



Pearson

# Mark Scheme (Results)

Summer 2022

Pearson Edexcel GCSE

In Mathematics (1MA1)

Foundation (Non-Calculator) Paper 1F

## **Edexcel and BTEC Qualifications**

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at [www.edexcel.com](http://www.edexcel.com) or [www.btec.co.uk](http://www.btec.co.uk). Alternatively, you can get in touch with us using the details on our contact us page at [www.edexcel.com/contactus](http://www.edexcel.com/contactus).

## **Pearson: helping people progress, everywhere**

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: [www.pearson.com/uk](http://www.pearson.com/uk)

Summer 2022

Question Paper Log Number P66306RA

Publications Code 1MA1\_1F\_2206\_MS

All the material in this publication is copyright

© Pearson Education Ltd 2022

## 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. (eg 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 (eg. 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 (eg 3.5 – 4.2) then this is inclusive of the end points (eg 3.5, 4.2) and all numbers within the range

**11 Number in brackets after a calculation**

Where there is a number in brackets after a calculation eg  $2 \times 6 (=12)$  then the mark can be awarded **either** for the correct method, implied by the calculation **or** for the correct answer to the calculation.

**12 Use of inverted commas**

Some numbers in the mark scheme will appear inside inverted commas eg "12"  $\times$  50 ; the number in inverted commas cannot be any number – it must come from a correct method or process but the candidate may make an arithmetic error in their working.

**13 Word in square brackets**

Where a word is used in square brackets eg [area]  $\times$  1.5 : the value used for [area] does **not** have to come from a correct method or process but is the value that the candidate believes is the area. If there are any constraints on the value that can be used, details will be given in the mark scheme.

**14 Misread**

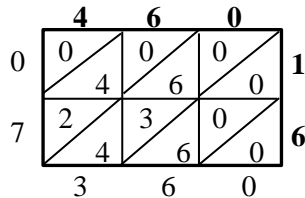
If a candidate misreads a number from the question. eg uses 252 instead of 255; method or process marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review.

### Guidance on the use of abbreviations within this mark scheme

<b>M</b>	method mark awarded for a correct method or partial method
<b>P</b>	process mark awarded for a correct process as part of a problem solving question
<b>A</b>	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)
<b>C</b>	communication mark awarded for a fully correct statement(s) with no contradiction or ambiguity
<b>B</b>	unconditional accuracy mark (no method needed)
<b>oe</b>	or equivalent
<b>cao</b>	correct answer only
<b>ft</b>	follow through (when appropriate as per mark scheme)
<b>sc</b>	special case
<b>dep</b>	dependent (on a previous mark)
<b>indep</b>	independent
<b>awrt</b>	answer which rounds to
<b>isw</b>	ignore subsequent working

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	400	B1	cao	
2	$4e$	B1	for $4e$ oe	$e^4$ gets no marks, where the 4 is clearly a power
3	Reflection shown	B1	cao	
4	6000	B1	for 6000 oe	Accept six (6) thousand(s) or just thousand(s)
5	$45\%$ , $\frac{1}{2}$ , 0.55	B1	Accept equivalent notation eg $\frac{45}{100}$ , $\frac{50}{100}$ , $\frac{55}{100}$ or 45%, 50%, 55% or 0.45, 0.5, 0.55 or a combination of notation	Do NOT accept reverse order
6	8	B1	cao	
7	7	P1  P1  A1	for $20 - 6 (= 14)$ <b>or</b> $20 \div 2 (=10)$ <b>and</b> $6 \div 2 (=3)$  for “14” $\div 2 (= 7)$ <b>or</b> “10” – “3” (= 7)  cao	May be seen as a build-up method or by a method of repeated subtraction, listing multiples of 2

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
8 (a)	Completed bar chart	B2	for a fully correct bar chart	Condone bars of unequal width Condone no gaps or inconsistent gaps
		(B1	for one bar correct eg May plotted at 35 <b>or</b> June plotted at 20 <b>OR</b> May plotted at 20 <b>and</b> June plotted at 35)	
(b)	Explanation	C1	<p><b>Acceptable examples</b>  Half a square is worth 2.5 (not 0.5)  It goes to 17.5  Halfway between 15 and 20 is not 15.5  It is between 17 and 18  It could/would be 17 or 18  It goes up in 5s (not 1s)</p> <p><b>Not acceptable examples</b>  The bar is in the middle  It could/would be 16 (or 19 or 15.6)  You can't have half a cm of rain  The answer would be a whole number</p>	
9 (a)	Shape drawn	B1	cao	Ignore any subsequent values
(b)	9 and 11	B1	cao	
10	27	M1 A1	for $-15 + 42 (=27)$ oe cao	SC: B1 for answer of 26 if M0 scored

Paper: 1MA1/1F													
Question	Answer	Mark	Mark scheme	Additional guidance									
11	£73.60 or 7360p	M1	for $89198 - 88738 (= 460)$  OR for showing $89198 \times 16$ <b>or</b> $88738 \times 16$  OR for showing $(89198 + 88738) \times 16$	May see 0.16 used  $89198 \times 16 = 1427168$ $88738 \times 16 = 1419808$ $(89198 + 88738) \times 16 = 2846976$									
		M1	for showing “460” $\times 16$  OR for showing $89198 \times 16 - 88738 \times 16$										
		M1	(dep on M1) for a complete method of multiplication with relative place value correct including an intention to add all the appropriate elements of the calculation eg, 2 lines of the 1st method, internal numbers of grids, or complete structure shown of partitioning methods.	Accept in any units, correct figures would imply previous mark 4600 <u>2760</u> 7360  									
		A1	for £73.6(0) or 7360p SC B3 for an answer with digits 736 with incorrect or missing units	<table border="1" data-bbox="1534 1005 1859 1117"> <tr> <td></td> <td>400</td> <td>60</td> </tr> <tr> <td>10</td> <td>4000</td> <td>600</td> </tr> <tr> <td>6</td> <td>2400</td> <td>360</td> </tr> </table> $4000+2400+600+360$		400	60	10	4000	600	6	2400	360
	400	60											
10	4000	600											
6	2400	360											



Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	$\frac{7}{12}$	M1	for finding two fractions with a correct common denominator, with at least one correct corresponding numerator, eg. $\frac{5}{12}, \frac{2}{12}$	Ignore errors in cancelling following sight of an equivalent fraction to $\frac{7}{12}$
(b)	$\frac{3}{16}$	A1	for $\frac{7}{12}$ oe eg $\frac{14}{24}, \frac{21}{36}, \frac{28}{48}, \frac{35}{60}, \frac{42}{72}, \dots$	
		M1	for method to multiply fractions, eg $\frac{3 \times 5}{10 \times 8} (= \frac{15}{80})$ <b>or</b> simplifies the calculation eg $\frac{3}{2} \times \frac{1}{8}$ <b>or</b> for an answer equivalent to $\frac{3}{16}$ unsimplified	
		A1	cao	
13 (a)	$\frac{4}{15}$	B1	oe	4 : 15 gets B0
(b)	0.7	B1	for 0.7 oe or $\frac{7}{10}$ oe or 70%	
14	19	M1	for a correct substitution, eg (y =) $6 \times 4 - 5$	
		A1	cao	
15 (a)	180	M1	rounds one figure appropriately 92 to 90 or 100 <b>or</b> 1.63 to 2 or 1.5 or 1.6 or 1.7	Answer of 149.96 ( $92 \times 1.63$ ) gets M0A0  Answer with no working gets M0A0 Ignore further rounding of their result
		A1	for 180 (= $90 \times 2$ ) or 135 (= $90 \times 1.5$ ) or 144 (= $90 \times 1.6$ ) or 153 (= $90 \times 1.7$ ) or 200 (= $100 \times 2$ ) or 150 (= $100 \times 1.5$ ) or 160 (= $100 \times 1.6$ ) or 170 (= $100 \times 1.7$ ) or 163 (= $100 \times 1.63$ ) or 184 (= $92 \times 2$ ) or 138 (= $92 \times 1.5$ ) or 147.2 (= $92 \times 1.6$ ) or 156.4 (= $92 \times 1.7$ )	
(b)	947.2	B1	cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
16 (a)	(0)8 45	P1	for $50 \div 40 (= 1.25)$ oe or (time =) (0)8 30 (after travelling for) 40 miles	
		P1	for a process to convert their time to minutes or hours and minutes, eg “1.25” $\times 60 (= 75 \text{ mins} = 1 \text{ hr } 15 \text{ mins})$ <b>or</b> for $\frac{10}{40} \times 60 (= 15 \text{ mins})$	May be seen as a build-up method and may state 1 hour 15 mins
		A1	for (0)8 45 oe	SC: B2 for answer of (0)8 55 (= 7.30 + 1.25)
(b)	Explanation	C1	<b>Acceptable examples</b> It will be earlier Time will be reduced He will get there quicker/faster He will arrive at a different time The journey will be shorter so he will arrive earlier  <b>Not acceptable examples</b> He will arrive later The time will increase	Explanations must be unambiguous

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
17 (a)	Frequency diagram  See end of m/s	C3  (C2  (C1	for a fully correct frequency diagram  for at least 5 correct values in the frequency diagram)  for at least 3 correct values in the frequency diagram)	If probabilities used instead of frequencies then maximum of C2 can be awarded          Accept equivalent decimal or percentage forms of probability Ignore errors in cancelling of their $\frac{12}{72}$
(b)	$\frac{12}{72}$	M1          A1	for $\frac{a}{72}$ where $0 < a < 72$ and $a$ is an integer <b>or</b> $\frac{12}{b}$ where $b > 12$ and $b$ is an integer <b>or</b> $12 : 72$ <b>or</b> ft their values for 72 and/or 12 from (a)  for $\frac{12}{72}$ oe or ft (a)	
18	100	M1          A1	M1 for a correct first step, eg $25 \div 10 (= 2.5)$ <b>or</b> $40 \div 10 (= 4)$ <b>or</b> $20$ (scones) = $40 \times 2 (= 80\text{g})$ <b>or</b> $5$ (scones) = $40 \div 2 (= 20\text{g})$  cao	Multiplier may be seen as evidence of this mark
19	288	M1          M1          A1	for a method to find 20% eg $240 \times 20 \div 100 (= 48)$ <b>or</b> shows a multiplier of 1.2 oe <b>or</b> 120%  for a complete method eg $240 + "48"$ <b>or</b> $240 \times 1.2$ oe <b>or</b> $240 \times 120 \div 100$  cao	

Paper: 1MA1/1F												
Question	Answer	Mark	Mark scheme	Additional guidance								
20	$\frac{39}{88}$	M1  M1  A1	for finding the gap (A) $1 - \frac{5}{8} (= \frac{3}{8} = \frac{33}{88})$ <b>or</b> (C) $1 - \frac{9}{11} (= \frac{2}{11} = \frac{16}{88})$ <b>or</b> $\frac{5}{8} + \frac{9}{11} (= \frac{55}{88} + \frac{72}{88} = \frac{127}{88})$  for $\frac{9}{11} - \frac{3}{8} (= \frac{72}{88} - \frac{33}{88})$ <b>or</b> $\frac{5}{8} - \frac{2}{11} (= \frac{55}{88} - \frac{16}{88})$ <b>or</b> $1 - \frac{3}{8} - \frac{2}{11} (= 1 - \frac{33}{88} - \frac{16}{88})$ oe <b>or</b> $\frac{5}{8} + \frac{9}{11} - 1 (= \frac{55}{88} + \frac{72}{88} - 1)$  oe									
21	<table border="1"> <tr><td>1</td><td>79</td></tr> <tr><td>2</td><td>55677789</td></tr> <tr><td>3</td><td>377</td></tr> <tr><td>4</td><td>57</td></tr> </table>  Key: eg 2 5 = 25 <b>or</b> 20 5 = 25	1	79	2	55677789	3	377	4	57	B2  (B1)  B1	for a fully correct ordered diagram  for a complete unordered diagram <b>or</b> for an ordered diagram with at most one error or omission  for correct key (units not required but must be correct if stated) eg 2 5 <b>or</b> 20 5 represents 25 (years)	Accept stem of 10, 20, 30, 40 Can be in reverse vertical order (with matching leaves) eg 4, 3, 2, 1 Errors can be omissions; one number in the wrong position is one error.  Key must be consistent with the stem
1	79											
2	55677789											
3	377											
4	57											
22	$45\pi$	P1  P1  A1	for (area of circle =) $\pi \times 3^2$  for (volume =) [area of circle] $\times 5$  cao	   [area of circle] $\times 5 = \pi \times 3^2 \times 5$ <b>or</b> $\pi \times 6^2 \times 5$ <b>or</b> $\pi \times r^2 \times 5$								

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
23	$x < 5$	M1  A1	for adding 27 to both sides or dividing throughout by 7 (in an inequality or an equation) as a first step  <b>or</b> showing 5 as the critical value  cao	Can be written as $x = 5$
24	$2 \times 2 \times 31$	M1  A1	for a complete method to find prime factors; could be shown on a complete factor tree with no more than one error <b>or</b> by division by prime factors with no more than one error  <b>or</b> for 2, 2, 31, (1)  for $2 \times 2 \times 31$ oe	Condone the inclusion of 1 for this mark  Accept $2^2 \times 31$

