalence eg: Indication that the same operation needs to be applied to both numerator and denominator. Correct shading on diagrams to demonstrate 1 quarter and 2 eighths Conversion of both fractions to a common format 2 is $\frac{1}{4}$ of 8 oe

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		35	1	B1 cao
	(b)		Thursday	1	B1 for Thurs(day)
	*(c)	Jack 25+30+45+30=130 Grahan 40+25+35+40=140	Graham and reason	3	M1 for intention to add either Jack's total or Graham's total (allow one error reading from chart) A1 for 130 and 140 or 2(h) 10 and 2(h) 20 with working C1 (dep on M1 and two totals) for clearly stating Graham as their answer or ft from their 2 totals. **OR** M1 for the intention to find the difference between the times on each of the 4 days A1 for 10 or -10 with working C1 (dep on M1 and a net difference) for clearly stating Graham as their answer or ft from their difference [SC B1 for Graham with 130 and 140 or 10 if M0 scored]
10			SB ST SV PB PT PV MB MT MV	2	M1 for at least 4 correct pairs A1 for all 9 combinations with no extras or repeats
11	(a)		$4b$	1	B1 for $4b$ oe
	(b)		$5n$	1	B1 for $5n$ cao
	(c)		$3cd$	1	B1 for $3cd$ oe algebraic simplified form
	(d)		$5x+6y$	2	M1 $5x$ or $6y$ A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		2	1	B1 cao
	(b)		0,1,2	2	M1 for any two of 0, 1, 2 correct with no extras **or** for showing 3,4,6,7 as consecutive numbers in an ordered list (ignore numbers before or after 3,4,6,7 and allow an extra 4 written within the list 3,4,4,6,7). A1 fully correct answer in any order
13			4	2	M1 for correct order of operations +7 then ÷3 A1 cao OR M1 for forming the equation $3x - 7 = 5$ and showing intention to add 7 to both sides or divide each term by 3 as a first step A1 cao NB Embedded solutions get M1 mark provided the equation or working is complete.
14	(a)		7	1	B1 for 6.8-7.2
	(b)(i)		78	2	B1 cao
	(ii)				B1 for vertically opposite angles are equal **or** clear indication of 2 step process and angles on a straight line add up to 180°

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*15			Yes with reasons	4	M1 for 14×100 (= 1400) or 18×100 (= 1800) or 230 + 50 + 30 (=310) M1 for "1400" + "310" **or** complete correct method to find 2 other comparable amounts A1 for £1710 total **or** £17.1(0) ticket price **or** £90 **or** £310 **and** £400 C1 for a clear statement and conclusion from their two correct comparable figures. **OR** M1 for 230÷100 or 50÷100 or 30÷100 M1 "2.30" + "0.50" + "0.3" + 14 A1 £17.1(0) C1 for a clear statement and conclusion from their two correct comparable figures.
16			×2 enlargement	2	M1 for quadrilateral with at least 2 correct sides A1 cao
17			0.6, 0.606, 65%, $\frac{2}{3}$	2	M1 for attempt to convert all to the same form for comparison with at least one correct conversion (Accept at least 0.66, 0.67 66%, 67% or better for $\frac{2}{3}$) A1 for a correctly ordered list (in any form) SC B1 for correct numbers in reverse order if no method seen.
18	(a)		120	2	M1 4 × 30 A1 cao
	*(b)		Tuesday 125 miles > 120 miles 200 km > 192 km	3	M1 for 200 ÷ 8 × 5 or "120" ÷ 5 × 8 A1 for 125 or 192 or ft from "a" C1 (dep M1) Correct conclusion for their calculated figure with its correct units stated. of "125" miles and "a" miles **or "**192" km and 200 km

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		14	1	B1 cao
	(b)		5	2	M1 for intention to subtract 4 from each side or divide each term by 3 as a first step **or** embedded answer. A1 cao
20			Tally chart	3	B3 for a **table** with all 3 aspects: Column/row heading 'months **or** list of at least 3 months Column/row heading 'tally' or tally marks Column/row heading 'frequency' or totals oe (B2 for a table with 2 of the 3 aspects) (B1 for a table with 1 of the 3 aspects)
21			Triangle drawn	2	M1 for a triangle with at least one side of length 5 cm (± 0.2) or at least one angle 60° (±2°) A1 for a correct triangle
22	(a)		36	2	M1 $12 \times 6 \div 2$ A1 cao
	(b)		10	2	M1 $55 \times 2 \div 11$ or an embedded answer A1 cao
23	(a)		Shape with vertices at (–1, 3), (0, 6), (2, 6), (1, 3)	1	B1 for correct shape in correct position
	(b)		Rotation centre (0,0) 90° anticlockwise	3	B1 Rotation B1 (centre) (0,0) or *O* or origin B1 90° anticlockwise or 270° clockwise Note: award no marks if more than one transformation is given

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*24			Not enough, needs £133	5	M1 for splitting the shape (or showing recognition of the "absent" rectangle) and using a correct method to find the area of one shape M1 for a complete and correct method to find the total area M1 for a complete method to find 70% of 19 (= 13.3) or 70% of their total cost or 70% of their area A1 114(m^2) and (£)133 **or** 114(m^2) and (£)13.3(0) and 108(m^2) C1 (dep on M2) for a conclusion supported by their calculations OR M1 for a complete method for the number of tins required for one section of the area of the floor M1 for a complete method to find the number of tins for the whole floor M1 for a complete method to find 70% of their total number of tins and multiply by 19 A1 (£)133 C1 (dep on M2) for a conclusion supported by their calculations

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25	(a)		Criticisms	2	B1 Qu 1 Overlapping boxes, no units B1 Qu 2 e.g. no time frame, non-specific responses, no number quantities, open to interpretation, no option for those who do not exercise
	(b)		Question given	2	B1 for a correct question with a time frame B1 for at least 3 correctly labelled non-overlapping response boxes (need not be exhaustive) or at least 3 response boxes that are exhaustive for all integer values of their time unit (could be overlapping) NB Units must be included in either question or response boxes to score full marks [Do not allow inequalities in response boxes]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26		<table><tr><td>x</td><td>–2</td><td>–1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>y</td><td>–4</td><td>–1</td><td>2</td><td>5</td><td>8</td></tr></table>	$y = 3x + 2$ drawn	4	B1 for axes scaled and labelled **(Table of values)** M1 for at least 2 correct attempts to find points by substituting values of x M1 ft for plotting at least 2 of their points (any points from their table must be correctly plotted) A1 for correct line between $x = –2$ and $x = 2$ **(No table of values)** M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 3x + 2$ drawn A1 for correct line between $x = –2$ and $x = 2$ **(Use of $y = mx + c$)** M1 for line drawn with gradient of 3 **OR** line drawn with y intercept at 2 M1 for line drawn with gradient of 3 **AND** with y intercept at 2 A1 for correct line between $x = –2$ and $x = 2$ [SC B2 (indep of B1) for correct line segment between x=0 and x=2 – ignore any additional incorrect line segment(s)]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
27	(i)	20, 40, 60 12, 24, 36, 48, 60 $20 = 4\times5 = 2\times2\times5$ $12 = 4\times3 = 2\times2\times3$	3 and 5 or any multiple of 3, 5	4	M1 attempts multiples of both 20 and 12 (at least 3 of each shown but condone errors if intention is clear) or identifies 60 or a multiple of 60 M1 (dep on M1) for a division by 20 or 12 or counts up 'multiples' or identifies a common mulitple (implied if one answer is correct or answers reversed) A1 cheese slices (packets) 3, burgers (boxes) 5 or any multiple of 3, 5 OR M1 for expansion of either 20 or 12 into factors M1 for demonstration that both expansions include 4 (or 2×2) A1 cao for cheese slices (packets) 3, burgers (boxes) 5
	(ii)		60		B1 for 60 or ft from their correct answer to (i) or ft "common multiple"
28			38	5	M1 $3x - 5 = 19 - x$ M1 for a correct operation to collect the x terms or the number terms on one side of an equation of the form $ax+b=cx+d$ A1 for $x = 6$ M1 for substituting their value of x in the three expressions and adding **or** substituting their value of x after adding the three expressions A1 cao

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

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

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

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
2		25 mm diameter	Standard mark scheme
4		*a* change to *e* ,*b* changed to *f*	Standard mark scheme
5		Braille only- There are numbers on five cards 4,5,7,8? Cards not given	Standard mark scheme
6		Probability scales are 16 cm	Standard mark scheme
7		2 models as well as diagrams	Standard mark scheme
9		Jack's bars are stripes ,Graham's are dotty shading	Standard mark scheme
11	(a) (d)	*b* changed to *y* *x* changed to *e*, *y* changed to *f*	B1 for 4*y* oe M1 5*e* or 6*f* A1 cao
14	(a)	Line *PQ* is 9 cm	B1 for 8.5 - 9.5

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
16		Enlargement (shape S) given on 2cm grid. Wording "Shape S is an enlargement of Shape R. What is the scale factor of the enlargement?"	B2 for 2
21		Base line of the equilateral triangle is given-side length 10cm	M1 for a triangle with at least one side of length 10 cm (± 0.5) drawn in addition to the base line given or at least one angle 60° (±5°) A1 for a correctly drawn triangle with 3 side lengths 10 cm (± 0.5) and 3 angles of 60° (±5°)
23	(a) (b)	2cm grid. Shape A moved two squares to the right. *x* axis finishes at -5. 2 cm grid. *x* axis reduced	Standard mark scheme
24		Braille only-diagram labelled clockwise A to F and information given.	Standard mark scheme
26		2cm grid. Axes drawn but not labelled	Standard mark scheme

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Mark Scheme (Results)

November 2013

Pearson Edexcel GCSE
In Mathematics Modular (2MB01)
Unit 1: (5MB1F_01) Foundation (Calculator)

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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.

10 Probability

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

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

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

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

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

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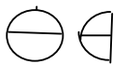
PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		24	1	B1 cao
	(b)		22	2	M1 for 8 + 8 + 6 oe or "24" − 2 A1 cao
	(c)			1	B1 for drawing a circle showing 4 quadrants and a semicircle showing 2 sectors
2	(a)		evens	1	B1 cao
	(b)		unlikely	1	B1 cao
	(c)		1 marked	1	B1 for cross marked at 1
	(d)		colours	1	B1 for 2 or 3 additional counters marked red
*3	(a)		diagram or chart	4	B1 for a key or suitable labels to identify Harry and Shamus B1 for horizontal or vertical axis labelled B1 for at least 3 correct plots C1 for fully correct diagram(s) or charts(s)
	(b)		comparisons	2	B1, B1 ft for any two correct comparisons.

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$\frac{1}{4}$

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			7.31	4	M1 for a correct method to work out the total cost (= 16.92) M1 for a correct method to find $\frac{1}{4}$ of their total cost (or $\frac{3}{4}$) M1 (dep on at least M1) for subtraction from £20 A1 cao
5	(a)		2	2	M1 for attempt to order or two middle unordered numbers selected A1 cao
	(b)		4	2	M1 for 5 – 1 or 1 – 5 or 1 to 5 A1 cao
	(c)		18 11 7 3 1	1	B1 cao
	(d)		40	1	B1 for 40 or ft their frequencies
	(e)	18×0 + 11×1 + 7×2 + 3×3 + 1×4 =	38	2	M1 for Σ *fx* A1 cao [SC: no working- B1 for 56]
*6			No	2	M1 for a relevant calculation, eg 60 +30 or 95 ÷ 60 (= 1.58…) or sight of 90 C1 (dep on M1) for correct statement with correct calculations
7	(a)		(A1), A2, A3 B1, B2, B3 C1,C2 C3	2	B2 for a fully correct list (B1 for 5 or 6 more correct. Ignore repeats)
	(b)		$\frac{1}{9}$	1	B1 for $\frac{1}{9}$ oe or ft part (a)

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
8	(a)		$\frac{1}{4}$	1	B1 for $\frac{1}{4}$ oe
	(b)		$2x°$	1	B1 for $2x°$ oe (condone omission of °)
	(c)		20	2	M1 for $150 \div 360 \times 48$ oe or $48 \div 4 + \frac{2}{3} \times (48 \div 4)$ oe A1 cao
*9			Investment B	4	M1 for 3×12×5 (= 180) M1 for 2500 × 3 × 2.5 ÷ 100 (= £187.50) A1 for (£)180 and (£)187.5(0) or (£)2680 and (£)2687.5(0) C1 (dep on M2) for correct conclusion for their figures Alternative method: M1 for 12 × 5 = 60 M1 for '60'÷ 2500 × 100 A1 for 2.4(%) C1 (dep on M2) for correct conclusion for their figures NB: accept comparable figures for different time periods SC: If compound interest used can score M1 M0 A0 C1 ft

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)	<table><tr><td>4</td><td>**15**</td><td>**11**</td><td>**30**</td></tr><tr><td>**12**</td><td>5</td><td>**10**</td><td>27</td></tr><tr><td>**16**</td><td>20</td><td>21</td><td>57</td></tr></table>	complete 2-way table	3	B3 cao (B2 for 4 or 5 correct entries B1 for 2 or 3 correct entries)
	(b)		5	1	B1 cao
	(c)		19	1	B1 for 19 or ft 4 + “15” or 30 – “11”
11	(a)		question + response boxes	2	B1 for appropriate question with time period B1 for at least 3 boxes that are either non-overlapping but not necessarily exhaustive, or exhaustive but not necessarily non-overlapping NB time period and/or unit of time may appear in either the question or with the response boxes; award a maximum of B1 if no units
	(b)		two correct reasons	2	B2 for 2 correct reasons from, eg only girls, (all about) the same age, same year group, same school (B1 for 1 correct reason)
12	(a)		$0.75 - x$	2	M1 for $1 - 0.25 + x$ or $0.25 + x$ A1 or $0.75 - x$ oe
	(b)		60	2	M1 for 0.25×240 oe A1 cao

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PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
13	(a)		Positive correlation	1	B1 for positive correlation or the greater the rainfall the more umbrellas sold oe
	(b)		52 – 58	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or an indication on the diagram from 28 on the *x*-axis A1 for an answer in the range of 52 – 58
*14		2 × 462 + 251 = 1175 0.95×1175 = 1116.25 2 × 485 + 218 = 1188 1188 – 75 = 1113.00	Jetstream	5	M1for identifying correct costs for either Highway Airlines or Jetstream Airlines M1 for attempt to calculate the costs for the family eg 2× “462” “251” or 2 × “485” + “218” M1 for a correct method to work out the discount for one company eg 0.95 × “1175” or 0.05 × “1175” or “1188” – 75 A1 for (£)1116.25 and (£)1113.00 C1 (dep on M1) for calculations clearly identified with each airline and correct decision from their figures

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

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

PAPER:			
Question		**Modification**	**Notes**
Q1		Circles are 2.5cm diameter. Key at top of pictogram.	Standard mark scheme
Q2	(c)	Probability scale is 16cm long.	Standard mark scheme
Q3		Grid is 2cm squares.	Standard mark scheme
Q4		No pictures just information given.	Standard mark scheme
Q10		Braille table has (i) to (vi) in spaces. 4 (i) (vi) (ii) (iv) 5 (v) 27 (iii) 2 21 57	Standard mark scheme
Q13		*x* axis 2cm for 5. *y* axis 2cm for 10. *x* changed to filled in circles. Right axis labelled.	Standard mark scheme
	(b)	Rainfall changed from 28mm to 30mm.	Standard mark scheme
Q14		On both tables top 2 rows and bottom 2 rows removed.	Standard mark scheme

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Mark Scheme (Results)

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3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

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: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1.	(a)		20	1	B1 cao
	(b)		14	1	B1 cao
	(c)		2 squares	2	B1 for 2 squares
			$4\frac{1}{2}$ squares		B1 for $4\frac{1}{2}$ squares
2.	(a)		8	1	B1 cao
	(b)	6+5+8+6+7+7+8 +8+8+6 = 69 69÷10	6.9	2	M1 for complete correct method to find mean e.g. sum ÷ 10 A1 for 6.9
	(c)		3	2	M1 for 8 − 5 or 5 − 8 or −3 A1 cao
	(d)		No with reason	1	B1 for No and reason e.g. 7 is between highest and lowest
3.	(a)		Reed Farm	1	B1 cao
	(b)		Rosewood	1	B1 cao
	(c)		£545	1	B1 cao

PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
4.		£4.45	3	M1 for adding 3 different prices (e.g. 3.00 + 3.50 + 2.95 (= 9.45)) or selecting the 3 highest prices M1 for complete method to find difference between total of 3 highest normal prices and £5 A1 cao
*5.		Diagram or chart	4	M1 for key or suitable labels to identify max and min M1 for 5 correct day labels or a linear scale M1 for diagram or chart (combined or separate) set up for comparison, correctly showing data for at least 3 days C1 for fully correct diagram or chart with axes correctly scaled and labelled
6. (a)		1418	1	B1 cao
(b)		Correct plan showing departure times and arrival times for 2 train journeys.	4	B1 for a departure time from Cromer of 10 57, 11 57 or 12 57 M1 for an arrival time at Norwich which is no later than 13 41 M1 for adding 30 minutes to 16 55 or correct departure time. A1 all train departure and arrival times correct (10 57 and 11 41 or 11 57 and 12 41 or 12 57 and 13 41 AND 17 45 (and 18 36))
7. (a)		Cross at $\frac{3}{10}$	1	B1 for cross at $\frac{3}{10}$
(b)		Cross at 0	1	B1 for cross at 0
(c)		I	1	B1 cao
8.		3	2	M1 for working out or using a correct duration of time. A1 cao

PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
9.		Correct pairs 3,7 or 4,6 or 2,8 or 5,5	2	B2 for 2 pairs from 5,5 or 3,7 or 4,6 or 2,8 (B1 for one pair) (Note: Condone non-integers if correct pair(s) given)
*10		London is more expensive	4	M1 for reading from the graph, e.g. £10 = €12 or €7 = £5.80 M1 for a complete method to convert either £60 into € or €70 into £ A1 for answer in interval €71 to €72 or in interval £57 to £59 C1 ft (dep on M1) for correct conclusion for their figures using consistent units
11.		165	3	M1 for correct method to find 5% of 300 or $\frac{2}{5}$ of 300 M1 (dep) for 300 – "15" – "120" A1 cao OR M1 for 1 – 0.05 – 0.4 (= 0.55) M1 (dep) for "0.55" × 300 A1 cao

PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
12. (a)		22	1	B1 cao
(b)		23	3	M1 for correct method to find total women who came by bus, e.g. 13 – 6 (=7) M1 for correct method to find women who came by train, e.g. 22 – 7 – 4 (=11) A1 cao OR M1 for correct method to find men who came by car, e.g. 28 – 6 – 12 (= 10) M1 for correct method to find total who came by car, e.g. 10 + 4 (= 14) A1 cao
(c)		$\frac{3}{7}$	2	M1 for $\frac{12}{28}$ oe A1 oe
13.		30	2	M1 for 0.6 × 50 oe A1 cao
14.		$\frac{x+x+5+2x}{3}$	2	M1 for intention to add x, $x + 5$, $2x$ or $4x + 5$ seen or ambiguous answer, e.g. "$4x + 5$" ÷ 3 A1 for $\frac{x+x+5+2x}{3}$ oe

PAPER: 5MB1F_01				
Question	**Working**	**Answer**	**Mark**	**Notes**
15. (a)		2 different reasons	2	B1 for a reason relating to: Bias – due to gender or due to railway station location Size of sample too small B1 for one other reason
(b)		Question and response boxes	2	B1 for a suitable question with time period and units in question or response boxes B1 for at least 3 non-overlapping and exhaustive response boxes
16.		12 | 3 5 9 13 | 0 3 3 5 7 8 14 | 7 7 8 9 15 | 0 1	3	B2 for a fully correct ordered diagram (B1 for correct unordered diagram or ordered with at most two errors) B1 for correct key eg 12 | 3 means 123 (cm)
17. (a)		Point at (47, 34)	1	B1 point plotted
(b)		Positive	1	Positive (correlation)
(c)		48 to 51 inclusive	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a horizontal line from 35 or point marked at (n, 35) A1 for given answer in the range 48 – 51

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

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

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

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
1		Key top left. Pictures size x 2½	
3		Table: Location column removed	
5		Table: Friday row removed, Saturday – 17 changed to 12 Grid: Vertical axis – 15 x 2 cm squares, horizontal axis 10 x 2 cm squares Room left for labelling on the left and below.	
6		Table: North Walsham now removed from both tables. 1057 and 1557 removed from Cromer to Norwich 1445 and 1955 removed from Norwich to Cromer	
7		Probability scales lengthened	
10		1½ cm grid. Inside measurements of squares are 1.4 cm. Right axis labelled	

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PAPER: 5MB3H_01			
Question		**Modification**	**Notes**
12		Braille: (i) is put in total women and (ii) in train total	
16		Diagram enlarged. 4th horizontal line drawn in at the bottom.	
17		1½cm grid. Inside measurements of squares are 1.4 cm. Crosses changed to filled in circles. Right axis labelled	

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

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

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)(i)		2.67	3	B1 cao
	(ii)		4		B1 cao
	(iii)		1.8		B1 cao
	(b)		$\frac{53}{100}$	1	B1 cao
	(c)		0.6	1	B1 cao
2	(a)		Pentagon	1	B1 cao
	(b)		7	1	B1 cao
	(c)		122	2	M1 for 360 – (56+87+95) A1 cao
	(d)		A and G	1	B1 cao
3			22.5(0)	3	M1 for working out the change for one week eg 15+3.5−2 (=16.5) or 3.5−2 (=1.5) or 6−4 (=2) or 6.5−3.5 (=3) M1 for working out the change for all weeks or differences eg (15+)3.5−2+4−6+5+6.5−3.5 oe or "1.5" + "−2" + "5" + "3" (=7.5) A1 for 22.5(0) OR M1 for working out the totals in or out eg 3.5+4+5+6.5 (=19) or 2+6+3.5 (=11.5) M1 for finding the differences of totals eg "19" – "11.5" (=7.5) A1 for 22.5(0)

