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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.
- 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If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.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		8	1	B1 cao
(a)				
(b)		30	2	M1 for $8 + 4 + 6 + 12$ or $7 \times 4 + 2$ A1 cao
(c)		4 circles on Friday	1	B1 cao
2		5	1	B1 cao
(a)				
(b)		$\frac{7}{10}$	1	B1 accept any equivalent vulgar fraction
(c)		0.03	1	B1 cao
(d)		16	2	M1 for a method to work out 20% of 80 e.g. $80 \div 10 \times 2$ or $2 \times 8$ oe A1 cao
3		B and D	1	B1 cao
(a)				
(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. $8.40 \div 2 (= 4.20)$ M1 for a method to work out the total cost of the 2 adults e.g. $2 \times 8.40 (= 16.80)$ <b>or</b> of the 3 children e.g. " $4.20$ " $\times 3 (= 12.60)$ <b>or</b> of the whole family e.g. $2 \times 8.40 + 3 \times "4.20" (= 29.40)$ M1 for a complete method to work out the change e.g. $3 \times \text{£}10 - "29.40" = (0.60)$ <b>or</b> $3 \times \text{£}10 - (2 \times 8.40 + 3 \times "4.20") (= 0.60)$ C1 for change with correct money notation 60p or £0.60 (accept £0.60p) <b>NB</b> 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 $180^\circ$ 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 $PR = 6.5 \text{ cm} \pm 0.2 \text{ cm}$ or angle $QPR = 70^\circ \pm 2^\circ$ )

Paper: 1MA0/1F				
Question	Working	Answer	Mark	Notes
7		15000 m or 15 km	3	M1 for $4 \times 1500 (= 6000)$ <b>or</b> $3 \times 3 (= 9)$ M1 correct method to change to consistent units e.g $3 \times 1000 (= 3000)$ <b>or</b> $1500 \div 1000 (= 1.5)$ A1 for 15 000 m or 15 km
*8		4 35 pm	4	M1 for $4 \times 25 (= 100 \text{ (min)})$ M1 for “100” + 15 (= 115) (min) M1 for 6 30 – “1hr 55 min” C1 for correct time with pm e.g.4 35 pm or 16 35(oe) <b>or</b> 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 <b>or</b> 6 30 → 6 05 → 5 40 → 5 15 → 4 50 M1 takes off 15 min <b>and</b> 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
*8 (b)		No with working	3	M1 for complete method to change 90 gallons to litres e.g. 10 gallons = “45” litres <b>and</b> $9 \times “45” = 405$ (litres) or 9 gallons = “40” litres <b>and</b> $10 \times “40” = 400$ (litres) A1 for answer in range 396 - 414 (litres) <b>or</b> room for 36 – 54(litres) C1 (dep on M1 ) for conclusion ft their answer. <b>or</b> M1 for complete method to change 450 litres to gallons e.g. 50 litres = “11” gallons <b>and</b> $9 \times “11” (= 99)$ (gallons) <b>or</b> 45 litres = “10” gallons <b>and</b> “10” $\times 10 (= 100)$ (gallons) A1 for answer in range 99 to 100 (gallons) <b>or</b> 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 <b>or</b> one error in totalling correct frequencies eg (Males 28 + 16 + 24 + 8) – (Females 16 + 12 + 18 + 6) or 76 – 52 A1 cao <b>or</b> 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 $(4 - 2 + 3 - 4 + 4) \div 5$ 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. $8 \times 8 (= 64)$ <b>or</b> the height of the shaded triangle e.g. $8 \div 2 (= 4)$ M1 for a complete method to find the area of the shaded triangle e.g. “64” $\div 4$ <b>or</b> $\frac{1}{2} \times 8 \times “4”$ 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. $7 \times 10 (= 70)$ <b>and</b> $“70” \times 5 (= 350)$ M1 for a method to find overtime rate e.g. $10 + 5$ or $1\frac{1}{2} \times 10 (=15)$ M1 for a method to find total overtime pay e.g. $(3 + 2 + 1 + 3) \times “15” (=135)$ M1 for a method to find total pay e.g. $“350” + “135”$ A1 cao <b>or</b> 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 2 days except Wednesday) M1 for totalling all five days e.g. $“115” + “100” + “70” + “85” + “115”$ A1 cao <b>or</b> M1 for a method to find overtime hours e.g. $3 + 2 + 1 + 3 (= 9)$ <b>and</b> weekday hours $7 \times 5 (=35)$ M1 for a method to find equivalent time on overtime e.g. $“9” + “9” \div 2$ M1 for a method to find total equivalent time e.g. $“13.5” + “35”$ M1 for a method to find total pay e.g. $“48.5” \times 10$ A1 cao <b>SC B2</b> 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 $60 \div 30 (= 2)$ M1 for a complete method to work out number of women e.g. $(360 - 60 - 60 - 90) \div "2"$ oe A1 cao <b>or</b> 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 $("150" \div 60) \times 30$ 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 $8e$ <b>or</b> $-2e^2$ )