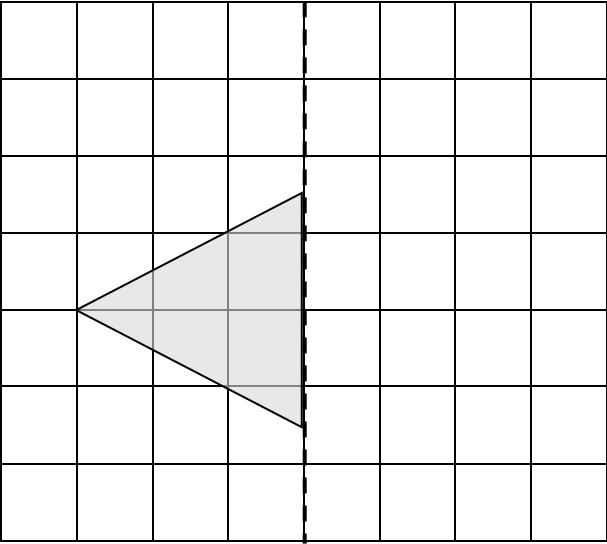
Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	30	P1	for $160 \div (3+7) (= 16)$ <b>or</b> $\frac{3}{3+7} (= \frac{3}{10})$	
		P1	for “16” $\times 3 (= 48)$ <b>or</b> “ $\frac{3}{10}$ ” $\times 160 (= 48)$	
		P1	for a correct step using 48 eg “48” $\div 8 (= 6)$ <b>or</b> “48” $\times 25 \div 100 (= 12)$ <b>or</b> (indep) for combining $\frac{1}{8}$ and 25%, eg $\frac{1}{8} + \frac{1}{4} (= \frac{3}{8})$ <b>or</b> “0.125” + “0.25” (= 0.375) <b>or</b> “12.5”(%) + 25(%) (= 37.5(%))	
		P1	for a complete process to find the number of petrol cars, eg “48” – “6” – “12” oe <b>or</b> $(1 - \frac{3}{8}) \times “48”$ oe <b>or</b> $\frac{3}{10} \times (1 - \frac{3}{8}) \times 160$ oe	
		A1	cao  SC B2 for an answer of 100 if P0 scored	Award no marks for a correct answer with no supportive working
26 (a)	0.00163	B1	cao	
(b)	$4.38 \times 10^5$	B1	cao	
(c)	$2.4 \times 10^{-1}$	M1	for $4 \times 6 \times 10^{3-5}$ <b>or</b> 0.24 oe eg $24 \times 10^{-2}$ <b>or</b> $2.4 \times 10^n$ where $n \neq -1$	
		A1	cao	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	132	M1  M1  A1	for finding an exterior angle eg $360 \div 6 (= 60)$ or $360 \div 5 (= 72)$ <b>or</b> an interior angle eg $180 \times 4 \div 6 (= 120)$ or $180 \times 3 \div 5 (= 108)$  for a complete method eg $360 - "120" - "108"$ or $"60" + "72"$  cao	Angles may be shown on the diagram Only award this mark for an angle that is not contradicted  Answer only award no marks
28 (a)	5,(1),(-1),-1,1,5	B2  (B1)	for all 4 values correct  for 2 or 3 correct values)	Accept a freehand graph drawn that is not made of line segments Ignore anything drawn outside the required range  ft their graph for this mark  Accept these coordinates reversed
(b)	Graph drawn	B2  (B1)	for a fully correct graph  ft (dep on B1 in (a)) for plotting at least 5 of the points from their table correctly)	
(c)	0.3 to 0.5 and 2.5 to 2.7	M1  A1	for a correct method, eg marking intercepts with $x$ -axis <b>or</b> one correct solution <b>or</b> both solutions given as a coordinates, eg (0.4, 2.6) <b>or</b> (0.4, 0) <b>and</b> (2.6, 0)  for answers in the range 0.3 to 0.5 and 2.5 to 2.7 <b>or</b> ft their graph with at least 2 solutions	

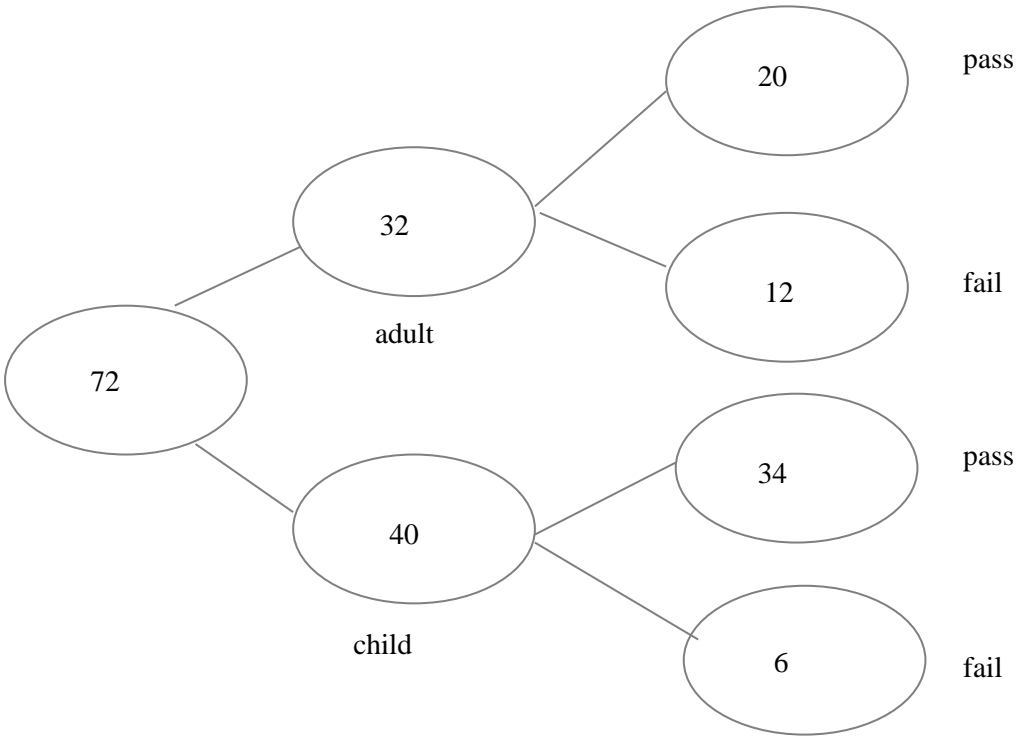
Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	3 : 2	P1  P1  A1	for a process to find either volume eg $3^3 (= 27)$ or $4^3 (= 64)$  for showing density <b>A</b> = $81 \div "27"$ (= 3) or density <b>B</b> = $128 \div "64"$ (= 2)  for 3 : 2 oe	Ignore units quoted
30	0.5	B1	for 0.5 or $\frac{1}{2}$ oe	



Qu 3



Qu 17



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

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:  $\pm 5^\circ$

Measurements of length:  $\pm 5$  mm

---

**PAPER: 1MA1\_1F**

Question	Modification	Mark scheme notes
2	<i>e</i> changed to <i>p</i> .	Standard mark scheme but note change of letters
3	Wording added 'Look at the diagram for Question 3 in the Diagram Booklet. It shows a shaded triangle.'; 'You do not need to shade your shape. A cut out shape may be available if you wish to use it.' Cut out shape provided. Diagram enlarged. Shading changed. The dashed lines made longer and thicker. The mirror line labelled at the bottom of the line as well as the top.	Standard mark scheme
5	Wording added 'Write the three numbers below in order of size.'	Standard mark scheme
6	Wording added 'Look at the diagram for Question 6 in the Diagram Booklet. It shows a pictogram which...'. Diagram enlarged. The sun symbols changed to a hollow circle. The key moved above the diagram. The frame removed from the key.	Standard mark scheme
8	Wording added 'Look at the diagram for Question 8 in the Diagram Booklet. It is a bar chart which...'. Diagram enlarged. Shading changed. The right axis labelled. The axes labels moved to the top of the vertical axis and to the left of the horizontal axis. Part (a) wording added 'in the Diagram Booklet.'	Standard mark scheme