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Reflection	1	B1 for correct reflection
	(b)		2	1	B1 cao
5	(a)		393	2	M1 for attempt to find the total mileage eg 178+215 or 207+186 A1 cao
	(b)		29	2	M1 for attempt to find the difference between the signs eg 207−178 or 215−186 or "393" – (178 + 186) or [(215+207)−(178+186)]÷2 oe A1 cao
6	(a)		2300	1	B1 cao
	(b)		35	1	B1 cao
	(c)		27	1	B1 cao

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*7			Enough bags Not enough bricks	4	M1 for a correct method to find bricks or mortar for $8m^2$ eg 8×60 (=480) oe or 8×2.4 (=19.2) oe M1 for a correct method to find bricks and mortar for $8m^2$ eg 8×60 (=480) oe and 8×2.4 (=19.2) oe A1 for 480 and 19.2 C1 (dep M1) ft for enough bags and not enough bricks oe OR M1 for a correct method to find area coverage for bricks or mortar eg 450÷60 (=7.5) or 20÷2.4 (=8.3...) oe M1 for a correct method to find area coverage for bricks or and mortar eg 450÷60 (=7.5) and 20÷2.4 (=8.3...) A1 for 7.5 and 8.3... C1 (dep M1) ft for enough bags and not enough bricks oe
8	(a)		2	1	B1 cao
	(b)		15	1	B1 cao
	(c)		9	1	B1 cao
	(d)		14	2	M1 for intention to subtract 5 from sides or multiply both sides by 2 as a first step A1 cao
*9			56p	3	M1 for a correct method to find total cost of pencils in £ or pence eg 12×37 (=444) M1 for a correct method to find the change from £5 eg 500 – "444" C1 for 56p or £0.56 ie with correct monetary units

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
10			construction	2	M1 for a correctly drawn equilateral triangle or appropriate construction lines A1 for a correctly drawn triangle with all accurate and appropriate construction lines shown
11			6 or − 6	3	M1 for 43 – 7 (=36) or $\sqrt{43}$ 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]

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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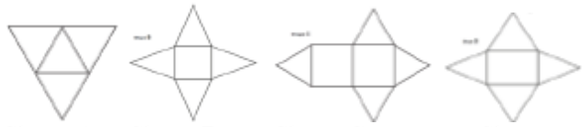
PAPER: 5MB3F_01					
Question		Working	Answer	Mark	Notes
22			43	3	M1 for π×40 or 2× π ×20 M1 for 34×2×π×20 A1 for 42.7 – 43

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**
2	(d)	Remove triangle H	
4	(b)	Grid enlarged. 'mirror line' repeated on the left	
5		Road given as straight line	
8	(a) (b)	MLP x changed to y t changed to e	
10		Given line 7 cm	
12		No picture – just information given	
15		Model given and a diagram for MLP Question revised – 4 shapes drawn (cut out shapes for braille) Candidates asked which shape would be a net of the square based pyramid	

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
15	ii	 Shape A Shape B Shape C Shape	
18		Garden enlarged – fountain to bench is 9.5 cm North lines put in from fountain and bench and removed from the right side.	
		Line joins fountain to bench.	
	(c)	Change 7 metres to 11 metres. Change 12 metres to 14 metres.	
12		Ground labelled	

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Mark Scheme (Results)

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

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		Lhotse	1	B1 cao
	(b)		8200	1	B1 cao
	(c)		Seven thousand four hundred and twenty-eight	1	B1 for any unambiguous answer
	(d)		8051	1	B1 cao
2	(a)		4,8,3,3,2	2	M1 for at least 2 tallies or 2 frequencies correct A1 for 5 correct frequencies
	(b)		correct graph	3	M1 for bar chart or other suitable chart with at least 2 correct frequencies drawn for their scale (ft from (a)) M1 for all bars labelled and vertical axis correctly scaled A1 for accurately representing their data, with all labels, ft from (a)
3	(a)		56 000	1	B1 cao
	(b)		276	1	B1 cao
	(c)		6	1	B1 cao
	(d)		29	1	B1 cao
	(e)		13	1	B1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4			3	3	M1 for attempt to find number of bags needed eg 254 ÷ 20 oe (= 12.7) **or**12 **or** 13 M1 (dep) for "254 ÷ 20" ÷ 5 oe (= 2.4) A1 cao **OR** M1 for 5 × 20 (=100) M1 (dep) for intention to find how many "100" in 254 (= 2.54) A1 cao
5	(a)		B or C	1	B1 for B **or** C **or** B and C
	(b)		G, E	2	B1 for G; B1 for E
	(c)		Hexagon	1	B1 cao
	(d)		Parallelogram	1	B1 cao
6	(a)		$3m$	1	B1 cao
	(b)		$7e$	1	B1 cao
	(c)		$15g$	1	B1 cao
7	(a)		31	2	M1 for 3 × 5 + 2 × 8 **or** 15 and 16 A1 cao
	(b)		$6x + 8y$	2	M1 for $6x$ **or** $8y$ A1 for $6x + 8y$ oe as final answer

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*8		Tables-R-Us 120 + (120 + 2 × 40) = 320 Fred's Furniture 120 + (32 × 6) = 312 Tables 'n Chairs 120 + (3 × 70) = 330	Fred's Furniture with working	4	M1 for correct method to find total cost of chairs (and table) for at least one shop M1 for correct method to find total cost of chairs (and table) for at least two shops A1 for 3 comparable totals (eg. chairs £200, £192, £210 **or** table and chairs £320, £312, £330) C1 (dep on M1) ft for correct statement with shop name from comparable figures
9			48	2	M1 for method to find 15% of 320 A1 cao
10	(a)		5	1	B1 cao
	(b)		evens	1	B1 cao
	(c)		$\frac{2}{6}$ oe	2	M1 for $\frac{a}{6}$ where $a < 6$ **or** $\frac{2}{b}$ where $b > 2$ A1 for $\frac{2}{6}$ oe
11	*(a)		No with working	2	M1 for 19.5 + 22.8 (= 42.3) **or** 40 − 19.5 − 22.8 (= −2.3) **or** 22 + 19 (= 41) C1 for statement with No and 42.3 **or** ±2.3 **or** 41 seen
	(b)		12 40	3	M1 for correct start eg. addition of two times **or** subtraction of one time from 1430 M1 for a complete method A1 for 12 40 (pm)

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
12			126 or 176	4	M1 for correct unit conversion of 2 m or 3 m or 20 cm M1 for method to find number in width or number in length **or** 14 or 9 or 16 or 11 M1 (dep on M1) for "number in length" × "number in width" eg 14 × 9 eg 16 × 11 A1 for 126 or 176
*13			Amsterdam with figures	3	B1 for a correct conversion from miles to km or km to miles eg 8 km = 5 miles eg 28 miles = 44 km M1 for a correct method to convert 280 miles to km or 500 km to miles **or** 420 – 460 (km) **or** 300 − 320 (miles) C1 (dep on M1) for statement with correct conclusion and correct conversions (420 – 460 km or 300 – 320 miles)
14			correct shape	2	M1 for at least 2 correctly enlarged sides A1 for correct shape **SC:** B1 for a fully correct enlargement scale factor 2 or 4
15	(a)		18	1	B1 cao
	(b)		56	1	B1 cao
	(c)		33	2	M1 for 23 and 56 identified A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*16			No with reason	3	M1 for 17, 20 .**or** + 3 **or** $3n + 2$ M1 for method to show that 34 is not in the sequence eg continue sequence to at least 32 eg attempt to solve $3n + 2 = 34$ C1 (dep on M2) for statement with conclusion eg No with 32, 35 shown eg $n = 32 \div 3$ which is not a whole number
17			700 cm^3	3	M1 for $20 \times 5 \times 7$ A1 for 700 B1 (indep) for cm^3
18			4	3	B1 for 11.8 − 12.2 (cm) or 1180 − 1220 (km) M1 for "12" × 100 ÷ 300 oe A1 for 3.9 – 4.1 from correct figures or ft from "12" × 100 ÷ 300 oe
19			1340	4	M1 for 500 × 4 (= 2000) M1 for 960 – 300 (= 660) or "2000" + 300 (= 2300) or "2000" – 960 (= 1040) M1 (dep on M2) for a fully correct method eg "2000" – "660" or "2300" – "960" or "1040" + 300 A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
20	(a)		$\frac{5}{12}$	2	M1 for $\frac{150}{360}$ or equivalent fraction A1 cao
	(b)		42	2	M1 for 60 ÷ 12 (= 5) **or** 210 ÷ 60 (= 3.5) oe A1 cao
	(c)		not enough information	1	B1 for 'not enough information' ticked **and** appropriate explanation given
21			25	4	M1 for 600 ÷ 4 (= 150) M1 for 4500 ÷ "150" (= 30) M1 for 750 ÷ "30" A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) M1 for 600 ÷ 4 (= 150) or 600 ÷ "6" (= 100) M1 for "150" ÷ "6" or "100" ÷ 4 A1 for 25 with supporting working **OR** M1 for 4500 ÷ 750 (= 6) or 750 ÷ 4500 (= $\frac{1}{6}$) M1 for $\frac{1}{4}\times"\frac{1}{6}"$ $\left(=\frac{1}{24}\right)$ M1 for $"\frac{1}{24}"\times 600$ A1 for 25 with supporting working

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*22			130 + correct reasons	4	M1 for angle *BFG* = 65 (may be seen on diagram) M1 (dep) for correct method to calculate *x* eg (*x* =) 65 + 65 (= 130) **or** (*x* =) 180 − (180 − 2 × 65) (= 130) C2 for *x* =130 **and** full appropriate reasons related to method shown (C1 (dep on M1) for any one appropriate reason related to method shown) eg alternate angles are equal ; base angles in an isosceles triangle are equal; angles in a triangle add up to 180°; angles on a straight line add up to 180°; exterior angle of triangle = sum of two interior opposite angles co-interior angles (allied angles) add up to 180°
23	(a)		2 reasons	2	B2 for two different reasons (B1 for 1 reason) eg No units (of distance) eg Overlapping intervals (2 and/or 3 in two boxes) eg Missing box (no box for more than 6 (km/miles) or 'other' or 4.5 (km/miles))
	(b)		Question	2	B1 for a suitable question which includes a time frame (time frame could appear with response boxes) B1 for at least 3relevant non-overlapping **and** exhaustive response boxes [Do not allow inequalities in response boxes]

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
24	(a)		$e(3e + 5)$	1	B1 for $e(3e + 5)$
	(b)		4	3	M1 for intention to expand brackets eg $7k - 21$ **or** division of all terms on RHS by 7 as a first step M1 for correct method to isolate terms in k in an equation A1 cao
	(c)		$a = 2f - 1$	2	M1 for a correct first step eg intention to multiply both sides by 2 A1 cao
25			$2 \times 2 \times 3 \times 3 \times 5$	3	M1 for continual prime factorisation (at least two consecutive steps correct) **or** at least two stages of a factor tree correct M1 for a fully correct factor tree **or** list 2, 2, 3, 3, 5 A1 for $2 \times 2 \times 3 \times 3 \times 5$ or $2^2 \times 3^2 \times 5$
26			9	4	M1 for method to find the area of one rectangle eg 15×8 (=120) or 15×11 (=165) M1 (dep) for subtraction from/by given area eg 138 − "120" (=18) or "165" – 138 (=27) M1 for final step from complete method shown eg 15 − "18"÷ 3 or for "27" ÷ 3 A1 cao **OR** M1 for a correct expression for the area of one rectangle eg $(8 + 3) \times (15 - x)$ or $8 \times x$ M1 (dep) for a correct equation eg $(8 + 3) \times (15 - x) + 8 \times x = 138$ M1 for correct method to isolate x eg $3x = 27$ A1 cao

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

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Angles: ±5°
Measurements of length: ±5 mm

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		Take out Jannu	
2	(b)	Table layout modified 2 cm grid provided with 14 squares across and 12 squares up Space on left and at the bottom for labeling	
5		Shapes H and I removed	
7		*a* changed to *e* *c* changed to *f*	
10		Spinner straightened up,● at centre to represent spike	
13		2 cm grid provided	
14		1½ cm grid provided Enlargement given Question reversed – 'Describe fully the transformation that maps Shape A onto Shape B	

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
15		Horizontal lines inserted to separate rows	
17		Model provided	

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Mark Scheme (Results)

November 2014

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

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iii) *organise information clearly and coherently, using specialist vocabulary when appropriate*.
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If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
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Guidance on the use of codes within this mark scheme
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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		6	1	B1 cao
	(b)		14	1	B1 cao
	(c)		Reflection	1	B1 cao
2	(a)		5	1	B1 cao
	(b)		Saturday	1	B1 cao
	(c)	4+6+5+2+4+7+6 = 34 5+3+4+3+4+6+3 = 28 34 – 28 -1 + 3 + 1 + -1 + 0 + 1 + 3	6	2	M1 for intention to find the total hours for Skegness or for Blackpool. A1 cao OR M1 for intention to find differences for each day. A1 cao
3	(a)		0.7	1	B1
	(b)		45	1	B1 cao
	(c)		$\frac{3}{10}$	2	M1 for $\frac{30}{100}$ or equivalent fraction A1 cao
	(d)		2.74	1	B1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
4	(a)		Perpendicular	1	B1 for a perpendicular line drawn
	(b)		Circle radius 4cm	1	B1 for a circle of radius 4 cm drawn
	(c)		Isosceles triangle	1	B1 for an isosceles triangle
	(d)		Quadrilateral	1	B1 for quadrilateral with exactly two right angles
5	(a)		winter	1	B1 cao
	(b)		amaryllis	1	B1 cao
	(c)(i)		Mark at 0	2	B1 for mark at 0
	(ii)		Mark at $\frac{1}{2}$		B1 for mark at $\frac{1}{2}$
6	(a)		85.50	2	M1 for 2×12.75 + 3×20 or 12.75+3×20 (=72.75) A1 for 85.5(0)
	(b)		16	3	M1 (ft from (a)) for subtracting cost of 1 or 2 or 5 lessons from 305.50 305.50 – "2×12.75" (= 280) or 305.50 – "85.50" (=220) or 305.50 – 12.75 (=292.75) M1 for "280" ÷ 20 (= 14) or "220 ÷ 20 (= 11) or 292.75 ÷ 20 A1 cao OR M1 for adding 20s to cost of 1 or 2 or 5 lessons eg 12.75 or "2×12.75" or "85.50" and intention to add on 20s or 14×20 or 11×20 M1 for "2×12.75" or "85.50" and adding 20s to within 20 of 305.50 A1 cao

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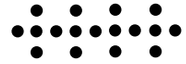
PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
7	(a)		Newcastle	1	B1 cao
	(b)		3	1	B1 cao
	(c)		–1	2	M1 for intention to find middle of –5 and 3 eg, may see –5 and 3 identified on a correct number line **or** (–5 + 3) ÷ 2 **or** –5 + (3 – –5) ÷ 2 **or** 3 – (3 – –5) ÷ 2 A1 cao
8	(a)		5, 3	1	B1 cao
	(b)		2, 4	1	B1 cao
	(c)		Point marked	1	B1 cao
9	(a)		14 cm or 0.14 m	3	M1 for 3 × 32 + 2 × 45 (=186) oe M1 (indep) for subtraction of "wood needed" from 2 m using consistent units eg 200 – "186" (=14) or 2 – "1.86" (=0.14) A1 for 14 cm, 0.14 m or 140 mm
	(b)		44	3	M1 for 320 ÷ 14 (= 22.8... or 23) or 2 × 320 ÷ 14 (= 45.7... or 46) M1 (dep) for evidence of truncating "total DVDs" **down** to integer value, e.g. 22.8... to 22 or 45.7... to 45 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
10	(a)		1	1	B1 cao
	(b)		1.8	2	M1 for adding all 10 scores **and** dividing by 10 eg 18 ÷10 A1 cao
	*(c)		Greater and explanation	2	M1 (ft from (b)) adding all 12 scores and dividing by 12 or for comparing 4 and 2 with '1.8' or comparing 4 + 2 with 2 × '1.8' C1 (ft from (b)) for correct conclusion and correct explanation NB: if M1 A1 awarded in (b) comparison must be with 1.8
11		06 57 06 57 07 19 07 19 07 10 07 10 07 33 07 33 07 45 07 58 07 45 07 58 08 50 09 27 08 50 09 27 0920 09 57 09 20 09 57	Fully correct schedule	3	B1 for 06 57 or 07 19 with correct arrival time in Peterborough **or** for 07 45 or 07 58 with associated arrival time in York B1 for fully correct departure times and arrival times for 2 train journeys that enable travel from Stamford to York to arrive by 0930 B1 ft for arrival time at meeting 30 mins after York arrival
12	(a)		22	1	B1 cao
	(b)		18	1	B1 cao
	(c)		3.4	2	M1 for intention to subtract 7 from both sides or divide all terms by 5 as a first step. A1 for 3.4 oe
13			Triangle drawn	2	M1 for angle of 35° or for line 5.5 cm long A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
14	(a)			1	B1 cao
	(b)		17, 21	1	B1 for 17, 21 cao
	(c)		$4n + 1$	2	B2 for $4n + 1$ oe (B1 for $4n + k$, $k \neq 1$, or k is absent or $n = 4n + 1$)
	(d)		12	2	M1 for $(50 - 1) \div 4$ **or** evidence of using their formula from part (c) if in the form $an+b$ **or** repeated addition of 4 (at least 3) ft table in part (b) **or** 49 seen A1 cao
*15			148°	4	M1 for (angle BDC =) $360 - 250$ (=110) M1 (dep) for $180 - (180 - '110' - 38)$ (= 148) or for '110' + 38 (= 148) C2 (dep on M2) for $x = 148$ with full reasons, relevant to the complete correct method used, for example: Angles at a point add up to 360° **and** angles in a triangle add up to 180° **and** angles on a straight line add up to 180°; Or Angles at a point add up to 360° **and** exterior angle of a triangle is equal to the sum of the interior opposite angles or (C1 (dep on at least M1) for one reason relevant to correct method)

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			89.3855	2	M1 for 3.8 or 23.5225 or 18.43 or 36.86 or 89.3855 seen only rounded or truncated to at least 3 sig figs A1 cao
17	(a)		**14** 13 **20** 47 **12** **7** 34 **53** 26 20 **54** 100	3	B3 for fully correct table (B2 for 3 or 4 or 5 correct entries) (B1 for 1 or 2 correct entries)
	(b)		$\frac{13}{47}$	2	M1 for $\frac{13}{n}$, $n > 13$ or for $\frac{n}{47}$, $n < 47$ A1 for $\frac{13}{47}$ (or 0.27 - 0.28 or 27% - 28%)
18			80	3	M1 for intention to find missing side length 10 – 4 (= 6) or perimeter of 4 rectangles eg 4 × (10 + 4 + 10 + 4) (=112) M1 for complete method to find perimeter eg 4 × (10 + 4 + '6') or '112' – 8 × 4 A1 cao

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19			36	4	M1 for $\frac{3}{5} \times 240$ (= 144) M1 for $\frac{1}{4} \times 240$ (= 60) M1 (dep on M2) for 240 – ('144' + '60') A1 cao OR M1 for $\frac{3}{5} + \frac{1}{4}$ or $\frac{17}{20}$ oe M1 for 1 – '$\frac{17}{20}$' (=$\frac{3}{20}$) or '$\frac{17}{20}$'× 240 (= 204) M1 (dep on M2) for '$\frac{3}{20}$'× 240 or 240 – '204' A1 cao
20	(a)		360	2	M1 30 ÷ 10 (= 3) or 120 ÷ 10 (=12) or 120 + 120 + 120 oe A1 cao
	(b)		25	2	M1 for $\frac{750}{300}$ (=2.5) oe A1 cao
21	(a)		Relationship	1	B1 for description of relationship eg "As the length of the pine cone increases the width increases" oe (accept positive correlation)
	(b)		6.1 to 6.4	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a vertical line from 8.4 or a point at (8.4, *y*) where *y* is from 6.1 to 6.4 A1 for given answer in the range 6.1 to 6.4

PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			2.10 euros or £1.81	3	M1 for 2.5 × 1.16 (= 2.9) M1 (dep) for 5 – "2.9" (=2.1) A1 for 2.1(0) euros OR M1 for 5 ÷ 1.16 (= 4.31...) M1 (dep) for "4.31" – 2.50 (=1.81) A1 for £1.81
23	(a)		$3(x + 2)$	1	B1 cao
	(b)		$7y - 16$	2	M1 for any intention to expand a bracket eg $5y - 10$ or $2y - 6$ A1 cao
*24			Decision (No the attendance target was not met)	3	M1 for attempting to find total number of students or 1210 seen M1 for $\frac{'1092'}{'1210'} \times 100$ oe or $\frac{'118'}{'1210'} \times 100$ oe C1 for correct decision with 90.(2479...) or correct decision with 6 and 9.(752...) **OR** M1 for attempting to find total number of students or 1210 seen M1 for $\frac{94}{100} \times$ '1210' oe C1 for correct decision with 1137 (.4) and 1092 or correct decision with 72(.6) and 118 **OR** M1 for a correct % method for one year, e.g. $\frac{192}{208} \times 100$ or $\frac{94}{100} \times 208$ M1 for a correct % method for each year C1 for correct decision with 92.(30...), 90.(87...), 89.(31...), 89.(27...), 89.(91...) or 195(.5..), 226.(9…), 246.(2..), 245.(3…), 223.(7…)

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PAPER: 1MA0_2F					
Question		**Working**	**Answer**	**Mark**	**Notes**
25		<table><tr><td>x</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y</td><td>-7</td><td>-5</td><td>-3</td><td>-1</td><td>1</td><td>3</td></tr></table>	Straight line from (–2, –7) to (3, 3)	4	**(Table of values)** C1 for axes scaled and labelled M1 for at least 2 correct attempts to find points by substituting values of x M1 ft for plotting at least 2 of their points (any points plotted from their table must be plotted correctly) A1 for correct line between $x = -2$ and $x = 3$ **(No table of values)** C1 for axes scaled and labelled M1 for at least 2 correct points with no more than 2 incorrect points M1 for at least 2 correct points (and no incorrect points) plotted OR line segment of $y = 2x - 3$ drawn A1 for correct line between $x = -2$ and $x = 3$ **(Use of $y = mx+c$)** C1 for axes scaled and labelled M1 for line drawn with gradient of 2 OR line drawn with a y intercept of –3 M1 for line drawn with gradient of 2 AND with a y intercept of –3 A1 for correct line between $x = -2$ and $x = 3$ [SC B2 (indep of C1) for the correct line between $x = 0$ and $x = 3$, ignore any additional incorrect line segment(s)]

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PAPER: 1MA0_2F					
Question		Working	Answer	Mark	Notes
*26			No + reason	4	M1 for intention to find the circumference eg 140 × π (= 439.82...) A1 for circumference = 439 – 440 M1 (dep on previous M1) for a complete method shown that could arrive at two figures that are comparable, eg "C"÷60×12 (=87.96..), 90÷12×60 (=450) , 90×60 ÷ C"(=12.27), "C"÷90×12 (=58.64..) C1 (dep on both M marks) for No and explanation that shows a correct comparison eg only 84 people could sit around the tables or that 13 tables are needed or that 480 cm is needed.