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

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

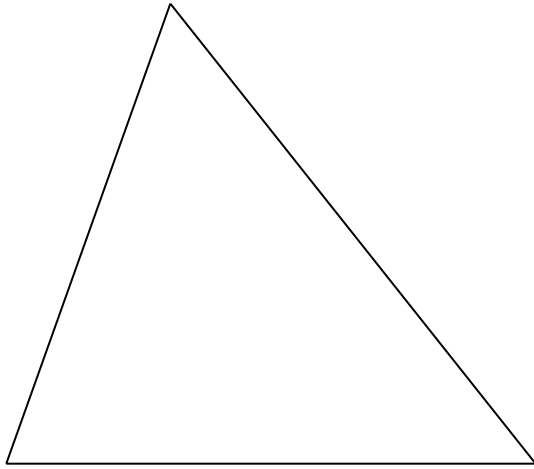
Paper: 1MA0/1F				
Question	Working	Answer	Mark	Notes
20 (a)		Frequency polygon	2	B2 correct frequency polygon (B1 for points plotted correctly but not joined <b>or</b> for points plotted at the correct heights, consistently placed within the class intervals (including ends) and joined <b>or</b> for an otherwise correct frequency polygon with no more than one point incorrect <b>or</b> correct frequency polygon with first and last points joined directly)  <b>NB:</b> ignore parts of graph drawn to the left of the 1 <sup>st</sup> 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 $ax + b = 2x + 8$ <b>or</b> $x + 3 = ax + b$ for isolating terms in $x$ <b>and</b> 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. $60 \div 3 (= 20)$ M1 for complete method to find weight of <b>one</b> of the other ingredients e.g. “20” $\times 2 (= 40)$ <b>or</b> “20” $\times 5 (= 100)$ A1 cao
(b)		1.44	3	M1 for a complete method to work out the weight of nuts needed e.g. $300 \div (3 + 2 + 5) \times 3 (= 90)$ <b>or</b> $300 \div (60 + “40” + “100”) \times 60 (= 90)$ M1 for a complete method to work out the cost eg $(800 \div 500) \times “90” (= 144)$ A1 cao
23		15 200	3	M1 for a method to obtain at least two different areas from $50 \times 80 (= 4000)$ , $\frac{1}{2} \times 40 \times 60 (= 1200)$ , $60 \times 80 (= 4800)$ M1 (dep on M1) for adding at least 4 correct face areas A1 cao

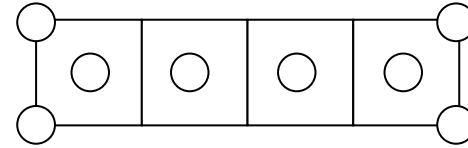
Paper: 1MA0/1F				
Question	Working	Answer	Mark	Notes
24		$\frac{4}{15}$	3	<p>M1 for a method to find the total number of people e.g. <math>3 \times 5 (= 15)</math> or writing <math>\frac{5}{15}</math> as an equivalent fraction to <math>\frac{1}{3}</math></p> <p>M1 (dep) for “15” – 5 – 6 (= 4) A1 oe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