**PAPER: 1MA1\_1F**

<b>Question</b>		<b>Modification</b>	<b>Mark scheme notes</b>
9		Wording added 'Look at the diagram for Question 9 in the Diagram Booklet. It shows a sequence of patterns made from shaded square tiles.'	
9	(a)	Wording added 'In the space below Pattern number 4, complete Pattern number 5.' The patterns stacked vertically. The labels moved to the left of the patterns. Diagram enlarged. Dotty shading. Pattern 4 repeated and labelled 'Pattern 5 (not completed)'. The candidate then needs to complete this pattern.	Standard mark scheme
9	(b)	Wording added 'Complete the table below.'; 'There are two spaces to fill.' Table turned vertical. For Braille: add (i) and (ii) in the blank spaces and add "Ans: (i) __ (ii) __"	Standard mark scheme
17		Wording added 'Look at the diagram for Question 17 in the Diagram Booklet. It shows an incomplete frequency tree.' In part (a) wording added 'in the Diagram Booklet.'; wording added 'There are seven spaces to fill.' Diagram enlarged. The labels moved above or below the circles. For Braille add (i), (ii), (iii), (iv), (v), (vi) & (vii) in the blank spaces, then add "Ans: (i) __ (ii) __ (iii) __ (iv) __ (v) __ (vi) __ (vii) __"	Standard mark scheme
18		Wording added 'Look at the information for Question 18 in the Diagram Booklet. It shows a...'. Frame removed. Racking lines have been added.	Standard mark scheme
20		Wording added 'Look at the diagram for Question 20 in the Diagram Booklet. It shows...'. Diagram enlarged. The labels moved above the diagrams. The dashed lines made longer and thicker. Shading changed.	Standard mark scheme

PAPER: 1MA1_1F		
Question	Modification	Mark scheme notes
21	<p>Wording added ‘Look at the diagram for Question 21 in the Diagram Booklet. It shows an incomplete stem and leaf diagram.’</p> <p>Wording added ‘Below are the ages...’.</p> <p>Wording added ‘Show this information in the stem and leaf diagram in the Diagram Booklet.’</p> <p>Diagram enlarged. The key moved above the diagram.</p> <p>A horizontal line added to the bottom of the stem and leaf diagram to help them track along.</p> <p>For Braille: Sentence changed to “The list below shows the ages, in years, of 15 people.”</p> <p>No diagram for Braille. Instead, add the sentence “You must include a key.”</p>	Standard mark scheme
22	<p>A model may be provided.</p> <p>Wording added ‘Look at the diagram for Question 22 in the Diagram Booklet. You may be provided with a model. The model is a cylinder. The diagram shows the plan and the side elevation of a cylinder on a grid.’; ‘1 square length on the grid represents 1 cm.’ added to the Question Paper and the Diagram Booklet.</p> <p>Diagram enlarged. The labels moved above the diagram. ‘height’ labelled beside the side elevation.</p> <p>Braille wording as follows:</p> <p>“Ask for the model for Question 22. The model is NOT accurate. The model is a cylinder. Look at the diagram for Question 22 in the separate Diagram Booklet.</p> <p>The diagram is a grid of squares showing the plan and side elevation of a cylinder that has been placed on one of its flat faces. Each square on the grid represents a one centimetre square. Work out the ...”</p>	Standard mark scheme
27	<p>Wording added ‘Look at the diagram for Question 27 in the Diagram Booklet. It shows a regular hexagon and a regular pentagon which share a common side.’.</p> <p>Diagram enlarged. The angle moved outside of the angle arc and the angle arc made smaller.</p> <p>For Braille the diagram has hexagon ABCDEF and pentagon GHICB with <math>x</math> outside the angle arc.</p> <p>Wording now “The diagram is a regular hexagon, ABCDEF, and a regular pentagon, GHICB, joined at the common side, BC.” “In the diagram, angle DCI is marked <math>x</math>.”</p>	Standard mark scheme

**PAPER: 1MA1\_1F**

<b>Question</b>		<b>Modification</b>	<b>Mark scheme notes</b>
28	(a)	Wording added 'Complete the table below...'. The table turned vertical. Wording added 'There are four spaces to fill.' For Braille Add (i), (ii), (iii) & (iv) in the blank spaces and "Ans: (i) __ (ii) __ (iii) __ (iv) __"	Standard mark scheme
28	(b)	Wording added 'Look at the diagram for Question 28(b) in the Diagram Booklet. It shows a grid.' Diagram enlarged. Open headed arrows. Small squares removed. The axes labels moved to the top of the vertical axis and to the right of the horizontal axis.	Standard mark scheme
29		Wording added 'Look at the diagram for Question 29 in the Diagram Booklet. It shows cube A and cube B.' Wording added 'Cube A has sides of length 3 cm'; 'Cube B has sides of length 4 cm.' Diagram enlarged. The diagrams relabelled as 'cube A' and 'cube B'. Braille: have a model with the words "The models represent two cubes, A and B."	Standard mark scheme



Pearson  
Edexcel

## Mark Scheme (Results)

Summer 2022

Pearson Edexcel GCSE  
In Mathematics (1MA1)  
Foundation (Calculator) Paper 2F



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	1480	B1	cao	
2	$\frac{7}{10}$	B1	oe fraction	
3	3	B1	cao	
4	Suitable number eg 725	B1	for a suitable 3 digit number ending in 0 or 5	
5	40	B1	cao	
6	-11, -7, -2, 3, 8, 10	B1	for -11, -7, -2, 3, 8, 10	Accept reverse order
7	(a) Hexagon	B1	accept irregular hexagon	Accept unambiguous misspellings
	(b) $AF$	B1	cao Accept $FA$	
	(c) $AB$ or $EF$	B1	$AB$ or $EF$ . Accept $BA$ or $FE$ or both	
8	(a) 3, 2	B1	cao	Allow reasonable hand-drawn attempts
	(b) Point at (-4, 3)	B1	cao	
	(c) Circle drawn, centre (1, -1)	B2  (B1)	fully correct diagram  circle drawn with radius 4 cm (any centre) <b>or</b> circle drawn using centre (1, -1) $r \neq 4$ cm)	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
9 (a)	23	B1	cao	
(b)	10 : 56	M1	for 10 or 56 identified	56 : 10 implies this mark only
		A1	for 10 : 56 or any other equivalent ratio	Accept 1 : 5.6
10	213	P1	for beginning to work with costs eg $1428 - 150 (= 1278)$ <b>or</b> $1428 \div 6 (= 238)$ <b>and</b> $150 \div 6 (= 25)$	
		P1	for complete process to find monthly payment eg “1278” $\div 6$ or “238” – “25”	
		A1	cao	
11	39 with reasoning	M1	for a method to find angle $ACB$ eg $180 - 116 - 25$	
		A1	for 39	$ACB = 39$ or $x = 39$ or $C = 39$ or just 39 is acceptable for this accuracy mark
		C1	for $x = 39$ with reasoning eg <u>Angles</u> in a <u>triangle</u> add up to 180 <b>and</b> <u>Vertically opposite angles</u> are equal <b>or</b> <u>Vertically opposite angles</u> are equal <b>or</b> <u>Angles</u> on a straight <u>line</u> add up to 180 <b>OR</b> The <u>exterior angle</u> of a triangle is <u>equal</u> to the sum of the <u>interior opposite angles</u> <b>and</b> <u>Angles</u> on a straight <u>line</u> add up to 180	Angle may be shown on diagram if no ambiguity or contradiction The key words underlined must be present. There should be no incorrect reasons given. All reasons given should be used, not just a list of angle facts.