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1		2 cm grid – wording added 'each square represents a one centimetre square' –this is also on diagram	
2		Right axis labelled	
4	(a) (b (c) (d)	2 cm grid 4 cm changed to 5 2 cm grid 2 cm grid	
5	(c)	Probability scales lengthened	
7		No map Information put into a table	
13		5.5 cm side changed to 8 cm 35° changed to 45°	M1 for angle of 45° or for line 8 cm long A1 cao
23	(b)	*x* changed to *y*	B1 for 3(*y*+2)

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Summer 2015

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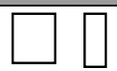
PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)			1	B1 for 6 TVs drawn for Sunday
	(b)		37	2	M1 for attempt to find the total for 4 days (eg 8+10+13+6) by adding individual days with at least 3 days correct A1 cao
2	(a)		50	1	B1 cao
	(b)		$\frac{3}{8}$	1	B1 cao
	(c)		2 squares shaded	1	B1 cao
	(d)		$\frac{2}{8}$ and $\frac{5}{20}$	2	B2 for both correct (B1 for one correct)
3	(a)		37.4	1	B1 cao
	(b)		6500	2	M1 for sight of 3500 or attempt to count up from 3500 on scale or count down from 10000 on scale or 10000 – "3500" ["3500" in the range 3000 – 4000] or an answer which includes the digits 65 A1 cao
4	(a)		Gulf	1	B1 cao
	(b)		Avris	1	B1 cao
	(c)		19 200	1	B1 cao

PMT

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		Parallel lines marked	1	B1 for parallel lines marked
	(b)		Right angle	1	B1 for right angle marked
	(c)		35	1	B1 for 33 - 37
6	(a)		11	1	B1 cao
	(b)		+ 8 or × 3	1	B1 for + 8 or × 3
7	(a)		08 12	1	B1 cao
	(b)		6	2	M1 for evidence of counting on 15 minutes from 09 20, could be shown with table A1 cao
	(c)		17 35	1	B1 cao
8	(a)(i)		likely	2	B1 cao
	(ii)		Mark at 0		B1 cao
	(b)		Mark at $\frac{1}{2}$	1	B1 cao
	(c)	(1, H), (2, H), (3, H), (4, H), (5, H); (6, H), (1, T), (2, T), (3, T), (4, T), (5, T), (6, T)	combinations shown	2	M1 for at least 4 correct outcomes A1 for all 12 correct outcomes with no incorrect outcomes and no repeats

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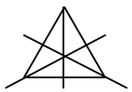
PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		4.40	3	M1 for a method to find the cost for one delivery method eg 19 + 7 × 0.7(0) (= 23.9(0)) or 16 + 7 × 0.5(0) (= 19.5(0)) M1 for a method to find the cost for **both** delivery methods **and** attempting to subtract eg 23.90 – 19.50 A1 cao Accept 4.4 **OR** M1 for method to find the difference between the two delivery costs eg 19−16 (=3) and 70-50 (=20) M1 for a method to find the "cost" using the differences eg "3" + 7 × "20" A1 cao Accept 4.4
	(b)		23	3	M1 for 25 – 16 (= 9) M1 for a method to divide "9" by 0.50 (= 18) A1 cao **OR** M1 for starting with 16 and a method to add on 0.50s M1 for starting with 16 and adding on 0.50s to within 0.50 of 25 A1 cao
10	(a)		5.8 to 6	1	B1 for an answer in the range 5.8 to 6
	*(b)		No (supported)	3	M1 for a correct conversion of any amount (lb to kg or kg to lb) excepting that in (a) M1 (dep M1) for a complete method to convert 100 kg (from 25×4) to lb (to compare with 200 lb) or to convert 50 lb (from 200÷4) to kg (to compare with 25 kg) C1 for "no" and a comparison with a converted weight of 212 - 228 pounds or 88 - 94 kg

<table>
<tr><th colspan="6">PAPER: 1MA0_1F</th></tr>
<tr><th colspan="2">Question</th><th>Working</th><th>Answer</th><th>Mark</th><th>Notes</th></tr>
<tr><td>11</td><td>(a)</td><td></td><td>2, 1</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(b)</td><td></td><td>–2, 3</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(c)</td><td></td><td>Point marked</td><td>1</td><td>B1 for point marked at (–3, –1)</td></tr>
<tr><td></td><td>(d)</td><td></td><td>Line $x = 3$ drawn</td><td>1</td><td>B1 for line $x = 3$ drawn</td></tr>
<tr><td>12</td><td></td><td></td><td>13
−1
13
26</td><td>4</td><td>B1 cao
B1 cao
B1 cao
B1 cao
SC: If B0 scored award M1 for appropriate working shown</td></tr>
<tr><td>13</td><td>(a)</td><td></td><td>9</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(b)</td><td></td><td>50</td><td>1</td><td>B1 cao</td></tr>
<tr><td>*14</td><td></td><td>
<table>
<tr><td colspan="2">g</td><td colspan="2">kg</td></tr>
<tr><td>2000</td><td>600</td><td>2</td><td>0.6</td></tr>
<tr><td colspan="2">mm</td><td colspan="2">cm</td></tr>
<tr><td>400</td><td>450</td><td>40</td><td>45</td></tr>
<tr><td>210</td><td>350</td><td>21</td><td>35</td></tr>
<tr><td>75</td><td>80</td><td>7.5</td><td>8</td></tr>
</table>
</td><td>Yes with correct conversions</td><td>4</td><td>M1 for using 1 kg = 1000 g eg sight of 2000 or 0.6
M1 for using 1 cm = 10 mm eg sight of 400, 210, 25, 45, 35 or 8
M1 for evidence of considering three boxes eg 2.5×3 (=7.5) or reducing the 2kg parcel to compare with one box
C1 for “yes” with correct conversions of dimensions and weight
NB: Candidates can work in cm or in mm and in kg or g</td></tr>
<tr><td>15</td><td>(a)</td><td></td><td>1</td><td>1</td><td>B1 cao</td></tr>
<tr><td></td><td>(b)</td><td></td><td>54</td><td>2</td><td>M1 fx (at least 3 seen from 0×2, 1×12, 2×8, 3×6, 4×2) or for an answer of 56
A1 cao</td></tr>
</table>

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16	(a)			2	M1 for any 1 correct line of symmetry, allow extras A1 for all 3 lines and no extras
	(b)		Triangle drawn	2	M1 for intersecting arcs of radii 6cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
	(c)		48	2	M1 for 24 ÷ 3 (=8) A1 cao
	(d)		Tessellation	2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating)
17	(a)		–7	2	M1 for 2 × 4 + 3 × –5 or 8 – 15 oe A1 cao
	(b)		36	1	B1 cao
*18			x =115° with complete reasons	3	M1 for angle CEB = 180 – 25 – 90 (= 65) or angle ABE = 90 – 25 (= 65) or for x = 25 + 90 A1 for 115 C1 (dep on M1) for full reasons, appropriate to their given method e.g. angles in a triangle add up to 180° **and** angles on a straight line add up to 180° e.g. the exterior angle of a triangle is equal to the sum of the interior opposite angles e.g. angles in a quadrilateral add up to 360° e.g. alternate angles are equal

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
19	(a)		16	2	M1 for 360 ÷ 45 oe or 2 × 8 or Roach identified as 6 or Bream identified as 8 A1 cao
	(b)		No	1	B1 for 'No' and correct explanation, e.g. the pie charts only show that the proportions OR explains that she could be correct if the total number of fish is the same in each chart OR explains that we don't know if she is correct because the total number of fish is not known.
20			18	3	M1 for $\frac{1}{10} \times 60$ (= 6) or $\frac{1}{10} + \frac{3}{5}$ or "$\frac{7}{10}$" oe M1 for $\frac{3}{5} \times 60$ (= 36) or 1 – "$\frac{7}{10}$" (=$\frac{3}{10}$) or "$\frac{7}{10}$"× 60 (= 42) A1 cao
21			12	3	M1 for a method to find volume of a cuboid, eg. 2 × 10 × 15 (= 300) or 5 × 5 × x (= 25x) M1 (dep) for "300" ÷ "25" oe A1 cao OR M1 for 10 ÷5 (= 2) and 15 ÷ 5 (= 3) or 10 ÷5 (= 2) and 2 ÷ 5 (= 0.4) M1 (dep) for 2 × "2" × "3" or 15 × "2" × "0.4" A1 cao

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
22			Question	2	B1 for a question with a time frame for frequency of use B1 for at least 3 correctly labelled response boxes (non-overlapping and exhaustive) [Do not allow inequalities in response boxes]
23	(a)		$2(4x + 3)$	1	B1 cao
	(b)		$y(y - 2)$	1	B1 cao
	(c)		p^5	2	M1 for $\frac{p^{3+4}}{p^2}\left(=\frac{p^7}{p^2}\right)$ or $p^{3-2} \times p^4$ $(= p^1 \times p^4)$ or $p^3 \times p^{4-2}$ $(= p^3 \times p^2)$ A1 cao

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PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*24		1195 4780 5975 2 3 9 0 4 | 0 6 | 1 8 | 2 5 1 0 | 1 5 | 4 5 | 5 9 7 5 200 30 9 20 4000 600 180 5 1000 150 45 4000 + 1000 + 600 + 150 + 180 + 45 = 5975	Kirsty's Plants with correct calculations	5	M1 for complete method with relative place value correct. Condone 1 multiplication error, addition not necessary. M1 (dep) for addition of all the appropriate elements of the calculation or digits 5975 M1 for a complete method to find 120% of £52.50 A1 for 59.75 and 63(.00) C1 (dep on M2) for correct conclusion for their figures OR M1 for the start of a method to divide £52.50 by 25, eg. 2 rem 2 M1 for a complete method to divide £52.50 by 25, condone one arithmetic error, or digits 21 M1 for a complete method to find 120% of "£2.10" A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures OR M1 for a complete method to find 120% of £52.50 M1 for the start of a method to divide "63" by 25, eg. 2 rem 13 M1 for a complete method to divide "63" by 25, condone one arithmetic error, or digits 252 A1 for 2.52 C1 (dep on M2) for correct conclusion for their figures
25	(a)		Relationship	1	B1 for a description of a dynamic relationship eg "The older the car the lower the price" or "The newer the car the greater the price" oe (accept negative correlation)
	(b)		6400 to 7000	2	B2 for an answer in the range 6400 to 7000 OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit or vert. line from 3.5 or a point plotted at (3.5, *y*), *y* in the range 6400 to 7000 A1 for 6400 to 7000

PAPER: 1MA0_1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
26		40, 80, 120 15, 30, 45, 60, 75, 90, 105, 120 40 = 2 × 2 × 2 × 5 15 = 3 × 5	3 and 8 or any multiple of 3, 8	3	M1 for multiples of both 40 and 15 (at least 2 of each shown but condone errors if intention is clear) or 40 × 15 M1 (dep on M1) for a complete method to find a common multiple of 40 and 15, eg sight of 120, 240, 600, condoning one arithmetic error in any lists of multiples shown A1 for 3, 8 or any multiple of 3, 8 **OR** M1 for factors 2,2,2,5 and factors 3,5 M1 (dep on M1) for a complete method to find a common multiple of 40 and 15 A1 for 3, 8 or any multiple of 3, 8
*27			Has enough (with evidence)	5	M1 for splitting the shape (or showing recognition of the "absent" triangles) and using a method to find the area of one shape M1 for a complete method to find the total area, (= 9 m^2) M1 (dep M1) for a method to find the number of packs required from their total area, eg. "9" ÷ 2 = 4.5 rounded up to 5 M1 for a method to find 75% of 24.80 or 75% of the cost of their total number of packs, eg. 24.80 × 5 × $\frac{75}{100}$ (= 93) or 24.80 × $\frac{75}{100}$ (= 18.6) C1 for a conclusion supported by fully correct answers, eg. showing 9 (m^2), 5 (packs) and 93 or 7 (from 100 – 93) **OR** M1 for method to find 75% of £24.80, eg. 24.80 × $\frac{75}{100}$ (= 18.6) M1 for method to find total number of packs Mary can buy, eg. 100 ÷ "18.60" = 5.3.... truncated to 5 or 10 (m^2) M1 for finding area of one relevant shape or showing how one pack (2 m^2) can fit in the diagram M1 (dep on previous M1) for complete method to show that 5 packs can cover the floor C1 for a conclusion supported by fully correct answers, showing the capacity (10) greater than total area (9)

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

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

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

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q1	(a)	Diagram enlarged. The key has been moved above the diagram. Braille only: rectangle has been divided into 4 in the diagram.	B1 for 6 TVs drawn for Sunday
Q1	(b)	Diagram enlarged. The key has been moved above the diagram. Braille only: rectangle has been divided into 4 in the diagram.	M1 for attempt to find the total for 4 days (eg 8+10+13+6) by adding individual days with at least 3 days correct A1 cao
Q2	(a)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(b)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(c)	All diagrams enlarged. Shading changed to dotty shading.	B1 cao
Q2	(d)	All diagrams enlarged. Shading changed to dotty shading. ‘some’ replaced by ‘five’.	B2 for both correct (B1 for one correct)

PMT

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q3	(a)	All diagrams enlarged.	B1 cao
Q3	(b)	All diagrams enlarged.	M1 for sight of 3500 or attempt to count up from 3500 on scale or count down from 10000 on scale or 10000 – "3500" ["3500" in the range 3000 – 4000] or an answer which includes the digits 65 A1 cao
Q4	(a)	Final column removed from the table.	B1 cao
Q4	(b)	Final column removed from the table.	B1 cao
Q4	(c)	Final column removed from the table.	B1 cao
Q5	(a)	Diagram enlarged. Angle arc put inside the angle size.	B1 for parallel lines marked
Q5	(b)	Diagram enlarged. Angle arc put inside the angle size.	B1 for right angle marked
Q5	(c)	Diagram enlarged. Angle arc put inside the angle size.	B1 for 33 - 37
Q6	(a)	Diagrams enlarged.	B1 cao
Q6	(b)	Diagrams enlarged. Braille only: (i) placed in the space.	B1 for + 8 or × 3
Q8	(a)(i)	Candidates asked to write the word instead of circling. Diagrams enlarged.	B1 cao

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q10	(a)	13 pounds changed to 35 pounds. Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B1 for an answer of 16
Q10	*(b)	Diagram enlarged. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	M1 for a correct conversion of any amount (lb to kg or kg to lb) excepting that in (a) M1 (dep M1) for a complete method to convert 100 kg (from 25×4) to lb (to compare with 200 lb) or to convert 50 lb (from 200÷4) to kg (to compare with 25 kg) C1 for "no" and a comparison with a converted weight of 212 - 228 pounds or 88 - 94 kg
Q11	(a)	Grid enlarged. Crosses changed to filled in circles.	B1 cao
Q11	(b)	Grid enlarged. Crosses changed to filled in circles.	B1 cao
Q11	(d)	Grid enlarged. Crosses changed to filled in circles.	B1 for line $x = 3$ drawn
Q11	(c)	Grid enlarged. Crosses changed to filled in circles. 'with a cross (x)' removed.	B1 for point marked at (–3, –1)

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q12		Wording added: 'There are four spaces to fill.'	B1 cao B1 cao B1 cao B1 cao SC: If B0 scored award M1 for appropriate working shown
Q13	(a)	MLP only: x changed to y.	B1 cao
Q14		2 models provided for all candidates. MLP also have diagrams for Diagrams A and B. For third diagram, all have a diagram showing the side view and the end view . Wording is adjusted.	M1 for using 1 kg = 1000 g eg sight of 2000 or 0.6 M1 for using 1 cm = 10 mm eg sight of 400, 210, 25, 45, 35 or 8 M1 for evidence of considering three boxes eg 2.5×3 (=7.5) or reducing the 2kg parcel to compare with one box C1 for "yes" with correct conversions of dimensions and weight NB: Candidates can work in cm or in mm and in kg or g
Q15	(a)	MLP only: Frequency column is widened to allow for working.	B1 cao
Q15	(b)	MLP only: Frequency column is widened to allow for working.	M1 *fx* (at least 3 seen from 0×2, 1×12, 2×8, 3×6, 4×2) or for an answer of 56 A1 cao

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q16	(a)	Diagram is enlarged.	M1 for any 1 correct line of symmetry, allow extras A1 for all 3 lines and no extras
Q16	(b)	Diagram is enlarged. 6 cm changed to 8 cm. Base line given on the diagram.	M1 for intersecting arcs of radii 8cm or an accurate triangle with no arcs A1 for a fully correct triangle with arcs
Q16	(c)	Diagram is enlarged. Diagrams enlarged.	M1 for 24 ÷ 3 (=8) A1 cao
Q16	(d)	Diagram is enlarged. Grid enlarged. Dots are 3 cm apart. Cut out shape provided for all. Braille candidates have extra shapes.	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating)
Q17	(a)	MLP only: a changed to e, b changed to f.	M1 for $2 \times 4 + 3 \times -5$ or $8 - 15$ oe A1 cao
Q18		Diagram enlarged. Angle arc put inside the angle size. Wording added: 'Angle DEB is marked x.'	M1 for angle *CEB* = 180 – 25 – 90 (= 65) or angle *ABE* = 90 – 25 (= 65) or for $x = 25 + 90$ A1 for 115 C1 (dep on M1) for full reasons, appropriate to their given method e.g. angles in a triangle add up to 180° **and** angles on a straight line add up to 180° e.g. the exterior angle of a triangle is equal to the sum of the interior opposite angles e.g. angles in a quadrilateral add up to 360° e.g. alternate angles are equal

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q19	(a)	Diagrams enlarged.	M1 for 360 ÷ 45 oe or 2 × 8 or Roach identified as 6 or Bream identified as 8 A1 cao
Q19	(b)	Diagrams enlarged.	B1 for 'No' and correct explanation, e.g. the pie charts only show that the proportions OR explains that she could be correct if the total number of fish is the same in each chart OR explains that we don't know if she is correct because the total number of fish is not known.
Q21		2 models provided for all candidates. MLP also have diagrams. In text, wording is added to give the dimensions of the first cheese.	M1 for a method to find volume of a cuboid, eg. 2 × 10 × 15 (= 300) or 5 × 5 × x (= 25x) M1 (dep) for "300" ÷ "25" oe A1 cao OR M1 for 10 ÷5 (= 2) and 15 ÷ 5 (= 3) or 10 ÷5 (= 2) and 2 ÷ 5 (= 0.4) M1 (dep) for 2 × "2" × "3" or 15 × "2" × "0.4" A1 cao
Q23	(a)	MLP only: x changed to y.	B1 cao

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PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
Q25	(a)	Diagram enlarged. Crosses changed to filled in circles. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B1 for a description of a dynamic relationship eg "The older the car the lower the price" or "The newer the car the greater the price" oe (accept negative correlation)
Q25	(b)	Diagram enlarged. Crosses changed to filled in circles. Label for horizontal axis left aligned. Label for vertical axis placed above the axis. Right axis is labelled.	B2 for an answer in the range 6400 to 7000 OR M1 for a single straight line segment with negative gradient that could be used as a line of best fit or vert. line from 3.5 or a point plotted at (3.5, *y*), *y* in the range 6400 to 7000 A1 for 6400 to 7000
Q27		Diagram enlarged. Measurement lines for 1 metre and 2.2 metres are removed. Dashed measurement line for 3.4 metres.	M1 for splitting the shape (or showing recognition of the "absent" triangles) and using a method to find the area of one shape M1 for a complete method to find the total area, (= 9 m^2) M1 (dep M1) for a method to find the number of packs required from their total area, eg. "9" ÷ 2 = 4.5 rounded up to 5 M1 for a method to find 75% of 24.80 or 75% of the cost of their total number of packs, eg. $24.80 \times 5 \times \frac{75}{100}$ (= 93) or $24.80 \times \frac{75}{100}$ (= 18.6) C1 for a conclusion supported by fully correct answers, eg. showing 9 (m^2), 5 (packs) and 93 or 7 (from 100 – 93) **OR** M1 for method to find 75% of £24.80, eg. $24.80 \times \frac{75}{100}$ (= 18.6) M1 for method to find total number of packs Mary can buy, eg. 100 ÷ "18.60" = 5.3.... truncated to 5 or 10 (m^2) M1 for finding area of one relevant shape or showing how one pack (2 m^2) can fit in the diagram M1 (dep on previous M1) for complete method to show that 5 packs can cover the floor C1 for a conclusion supported by fully correct answers, showing the capacity (10) greater than total area (9)

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Mark Scheme (Results)

November 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 1

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NOTES ON MARKING PRINCIPLES

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

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

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

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

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

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

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

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

7 With working

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

8 Follow through marks

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

9 Ignoring subsequent work

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

10 Probability

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

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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).