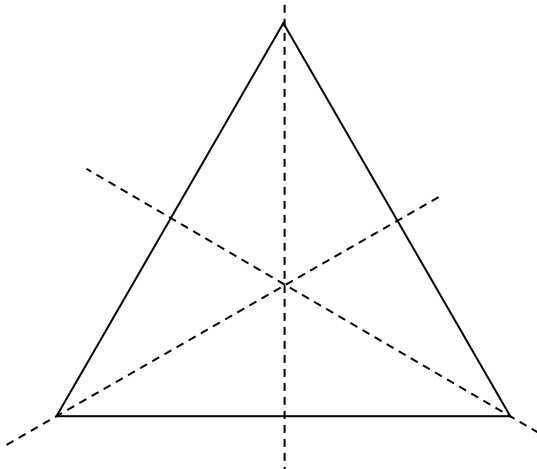
6c



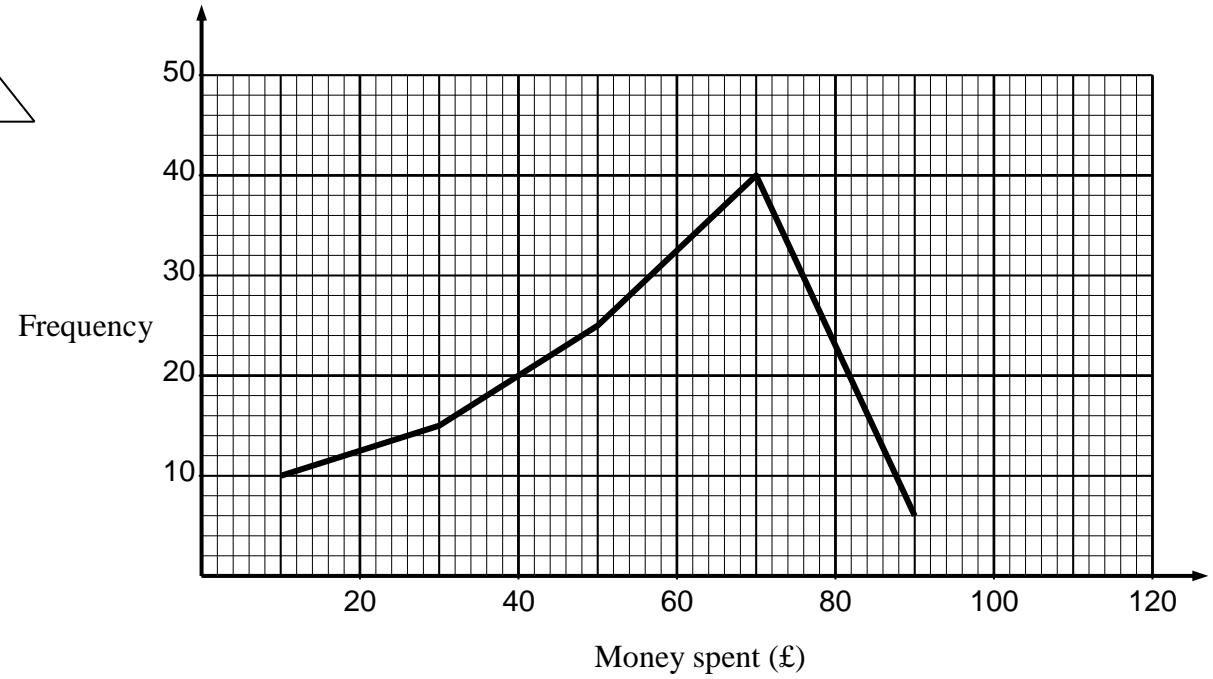
5a



12a



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:

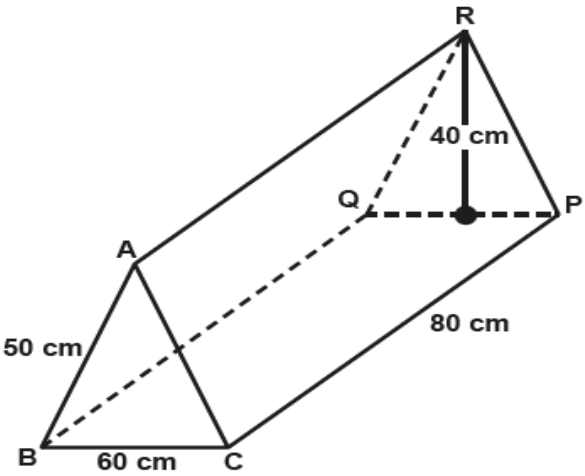
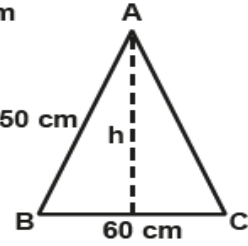
Angles:  $\pm 5^\circ$

Measurements of length:  $\pm 5$  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 dotted 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 dotted 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 dotted 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

Question	Modification	Mark scheme notes
23	<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;">  <p style="text-align: center;">Cross section of prism</p> <p>h = height 40 cm</p>  </div> <div style="width: 50%;"> <p>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.</p> </div> </div>	Standard mark scheme