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	9	B1	cao	<div style="display: flex; justify-content: space-between;"> <span>÷11 and −8 could be seen in a flow diagram</span> </div> <div style="display: flex; justify-content: space-between;"> <span>Evidence could be provided by algebraic statement, numerical statements or by diagram</span> </div>
(b)	6	M1	starts to find input using inverse operations eg $154 \div 11 (= 14)$ <b>or</b> indicates $\div 11$ <b>and</b> $- 8$ <b>or</b> derivation of equation eg $(8+ n) \times 11 = 154$ <b>or</b> starting to solve for unknown eg $154 - 8 \times 11 (= 66)$	
		A1	cao	
13	53 19 <b>67</b> 139 <b>17</b> 26 16 <b>59</b> 70 <b>45</b> <b>83</b> <b>198</b>	B3 (B2) (B1)	for a fully correct table for at least 7 figures correctly placed) for the 4, 5 or 6 values correctly placed)	
14 (i)	>	B1	cao	
(ii)	=	B1	cao	
15 (a)	774	M1	for at least three of $0 \times 3 (= 0)$ or $1 \times 57 (= 57)$ or $2 \times 84 (= 168)$ or $3 \times 75 (= 225)$ or $4 \times 81 (= 324)$ <b>or</b> for $0 \times 3 + 1 \times 57 + 2 \times 84 + 3 \times 75 + 4 \times 81$	<div style="display: flex; justify-content: space-between;"> <span>Note if 2 non zero products are seen award M1</span> </div> <div style="display: flex; justify-content: space-between;"> <span>Use of the figure 777 is enough for M1</span> </div>
		A1	cao	
(b)	3	M1 A1	for method to begin to work with the median, eg $300 \div 2 (= 150)$ cao	



Paper: 1MA1/2F					
Question	Answer	Mark	Mark scheme		Additional guidance
18	13.2	P1	process to convert decimal time, eg $25.3 \times 60 (= 1518)$ or $0.3 \times 60 (= 18)$ <b>OR</b> process to work with mean, eg $[\text{time}] \div 115 (= 0.22)$ or $1 \div (115 \div [\text{time}]) (= 0.22)$		[time] could be 25.3 or any other time that has been incorrectly changed from 25.3 hours
		P1	full process to work out mean time allocated for appointment, eg "1518" $\div$ 115 or "0.22" $\times$ 60		
		A1	cao		
19	1.19	P1	process to find number of small bags that can be filled, eg $[3\text{kg}] \div 150 (= 20)$ oe		[3kg] must be 3 and zeros only eg 300 Build up methods are allowed to imply process  Cost per small bag given as £0.88 will imply P1P1
		P1	for starting a process to work with percentage for cost of box, eg $17.60 \times \frac{35}{100} (= 6.16)$ <b>or</b> $100 + 35 (= 135)$	works with starting cost per small bag, $17.60 \div "20"$	
		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" $\div$ "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				
Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	0.87, 0.94, 0.94	B2	for all probabilities correct	Accept any equivalent fraction, eg $\frac{87}{100}, \frac{47}{50}$ or equivalent percentage form 87%, 94%
		(B1	for 0.87 or 0.94 correctly placed)	
(b)	0.0078	M1	for $0.13 \times 0.06$ oe	
		A1	0.0078 oe	
21 (a)	$x^{15}$	B1	cao	Where $a \geq 1$ and $b \geq 1$
(b)	$40 - 10x$	M1	for method to expand one bracket or collect like terms, eg $4 \times x + 4 \times 3 (= 4x + 12)$ <b>or</b> $7 \times 4 - 7 \times 2x (= 28 - 14x)$ <b>or</b> $4 \times x - 7 \times 2x (= 4x - 14x)$ <b>and</b> $4 \times 3 + 7 \times 4 (= 12 + 28)$	
		A1	oe	
(c)	$3x^2(5x + y)$	M1	for $3(5x^3 + x^2y)$ <b>or</b> $x(15x^2 + 3xy)$ <b>or</b> $3x(5x^2 + xy)$ <b>or</b> $x^2(15x + 3y)$ <b>or</b> $3x^2(ax + by)$	
		A1	cao	
22	translation $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$	B1	for translation	Award no marks if more than one transformation is given
		B1	for vector $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$	Do not accept as a coordinate (-5, 6)

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
23	89.5 and 90.5	B1	for 89.5 in the correct position	
		B1	for 90.5 in the correct position	Accept 90.49 or 90.499(...)
24 (a)	19	P1	for process to find area available at festival B, eg $700 \times 2000 (=1\ 400\ 000)$	
		P1	for finding the area available per person at one festival, eg $80\ 000 \div 425 (= 188.23..)$ <b>or</b> $[\text{area}] \div 6750 (= 207.40..)$	Accept either number rounded eg 207 or 188
		P1	for finding the area available per person at both festivals, eg $80\ 000 \div 425 (= 188.23..)$ <b>and</b> $[\text{area}] \div 6750 (= 207.40..)$	Accept both numbers rounded eg 207 and 188
		A1	answer in the range 18.7 to 19.5	
(b)	explanation	C1	for a valid statement relating to scale factor for area, <b>Acceptable examples</b> there are 10000 (cm <sup>2</sup> ) in 1 (m <sup>2</sup> ) because 1 m <sup>2</sup> is the same as $100 \times 100 = 10000\ \text{cm}^2$ there are 2 side lengths that change from 1 m to 100 cm $300 \div 3$ is 100 should use $100^2$ $300 \div 100 \div 100 = 0.03$ $3 \times 100 \times 100 = 30000$ Because it's area not length. Because it's in m <sup>2</sup> not just metres He hasn't taken the squared sign into account <b>Not acceptable examples</b> there are 1000 cm in 1 m Callum is correct because ..... $300 \div 3$ is 100 $3^2 = 9$ $300 \times 300 = 90000$ You have to square the number	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	14.5, 21	P1  P1  P1  A1	<p>for process to work with coordinates, eg <math>4 - (-3) (= 7)</math> <b>or</b> <math>9 - 1 (= 8)</math></p> <p>for process to use ratio, eg <math>"7" \div 2 (= 3.5)</math> <b>or</b> <math>"8" \div 2 (= 4)</math> <b>or</b> <math>"7" \times 3 (= 21)</math> <b>or</b> <math>"8" \times 3 (= 24)</math></p> <p>for complete process to find either the <math>x</math> or the <math>y</math> coordinate of <math>N</math>, eg <math>"3.5" \times 3 + 4</math> or <math>"4" \times 3 + 9</math> or <math>"3.5" \times 5 - 3</math> or <math>"4" \times 5 + 1</math> <b>OR</b> to find both the required distances eg <math>"3.5" \times 3 (= 10.5)</math> <b>and</b> <math>"4" \times 3 (= 12)</math> <b>or</b> <math>"21" \div 2 (= 10.5)</math> <b>and</b> <math>"24" \div 2 (= 12)</math> <b>or</b> <math>"3.5" \times 5 (= 17.5)</math> <b>and</b> <math>"4" \times 5 (= 20)</math></p> <p>oe</p>	<p>Accept in reverse order eg <math>-3 - 4 (= -7)</math> and negative distances throughout</p> <p>This mark is implied by 10.5 or 12 or 17.5 or 20</p>
26	600.74	M1  M1  A1	<p>works out decrease for one year, eg <math>679 \times 4 \div 100 (=27.16)</math> oe <b>or</b> <math>679 \times (100 - 4) \div 100 (= 651.84)</math> oe</p> <p>for compound method, eg <math>679 \times "0.96"^t, t \geq 2</math> <b>or</b> <math>"651.84" \times "0.96" (= 625.76..)</math> or <math>"651.84" \times "0.04" (=26.07)</math> <b>or</b> for answers in the range 600.71 to 600.74 exclusive</p> <p>accept 600.71 <b>or</b> 600.72 <b>or</b> 600.73 <b>or</b> 600.74</p>	<p>Implied by <math>679 \times 0.12 (=81.48)</math> or <math>679 \times 0.88 (=597.52)</math></p> <p>Values may be rounded or truncated</p> <p>If the correct answer is seen and the difference found award M1M1A0</p>



Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
27	No (supported)	P1  P1  P1  C1	for a conversion with litres and gallons, eg $18 \div 4.5 (= 4)$ or $8 \times 4.5 (= 36)$  for a conversion with £ and euros, eg $27 \times 0.85 (= 22.95)$ or $40.8 \div 0.85 (= 48)$  for finding the unit price, eg $27 \div 18 (= 1.5)$ <b>OR</b> finding proportionality for fuel eg (" $36$ " $\div 18$ ) (= 2)  for No with comparative figures, eg No with 20.4 <b>and</b> 22.95 <b>or</b> No with 1.275 <b>and</b> 1.133..	See page at end of mark scheme   May compare cost per gallon or cost in euros May be seen in a calculation or given in a description Accept comparative figures rounded or truncated No is implied by eg Wales is cheaper
28	$x = 6.5,$ $y = -2.75$	M1  M1  A1	for a correct method to eliminate either $x$ or $y$ or method leading to substitution  (dep) for substituting found value in one of the equations <b>OR</b> correct method after starting again  for $x = 6.5, y = -2.75$ oe	(condone one arithmetic error)   (condone one arithmetic error)

**QUESTION 27 - Additional information NOT Exhaustive**

<p><b><u>Cost per litre in £:</u></b>  <math>27 \times 0.85 (=22.95)</math>  <math>"22.95" \div 18 (=1.275)</math>  <math>8 \times 4.5 (=36)</math>                  No <b>and</b> <math>40.8 \div "36" = 1.133..</math> (cost per litre in £ in Wales) compared to 1.275 (cost per litre in £ in Spain).</p>	<p><b><u>Cost per litre in euros:</u></b>  <math>27 \div 18 (=1.5)</math>  <math>8 \times 4.5 (=36)</math>  <math>40.8 \div 0.85 (= 48)</math>                  No <b>and</b> <math>"48" \div "36" = 1.333..</math> (cost per litre in euros in Wales) compared to 1.5 (cost per litre in euros in Spain).</p>
<p><b><u>Cost per gallon in £:</u></b>  <math>40.8 \div 8 (=5.1)</math>  <math>27 \times 0.85 (=22.95)</math>  <math>18 \div 4.5 (= 4)</math>                  No <b>and</b> <math>"22.95" \div "4" = 5.7375</math> (cost per gallon in £ in Spain) compared to 5.1(0) (cost per gallon in £ in Wales).</p>	<p><b><u>Cost per gallon in euros:</u></b>  <math>40.8 \div 0.85 (=48)</math>  <math>"48" \div 8 (= 6)</math>  <math>18 \div 4.5 (=4)</math>                  No <b>and</b> <math>27 \div "4" = 6.75</math> (cost per gallon in euros in Spain) compared to 6 (cost per gallon in euros in Wales).</p> <p><b><u>Note:</u></b>  <math>"2"</math> comes from <math>8 \div "4"</math> or <math>"36" \div 18</math></p>
<p><b><u>Cost of 8 gallons in £:</u></b>  <math>18 \div 4.5 (= 4)</math>  <math>27 \times 0.85 (=22.95)</math>  <math>"22.95" \times "2" (=45.90)</math>                  No <b>and</b> 45.90 (total cost in £ in Spain) compared to 40.80 (total cost in £ in Wales given).</p>	<p><b><u>Cost of 8 gallons in euros:</u></b>  <math>18 \div 4.5 (=4)</math>  <math>40.8 \div 0.85 (=48)</math>  <math>27 \times "2" (= 54)</math>                  No <b>and</b> 54 (cost for 8 gallons in euros in Spain) compared to 48 (cost of 8 gallons in euros in Wales).</p>
<p><b><u>Cost of 18 litres in £:</u></b>  <math>8 \times 4.5 (= 36)</math>  <math>40.8 \div "2" (= 20.4)</math>  <math>27 \times 0.85 (= 22.95)</math>                  No <b>and</b> 22.95 (cost for 18 litres in £ in Spain) compared to 20.40 (cost of 18 litres in £ in Wales).  <b>OR</b>  <math>18 \div 4.5 (= 4)</math>  <math>27 \times 0.85 (= 22.95)</math>  <math>40.8 \div "2" (= 20.4)</math>                  No <b>and</b> 22.95 (cost for 18 litres in £ in Spain) compared to 20.40 (cost of 18 litres in £ in Wales).</p>	<p><b><u>Cost of 18 litres in euros:</u></b>  <math>18 \div 4.5 (=4)</math>  <math>40.8 \div 0.85 (=48)</math>  <math>"48" \div "2" (= 24)</math>                  No <b>and</b> 24 (cost for 18 litres in euros in Wales) compared to 27 (cost of 18 litres in euros in Spain given).  <b>OR</b>  <math>8 \times 4.5 (= 36)</math>  <math>40.8 \div "2" (= 20.4)</math>  <math>"20.4" \div 0.85 (= 24)</math>                  No <b>and</b> 24 (cost for 18 litres in euros in Wales) compared to 27 (cost of 18 litres in euros in Spain given).</p>

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

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

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:

Angles:  $\pm 5^\circ$

Measurements of length:  $\pm 5$  mm

---

**PAPER: 1MA1\_2F**

<b>Question</b>		<b>Modification</b>	<b>Mark scheme notes</b>
2		Wording added ‘...to make the calculation below correct.’ Braille: the text frame replaced with a blank space indicator. “Ans: __” added.	Standard mark scheme
3		Wording added ‘Below is a list of nine numbers.’	Standard mark scheme
6		Wording added ‘Write the six numbers below in order of size.’	Standard mark scheme
7		Wording added ‘Look at the diagram for Question 7 in the Diagram Booklet. It shows...’ Diagram enlarged. Shading changed. Braille: Sentence changed to “The diagram shows polygon ABCDEF on a square grid.”	Standard mark scheme
8	(a)	Wording added ‘Look at the diagram for Question 8 in the Diagram Booklet. It shows point A on a grid.’ The wording ‘Here is a centimetre grid’ replaced by ‘1 square length on the grid represents 1 cm.’ The axes labels moved to the top of the vertical axis and to the right of the horizontal axis. Open headed arrows. Diagram enlarged. Change the crosses to dots.	Standard mark scheme
8	(b)	Wording added ‘On the grid in the Diagram Booklet, mark the point...’.	Standard mark scheme
8	(c)	Wording added ‘On the grid in the Diagram Booklet,’	Standard mark scheme
9		Wording added ‘Look at the diagram for Question 9 in the Diagram Booklet. It is a graph which shows...’. The small grid lines removed and intermediates added at intervals of 5. Some values changed so that they can be read on a grid line. Diagram enlarged. February changed to 25. June changed to 55. The axes labels moved to the top of the vertical axis and to the left of the horizontal axis. Open headed arrows. Right axis labelled. The crosses changed to dots.	(a) B1 for 25 cao (b) M1 for 10 or 55 identified A1 for 10 : 55 or any other equivalent ratio