12 Parts of questions

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)

14 The detailed notes in the mark scheme, and in practice/training material for examiners, should be taken as precedents over the above notes.

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

5MB1F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1.	(a)		Black	1	B1 cao
	(b)		Fran	1	B1 cao
	(c)		Derek	1	B1 cao
2.	(i)		16	2	B1 cao
	(ii)		12		B1 cao
3.	(a)		A	1	B1 cao
	(b)		D	1	B1 cao
4.			£44.80 or 4480p	4	M1 for 8565 – 8437 (=128) M1 for "128" × 35 A1 for digits 448(0) C1 for £44.80 or 4480p ie clearly stated answer with correct money notation.

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
5.			Diagram or chart	4	B1 for a key or suitable labels to identify the Wizard and Reds. The key may be ignored if unclear provided the graph is clear, ie if different colours are used to shade in the graph. B1 for a diagram(s) or chart(s) set up for comparison showing data for at least 3 months eg dual bar chart, composite bar charts, frequency polygon, etc. B1 for correct heights for Wizards or Reds or totals C1 for a fully correct diagram or chart.
6.		(S,F), (S,M), (S,P) (J,F), (J,M), (J,P)	6 choices	2	B2 for all 6 choices with no extras or repeats (B1 for at least 3 correct; ignore extras or repeats)
7.	(a)		$\frac{3}{10}$	2	M1 for $\frac{a}{10}$ or $\frac{3}{b}$ where $a < 10$ and $b > 3$ A1 for $\frac{3}{10}$ oe
	(b)		$\frac{7}{10}$	1	B1 ft or for $\frac{7}{10}$ oe

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
8.	(a)		3	2	M1 for evidence of ordering A1 cao
	(b)		4	2	M1 for 6 – 2 A1 cao
	(c)		3.5	2	M1 for (3 + 6 + 2 + 2 + 5 + 3) ÷ 6 or 21 ÷ 6 A1 cao
9.			Data collection sheet	3	B1 for data illustrated for fruit (at least 3 items) or correct heading B1 for tally column or frequency column labelled B1 for suitable data collection sheet appropriate to the task e.g. with exactly 3 columns and which are all correctly labelled NB do not accept questionnaires or graphs

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
10.			67	2	M1 for at least three of 1 × 8, 2 × 6, 3 × 7, 4 × 4, 5 × 2 or at least three of 8, 12, 21, 16, 10 A1 cao
11.	(a)		15.86	4	M1 for 4 × 96 (= 384) or 3 × 56 (= 168) M1 for (“384” + ”168”) × 3 ÷ 4 oe or sight of 414 M1 for 20 – “4.14” or 1586 A1 cao **OR** M1 for 4 × 96 (= 384) or 3 × 56 (= 168) M1 for 20 – (“384” + ”168”) or 20 – “552” (= 1448) M1 for “1448” + (“552” ÷ 4) A1 cao NB allow work in £ or p for M marks
	(b)		7	2	M1 for 14 ÷ 1.84 or 7.60(8695…) or 12.88 and 14.72 A1 cao
12.	(a)		$20 - t$	1	B1 for $20 - t$
	(b)		$4x + 20y$	2	B2 for $4x + 20y$ (B1 for $4x$ or $20y$)

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5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
13.	(a)		20	2	M1 for $\frac{60}{360}\times 120$ A1 cao **OR** M1 for 360 ÷ 120 (= 3) or 60 ÷ 3 A1 cao
	(b)		50	3	M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for 360 ÷ 120 (= 3°) or "150" ÷ 3 A1 for 50; allow answers in the range 49-51 **OR** M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for $\frac{"150"}{360}\times 120$ A1 for 50; allow answers in the range 49-51 **OR** M1 for 360 – (45 + 60 + 105) (= 150; could be measured) M1 for $\frac{"150"}{60}\times "20"$ A1 for 50; allow answers in the range 49-51 **OR** M1 for working out how many in all three sectors M1 for subtraction from 120 A1 for 50; allow answers in the range 49 - 51

5MB1F 1F November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
14.	(a)		(146, 41)	1	B1 point plotted
	(b)		Description	1	B1 for description of dynamic relationship or statement of positive correlation
	(c)		155 – 158	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit or a horizontal line from 47.5 A1 answer in the range 155 – 158 or ft from line
15.	(a)		Out: 1023/1148 Return: 1737/1918 in Colwyn 5h 49min	4	B1 for selecting 1023 train (cheapest out) B1 for selecting 1737 B1 for 5h 49min (spent in Colwyn) C1 (dep on at least B1) clearly stating departure and arrival times of both trains used and correct time in Colwyn for their trains
	(b)		133.40	3	M1 for 30% of any adult fare M1 for 2 × adult fare + 3 × child fare for at least one of their chosen trains A1 (accept 133.4) (SC B2 for £188.60)

5MB1F 1F November 2015

Question	Working	Answer	Mark	Notes
16.	<table><tr><td></td><td>Bus</td><td>Pre</td><td>Ec</td><td>Tot</td></tr><tr><td>M</td><td>(30)</td><td>28</td><td>34</td><td>(92</td></tr><tr><td>F</td><td>14</td><td>32</td><td>(62)</td><td>108</td></tr><tr><td>Total</td><td>(44)</td><td>(60)</td><td>96</td><td>(200</td></tr></table> ( ) value given	28	4	M1 for total female passengers 200 – 92 or 108 seen; or for total Economy passengers 200 – 44 – 60 or 96 seen. M1 for male passengers in Economy “96” – 62 or 34 seen; or for female Premium “108” – 62 – (44 – 30) or 32 seen M1 for 92 – 30 – “34” or for 60 – “32” A1 cao **OR** Answers may appear in a two-way table with no other method seen B1 for Female total 108 or Total Economy 96 M1 for “96” – 62 or 34 seen in Male Economy; or “108” – 62 – (44 – 30) or 32 seen in Female Premium M1 for 92 – 30 – “34” or for 60 – “32” A1 cao

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

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Angles: ±5°
Measurements of length: ±5 mm

PAPER: 5MB1F_01			
Question		**Modification**	**Notes**
Q01		Row for Gary removed.	
Q02		Diagram enlarged.	
Q03		Crosses changed to filled in circles. Diagram enlarged.	
Q05		Value on table changed: Wizard: 20 28 18 32. Reds not altered. Grid enlarged.	
Q10		Frequency column widened to allow for working.	
Q13		Diagram enlarged.	
Q14	(a)	Grid enlarged. Crosses changed to filled in circles. 146 cm changed to 150 cm. 41 kg changed to 40 kg.	
Q15		Crewe to Colwyn – First 2 columns removed. Colwyn to Crewe – First and last columns removed	

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Mark Scheme (Results)

November 2015

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

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Edexcel and BTEC Qualifications

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NOTES ON MARKING PRINCIPLES

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2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

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

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

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The strands are as follows:

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

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

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

7 With working

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

8 Follow through marks

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

9 Ignoring subsequent work

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

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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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5MB3F_01 November 2015					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		0.2	1	B1 cao
	(b)		$\frac{37}{100}$	1	B1 cao
	(c)		4	1	B1 cao
	(d)		6	1	B1 for 6 or +6
2	(a)		A and G	1	B1 cao
	(b)		F	1	B1 cao
3			70	2	M1 for 20+25+25 (=70) or 15+35+25 (=75) or 20+60 (=80) A1 cao
4	(a)		300	1	B1 cao
	(b)		4	1	B1 cao
	(c)		0.7	1	B1 cao

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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%

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

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Measurements of length: ±5 mm

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q02		2cm grid. Shape F is turned vertical. Text: Line 1 “centimetre” removed.	
Q03		Diagram enlarged.	
Q06		White Tor to Gilly Tor = 6.5 cm. Joined by a dashed line.	
Q08		Diagram enlarged.	
Q10	(a)	Grid enlarged. Text: Line 1 “centimetre” removed.	
Q10	(b)	3 cm squares.	
Q12	(a)	Grid enlarged.	
Q12	(b)	4 cm changed to 8 cm. 3 cm changed to 6 cm. Sketch of rectangle given.	

PAPER: 5MB3F_01			
Question		**Modification**	**Notes**
Q15	(a)	MLP only: x changed to y.	
Q15	(d)	MLP only: x and y changed to e and f.	
Q16	(b)	Given shape labelled A. Transformation, labelled B, put on diagram. Question reversed and candidates asked to describe the transformation.	
Q18	(a)	Grid enlarged.	
Q18	(b)	64 grams changed to 60 grams.	
Q21		Harbour to Lighthouse = 10 cm. Harbour and Lighthouse are joined with a dashed line. North line extended.	
Q22		Drawings removed. Text kept.	
Q23		MLP only : x changed to y.	
Q24		Grid enlarged.	
Q25		Model provided for all candidates. MLP also has an enlarged diagram. Wording added : “The height of the cylinder is 90 cm. The diameter of the base is 50 cm.	

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Mark Scheme (Results)

November 2016

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

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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 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)			1	B1 for 4 people unambiguously drawn for Cricket
	(b)		27	2	M1 ft from their pictogram for 4 + 6 + 9 + 8 or 2 × (2 + 3 + 4.5 + 4) A1 cao
2	(a)		6.5	1	B1 for 6.5 ± 0.2, accept 6½
	(b)		obtuse	1	B1 cao
	(c)		135	1	B1 for 135 ± 2
3	(a)		millilitres	1	B1 for millilitres or m*l* or cm^3
	(b)		kilometres	1	B1 for kilometres or km
	(c)		tonnes	1	B1 for tonnes or tonne
4	(a)	ruler, pen ruler, pencil, eraser ruler, 3 erasers **or**	3	2	M1 for at least one correct way listed in words or as costs **or** for answer of 3 A1 for 3 **and** the three correct ways listed in words or as costs
	(b)	7 × 30 + 3 × 45 = 3.45 5.00 – 3.45 =	1.55	3	M1 for 7 × 30 (= 210) or 3 × 45 (= 135) M1 (dep on previous M1) for £5 – their **total** of 7 × 30 and 3 × 45 **or** digits 155 seen A1 for 1.55 cao **B1 SC** for 4.25
	(c)		20*y*	1	B1 for 20*y* oe

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)			1	B1 cao
	(b)		20	1	B1 cao
	(c)	(i)	15	2	B1 cao
	(c)	(ii)	Response		B1 for "divide 45 by 3" or "divide 30 by 2" or "a third of the squares are grey" oe
6	(a)		8	1	B1 for 8 or – 8
	(b)		14 30	1	B1 for 14 30 or 2 30 pm
	(c)		18 00	2	M1 for intent to add 9 h to 1400 **and** subtract 5 h in any acceptable order A1 for 18 00 or 6 pm
7			(2, –1) or (4, 5) or (–8, –1)	3	M1 for **plotting** one point correctly M1 for plotting all three points correctly A1 **SC B1 ft** their points for coordinates of point giving parallelogram if M0 scored
8	(a)		300	2	M1 for using 1000 g = 1 kg or 1.7 or 0.3 seen (maybe on scale) A1 cao
	(b)		21	3	M1 for sight of 18 or 3 (maybe on scale) M1 for complete process of ("18" – 15) × 7 A1 cao

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
9	(a)		13347	1	B1cao
	(b)		73314	2	B2 cao (B1 for 74331 **or** any number made from the given 5 digits ending with 4)
	(c)		$\frac{1}{5}$	1	B1 for $\frac{1}{5}$ oe
	(d)		$\frac{4}{5}$	1	B1 ft for $\frac{4}{5}$ oe
*10			1.2 m or 120 cm	4	B1 for evidence of using 1 m = 100 cm M1 for subtracting the four post widths from the total length eg $4 - 4 \times 10$ (= 360) or "400" $- 4 \times 10$ or $3x + 40 = 400$ (oe) M1 for dividing their total space found by 3 or subtracting 40 from both sides of $3x + 40 = 400$ C1 for correct conclusion for 1.2 m or 120 cm with supported working
11	(a)		$3h$	1	B1
	(b)		$3pr$	1	B1
	(c)		$2x + 7y$	2	M1 for $2x$ or $7y$ A1 for $2x + 7y$
	(d)		22	2	M1 for correct substitution e.g. $2 \times 5 + 4 \times 3$ A1 cao

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
12 (a)		Correct explanation	2	M1 for working out area of triangle (=6) and area of rectangle (=24) **or** for dividing rectangle into eighths or other comparable areas A1 for explaining that that 24 ÷ 6 is 4 **or** $\frac{2}{8} = \frac{1}{4}$ **or** that ½ × ½ = ¼ from symmetry of shape
(b)		75	1	B1 cao
13 (a)		9.4	1	B1 cao
*(b)		Diagram or chart	4	B1 for a key, or suitable labels, to identify regular yoghurt and low fat yoghurt. B1 for diagram(s) or chart(s) set up for comparison, showing data for protein, carbohydrate and fat, e.g. dual bar chart, line graph, etc B1 for correct heights for regular yoghurt **or** low fat yoghurt, dependent on a linear scale C1 for a fully correct diagram or chart to include labels for protein, carbohydrate and fat and vertical axis correctly scaled and labelled
14	0.25, $\frac{3}{10}$, 0.32, 35%, $\frac{2}{5}$	Correct order	2	M1 for conversion to decimals with one error **or** conversion to percentages with one error **or** conversion to fractions with a common denominator with one error **or** correct order with one error **or** correct in reverse order A1 for correct order in any format
15		Data collection table	3	Table with columns: B1 for column with 'method of travel' oe or at least 3 examples B1 for column with 'tally' or tally marks B1 for column with 'frequency' or 'number of people' **NB** Do not accept questionnaires or attempts at graphs.

PAPER: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
16			25	3	M1 for (opposite angle =) 50 May be marked on the diagram M1 for complete method eg 90 – (180 – "50") ÷ 2 or 50 ÷ 2 A1 cao **or** M1 for 180 – 50 (= 130) May be marked on the diagram M1 for complete method eg (180 – "130") ÷ 2 A1 cao
17	(a)		30 minutes or ½ hour	1	B1 for 30 minutes or ½ hour
	(b)		4	1	B1 cao
	(c)		5 30 pm	1	B1 for 5 30(pm) or 17 30
18	(a)		Diagram	2	B2 for a correct enlargement scale factor 3 (B1 for at least 2 lines correctly enlarged or any enlargement using an incorrect scale factor, sf ≠ 1)
	(b)		Diagram	2	B2 for correct tessellation (at least 5 more shapes) (B1 for at least 4 shapes, including initial shape, correctly tessellating ignoring extra shapes)

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
19 (a)		$\frac{1}{6}$	1	B1 cao
(b)		4	2	M1 for 20 ÷ 5 (=4) Allow build up method to 4 lots of 1:5 A1 cao
(c)		6	2	M1 for a full method to find the number of red counters needed eg 20 ÷ 2 – "4" A1 ft from (b)
20	(A, 1), (A, 2), (A, 3) (B, 1), (B, 2), (B, 3) (C, 1), (C, 2), (C, 3)	$\frac{1}{9}$	3	M1 for any 3 combinations with no incorrect combinations or for 3 × 3 A1 for all 9 combinations with no duplicates or extras **or** for 9 B1 (dep on M1) for $\frac{1}{'9'}$ **Alternative scheme** B1 for $\frac{1}{3}$ seen M1 for $\frac{1}{3} \times \frac{1}{3}$ A1 for $\frac{1}{9}$ oe
21		17.6(0)	4	M1 18 × 6.45 (= 116.1(0) or 18 × 645 = (11610) M1 for 18 × 6.45 – 98.50 in the correct order but units may not be consistent A1 for digits 1760 A1 ft (dep on M2) for correct placement of decimal point after subtraction (of appropriate values)

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22 (a)		$50 < a \leq 60$	1	B1 for correctly identifying the modal class interval e.g. 50 – 60 oe
(b)		Polygon	2	B2 for fully correct frequency polygon - points plotted at the midpoint (B1 for all points plotted accurately but not joined with straight line segments **or** all points plotted accurately and joined with last joined to first to make a polygon **or** all points at the correct heights and consistently within or at the ends of the intervals **and** joined (can include joining last to first to make a polygon) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.
23	$(7 + 3 + 3) \times (4 + 3 + 3) - 7 \times 4 = 102$ **or** $2 \times 7 \times 3 + 2 \times 4 \times 3 + 4 \times 3 \times 3 = 102$	11	4	M1 for a correct method to find the area of one appropriate rectangle M1 for a complete method to find the area of the path M1 (dep on M1) for "102" ÷ 10 A1 cao
*24		Bathroom Mart and correct figures	4	M1 for $\frac{1}{3} \times 1500$ (= 500) or $\frac{2}{3} \times 1500$ (= 1000) M2 for a correct method to reduce 1500 by 60% **and then** by a further 15% eg 1500 × "0.4" × 0.85 (= 510) oe (M1 for method to find 60% or 40% of 1500 e.g. $\frac{60}{100} \times 1500$ (= 900) C1 for 510 and 500 with a correct conclusion.

PAPER: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*25		95° with reasons	4	M1 for angle *DBC* = 180 – 125 (= 55) **or** angle *EAC* = 180 – 125 (=55) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) with full reasons for their given method, e.g. angles on a straight line add up to 180° **and** angles in a triangle add up to 180° **and** corresponding angles are equal **or** allied angles / co-interior angles add up to 180° **and** angles in a triangle add up to 180° (C1 (dep on M1) for one appropriate reason linked to parallel lines) M1 for angle CDB = 125 – 30 (= 95)) (May be on diagram) A1 for *x* = 95 C2 (dep on M1) for full reasons, for their given method, e.g. exterior angles are equal to the sum of the interior opposite angles **and** corresponding angles are equal (C1 (dep on M1) for one of these appropriate reasons linked to parallel lines)
26 (a)		Diagram	2	B2 for fully correct solution with all three aspects with no ambiguity Aspect 1: circle at 3 Aspect 2: circle not shaded Aspect 3: arrow pointing left indicating extension beyond −4 or line extending beyond −4 (B1 for any two aspects)
(b)		$x \geqslant 5$	2	M1 for intention to add 7 to both sides (of inequality or equation) or to divide all 3 terms by 4 as a first step, or (*x* =) 5 A1 for $x \geqslant 5$ oe

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

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

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

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
1		Diagram enlarged. Stick men changed to circles. Key moved above and to the left of the diagram.	Standard mark scheme
2	(a)	Line AB has been increased 8.5cm to allow for use of specialist equipment.	B1 for 8.5 ± 0.5, accept 8½
	(b)	Diagram enlarged.	B1 for obtuse
	(c)	Diagram enlarged.	B1 for 135 ± 5
4		Price list has been put into a table.	Standard mark scheme

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
5		3 patterns are placed vertically. Pattern number 3 is repeated below and labelled 'Pattern number 4 (not completed)' Wording altered: Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram. 'Grey' wording changed to 'shaded' throughout. Shading changed to dotty shading.	Standard mark scheme
6		Table has been turned to vertical format.	Standard mark scheme
7		Grid has been enlarged.	Standard mark scheme
8	(a) (b)	Scale is drawn as a horizontal line labelled from 0 to 4 kg. Additional text added: It shows a scale. Scale is drawn as a horizontal line with measurements along it from 0 to 40kg.	Standard mark scheme
10		Diagram enlarged. '10cm' put inside the posts.	Standard mark scheme
11	(a) (c)	Braille only: h changed to q. MLP only: x changed to e and y changed to f.	Standard mark scheme

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
12		Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
13		Table has been turned to a vertical layout. Grid changed to 14 squares by 12 squares. Grid has been enlarged. Table values have been changed. Regular 4.5, 4.5, 3.5. Low fat 6.0, 5.5, 0.5.	Standard mark scheme using revised values
16		Diagram enlarged.	Standard mark scheme
17		Diagram enlarged. Axes labels have been moved to the top of the vertical axis and to the left of the horizontal axis. Right axis has been labelled.	Standard mark scheme

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
18	(a)	Two shapes are given on the grid, labelled Shape P and Shape Q. Question text has been changed to: 'Shape P has been mapped onto Shape Q. Describe fully the transformation that maps Shape P onto Shape Q.'	B1 for enlargement B1 scale factor 3
	(b)	Number of shapes to draw has been reduced to 5. A cut out shape is provided for all candidates. 1 column has been removed from the right hand side.	Standard mark scheme
20		Boxes have been removed around letters and numbers.	Standard mark scheme
22	(a)	The letter 'a' has been changed to't' for all candidates. Frequency numbers have been changed to 5, 15, 15, 20, 5.	Standard mark scheme using changed values
	(b)	Grid has been enlarged. Axes labels have been moved to the top of the vertical axis and to the left of the horizontal axis. Right axis has been labelled.	Standard mark scheme
23		Diagram has been enlarged. Shading changed to dotty shading.	Standard mark scheme
25		Diagram has been enlarged. Wording added 'Angle CEA is marked x.'	Standard mark scheme