**PAPER: 1MA1\_2F**

<b>Question</b>		<b>Modification</b>	<b>Mark scheme notes</b>
11		Wording added 'Look at the diagram for Question 11 in the Diagram Booklet. It shows...'. Diagram enlarged. The angles moved outside of the angle arcs and the angle arcs made smaller. Wording added: 'Angle $BAC = 116^\circ$ Angle $ABC = 25^\circ$ Angle $ECD$ is marked $x$ '. Braille: Extra information added: "In the diagram: $ACD$ and $BCE$ are straight lines"	Standard mark scheme
12	(a)	Wording added 'Look at the diagram for Question 12(a) in the Diagram Booklet. It shows a number machine.'; Diagram enlarged. Braille: frames removed.	Standard mark scheme.
12	(b)	Wording added 'Look at the diagram for Question 12(b) in the Diagram Booklet. It shows a different number machine.'; Diagram enlarged. Wording added 'Complete the number machine in the Diagram Booklet.' Braille: Boxes removed. In the blank space (i) added, and "Ans: (i) ___"	Standard mark scheme

**PAPER: 1MA1\_2F**

Question	Modification	Mark scheme notes																				
13	<p>Wording added ‘Look at the incomplete two-way table for Question 13 in the Diagram Booklet.’</p> <p>Wording added ‘...to complete the two-way table in the Diagram Booklet. There are twelve spaces to fill.’</p> <p>Braille:</p> <table border="1" data-bbox="454 413 1180 762"> <thead> <tr> <th></th> <th>With mattress</th> <th>Without mattress</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Single</td> <td>(iv)</td> <td>17</td> <td>(iii)</td> </tr> <tr> <td>Double</td> <td>(viii)</td> <td>(vii)</td> <td>45</td> </tr> <tr> <td>King size</td> <td>67</td> <td>(vi)</td> <td>83</td> </tr> <tr> <td>Total</td> <td>(v)</td> <td>(ii)</td> <td>(i)</td> </tr> </tbody> </table> <p>Add “Ans: (i) __ (ii) __ (iii) __ (iv) __ (v) __ (vi) __ (vii) __ (viii) __”</p>		With mattress	Without mattress	Total	Single	(iv)	17	(iii)	Double	(viii)	(vii)	45	King size	67	(vi)	83	Total	(v)	(ii)	(i)	<p>Standard mark scheme but for Braille:</p> <p>B3 for a fully correct set of values (B2 for at least 4 values given) (B1 for (i) as 198 and (ii) as 59)</p> <p>Values:            (i) 198 (ii) 59 (iii) 70 (iv) 53            (v) 139 (vi) 16 (vii) 26 (viii) 19</p>
	With mattress	Without mattress	Total																			
Single	(iv)	17	(iii)																			
Double	(viii)	(vii)	45																			
King size	67	(vi)	83																			
Total	(v)	(ii)	(i)																			
14	<p>Wording added ‘Below are three mathematical symbols.’ The frame removed.</p> <p>Wording added ‘Choose a symbol to make...’.</p> <p>Braille: “From the box, ...” changed to “From the list, ...”</p>	Standard mark scheme																				
15	Wording added ‘Look at the table for Question 15 in the Diagram Booklet. It shows...’.	Standard mark scheme																				

**PAPER: 1MA1\_2F**

Question	Modification	Mark scheme notes
17	<p>Wording added 'Look at the diagram for Question 17 in the Diagram Booklet. It shows a grid.'</p> <p>Wording 'On the grid below' removed and replaced by 'On the grid in the Diagram Booklet'.</p> <p>Wording added 'Space for working.'</p> <p>The grid cut at <math>y = 7</math> and <math>y = -2</math>. The intermediate lines removed at intervals of 0.5.</p> <p>Diagram enlarged. Open headed arrows.</p> <p>The axes labels moved to the top of the vertical axis and to the right of the horizontal axis.</p> <p>Braille: provided with a vertical table of values with the <math>y</math> values to be added with the words "You may use the table below to help you if you wish."</p>	Standard mark scheme
18	<p>Wording added 'Look at the information for Question 18 in the Diagram Booklet. It shows a sign that was in a doctor's waiting room'; Frame removed.</p> <p>Braille: Sentence changed to "The statement below was posted in a doctor's waiting room."</p>	Standard mark scheme
20	<p>Wording added 'Look at the diagram for Question 20 in the Diagram Booklet. It shows an incomplete probability tree diagram.'; Diagram enlarged.</p> <p>Wording added 'Complete the probability tree diagram in the Diagram Booklet. There are three spaces to fill.'</p> <p>Braille: (i), (ii) &amp; (iii) in the blank spaces and "Ans: (i) __ (ii) __ (iii) __"</p>	Standard mark scheme
21	(b) The letter $x$ changed to $y$ .	Standard mark scheme but note change of letter.
22	<p>Wording added 'Look at the diagram for Question 22 in the Diagram Booklet. It shows shape S and shape T on a grid. A cut out shape may be available if you wish to use it.'</p> <p>Cut out shape provided. Diagram enlarged. Shading changed.</p> <p>The axes labels moved to the top of the vertical axis and to the right of the horizontal axis.</p> <p>Open headed arrows. The shapes labelled as 'shape T' and 'shape S'.</p>	Standard mark scheme