PAPER: 1MA0_1F			
Question		**Modification**	**Notes**
26		Diagram has been enlarged. Wording added 'It shows a number line.'	Standard mark scheme

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Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 1

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NOTES ON MARKING PRINCIPLES

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

2 Mark schemes should be applied positively.

3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners should be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

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

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

6 Mark schemes will award marks for the quality of written communication (QWC).
The strands are as follows:

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

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

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

7 With working

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

8 Follow through marks

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

9 Ignoring subsequent work

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

10 Probability

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

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

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

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

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

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		10p	1	B1 cao
	(b)		5p	1	B1 cao
	(c)		30	1	B1 cao
2	(a)		Style Master	1	B1 cao
	(b)		700	1	B1 cao
	(c)		3	1	B1 cao
3	(ai)		36	2	B1 cao
	(aii)		30		B1 cao
	(b)		2 hexagons 1 hexagon and 1 triangle	2	B1 for 2 hexagons (each divided into 6 triangles) B1 for 1 hexagon (divided into 6 triangles) and 1 triangle
4	(ai)		evens	2	B1 for evens circled oe
	(aii)		unlikely		B1 for unlikely circled oe
	(b)		cross at 0	1	B1 for 0 marked with a cross
5		Eg 1045 – 1120 Penguin feeding time 1200 – 1245 Jeep safari 1300 – 1340 Dolphin show 1400 – 1425 Steam train	Correct time plan	3	B3 for 4 activities between 1020 and 1430 with correct start times and correct finish times (B2 for 2 or 3 activities between 1020 and 1430 with correct start times and correct finish times B1 for 1 activity between 1020 and 1430 with correct start time and correct finish time)

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
*6			Diagram or chart	4	B1 for a key or suitable labels to identify Trudy and Phil B1 for horizontal or vertical axis labelled B1 for at least 3 correct plots C1 for fully correct diagram(s) or chart(s)
7	(a)		5	1	B1 cao
	(b)		4	2	M1 for ordering numbers A1 cao (SC B1 for 7)
	(c)		6	2	M1 for 7 and 1 seen together A1 cao
8	(a)	(4, 4) (4, 5) (4, 6) (5, 4) (5, 5) (5, 6) (6, 4) (6, 5) (6, 6)	Complete diagram	1	B1 cao
	(b)		$\frac{1}{36}$	1	B1 for $\frac{1}{36}$
	*(c)		7 has greater probability with correct reason	1	C1 for 7 has greater probability oe with correct reason, eg gets a total of 7 more often

PAPER: 5MB1F_01

Question		Working	Answer	Mark	Notes
9	(a)		Data collection sheet	3	B1 for lemonade and cola and orange (squash) B1 for tallies B1 for frequency or total oe
	(b)		4.32	4	M1 for cost of 2 bottles of orange and 3 bottles of lemonade M1 for finding $\frac{1}{5}$ of a cost M1 (dep on M2) for correct method to find change A1 cao
10	(a)		4 : 3	2	M1 for 20 : 15 or 3 : 4 A1 cao
	(b)		$35 - x - y$	2	M1 for $20 - x$ or $15 - y$ A1 for $20 - x + 15 - y$ oe
11		<table><tr><td></td><td>Friday</td><td>Saturday</td><td>Sunday</td><td>Total</td></tr><tr><td>Morning</td><td>27</td><td>34</td><td>51</td><td>112</td></tr><tr><td>Afternoon</td><td>38</td><td>52</td><td>63</td><td>153</td></tr><tr><td>Total</td><td>65</td><td>86</td><td>114</td><td>265</td></tr></table>	Complete two-way table	3	B3 cao (B2 for 4 or 5 correct B1 for 2 or 3 correct)

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
12	(a)		315	2	M1 for taking a reading from graph A1 for 310 – 320
	(b)		0.45	2	M1 for amount paid ÷ distance travelled, eg 45 ÷ 100 A1 for 0.425 – 0.475 or 42.5p – 47.5p OR M1 for 'part (a)' ÷ 700 A1 ft for 0.425 – 0.475 or 42.5p – 47.5p
13			4 | 7 8 8 5 | 0 0 1 3 5 7 8 6 | 1 2 4 6 6 9 7 | 3 5 8 4 | 7 represents 47 grams	3	B2 for fully correct ordered diagram (B1 for correct unordered diagram or ordered with at most 2 errors) B1 for correct key, eg 4 | 7 represents 47 (grams)
14	(a)		The greater the hand length the greater the foot length	1	B1 for the greater the hand length the greater the foot length oe (accept positive correlation)
	(b)		24 – 25	2	M1 for a single straight line segment with positive gradient that could be used as a line of best fit **or** an indication on the diagram from 18.5 on the *x*-axis A1 for answer in range 24 – 25

PAPER: 5MB1F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
15	(a)		Suitable question	2	B1 for a suitable question including time period (may appear with response boxes) B1 for at least 3 non-overlapping boxes which are exhaustive for their question
	(b)		Suitable reason	1	B1 for suitable reason eg sample not representative
*16			No from a correct method	5	M1 for method to find cost of room after discount eg (1 – 0.15) × 168 oe (= 142.8) M1 for method to find income or method to find total expenditure eg 48 × 9.5 (= 456) eg 50+25+15+225+ '142.8' (= 457.8) M1 (dep on M2) for complete method to work out if Freya has enough money eg '457.8' and '456' (or 1.8) eg '457.8'÷ 48 (= 9.53– 9.54) eg '456' – 90 – 225 (= 141) A1 for correct values for comparison eg 457.8 and 456 eg 9.53 – 9.54 eg 141 and 142.8 C1 (dep on M1) for No or ft their values, with no incorrect statement.

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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 award marks for the quality of written communication (QWC).
The strands are as follows:

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

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

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

7 With working

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

8 Follow through marks

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

9 Ignoring subsequent work

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

10 Probability

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

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

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

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

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

PAPER: 5MB3F_01					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		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 $4+5\times3$ 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)

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

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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 (Non-Calculator) Paper 1F

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NOTES ON MARKING PRINCIPLES

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

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

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

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

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

i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
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It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.
Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given a fractions, percentages or decimals. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).
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Paper: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
1	(a)		8	1	B1 cao
	(b)		30	2	M1 for 8 + 4 + 6 + 12 or 7 × 4 + 2 A1 cao
	(c)		4 circles on Friday	1	B1 cao
2	(a)		5	1	B1 cao
	(b)		$\frac{7}{10}$	1	B1 accept any equivalent vulgar fraction
	(c)		0.03	1	B1 cao
	(d)		16	2	M1for a method to work out 20% of 80 e.g. 80 ÷ 10 × 2 or 2 × 8 oe A1 cao
3	(a)		B and D	1	B1 cao
	(b)		E	1	B1 cao
	(c)		10	1	B1 cao

Paper: 1MA0/1F					
Question		**Working**	**Answer**	**Mark**	**Notes**
*4			60p	4	M1 for price of child ticket e.g. 8.40 ÷ 2 (= 4.20) M1 for a method to work out the total cost of the 2 adults e.g 2 × 8.40 (= 16.80) **or** of the 3 children e.g "4.20" × 3 (= 12.60) **or** of the whole family e.g. 2 × 8.40 + 3 × "4.20" (= 29.40) M1 for a complete method to work out the change e.g. 3 × £10 – "29.40" = (0.60) **or** 3 × £10 – (2 × 8.40 + 3 × "4.20") (= 0.60) C1 for change with correct money notation 60p or £0.60 (accept £0.60p) **NB** candidates may work in pence rather than pounds
5	(a)		Diagram	1	B1 for correct addition to diagram
	(b)		13, 16	1	B1 cao
	(c)		37	1	B1 cao
	(d)		24	1	B1 cao
6	(a)		40	2	M1 for evidence of using the fact that there are 180° on a straight line eg 100 + 2x = 180 or 180 – 100 – 2x A1 cao
	(b)		Acute	1	B1 cao
	(c)		Accurate drawing	2	B2 for a fully correct drawing (B1 for PR = 6.5 cm ± 0.2 cm or angle QPR = 70° ± 2°)

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
7		15000 m or 15 km	3	M1 for 4 × 1500 (= 6000) **or** 3 × 3 (= 9) M1 correct method to change to consistent units e.g 3 × 1000 (= 3000) **or** 1500 ÷ 1000 (= 1.5) A1 for 15 000 m or 15 km
*8		4 35 pm	4	M1 for 4 × 25 (= 100 (min)) M1 for "100" + 15 (= 115) (min) M1 for 6 30 – "1hr 55 min" C1 for correct time with pm e.g.4 35 pm or16 35(oe) **or** M1 takes off 15 min e.g. 6 30 − 15 (= 6 15) M1 takes off 25 min 4 times e.g "6 15"→5 50→5 25→ 5 00→ 4 35 **or** 6 30 →6 05 →5 40 → 5 15 → 4 50 M1 takes off 15 min **and** takes off 25 min 4 times C1 for correct time with pm e.g 4 35 pm or 16 35(oe)
9 (a)		8	1	B1 7.8 – 8.2
*(b)		No with working	3	M1 for complete method to change 90 gallons to litres e.g. 10 gallons = "45" litres **and** 9 × "45" = 405 (litres) or 9 gallons = "40" litres **and** 10 × "40" = 400 (litres) A1 for answer in range 396 - 414 (litres) **or** room for 36 – 54(litres) C1 (dep on M1) for conclusion ft their answer. **or** M1 for complete method to change 450 litres to gallons e.g. 50 litres = "11" gallons **and** 9 × "11" (= 99 (gallons)) **or** 45 litres = "10" gallons **and** "10" × 10 (= 100 (gallons)) A1 for answer in range 99 to 100 (gallons) **or** room for 9 or 10 (gallons) C1 (dep on M1) for conclusion ft their answer.

Paper: 1MA0/1F					
Question		Working	Answer	Mark	Notes
10	(a)		28	1	B1 cao
	(b)		42	1	B1 cao
	(c)		24	2	M1 for complete method to find the difference between males and females condone one error in reading frequencies **or** one error in totalling correct frequencies eg (Males 28 + 16 + 24 + 8) – (Females 16 + 12 + 18 + 6) or 76 − 52 A1 cao **or** M1 for finding the differences for each pair of columns condone one error in reading frequencies eg (28 − 16) + (16 − 12) + (24 − 18) + (8 −6) or 12 + 4 + 6 + 2 A1 cao
11	(a)		Newcastle	1	B1 cao
	(b)		6	1	B1 accept −6
	(c)		−4	1	B1 cao
	(d)		1	2	M1 for (4 −2 + 3 − 4 + 4) ÷ 5 A1 cao
12	(a)		Correct lines	2	B2 exactly 3 correct lines of symmetry (B1 for 1 or 2 correct lines and no incorrect lines)
	(b)		16	3	M1 for a method to find the area of the square e.g 8 × 8 (= 64) **or** the height of the shaded triangle e.g. 8 ÷ 2 (= 4) M1 for a complete method to find the area of the shaded triangle e.g. “64” ÷ 4 **or** ½ × 8 × “4” A1 cao

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
13 (a)		−7	2	M1 for substitution eg $4 \times 2 - 3 \times 5$ A1 cao
(b)		9	2	M1 for substitution eg $30 = 4x - 3 \times 2$ or $\frac{30+6}{4}$ or $y + 3t = 4x$ oe A1 cao
14		485	5	M1 for a method to find weekly basic pay e.g. 7×10 (= 70) **and** "70" × 5 (= 350) M1 for a method to find overtime rate e.g. 10 + 5 or 1½ × 10 (=15) M1 for a method to find total overtime pay e.g. (3 + 2 + 1 + 3) × "15" (=135) M1 for a method to find total pay e.g. "350" + "135" A1 cao **or** M3 for method to calculate pay per day for 5 days e.g. Mon 70 + 45 (= 115), Tues = 70 + 30 (= 100), Wed = 70, Thurs = 70 + 15 (= 85), Fri = 70 + 45 (= 115) (M2 for method to calculate pay per day for 3 or 4 days) (M1 for method to calculate pay per day for 1 or 2days except Wednesday) M1 for totalling all five days e.g. "115" + "100" + "70" + "85" + "115" A1 cao **or** M1 for a method to find overtime hours e.g. 3 + 2 + 1 + 3 (= 9) **and** weekday hours 7×5 (=35) M1 for a method to find equivalent time on overtime e.g "9" + "9" ÷ 2 M1 for a method to find total equivalent time e.g. "13.5" + "35" M1 for a method to find total pay e.g "48.5" × 10 A1 cao **SC** B2 for answer of 575

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
15 (a)		$\frac{1}{6}$	2	B2 cao (B1 for any equivalent fraction)
(b)		75	3	M1 for method to work out degree equivalent of 1 person e.g 60 ÷ 30 (= 2) M1 for a complete method to work out number of women e.g. (360 − 60 − 60 − 90) ÷ "2" oe A1 cao **or** M1 for complete method to work out angle of women sector eg 360 − 60 − 60 − 90 (= 150) M1 for a complete method to work out number of women e.g ("150" ÷ 60) × 30 oe A1 cao
(c)		Can't tell or No (supported)	1	B1 for a convincing reason e.g. there is no information about the population size this week
16 (a)		$7x$	1	B1 cao
(b)		$6y$	1	B1 cao
(c)		$8e - 2e^2$	2	B2 or any correct two term factorised form (B1 for $8e$ **or** $-2e^2$)

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*17		45	4	M1 for complete method to find angle *ABC* e.g. (180 − 70) ÷ 2 (= 55) M1 for complete method to find *x* e.g. angle *CBD* = 180 –"55" (= 125) **and** "125" – 80 A1 cao C1 base angles of an isosceles triangle are equal **and** the sum of the angles in a triangle is 180 **and** the sum of the angles on a straight line is 180 **or** M1 for complete method to find angle *BAC* e.g. (180 − 70) ÷ 2 (= 55) M1 for complete method to find *x* e.g 70 + "55" (= 125) **and** "125" −80 A1 cao C1 base angles of an isosceles triangle are equal **and** the exterior angle of a triangle is equal to the sum of the two interior opposite angles
18		12	4	M1 for a correct expression for the volume of a block e.g. 2 × 2 × 10 (= 40) M1 for a correct expression for the volume of a box e.g. 10 × 8 × *x* **or** for "40" × 24 M1 for a complete method to find *x* e.g. ("40" × 24) ÷ (10 × 8) A1 cao **or** M1 for a method to find number of blocks that can fit in a bottom row of the box 8 ÷ 2 (= 4) M1 for a method to find the number of rows 24 ÷ 4 (= 6) M1 for a complete method to find *x* e.g. "6" × 2 A1 cao

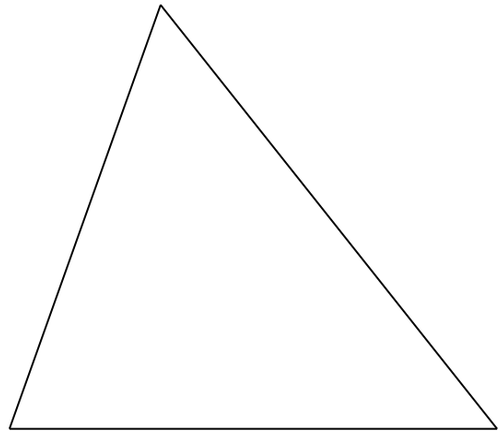
Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
*19		Yes (supported)	5	M1 for method to calculate profit on one laptop e.g.400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for method to calculate selling price of one laptop e.g. 400 × 1.3 oe (= 520) **or** 400 × 1.15 oe (= 460) M1 for method to calculate the total selling price in one of the two deals e.g.40 × 400 × 1.3 oe (= 20 800) **or** for 10 × 400 × 1.15 oe (= 4600) M1 for total income e.g. “20 800” + “4600” C1 for Yes **and** (£)25 400 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit in one of the two deals e.g.40 × “120” (= 4800) **or** 10 × “60” (= 600) M1 for a method for total profit “4800” + “600” (= 5400) M1 for a method for target profit e.g. 25 000 − 400 × 50 (= 5000) C1 for Yes with (£)5400 **and** (£)5000 **or** Yes with £400 more **or** M1 for a method for the profit on one laptop e.g. 400 × 0.3 oe (= 120) **or** 400 × 0.15 oe (= 60) M1 for a method for the total profit for one of the two deals e.g.40 × “120” (= 4800) **or** 10 × “60” (= 600) M1 for 50 × 400 +“4800” or 50 × 400 + “600” or “4800” + “600” M1 for 50 × 400 +”4800” + “600” (= 25 400) C1 for Yes **and** (£)25 400 **or** Yes with £400 more

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
20 (a)		Frequency polygon	2	B2 correct frequency polygon (B1 for points plotted correctly but not joined **or** for points plotted at the correct heights, consistently placed within the class intervals (including ends) and joined **or** for an otherwise correct frequency polygon with no more than one point incorrect **or** correct frequency polygon with first and last points joined directly) **NB**: ignore parts of graph drawn to the left of the 1st point or the right of the last point; ignore any histograms drawn.
(b)		$60 < A \leq 80$	1	B1 ft from their frequency polygon
21		-2	3	M1 for expanding brackets e.g. $4x+12\ (=2x+8)$ or divide by 4 as a first step e.g. $x+3=\frac{2x}{4}+\frac{8}{4}$ M1 ft their equations which have to be of the form $ax + b = 2x + 8$ **or** $x + 3 = ax + b$ for isolating terms in x **and** numbers e.g. $4x - 2x = 8 - 12$ seen as part of their solution oe A1 cao

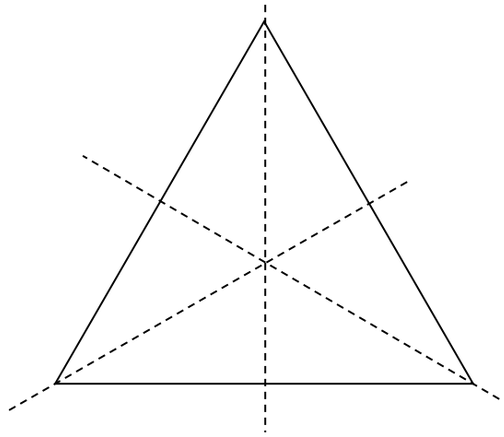
Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
22 (a)		40, 100	3	M1 method to find unit weight e.g. 60 ÷ 3 (= 20) M1 for complete method to find weight of **one** of the other ingredients e.g "20" × 2 (= 40) **or** "20" × 5 (= 100) A1 cao
(b)		1.44	3	M1 for a complete method to work out the weight of nuts needed e.g. 300 ÷ (3 + 2 + 5) × 3 (= 90) **or** 300 ÷ (60 + "40" + "100") × 60 (= 90) M1 for a complete method to work out the cost eg (800 ÷ 500) × "90" (= 144) A1 cao
23		15 200	3	M1 for a method to obtain at least two different areas from 50 × 80 (= 4000), $\frac{1}{2} \times 40 \times 60 \ (=1200)$, 60 × 80 (= 4800) M1 (dep on M1) for adding at least 4 correct face areas A1 cao

Paper: 1MA0/1F				
Question	**Working**	**Answer**	**Mark**	**Notes**
24		$\frac{4}{15}$	3	M1 for a method to find the total number of people e.g 3×5 (= 15) or writing $\frac{5}{15}$ as an equivalent fraction to $\frac{1}{3}$ M1 (dep) for "15" – 5 – 6 (= 4) A1 oe **or** M1 for a method to find prob (boy) e.g. $\frac{6}{5} \times \frac{1}{3} (= \frac{6}{15})$ M1 (dep) for $1 - "\frac{6}{15}" - \frac{1}{3}$ A1 oe **or** M1 for an expression for the probability of the number of girls in the room e.g. $\frac{5}{5+6+x}$ M1 (dep) for "$\frac{5}{5+6+x}$" = $\frac{1}{3}$ or $x = 4$ A1 oe **SC B2 for** $\frac{4}{n}$ where $n > 4$ and $\neq 15$

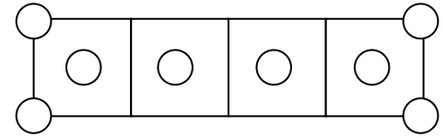
6c



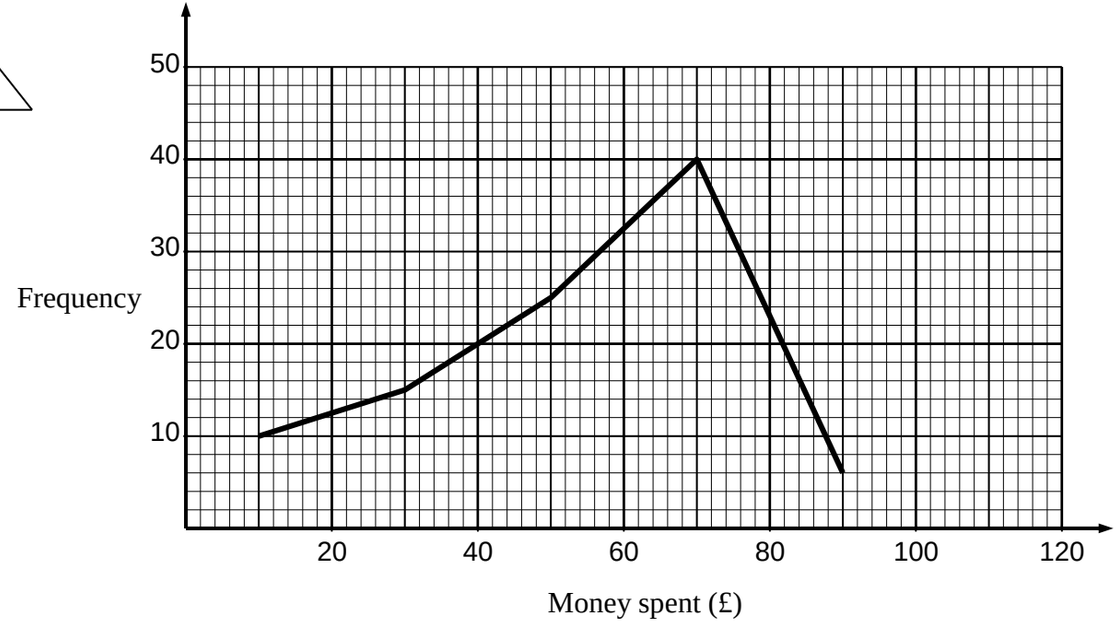
12a



5a



20a



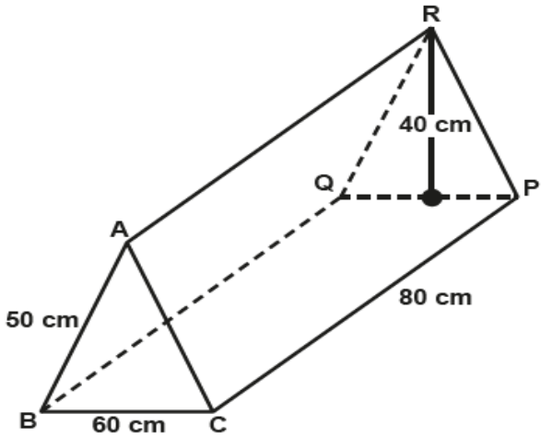
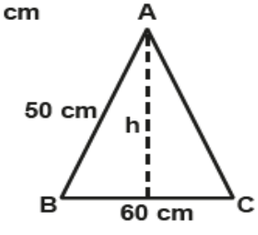
Modifications to the mark scheme for Modified Large Print (MLP) papers.

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

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

PAPER: 1MA0_1F			
Question		**Modification**	**Mark scheme notes**
1		Diagram enlarged. Key moved above and to the left of the diagram.	Standard mark scheme
3		Diagram enlarged. Wording 'centimetre' removed. Shapes labelled 'shape A, shape B, shape C, shape D, shape E and shape F.' Layout of shapes changed so shapes A B C are on the top row then D E F are below. Shading changed to dotty shading. In (c) Wording added 'Each square on the grid represents a one centimetre square.'	Standard mark scheme
5		The 3 patterns are stacked vertically. Pattern number 3 is repeated below pattern number 3 and is labelled 'pattern number 4.' Wording changed to 'There is a sequence of patterns made from lines and circles: pattern number 1, pattern number 2 and pattern number 3.' In (a) Wording changed to 'Pattern number 4 has been started below pattern number 3. Complete pattern number 4 on the diagram.' Diagram removed. In (b) Table has been turned to vertical format. Wording added 'There are two spaces to fill.'	Standard mark scheme
6	(a)	Diagram enlarged. Angle sizes moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
6	(b)	Diagram enlarged. 7 cm changed to 9 cm and 6.5 cm changed to 8.5 cm. Angle size moved outside of the arc and the arc has been made smaller.	Standard mark scheme
6	(c)	Line *PQ* made 9 cm.	Standard mark scheme adjusted for the fact that *PR* has now changed from 6.5 cm to 8.5 cm.
9		Diagram enlarged. Right axis has been labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis. In (a) 36 changed to 35.	In (a) award the mark for an answer in the range 7.6 to 7.9 gallons. In (b) use the standard mark scheme.

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
10		Diagram enlarged. Right axis has been labelled. Key has been moved above and to the left of the diagram Male shading changed to dotty shading. Female shading changed to white. Vertical axis label moved above the vertical axis. Vertical axis extended to end at 35. Points on the graph moved to: Car – male: 30, female: 15. Walk – male: 15, female: 10. Bus – male: 25, female: 20. Other – male: 10, female: 5.	(a) B1 for 30 (b) B1 for 45 (c) M1 for finding the difference between males and females eg (Males 30 + 15 + 25 + 10) – (Females 15 + 10 + 20 + 5) or 80 − 50 A1 for 30 OR M1 for finding the differences for each pair of columns eg (30 − 15) + (15 − 10) + (25 − 20) + (10 − 5) A1 for 30
12		In (a) Diagram enlarged. In (b) Diagram enlarged. Shading changed to dotty shading.	Standard mark scheme
14		Table has been turned to vertical format.	Standard mark scheme
15		Both pie charts have been put on the same page and labelled 'Last week' and 'This week'. In (a) Diagram enlarged. Angles have been moved outside of the angle arcs and the arcs have been made smaller. In (c) Diagram enlarged. Angles have been moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
16	(a)	MLP only: *x* changed to *f*.	Standard mark scheme but *x* changed to *f* for MLP
16	(c)	Braille only: *e* changed to *n*.	Standard mark scheme but *e* changed to *n* for Braille
17		Diagram enlarged. Angle sizes have been moved outside of the angle arcs and the arcs have been made smaller.	Standard mark scheme
18		Models provided for all candidates. Diagrams also enlarged and provided for MLP. Labels 'Box' and 'Block' have been moved above the diagrams.	Standard mark scheme
20		Number 6 on the frequency column of the table changed to number 5. Diagram enlarged. Right axis has been labelled. Axes labels have been moved to the left of the horizontal axis and above the vertical axis.	Standard mark scheme
21		MLP only: *x* changed to *y*.	Standard mark scheme but *x* changed to *y* for MLP

PAPER: 1MA1_1F			
Question		**Modification**	**Mark scheme notes**
23		 Cross section of prism h = height 40 cm 	Diagram changed as shown. Model provided for all candidates. Diagram also enlarged and provided for MLP. Cross section of the prism also provided. Key provided for the cross section of the prism. Braille only: will label the cross section R P Q.	Standard mark scheme

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Mark Scheme (Results)

Summer 2017

Pearson Edexcel GCSE (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

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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

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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 2

This question was also well answered with very few errors seen.

Question 20

There were very few correct answers of 12.5% seen. Many students did not attempt this question at all. Success came most commonly from a diagrammatic approach. Successful students drew examples of square A inside square B and recognised that the area of A was in fact a quarter of the area of B and therefore the area of the triangle was 1/8 of the area of B. This helped students to visually see the relationship between the 2 shapes. A few students were unable to convert 1/8 into a percentage. Even here arithmetic errors were made with 25 ÷ 2 = 13 seen.

Some students assigned lengths to the squares in order to find areas but only a small number of those went on to actually calculate an area.
The most common incorrect answer seen was 25% from halving 50%.

Question 15

Although a few students did work with perimeter instead of area, the vast majority gained at least one mark for 90 × 60. Many, failing to read the question carefully, then simply found the area of the garden where flowers are grown. It was however pleasing to see so many fully correct solutions. Many used non calculator methods to find 40% (or 60%). Some found 40% or 60% of **both** dimensions as opposed to just one before finding the area.

Question 16

In part (a), it was rare to see both parts answered correctly. B was often identified as the least likely coin to land on Heads but A and D were very common choices for the most likely.

Many students correctly said that Julie was wrong in part (b) but their reasoning varied widely. Simply saying that coin C was biased was insufficient since this was given in the question. It needed to be clear that the student was referring to the probability of the $\frac{1}{3}$ given in the table. Students using decimal or fraction equivalents for $\frac{1}{3}$ often made errors in the conversion; 30% was a common error. A number of students referred to even chances or 50-50 chances or 'odds' rather than using the correct probability language.

Part (c) was often answered well. Many students tried to convert 0.033 to a fraction or a percentage usually making an error in their subsequent working. Many did not understand the use of the word "estimate" in the context of probability and believed they were required to

round off the numbers before calculation. Students who found the correct answer of 132 and then rounded to say 130 were not penalised, provided 132 was seen. A number of students were not explicit in the use of 0.033 and so any rounding made (eg. 0.03) without first writing 0.033 was given no credit.

Question 5

This was very well answered with few failing to gain the mark.

Question 6

Many students gave the correct answer. Less successful methods were those where students used partitioning methods which introduced more opportunity for error. This included those who divided 8 by 2 and gave the answer of 4 on the answer line, or those who just found 10% as 8 and made errors from there. Some treated this as an increase or decrease percentage, giving answers of 64 or 96, but were still credited for method.

Question 23

Setting out methodical and clear working was essential in this question. The majority gained the first mark for calculating either 28% or 112 packets for Alan, but it was not usual to find students working out 32% and 40% and just adding them. Equally, many went on to show 6/10 or 300 for Beryl, but again there were those who just worked with 4/10. As in other questions there were too many cases of poor arithmetic or mis-copying figures, though this did not prevent the award of the process marks. The ratio calculation was the more challenging aspect of this question with many just trying a ratio division using 3 : 4, usually involving a division by 7.

Question 5

Nearly all students answered this question correctly though a few students gave incorrect answers such as 1.5 and $\frac{15}{100}$.

Question 3

Most students were able to write 0.23 as a percentage.

Question 16

For those that understood simple interest a common first step was to work out 1.8% of 4500. It was surprising to see some students using an inefficient build up method to work out 1.8% of 4500 on this calculator paper. They were often not successful. Some students took the 3 years into account at the start and worked out 5.4% of 4500. Having used a complete method to get 243 some students were not awarded the accuracy mark because they gave the final answer as 4743 or 4257. A common incorrect first step was to divide 4500 by 3 and assume that Maria invested £1500 each year. Many students treated this as a compound interest question rather than as a simple interest question and they could score at most one mark for a calculation of the form 4500×1.018^n. This was usually 4500×1.018 or 4500×1.018^3. Incorrect multipliers such as 1.8 or 1.18 were quite common. A significant number of students gave answers which were large compared to the initial amount invested. Students should be encouraged to consider whether their answers are reasonable in the context of the question.

Question 20

Most of the students that substituted $f = 110$ into the formula obtained 452 and were awarded the first two marks. Many students, however, were not able to complete the solution by showing that the difference between 452 and the real height is less than 5% of the real height. Some made no attempt to do so. Others did make an attempt but could not show a complete method. Some found the difference of 10 but did not work with percentages whereas others found 5% of 442 but not the difference of 10. A common mistake was to find 5% of 452 instead of 5% of the real height. A

significant number of students did not use the formula correctly and gained no marks. Attempts at solving an equation such as $442 = 4f + 12$ or $110 = 4f + 12$ were quite common. Some students thought that they needed to round values because of the word 'estimate'.

Question 15

This item posed many problems for students, with many unable to get beyond two marks. The best responses were the more structured ones, and it was good to see students using two-way tables or frequency trees, to structure their response. Typically, students scored one or both of the first two process marks (which could be awarded in either order) by finding either the number of boy or girls, along with the number of school dinners or packed lunches. It was from this point that many were unable to progress and often we saw incomplete processes. It was also unfortunate to see students mis-assigning values, eg girls = $0.55 \times 800 = 440$, which made the processes incorrect. Students should be encouraged to take real care in how they present their responses; those who approached the question in a logical and structured way, ticking off information in the question at each stage were more successful.

Question 21

This was a question that students generally struggled with. Most were able to make a start and gain the first mark for finding the profit. At that point many students did not know how to progress further to find the percentage profit. Students generally knew division was necessary part of this calculation, but often this was seen as profit ÷ new rather than profit ÷ original and as a result no further marks were awarded. It is evident that percentage change and percentage profit is an area that foundation students need to work on further. Trial and improvement methods were seen and were usually unsuccessful in finding a correct solution; this method should be discouraged.

Question 17

Again, many students failed to read this question carefully enough by simply concentrating on Tuesday, assuming the normal price of £500 needed to be reduced by 20% This gained no credit if Monday was ignored. However, it was pleasing to see that many of the most successful students identified $\frac{1}{10}$ of 500 by 500 ÷ 10, they correctly found the sale price on Monday, were very clear in separating Monday from Tuesday in their working and went on to complete a fully correct solution. Many weaker students were able to score one mark for correctly working out $\frac{1}{10}$ of £500.

Question 24

Many students were able to find the selling price of the 24 bars of chocolate, either in pence or in pounds, but few were able then to work out the percentage profit, often quoting the £12 selling price or the £2 profit made as 12% or 2%. Students who attempted to work out the cost of each chocolate bar usually found an incorrect value and then got no further. Some tried to achieve this by dividing 24 by 10.

Question 4

This simple conversion from a fraction to a percentage was well answered and the vast majority of answers were correct. However, the common misconception that $\frac{1}{4} \equiv 40\%$ was seen several times.

Question 16

The modal score for this question was four marks. The question required students to work with a fraction of an amount and a percentage of a different amount within a mini problem. When full marks were not awarded students often gained part marks for finding 70% of 60 as 42 or for finding two thirds of the total marks available or two thirds of the marks available on an individual paper. Whether the student went on to score full marks hinged on the need to consider the total pass mark needed was 100 and then perform the required subtraction.

A common loss of marks was often due to the misconception that two thirds is equivalent to 60% or 0.6, but this secured the award of two marks as a special case if all stages were carried out accurately. Students should be able to calculate with thirds as fractions and not try to approximate to decimals or percentages as this all too often leads to inaccurate answers.

The use of a build-up method to calculate the percentage was commonly seen but was not always successful. Students must show a correct process for finding a percentage of an amount to avoid the loss of marks.

This problem was very accessible to students and often working was clearly shown.

Question 23

Attempts at this multi-stage problem varied greatly with mixed levels of success. A small number of students scored full marks on this question and of those that did, almost all showed the full method followed by calculating 30% of 290 to support their 'no' response. Calculation of 31% was rare but acceptable.

Partial marks were often awarded for using the ratio correctly with 3000 to find 600, with many then continuing correctly to find the total number of tins in large boxes and small boxes to gain the second process mark. Many students then found the next stages of the calculation challenging, with very few finding the number of each type of box that would be needed and even fewer continuing to work appropriately with percentage. It was common to see students who had found 1800 and 1200 to continue to calculate 30% of 3000 and making an incorrect comparison to 1200.

The most common incorrect approach seen was to divide 3000 by 6 or by 20 and show no other calculations.

Question 1

Very few failed to earn the mark here. Those with incorrect answers usually wrote 3%.

Question 19

Most students gained at least one mark for correctly calculating the actual loss of £24 but very many were unable to represent this as a percentage of the cost price of the watch. 24% was the most common incorrect answer seen. Some students correctly quoted £80 = 100% but were unable to use this to answer the question.

Question 23

Whilst some students were able to fully complete a solution for this problem, many were unable to find 20% or 30% of the required value, often getting confused with the numbers of 'zeros' involved. It was not uncommon to see 10% of 220 000 given as 2200 or 220. A great many students lost marks because they did not show a mathematical method, simply writing "20% of 220000" gains no marks whereas $\frac{20}{100} \times 220\,000$ gets the method mark.

Many students found the correct decrease or increase of £44 000 and £48 000 respectively and went no further. The fact that one was an increase in value and one a decrease in value was often missed. Again, students must read the questions carefully. Of those who did gain the correct values many failed to say which was the larger amount, thus failing to gain the final mark.

Question 1

This question was very well answered with the vast majority of answers being correct. A few incorrect answers were seen with $3\frac{1}{10}$ being one of the incorrect answers given.

Question 17

It was common to award 2 marks or full marks for this question. Students often correctly placed 38 or 15 for the first mark and therefore went on to calculate or place 22 or 7 for the second mark.

Many students then failed to attempt to find 60% of 60 but when they did they often went on to correctly complete the rest of the question. The most common error was to find 60% of the wrong value (usually 38). Some students gained a third mark by simply showing that the total number of texts was 36 but not using it in the diagram, this skill in working with percentages was enough for the third mark.

Some responses had the correct numbers misplaced in the tree diagram and students should be encouraged to check their answers thoroughly. These students did gain some marks for working but could not gain communication and accuracy marks.

Question 28

As the last question on the paper it was not surprising to see that students found this question challenging. The overwhelming number of responses to this question was £312800, coming from a variety of methods to find 115% of £272000. Occasionally 85% of £272000 was seen, usually from £272000 – (15% of £272000).

The fact that what was required was 100% when the given figure was actually 85% was rare. Those who did recognise this usually went on to gain full marks.

Summary

Based on their performance on this paper, students should

- carefully read questions
- practice questions involving negative numbers
- give succinct explanations
- use a calculator.

Question 1

A well answered first question on the paper where most students gained the mark.

Question 13

In part (a) the most common incorrect answer was obtained by writing 2 : 3 as 66%. Students using equivalent ratios and recognising they needed $\frac{2}{5}$ or 20% did much better.

Part (b) was answered better than part (a), with many students able to link the percentage to the ratio. It is evidence that a number of students incorrectly carried forward information from part (a). The majority of correct answers were given as 1 : 4 or 2 : 8. One mark was awarded to those students who did not get this far, but did show sufficient understanding to get to 80.

Question 5

This was answered well with many showing understanding of equivalent forms, A few gave the 3 values in reverse order and were penalised for not reading the question carefully enough. A common misunderstanding was for 0.5 to be less than 0.45 thinking perhaps that since 5 < 45 then 0.5 < 0.45. A small proportion did not convert all values to the same equivalent form which resulted in evaluating $\frac{1}{2}$ as smaller than 45%.

Question 19

Finding 20% of 240 was the more common starting point here although many methods to do this were incomplete or flawed. It was not uncommon to see 10% = 24 and then a second 10% equal to half or a tenth of 24. Poor arithmetic was often the reason for loss of marks. Even those who found 48 often couldn't get to 288. A significant number went on to subtract 20% from the 240 rather than adding it or did not realise they needed to add it on resulting in a common final answer of 48.

Question 25

Those students understanding the concept of ratio usually started correctly by dividing the 160 vehicles in the ratio 3 : 7, resulting in 48 (16 × 3) cars. Failure to then complete the solution correctly was generally a result of finding either $\frac{1}{8}$ of 48 or 25% of 48 and then immediately subtracting the single result from 48 and then calculating either $\frac{1}{8}$ or 25% of the remainder.

Some students misinterpreted the first line of the question and assumed that here were 160 cars and then proceeded to find $\frac{1}{8}$ and 25% of 160 leaving them with an answer of 100. This was marked as a special case with the award of two marks.

Question 5

This question was answered correctly by over 80% of the cohort. The common incorrect answer was to give 4% as the final answer.

Question 19

The majority of students gained marks on this question. Many gained three marks for finding the number of bags as 20 and the percentage increase as £23.76. Unfortunately, most students were unable to go onto the next stage of 23.76 ÷ 20 = 1.188 and then round to £1.19. Of those students that managed this calculation, some gave the final answer as £1.18 but many seemed unable to do the final division and so started to 'guess' possible answers and multiplied up in a trial and improvement method; this method was rarely successful.

A common error was to attempt the build up method for the percentage calculation, by finding 10% and then 5% and adding appropriate multiples to get to 35%. There were many responses where the intermediate figures, often inaccurate, were stated without giving the process they came from given, this does not score marks as no process is available to mark. Students should be encouraged to use calculators for this type of question on a calculator paper.

Only a small minority attempted the alternative method to start working with the price of the small bag first before working with percentage and most who did stopped when they reached £0.88.

Question 1

Most responses were correct for this question with the most common answer of $\frac{35}{100}$.

The simplified version of $\frac{7}{20}$ sometimes followed or was the only answer given.

Question 19

The vast majority of students attempted this question with a fair proportion getting full marks. The majority found 150 for red, thus gaining the first mark. The most common approach was then to subtract this together with 82 from 400 to get 168 green counters and thus scoring two marks. Some just subtracted 82 from 150 getting 68 instead of 168. If they knew how to find the percentage of amount, they rarely made a mistake for the last two marks, so 3 out of 4 marks was rare.

The most common error was to subtract the 82 from 400 as a first step and then try to find $\frac{3}{8}$ of 318 which resulted in no marks. Another incorrect method seen was converting $\frac{3}{8}$ to a decimal and then adding it to 82.

It was very rare to see students using the alternative method of converting both $\frac{3}{8}$ and 82 to percentages. Some students converted $\frac{3}{8}$ to 0.375 or 37.5 and then added this to 82 before subtracting. There were a fair number of students who managed to add together 82 and 150 then covert this to a percentage (58%) but this was as far as they got, not realising that this was not the percentage of green counters.

Generally, the major weakness was a failure of students to understand how to convert to a percentage for the final answer, which therefore limited the number of marks to just 2.

Question 25

Despite being later in the paper it was pleasing to find many students gained full marks on this question with the vast majority able to gain at least 1 mark. There were various methods used but the most popular was to find the cost of 15 rolls for each shop. It was common to find the values £180 and £184.80 clearly stated with the correct conclusion of Chic being the cheapest. The next popular method was to work it out for 5 rolls each. Those that did not gain full marks generally made an error in calculating the percentage discount for Style Papers because they used the breakdown method with the common error of showing 2% as 0.14 rather than 1.4; a correct method to calculate an appropriate percentage was essential to proceed through this question.

Question 30

Most of the students did not recognise that this was a reverse percentage question so just found 15% of 13600 and added it on. This is a very common misconception. Those who were awarded full marks mostly used the method 85% = 13600, 1% = 160, 100% = 16000
Those who used the multiplier of 0.85 often incorrectly used it to multiply rather than divide. Even when students correctly identified that they had 85%, they did not understand that they needed to divide by 85 and multiply by 100 to get back to 100%.

Summary:

Based on their performance on this paper, students should:

- ensure that their written work is legible. Figures taken from the question, and taken from student's own work, need to be transcribed accurately.
- avoid rounding or truncating answers to calculations and use the most accurate values where possible.
- practise algebraic manipulation and derivation, application of ratios, scaling and rates, and time.
- learn to use their calculators for working with percentages, rather than always using a break-down / partitioned approach.
- include working out to support answers.
- be confident in their use of measuring equipment in drawing and in measuring.

Question 2

This question was well answered, with nearly all candidates scoring this mark.

Question 11

This was a well attempted question with most students gaining at least 2 process marks and the vast majority achieving full marks. However, some students did not subtract to find the total number of children first and some, despite the bold print, did not go onto find the number of children not wearing hats.

For those not scoring full marks, it was common that they scored at least one mark for saying there were 200 children. Some students stopped at finding just 35% (70) and so were only able to achieve half the marks.

Common errors were to find 35% of 214 and another common error was seen when students did the build-up method for percentages. Most candidates using this method did not show what calculations they have done and so, unless their answer is correct, can have no method marks.

Centres would benefit from reminding students of the need to read the question carefully and check that their answer is reasonable. They should also be reminded to show their working out to find percentages as students often made arithmetic errors without showing the associated calculations.

Question 26

Where students understood the process to calculate the original amount, they were successful in gaining both marks.

Unfortunately the majority of responses saw students increase or decrease the given amount by 9%. Another common mistake was to use 0.91 as a multiplier.

The best solutions came from those who identified 165680 as 109% at the outset and then proceeded to divide by the correct multiplier of 1.09. A few did recognise that 165680 was 109% but only divided by 109.

In summary

Based on their performance on this paper, students should

- carefully read questions
- practice questions involving significant figures
- provide solutions to problems in a systematic manner
- use a calculator for this paper.

Question 1

This first question was generally well answered although incorrect answers of 3.8 and 0.38% were not uncommon. A significant number failed to give their answer as a decimal and often an answer of $\frac{38}{100}$ was seen.

Question 14

Part (a) was answered well with very few failing to subtract 73 from 100 correctly. In part (b), $\frac{2}{5}$ was the most common error made.
Part (c) offered a different challenge and while many were able to find 70% of 500, fewer were able to find $\frac{5}{8}$ of 720 and thus complete the solution. Some divided by 8 but were unable to then multiply their answer by 5. An interesting way round this was to find one half of the 720 and conclude that this was already larger than 350 and that as $\frac{5}{8}$ was larger than one half then Kasim was wrong.
Others multiplied by 8 first and then divided by 5. Some attempted to convert 5/8 to a percentage. Those achieving this correctly were often unable to calculate 62.5% of 720.
Many students assumed that an equal number of people watched the film on each day and simply compared 70% with $\frac{5}{8}$, concluding that more children watched the film on Friday as 70% is greater than $\frac{5}{8}$. A number failed to state 'No' despite all workings being correct so did not gain the final mark.

Question 17

The vast majority of students were able to find the actual number of yellow and green counters in the bag (55 of each) but were unable to work this out as a percentage of 200. The usual answer was to simply offer 55 as their percentage. Very few showed their method for the final percentage which would have gained a method mark. When students attempted to

write 55/200 as a percentage, they usually took the approach to halve numerator and denominator but often couldn't divide 55 by 2, 22.5 being a common error.

Question 26

This was poorly answered with very many students simply finding 20% of 240 and either decreasing £240 to give £192 or increasing £240 to give £288
Those that started with 20% = £240 usually went on to work accurately leading to a correct answer. Occasionally answers of 960 or 1440 were seen and these gained one mark.

Question 19

The majority of students gained marks on this familiar frequency tree question, with part (a) being well attempted and many gaining at least one mark. Of those who were not awarded full marks, the vast majority were able to correctly place at least one of the given values, generally for placing 150 correctly, and then could calculate at least 1 or 2 of the missing values. However, many students placed 110 incorrectly as the number of students who have a bicycle and a car, simply reading this value from the question and not realising this was the total number of people with a bicycle and making use of the final piece of information given. Careful reading should be encouraged for this type of question and it was pleasing to see students checking that the values they had placed totalled 240 and correcting as necessary if 240 was not reached.
Part (b) required students to use their frequency tree to find a percentage, with a large proportion of students who were successful with the frequency tree, correctly working out the required percentage. Whilst many identified the correct value to use as a numerator, a small number of students calculated this as a percentage of the total people rather than the number of people who had a car and therefore gained no marks. The most common errors from incorrect frequency trees led to 110 and 150 being used in part (b) but could be followed through for both marks if used correctly. Other students simply stated the values from their frequency tree or as a fraction rather than converting them to a percentage or gave a subtraction e.g. 150 – 45 or even 100 – 45.

Question 25

Combining the skills of applying percentages and ratio in this small problem appeared to be demanding for many students, with many often only being able to work with one or the other but not both together. Calculating 57% of 800 was by far the most common first step shown but, after finding 456, it was common either to multiply or divide by 7 or 12 without using 19 in their calculations. Of those who chose to work with percentage first, this was not always done correctly by those using a build-up method rather than the calculator. When doing this, very few showed a method for the individual percentages and just stated what they thought the percentage was, so any error lost the method mark.
Almost all responses that gained full marks worked through each part as an individual calculation such as dividing by 19 and then separately multiplying by 7, very few used

fractions in their working. This approach proved to be the most successful and should be encouraged.

Question 2

This was generally very well answered. Some candidates showed misunderstanding by giving a fraction out of 100. A common incorrect answer was 3.

Question 19

This question was attempted by most candidates, but few achieved full marks. Many candidates gained 1 mark, often by calculating 450 ÷ 6 and getting an answer of 75; or for finding '450 is 15% of 3000'. Unfortunately, many candidates were not able to progress past this point in their calculations and gained no further marks. Some candidates were able to take the calculation further but failed to finish the calculation giving final answers of 0.025 or 1.025. A common incorrect approach was to consider this to be a compound interest question and to use the compound interest formula.

Question 21

A large proportion of candidates were able to secure a mark for commencing this problem by taking into consideration the two cups of coffee by doubling one of the other stated values, or by multiplying by 10.6 to take into consideration the amount of coffee required for one cup of coffee. These two steps could have been completed after working with the proportion of the 800 people (68%) that would drink coffee. In order to progress with this problem, candidates had to work with the 68% and in most cases, this was completed by working out how many people this was. Although they could use calculators for this paper, a significant number of candidates chose to compute this by demonstrating a build-up method. When this was done correctly, most went on to arrive at the correct solution of 11532.8. Where candidates did not show all stages of their working and simply stated correct and incorrect percentage values that they then added, no marks or no further marks were able to be awarded. Generally, partitioning methods frequently led to error, but those using a more direct approach, typically by multiplying by 0.68, usually went on to work the percentage out correctly.
In part (b) responses of "there will not be enough coffee" or "more coffee will be needed" or similar equivalent responses were rewarded with the communication mark. Some candidates chose to recalculate the problem and chose to work out the new total of people drinking coffee or the new weight of coffee required. When they did this correctly this also secured this last mark. Candidates should be encouraged to generalise so that they do not have to complete additional unnecessary work, particularly when there was only one mark to be gained. It was encouraging to see many correct responses to this part.

Question 5

The majority of students were able to find a simple percentage of an amount in this question which was very pleasing to see.

Question 15

Most students were able to find 72% of 120, but it was disappointing to note that many still used a build-up method with this topic as several correctly found 70% but struggled to find the 2% accurately using this method. If the full process was not shown, due to listing their values for e.g. 50%,10% and 1%, the process marks could not be awarded for incorrect values. Of those correctly finding 72% of 120, many went on to incorrectly subtract 30% of 120 from 86.4 rather than find 30% of the value just found. It was common to see an incomplete answer of £25.92 from correctly finding 72% then 30% of the answer, but not subtracting this to find the amount remaining. Centres should encourage students to write a valid process when calculating percentages of amounts and ensure they are aware that simply writing $120 \times 72\%$ is not acceptable unless an accurate answer is shown.

Question 23

It was pleasing to note that students were able to access this calculating the percentage profit after working with income and outgoings in this small problem, with some students successfully reaching the correct answer and a large number gaining partial marks. Responses to this question often started well, with many students gaining 1 mark for finding both the income and outgoings. A second mark was also often awarded for beginning the process to find the percentage profit, commonly by finding the difference between income and outgoings. Unfortunately, many who found the difference did not seem to know what to do next with this value, with a variety of attempts to work with it being seen. It did not seem to be clear to most in this cohort that percentage profit means percentage of outgoings. Incorrect next steps that were frequently seen were writing 10.5 or dividing 105 by 100 or by 405. Others instead worked out 300 as a percentage of 405 or attempted to add 300 to 405, meaning that there was no work with profit and only 1 mark was scored.

Question 1

A well answered first question on the paper where most candidates gained the mark. The most common mistake was to just remove the percentage sign and write 35. Occasionally it was seen as a fraction or only divided by 10 instead of 100.

Question 14

It was pleasing to see many correct answers given, with the numbers (or their equivalents) given in the correct order. Candidates who attempted to convert to fractions quickly realised that this was a more difficult route since you then had to find fractions with common denominators in order to make a comparison. They usually joined the rest in converting the two fractions to a decimal, and then ordering their five decimals, though this was not always done correctly.

Question 2

The vast majority of candidates were able to write 0.3 as a percentage. Where incorrect answers were seen the most common was 3%, although a few gave an answer of $\frac{3}{10}$.

Question 26

Only a minority of candidates were able to correctly calculate the percentage of Kasim's jars that were empty small jars. The majority of candidates who scored gained only 1 or 2 marks. A correct process to find $\frac{3}{8}$ of 400 was the most commonly awarded mark, with a significant proportion of candidates able to also start to deal with the ratios and identify that number of small jars : number of medium jars : number of large jars could be written as 3:4:8. Having reached this point candidates generally struggled to find the number of empty small jars (30) with a range of incorrect attempts being seen. A very common incorrect combined ratio was to write the correct ratios, in the correct position in columns for S:M (3:4) and M:L (1:2). This gave an incorrect ratio of 3:4:2. Others added together the middle parts reaching 3:5:2**.** Having started with a process to find the number of empty small jars, many candidates worked with the ratios as given in the question and found $\frac{3}{3+4+1+2}$ of 150 rather than $\frac{3}{3+4+8}$ in an attempt to find the number of empty small jars. Where candidates did find that there were 30 empty small jars, a majority went on to incorrectly calculate what proportion of the empty jars were small, calculating $\frac{30}{150} \times 100$, rather than what proportion were small empty jars, $\frac{30}{400} \times 100$. There were a variety of other incorrect approaches seen.

Question 27

In this question candidates needed to perform a reverse percentage change. Only a minority of candidates were able to give a fully correct answer. When candidates correctly identified that £280 was 70% of the original amount they were often able to go on to find the normal price of the TV. The most common error was to treat the reduced amount as 100%, finding 30% of this and adding this on giving an answer of 364. Other incorrect responses included reducing 280 by 30% (answer 196) or treating £280 as 30% of the normal price. It should be noted that a fair number of candidates did not consider their answers in the context of the question, obtaining a normal price for the TV that was less than the sale price or obtaining an answer that was in the thousands.

Question 18

Whilst many students gained all 3 marks available in this small problem, many students struggled to find 56% of 1800 using a valid method as the first step. Calculations attempted unsuccessfully were often a non-calculator method such as a build-up or partitioning method,

with the working shown often being insufficient for students to be given credit. Students should be encouraged to use a calculator appropriately and be confident in using decimal multipliers. Of the students who could calculate 56%, many of those then misunderstood the question and did not subtract this from 1800 and some also did not divide by 66. The vast majority of students did, however, realise and therefore gained credit for using [44%] ÷ 66. As with the majority of questions requiring the use of percentages, many students still believe writing 56% of a number or 56% = … is sufficient evidence of a correct process but such statements gain no credit unless a correct value is given. Use of the percentage button on the calculator may account for this but there is evidence to support the conclusion that many students do not know how to use this function correctly.

Question 25

Combining the skills of applying fractions, percentages and ratio in this small problem appeared to be demanding for many students, with many often only being able to work with one of the three skills but not all in a correct way. Calculating $\frac{3}{7}$ of 14 was by far the most common first step shown, earning 1 mark with these students either failing to advance further in the problem-solving process but many then using a correct process to find the number of sweets for Andy and Tina after the first exchange to gain 2 of the 4 marks.
Of the students gaining 2 marks, a large number either stopped or were not able to work with 12.5% using a valid method.

Very few students showed working for every step which often led to marks being unachievable if arithmetic errors occurred. Selecting a specific value to begin working with was more commonly seen than expected, with many multiplying each part of the ratio by 21 from adding the parts of the ratio together or using 100. Of these students, very few were successful due to increased arithmetic errors or decimal values when working with a starting value of 100. Unfortunately, the majority of the cohort gained no marks and this was often due to using 21 rather than 14 when working with $\frac{3}{7}$.

Centres should give more opportunities to students on practicing the best way to approach multi-step problems involving multiple skills, particularly involving ratio, and how to logically organise their calculations.

Question 1

This question was answered very well with most students gaining one mark for a correct answer. The most common error was writing the answer as a decimal rather than a fraction.

Question 15

The majority of students scored 3 marks on this question for reaching two comparable figures and making a correct decision. A small number of students gained 0 marks and it was evident that they found working with percentages challenging or they showed an incorrect process such as, for example, finding 115% of 88 and 120% of 62 or 85% of 88 and 80% of 62. It should be noted that 15% × 88 is not considered a mathematical process and therefore will not gain credit unless it is accompanied by the correct figure (e.g. 15% × 88 = 13.2 would gain the mark but without the 13.2 it would not). Many students used non-calculator processes that resulted in errors in arithmetic, or the full process was not shown and therefore credit could not be awarded.

Question 1

The majority of learners were able to write 25% as a decimal.

Question 1

The opening question was accessible to all learners and was well answered with very few learners not being awarded the mark, often due to writing 17% as a decimal rather than a fraction or having an incorrect denominator such as 10 or 1000 with 17 as the numerator.

Question 12

This was the first multi-step question on the paper which combined the skills of finding a percentage of a quantity and using proportion, with a large number of learners being able to follow the necessary steps through correctly to gain an accurate answer. When errors were made after correctly finding 60% was 108, it was often due to becoming confused and selecting the wrong figures to use in their next set of calculations. Encouraging learners to label what intermediate figures are in their working would help here.
Another common issue was incorrect percentage work. It still remains a problem for learners to simply write 60% of 180 or try to use a build up method, namely 10%, without using their calculators and without showing their calculations and therefore gaining no credit if arithmetic errors were made. Evidence also suggests some may be trying to use the percentage function of their calculator unsuccessfully.

Question 17

Part (a) of this question was well answered, with many learners successfully performing the percentage decrease accurately. Most began by calculating the 7% and then subtracting it, rather than working directly with 93% but both methods were acceptable. The most common cause of the loss of marks was to work with percentage methods that were inefficient and avoided use of the calculator such as using partitioning to build-up towards 7%, often via amounts such as 10%, 5% and 1%. Such methods are frequently used and often lead to inaccurate values being calculated compared to learners using a more efficient method such as decimal multipliers.

Part (b) was poorly answered but in line with performance in questions from previous series using this skill. Whilst some learners were able to find the bonus of £400 which also gained the first mark, many were then unable to continue with a correct calculation to demonstrate that £400 represented 5% and use this to work back towards 100%. A very common error was to find 20% of 400, and these responses only gained the first mark, but it was more common to see learners gain no credit due to either working out 5% of £1700 and adding it on or finding 5% of £2100 and subtracting it. The most successful learners were those who wrote statements such as £400 = 5% and then continued to either divide by 5 then multiply by 100 or used a build-up method to show £800 = 10% and continued to build until 100% was reached.

Question 25

Whilst the majority attempted this question learners historically find this particular topic more challenging and this series is no different to previous series. Whilst, many learners were awarded the first mark for a suitable starting process to find one or both increases via subtraction, many also continued to use the values found incorrectly and evidence suggests that many learners are not confident in the process to calculate a percentage increase. The most commonly seen incorrect next step was simply to compare the 9 and the 1 by subtracting them from each other, dividing them or then finding 9% and 1% of the old or new prices.

Although the question asked learners to compare percentage changes, alternative acceptable methods seen included working with decimal equivalents throughout. Some learners were also unsure whether to find the percentages of the old price or the new price, performing incorrect divisions such as $9 \div 85$ or $1 \div 66$ and so could not gain more than the first mark.

Question 9

This question was answered well with most of this cohort able to gain 5 marks for a correct answer. There were a variety of processes in the mark scheme for learners to gain credit from with the most common seen being to work out the number of child vegetarians and subtract from 80, and the number of adult vegetarians and subtract from 120, and add these two results together. Some of this cohort were unable to make any progress on this question, not being able to deal with finding $\frac{2}{5}$ of 200 being the main issue.

Many learners did not gain marks because they failed to show their process when finding fractions or percentages of amounts, for example 35% × 80 does not gain credit without an accurate result, whereas 0.35 × 80 is worth P1.

Question 21

This question saw the full range of marks awarded. It was rare to see a fully correct solution. That being said, it was common to see 2 or 3 marks awarded and these could be gained in a variety of ways. Those that worked with the ratio usually gained at least the first 2 marks and possibly the third mark for either the cost to buy or amount to sell for both or the profit for one item. If a learner was not able to work with ratio, the mark scheme still allowed them to gain up to 3 marks using their values of the number of pens and the number of pencils. It was rare to see learners gain the 4th P mark and it is clear this cohort needs to work on percentage profit and finding one amount as a percentage of another in general. A common error was to reach 2490 and 1710 but divide the wrong way round when attempting to find the percentage profit.

Question 3

Learners were generally very able to write a decimal as a percentage. The most common error was to write as a fraction instead.

Question 10

Learners responded well to this familiar question of writing two variables as a ratio, with the first mark being awarded for 20 : 80 or any equivalent ratio, and full marks being given if this was correctly simplified to either 1 : 4 or 0.25 : 1 and condoning 1% : 4% but not 0.01 : 0.04 as shown in the additional guidance part of the mark scheme.

Responses with the ratio written the wrong way round scored a maximum of 1 mark but only if cancelled down correctly to reach 4 : 1 or 1 : 0.25. Weaker responses showed confusion by not subtracting the 20% from the total and using ratios such as 20 : 100 which scored no marks. Unfortunately, responses that used equivalent fractions such as $\frac{1}{5}$ or $\frac{1}{4}$, or decimal numbers gained no credit without using a colon to represent ratio notation.

Question 17

Whilst many fully correct responses were seen, a wide variety of different approaches were used for this percentage decrease question with varying levels of success. The valid method to find 85% or 15% of 9000 is to divide by 100 and multiply by 85 or 15 or use a correct multiplier, and learners should be encouraged to work in this way on their calculator and to also write the calculation down. However, a large number of learners chose instead to use non-calculator approaches, often by building up to 85% in multiples of 10%. When this approach is used, there are multiple stages to show, with many chances of avoidable errors and is the most common cause of marks not being awarded. If using this method, marks can only be awarded if the full method is written down with accurate partitioning values or if the final answer is accurate. It should also be noted that writing down 85% of 9000 or 9000 × 85%, possibly trying to show

use of the percentage button on the calculator, is not considered to be valid unless carried out accurately.

Whilst answers of 7650 were often seen, learners should be encouraged to read back through the question when they think they have finished, to check that they have not forgotten to do a necessary stage of work, in this case subtracting to find the percentage required. A few responses included correct work leading to 1350 in the working space but put 7650 on the answer line, which gained both process marks only.

Question 3

The most common correct answer was $\frac{19}{100}$ but some response also gained B1 for an answer of $\frac{190}{1000}$. The most common incorrect answers were 0.19, $\frac{1.9}{10}$ and $\frac{1}{19}$.

Question 15

In part (a), B1 was awarded for a correct fraction e.g. $\frac{87}{200}$ or an equivalent fraction. Common incorrect fractional answers included $\frac{43.5}{100}$, $\frac{87}{100}$, $\frac{89}{200}$ and $\frac{87}{111}$. It should be noted that a fraction was asked for in the question so if the answer was given in an alternative form such as a decimal or percentage, even if the correct fraction had been seen, B0 was awarded.

In part (b), B1 was awarded for an answer of 12. Common incorrect answers included 0.12, 0.24, 24 and 48. It should be noted that a percentage was asked for in the question so if the answer was given in an alternative form such as a decimal or fraction, even if the correct percentage had been seen, B0 was awarded.

Question 18

The most common correct method for gaining 3 marks involved reducing £12,000 by 20% to get £9600, then dividing by 24 to reach £400. A decision was required for full marks, this could be stated as "Yes" or implied through an equivalent statement such as "Amy is correct" or "She is correct". Some responses did not include a decision or gave an incorrect one, resulting in the loss of the communication mark.

It was also common to see responses that calculated £9600 and compared it with the total of 24 monthly payments of £450 (£10,800). A few responses gained the first mark by dividing £12,000 by 24 to get £500 but rarely progressed to multiply by 0.8 or use an equivalent method to reach £400.

The definition of a communication (C) mark should be noted: it is awarded for a fully correct statement with no contradiction or ambiguity. Some responses were unable to be awarded this mark as they included a correct decision and correct values alongside an incorrect statement, such as “400 > 450” or “the difference is £60”.
Responses that gained 0 marks often calculated 20% of £12,000 (£2400) but then attempted to work with this value directly, rather than subtracting it from £12,000.

Question 24

The most common fully correct method involved calculating the selling price of 200 oranges (£40), subtracting the cost price (£25) to find the profit (£15), then dividing by £25 and multiplying by 100 to reach a percentage profit of 60%.

Other valid methods listed in the mark scheme were seen but less frequently. Some responses gained 2 marks for reaching £15 or 0.6 but gave this as the final answer, stopping one step short. Others gained 1 mark for completing only the first step, such as calculating £15 or £40.
One mark (P1) was also awarded where £40 was correctly calculated, but the next step was incorrect, for example, dividing £25 by £40 instead of £40 by £25. Converting the profit into a percentage was the most common source of error.



Examiners' Report
Principal Examiner Feedback

November 2020

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Calculator) Paper 3F

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GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 3

Introduction

The overall quality of the presentation of work was good. However, students need to read the questions carefully. There remain a concerning number of cases where students copy down the wrong figures from the question, mis-copy their own figures, or round figures almost randomly. Equally another error sometimes occurs when students prematurely round or truncate figures, either their own figures or figures from the calculator, which usually result in lost accuracy marks and could also make questions more difficult than they were designed to be.

Approaches to questions that required some interpretation or explanation were inconsistent. Questions 10 and 21 were answered well, but poor attempts were made in questions 15 and 26. On too many occasions students included contradictory or incorrect statements, which cannot be credited.

Within a broad range of questions, the paper was able to discriminate well. Weakest areas continue to be the application of ratios, scales and rates, but also algebraic manipulation and problem solving. Most demonstrated good use of a calculator, though on some occasions it was clear that they did not have an understanding of the way in which their calculator worked or did not have one at all, such as in question 9.

Questions which had a slightly unexpected approach, that is required more thought, caused immediate problems for many, even in the earlier part of the paper. This includes questions 18, 20 and 24. Question 25 to 29 were the more challenging questions for those striving to demonstrate ability at the highest grades available, and a significant proportion of students therefore failed to score on these questions.

There were far fewer attempts using trial and improvement approaches. These mainly occurred when students showed evidence of not having a calculator, mainly evident in questions 15, 18, 19 and 20 where non-calculator methods were also seen, such as multiple additions.

The inclusion of working out to support answers remains an issue for many; but not only does working out need to be shown, it needs to be shown legibly, demonstrating the processes of calculation that are used. This is most important in longer questions, and in “show that” questions.

Report on Individual Questions.

Question 1

This was a poorly answered question. Most students gave the correct answer of 3 but 300, 30 and 3000 were frequently seen.

Question 2

A well answered question with nearly all giving the correct answer of 8.

Question 3

This was not always answered correctly.

Question 4

There were few incorrect answers in this question.

Question 5

This was very well answered with few failing to gain the mark. The most common error was the absence of one of the numbers.

Question 6

A very well answered question. There were a few who gave the answer of 4 to part (a).

Question 7

Students were generally very successful with this question with most obtaining full marks. Those achieving partial marks tended to mis-read the shaded section and recorded the fraction unshaded instead leaving their answer as $\frac{1}{4}$. A significant minority failed to give their answer in its simplest form, usually leaving the answer as $\frac{12}{16}$.

Question 8

This question was generally well done with the majority dividing 200 by 25 (some with multiple additions of 25) and then completing the process of 9.75 × 8 and giving the correct answer 78. Some students preferred to list eight lots of £9.75. The most common errors were students multiplying the cost by 200 or by 25.

Question 9

Parts (a) and (b) were not always answered correctly, with students having difficulty with the order of operations on their calculators.

It was rare to see any correct answers to part (c). Knowing the meaning of the term “reciprocal” is clearly a weakness in students.

Question 10

Most students got the marks in parts (a) and (b).

In part (c) students were able to explain that the drop in the first 3 minutes was steeper than the last 3 minutes. Some struggled to articulate this and some forgot to agree and imply that Pam was correct. There were a wide variety of values presented by students, although this question assessed the interpretation of the graph rather than the accuracy of reading values. Students generally used suitable values to explain their reasoning. Some students didn’t use the graph at all but tried to explain that water cools more quickly when it is hotter.

Question 11

Many responses achieved full marks. Many managed to use the fact that angles in a quadrilateral sum to 360 or found the angle on the straight line to *y* was 70 degrees and score one mark. Not all students who correctly calculated angle *PSR* were able to complete this question correctly, deciding to go off in all sorts of related incorrect calculations. Some of the weaker students knew that angles on a straight line totalled 180° but chose to use angle *QPS* with angle *y* to sum to this total.

Question 12

Part (a)(i) was well answered. In parts (a)(ii) and (b) it was clear students did not properly understand the meaning of "term". This was evidenced by statement involving algebra, "*n*th term", "*n* –5" and numbers not relating to the sequence given in the question.

Question 13

Many students added up the numbers that they saw on the diagram to get an answer of 26. Many more managed to score at least one mark on this question as they identified the length of one of the missing sides, usually on the diagram. For some reason finding 2cm was much more prevalent than finding 6cm. Some then forgot to find the missing length of 6cm leading to an answer of 28. The majority understood the meaning of perimeter, but some divided the shape into rectangles and added together the perimeter of both rectangles. The other common mistake was trying to find the area.

Question 14

In part (a) most students understood the need to collect like terms and it was often done successfully. If full marks were not awarded, students usually achieved one method mark, usually for the 5*x*.
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 ÷ 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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Pearson Edexcel

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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Examiners' Report

Principal Examiner Feedback

November 2023

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Foundation (Non-Calculator) Paper 1F

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GCSE (9 – 1) Mathematics – 1MA1
Principal Examiner Feedback – Foundation Paper 1

Introduction

This paper provided good coverage across the specification and allowed students the opportunity to demonstrate their ability across the grades. Plenty of success was seen across the early part of the paper as students showed confidence picking up marks in the first half of the paper.

Challenges arose when questions contained a context and with it large amounts of text; extracting the key pieces of information and applying it using the correct mathematical processes are an area for improvement. Good amounts of working out were seen which certainly helped students, especially those which had arithmetic errors as part of their solution.

Question 21 onwards proved challenging for this cohort with very few students gaining full marks and the mode score being 0 marks on almost all questions. Nevertheless, the majority of questions were at least attempted in a bid to gain some credit.

For those questions requiring a written conclusion, most responses did have some sort of decision showing that students are well-accustomed to this sort of demand in a question.

Areas of the specification that need to be improved upon are highlighted in the list at the end of this report.

REPORT ON INDIVIDUAL QUESTONS

Question 1

A good number of students were able to give a correct answer of 6 but there were a significant number who did not and a wide variety of incorrect answers were given. The most common incorrect answers were 4 (from finding the median) and 5 (from finding the mean).

Question 2

This question was answered well with the majority of students able to give a correct answer of 31. Of those that didn’t gain B1, 209 was the most common incorrect answer from adding instead of subtracting; 41 was also seen when students were unable to deal with the tens correctly.

Question 3

This simplifying question saw mixed results. The majority of students were able to give a correct answer of $12a$ but there were a variety of incorrect answers seen. Students should note that this

type of simplifying question requires no multiplication signs in the answer; $12 \times a$ and $3 \times 4a$ were often seen and gained no marks.

Question 4

Measuring angles is an area of the specification that needs attention. Although some students did gain a correct answer in range, with 40 most commonly seen, there were a whole range of incorrect answers given such as 35, 50 and 140.

Question 5

The majority of this cohort were able to gain B1 for a correct answer of 60. Of those that didn't, 50 and 150 were the most common incorrect answers seen.

Question 6

The majority of students gained 3 marks for an answer of 2300 on this question. For those that didn't it was an error in conversion which was often seen with 1 litre = 100 millilitres being the most common incorrect conversion used; these students could still gain 1 mark if they had a correct process to find the difference using one of the incorrect conversions stated in the mark scheme. Those students who converted 3 litres into millilitres were more successful than those who converted 700 ml into litres and errors in arithmetic were noted when doing 3000 – 700. A small number of students arrived at 2300 but spoiled their answer by then trying to convert to litres; this was still allowed if the student gave an answer of 2.3 litres but 2.3 on its own lost the A mark and this was seen on occasions. Some students also missed that the question was about 3 litres and instead subtracted 700 from 1 litre (1000 ml) obtained 300 ml and gained no marks.

Question 7

Part (a) was answered very well with the majority gaining B1 for an answer of 15. Some students found the difference between 1 and 5 and added this to 3. Part (b) saw less success with more incorrect answers seen than in (a), the most common being 10 from dividing 20 by 2 instead of 4. There were still a good proportion of the cohort who gained B1 for an answer of 4.

Question 8

Part (a) saw mixed results. A good number of students were able to find the correct frequencies for 2 marks. Many gave the correct frequencies in the tally column and something incorrect such as frequency/24 as a fraction which gained 1 mark. Some also confused the definitions of tally and frequency and put the information in the wrong column. It was encouraging to see that a number of students were crossing out items in the list as they entered their tally marks in the frequency table and were using the correct bar notation for recording the tallies. Part (b) was answered well with many gaining B1 for a correct answer; those that didn't often gave a number

for their answer instead of the correct word. Part (c) saw the full range of marks awarded with most students gaining full marks. Of those that didn't, the most common error was an incorrect linear scale, although these students could still gain 2 marks for labelling bars and correct height bars for their scales and many did. Students often struggled to correctly scale the vertical axis, sometimes writing the numbers between the squares instead of on the gridline or using multiples of 3 or 5 which often led to errors.

Question 9

For part (i) and (ii) the majority of students answered the questions correctly to gain 2 marks. Of those that didn't, giving the answer in an incorrect notation, such as ratio, was often the issue; students should be reminded that correct notation for probabilities are fractions, decimals or percentages. Some students gave an answer of $\frac{8}{22}$ for (ii), e.g. the probability for 'pink' instead of 'not pink'. In (iii) the majority of students gained B1 for a correct answer with 0 and $\frac{0}{22}$ given in equal measure. Incorrect answers generally involved incorrect notation such as 0:22 or worded answers, e.g. impossible.

Question 10

It was pleasing to see the majority of students gain 3 marks on this question. The most common process seen was to divide 60 by 20 and then multiply 250 by 3 to arrive at 750. The majority of students who reached this point also gave a positive decision to gain the full 3 marks. Some students used a 'build-down' process starting at 900 and subtracting 250 three times to deduce there would be 150 grams left. Some students attempted to find the amount needed for one cookie and go from there but this process often led to arithmetic errors. Common incorrect processes often revolved around arithmetic errors and a small number of students reached an accurate figure to compare but gave an incorrect or no decision. Some students worked with the other ingredients too but this was ignored as long as it did not contradict their final answer. A number of students believed doubling and then doubling again went from 20 to 60 rather than 80 and therefore gained no credit.

Question 11

Less than half of students in this cohort were able to gain 2 marks for a correct enlargement. Of those that didn't, the main error was in the height of the triangle and the positioning of the top vertex; most were able to gain B1 for a base of 6 cm. Some students misread the scale factor and enlarged the shape by a different scale factor – usually 2 – if done correctly B1 could still be gained.

Question 12

Part (a)(i) was answered well with most students able to gain 2 marks for an answer of 26. Of those that didn't, it was common to see incorrect algebraic expressions such as $6g + 20h$ and $23 + 45$ was often seen. Part (a)(ii) saw less success with many students unable to make any progress with the substitution. Many were unsure as to which letters should be substituted for which values and substituting g for 38 was often seen. For those that did manage to show a correct substitution, some were able to rearrange correctly to reach an answer of 13. One commonly seen incorrect answer was $g = 26$. Students should be advised to write the correct answer on the answer, on occasions 13 could be seen embedded in a calculation but the wrong answer given on the answer line, leading to 0 marks. Part (b) saw mixed results as less than half of students in this cohort gained 2 marks. Of those that didn't, many gained 1 mark, usually in one of two ways; successfully working out 3×-3 as -9 but being unable to accurately subtract 2 or for a full substitution; common incorrect answers included -7, 7 and 11. Some students wrote notes saying 2 negatives make a positive, leading to the misconception that the negative for the 9 and the subtraction sign meant the two values needed to be added, leading to an answer of 11.

Question 13

This question saw the full range of marks awarded. Some students were able to work through the process to reach an answer of 23p or £0.23. Of those that didn't, it was common to see 2 or 3 marks awarded, in particular for students who reached 160 or 460 but could go no further. Those that earned 3 marks gave a complete process with arithmetic errors in the process. It is encouraging to see that more students are fully demonstrating their method enabling them to gain marks despite their final answer being incorrect. Centres should continue to encourage their students to set out their working in a logical order so that they can access Method and Process marks. Some students dealt with the information and started the process incorrectly such as $100 \div 3$ or started correctly e.g. $100 \div 5$ but went wrong after that such as $20 + 8$ and an answer of 28p. Some students incorrectly divided £3 by 5 following their process of dividing 100 by 5, resulting in an answer of 60p or 68p (after adding 8p) whereas others mixed up units within their working, e.g. 300/100 = 3g instead of 3p.

Question 14

This question saw the full range of marks awarded. Of those students who managed to plot the correct 5 points it was usual to see this accompanied by a straight line through the points. Some students gained 2 marks, usually for a line segment through 3 correct points; students should be able to recognise that an equation of the form $y = mx + c$ produces a straight line and therefore if one point is not in line with the others it will likely be incorrect. Some students gained 1 mark for producing 2 correct points either plotted or stated in the workspace but there were difficulties in calculating y when x was negative. More than half of the cohort gained 0 marks so this is an area of the specification that needs to be worked on.

Question 15

This question saw the full range of marks awarded. The majority of the cohort made a good start with a process to find 25% of 12,000. It was common to see students using the build-up method to work out percentages of amounts but this alone could not be credited with method or process marks if arithmetic errors were made and the process is not complete e.g. all steps seen such as 10% = 12,000 ÷ 10 = 1,200. Many then picked up the 2nd process mark for subtracting the deposit from 12,000 and also the 3rd for a complete process. It was common to see the accuracy mark not gained as students were unable to carry out the arithmetic for the division; 405 and 45 were commonly seen incorrect answers. Some students were not able to gain the first P mark but were able to gain the second and third P mark for a correct process using their deposit value and this was often seen. 12,000 was often misread as 1,200.

Question 16

Around two thirds of this cohort were able to gain 2 marks by reaching a value to show that Shah had passed the exam, usually 42 or 75(%). Some students had a correct method but could not carry it out accurately. Others were not able to gain any marks as they set up a fraction such as $\frac{45}{60}$ but were not able to go any further. Some students reached 42 or 75 but failed to interpret the results correctly, often saying that Shah did not pass the exam.

Question 17

The majority of students were able to gain at least 1 mark for correctly inverting the second fraction and multiplying. It was common to see the second mark gained too, usually for reaching $\frac{18}{5}$. Students who attempted to find a common denominator, e.g. $\frac{18}{30} \div \frac{5}{30}$ often made no further progress. The final step proved to be the most challenging for this cohort but some were able to successfully convert to a mixed number. Students should read the demand of the question carefully as 3.6 given as an answer was seen.

Question 18

The majority of students opted to use column multiplication for this arithmetic question. Some students managed correct place value in their structure and a good number of those managed to reach the digits 1512 to gain the first accuracy mark and place the decimal point correctly to the gain the full 3 marks. Common errors seen were incorrect place value in the columns, as well as incorrect arithmetic when adding the columns, usually arriving at the digits 378 or in trying to break down the components but only using 6 × 2 and 0.3 × 0.4, giving an answer of 13.2. Some students reached 1512 but were unable to place the decimal point in the correct place; centres need to continue to encourage students to use approximation to decide on a sensible place for their decimal point.

Question 19

It was rare to see a correct answer in (a)(i) with incorrect answers of 0 and 5 seen often. (a)(ii) also saw little success with the majority of students gaining B0; common incorrect answers included 0.05, −10 and −25. Part (b) saw mixed results, some students were able to make a correct first step, usually adding the powers for the numerator to reach 2^9. From there students either went onto gain 2 marks for a correct answer or incorrectly simplified, with $2^9 \div 2^3 = 2^3$ most commonly seen. A good proportion of the cohort gained no marks, making an incorrect first step such as $2^5 \times 2^4 = 4^9$ or $2^5 \times 2^4 = 2^{20}$. Some students also evaluated the terms as ordinary numbers and worked from there; if 64 was reached this gained M1 and was seen regularly.

Question 20

Part (a) saw most students make a good attempt at a factor tree. A good number of students were able to complete their factor tree accurately and also write their prime factors as a product. The factor tree was attempted by most students and well set out. There was a good understanding of the need for prime factors and very few included 1. Of those that did not gain 2 marks, common errors included incorrectly considering 39 as a prime number and arithmetic errors when considering the next pair of prime factors. For part (b) it was more common to see 1 mark gained rather than 2. Students were able to produce either the prime factors of 130, at least 4 factors of 156 or 130 or a common factor of 156 and 130. Of those students who gained no marks, finding the lowest common multiple was the most commonly seen incorrect method.

Question 21

Part (a) saw the full range of marks awarded. Some students completed a fully correct process to reach an answer of 3.5 or equivalent. Of those that didn't, some reached as far as $14 \div 4$ but could not follow the process through with 3.2 quite often seen as the result of the division; students and centres should note that $\frac{14}{4}$ gained full marks. Some students were able to find the total length of the 5 sticks but made no further progress. There were also a good number who did not manage to make a correct first step and gained 0 marks; a common error was to calculate 4×7 or 4×4.2 rather than 5×4.2. Part (b) saw little success as most students gained no marks, with common incorrect responses centring around the mean increasing or the length of the other 4 sticks being reduced.

Question 22

It was rare to see a fully correct construction and 90° angle at *P* on this question. Almost all students on this paper did not know what arcs were required. Many students did however gain 1 mark for drawing a 90° angle at *P* without the correct construction lines.

Question 23

Very few students were able to gain full marks on this question. A small number made a positive start and gained one of the first two P marks, the equations most commonly seen were $x = 2y$, $2x + y = 180$ and $y + w = 180$. Division by 3, rather than 5, of the 180° in the triangle was commonly seen. Most students understood the correct angle facts for angles in a triangle / on a straight line. Many students ignored the fact the triangle was isosceles and calculated the angles as if it was an equilateral triangle, giving 60° angles which led to $180 - 60 = 120$ as the incorrect answer. Many students attempted to assign values to x and y, these values were usually incorrect but if the correct values were seen this usually led to a correct value for w as well.

Question 24

This was another challenging multi-step question for this cohort; the majority gained 0 marks. Some were able to make a correct start and set up an equation in x, although some failed to include the x from shelf **A**. Progress from there required a correct process to solve their equation and substitute the value for x into one of the expressions for shelves **B** or **C**, any students that did this successfully often gained the 3rd P mark as well for 7500 ÷ "25". It was rare to see any students get as far as the 4th P mark but those that did usually went on to gain full marks assuming their arithmetic had been correct. There were many completely incorrect solutions seen such as expanding $(3x + 1)(2x - 5)$ or setting $3x + 1$ equal to 7500 and going from there.

Question 25

Those that knew the density, mass, volume formula generally scored 2 marks. Of those that did not gain 2 marks, most scored 0 for incorrect use of mass and volume, with the most common error being to multiply 27 and 10 instead of divide. Other incorrect methods involved trying a volume unit conversion, confusing units^3 with 10^3 and dividing 27 by 1000, and being unable to choose between m/v and $m \times v$ and stating both.

Question 26

It was common to see students gain the first method mark for rounding one of the figures appropriately, 6 or 8 on the numerator being seen most often. The majority then struggled with the next step which was to carry out an accurate calculation. Some were able to reach the digits 16, from attempting 48 ÷ 0.3 but resulting in incorrect place value. Some students attempted to work out the accurate calculation and then round the answer, gaining no marks. A few students were able to deal with the decimal value of 0.3 in the denominator by multiplying both the top and bottom of their fraction by 10. This is a useful skill for centres to continue teaching their students but in general dividing by decimals is a skill that needs more practice. Some students rounded 0.26 down to 0 which led to 48 ÷ 0 and were confused with what to do with the calculation.

Question 27

For part (a) there were many good attempts to expand the brackets but these attempts rarely resulted in credit being awarded. Common errors included $6x$ or $5x$ instead of $6x^2$ and incorrect signs being used. Those students using the grid method to expand the quadratic were usually successful at gaining at least 1 mark. In part (b) a small number of students were able to give a correct factorisation. Some students who gained B0 were able to give a pair of brackets with the product of the constants being -16, such as $(x + 2)(x - 8)$.

Summary

Based on the performance on this paper, students/centres should work on:

- measuring angles accurately.
- improving numeracy skills, including division skills for integers and decimals, multiplication skills for decimals.
- the interpretation of problems involving ratio.
- the formation of algebraic equations and solving them along with subsequent substitution to apply to problems in context.
- drawing a straight line graph by correctly calculating a table of values.
- using equilateral, isosceles and right-angled triangles to solve angle questions.
- encouraging students to show a full method for percentage calculation, noting that before method marks can be awarded a full explanation of each step has to be shown. If the answer is just stated then process marks will be lost if there are any arithmetic errors.
- encouraging students to set out their working using logical steps.
- encouraging students to read the question carefully so that they understand what they are required to do and what format the answer should be stated in.
- encouraging students to use approximations to check if their answers are sensible.
- encouraging students to set their work out in an orderly fashion.
- improving the expertise and accuracy required in geometric constructions.

and

- in questions requiring finding the prime factors of a number, encourage a more structured approach of dividing the number by the smallest prime numbers successively until the result was a prime number.
- ensure students know common metric equivalents from the specification, from one unit to another.
- practise arithmetic processes involving negative numbers.

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