Pearson  
Edexcel

## Mark Scheme (Results)

Summer 2022

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



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	$\frac{35}{100}$	B1	for $\frac{35}{100}$ oe	
2	7	B1	cao	
3	Two from 1, 2, 3, 4, 6, 12	B1	for any two correct factors from 1, 2, 3, 4, 6, 12	Do not allow any incorrect numbers
4	$6m$	B1	for $6m$	
5	1.3	B1	cao	
6	drawing of a parallelogram	B2  (B1)	for an accurate drawing of a parallelogram that is not a rectangle or a rhombus  for a quadrilateral drawn with no lines of symmetry or for a quadrilateral drawn with rotational symmetry of order 2)	Accept freehand drawings with some inaccuracy if the intention is clear
7	29	P1  P1  A1	for a start to a process, eg. (total apples = ) $86 + 75 + 92 (= 253)$ or (total oranges = ) $68 + 80 + 76 (= 224)$  <b>or</b> differences each week, eg. (week 1) $86 - 68 (= 18)$ or (week 2) $75 - 80 (= -5)$ or (week 3) $92 - 76 (= 16)$  for complete process, eg “253” – “224” <b>or</b> “18” + “- 5” + “16”  cao	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
8	(a) 28 33	B1	cao	One correct, one incorrect statement gets C1 as long as they are not contradictory.
	(b) Explanation	C1	<p>for explanation</p> <p><b>Acceptable examples</b>  all terms end in 3 or 8  there are no terms that end in 0  50 does not end in 3 or 8  48 and 53 are both in the sequence (could be shown)  48 is in the sequence and 50 is 2 more  <math>5n-2=50</math> so <math>n</math> is not a whole number.  if it started at 0 then it would but it starts at 3 so it never will  or shows sequence continuing up to and beyond 50</p> <p><b>Not acceptable examples</b>  adding 5 each time will not lead to 50 (insufficient)  it goes past 50  the closest number to 50 is 48</p>	
9	(a) 5	B1	cao	
	(b) 9	B1	cao	
10	(a) cross at 0	B1	cao	<p>To ft “5” the “5” needs to be clearly stated as being the number of even numbers; otherwise accept 5 only; could be indicated alongside the given numbers.</p> <p>Could be written as a decimal (0.62, 0.625 or 0.63) or equivalent percentages to these</p>
	(b) cross at $\frac{1}{2}$	B1	cao	
	(c) $\frac{5}{8}$	M1	<p>for “5” where <math>a &gt; 5</math> or <math>\frac{b}{8}</math> where <math>b &lt; 8</math></p> <p><b>or</b> for identifying all the even numbers, 2, 6 and 8</p> <p><b>or</b> for writing the correct probability using the wrong notation eg 5 : 8</p>	
		A1	for $\frac{5}{8}$ oe	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
11	Yes (supported)	M1  M1  C1	for $48 \times 3 (=144)$ or $35 \times 4 (= 140)$ or $48 \div 4 (=12)$  for $48 \times 3 (=144)$ <b>and</b> $35 \times 4 (= 140)$ or “140” $\div 48 (=2.9\dots)$ or “140” $\div 3 (=46.6\dots)$ or “12” $\times 3 (=36)$ or “144” $\div 4 (=36)$ or “144” $\div 35 (=4.1\dots)$  for Yes with 144 <b>and</b> 140 <b>OR</b> 36 <b>OR</b> 2.9... <b>OR</b> 4 (spare) <b>OR</b> 4.1... (each frame) <b>OR</b> 46.6... (in each box)	
12	$\frac{3}{50}$	M1  A1	for $\frac{60}{1000}$ or equivalent fraction  cao	
13 (a)	300	M1  M1  A1	for a correct method to measure and convert one line to a distance in metres, eg. ( $AB =$ ) $5 \times 150 (= 750)$ or in the range 720 to 780 or ( $BC =$ ) $4 \times 150 (= 600)$ or in the range 570 to 630 or ( $AC =$ ) $7 \times 150 (= 1050)$ or in the range 1020 to 1080  <b>or</b> for $5 + 4 - 7 (=2)$ or in the range 1.4 to 2.6  for a complete method, eg. “750” + “600” – “1050” <b>or</b> “2” $\times 150$	Accept measurements given in mm instead of cm for the first mark. Accept measurements given to a tolerance of $\pm 2$ mm
(b)	288	A1  B1	for answer in the range 210 to 390  for answer in the range 286 to 290	Where “750”, “600”, “1050” and “2” have come from their measurements

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
14	(a) 7	B1	cao	Simply quoting values for median, range is insufficient; they must be compared.
	(b) 5	B1	cao	
	(c)	C2 (C1)	ft for correct comparison of both medians and ranges, eg. median of boys shoe sizes is greater than the median of the girls shoe sizes and the range of the boys shoe sizes is greater than the range of the girls shoe sizes. ft for a correct comparison of either medians or ranges)	
15	5	M1 A1	for 40.15 or 8.03 seen in working cao	
16	Triangle drawn	B2 (B1)	for an isosceles triangle drawn with the product of the base and perpendicular height being 24, eg. $6 \times 4$ or $4 \times 6$ or $8 \times 3$ or $3 \times 8$ for any isosceles triangle drawn or for any triangle with 24 as the product of the base and the perpendicular height)	Accept triangle drawn in any orientation or drawn freehand.
17	(a) $12 - 6x$	B1	for $12 - 6x$ (accept $-6x + 12$ )	Do not accept ambiguous algebraic expressions  Do not accept equivalent expressions not fully factorised
	(b) 16	M1 A1	for a correct first step, eg. $3y = 12 \times 4 (= 48)$ or $\frac{y}{4} = \frac{12}{3}$ cao	
	(c) $2(2p + 3)$	B1	cao	
18	(a) 2500	B1	cao	
	(b) 0.09	B1	cao	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	42	P1  P1  P1  A1	<p>for process to find number of red counters, eg. <math>400 \div 8 \times 3 (= 150)</math>  <b>or</b> process to convert both to percentages: <math>3/8</math> as 37.5 and <math>82/400</math> as 20.5  <b>or</b> process to convert both to fractions with common denominator:  eg <math>3/8</math> as <math>75/200</math> and <math>82/400</math> as <math>41/200</math> oe</p> <p>P1  for process to find number of green counters,  eg <math>400 - "150" - 82 (=168)</math></p> <p><b>or</b> process to find the percentage of red and yellow counters  eg "<math>37.5</math>" + "<math>20.5</math>" (<math>=58</math>) or ("<math>150</math>" + <math>82</math>) <math>\div 400 \times 100 (=58)</math></p> <p>P1  for complete process to find the percentage of counters that are green,  eg "<math>168</math>" <math>\div 400 \times 100</math> or <math>100 - (37.5 + 20.5)</math> or <math>100 - "58"</math></p> <p>A1  cao</p>	NB could use other decimals eg 0.375, 0.205 or % or fractions
20	118 with reasons	M1  M1  C1  C1  A1	<p>for angle <math>QPR = 56</math> or <math>CQP = 56</math></p> <p>M1  for angle <math>PQR = (180 - 56) \div 2 (= 62)</math></p> <p>C1  (dep on a previous M1) for giving a reason relating to parallel lines:  angle <math>CQR = 180 - "62"</math> (<u>Allied angles</u> / <u>Co-interior</u> angles add up to 180)  <b>or</b> angle <math>CQP = 56</math> (<u>corresponding angles</u> are equal)  <b>or</b> use "angle <math>QPR</math>" (<u>alternate angles</u> are equal)</p> <p>C1  (dep on a previous M1) for at least one reason given from:  vertically <u>opposite angles</u> are equal OR <u>vertically opposite</u> angles are equal  <b>or</b> base angles of an <u>isosceles triangle</u> are equal  <b>or</b> <u>Angles</u> in a <u>triangle</u> add up to 180</p> <p>A1  for 118</p>	<p>Angles must be clearly labelled on the diagram or otherwise identified. Full solution must be seen. Correct method can be implied from angles on the diagram if no ambiguity or contradiction.</p> <p>When reasons are given the key words underlined must be present. Reasons need to be linked to their method; any reasons not linked, do not credit. There should be no incorrect reasons given.</p>

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
21	168	M1  A1	for a list of at least 3 multiples of each number or for factors 3,2,2,2 oe and 7,2,2,2 oe (could be shown in a factor tree or Venn diagram or table)  cao	Condone the use of 1 as a factor
22	7.5	M1  A1	for correct use of Pythagoras, eg. $8.5^2 - 4^2 (= 56.25)$ or $4^2 + x^2 = 8.5^2$  for 7.5 or $7\frac{1}{2}$ or $\frac{15}{2}$	Must have values substituted Trigonometry may be used but M1 only awarded when complete method shown.
23 (a)	25	M1  A1	for $(T=) 4 \times (-3)^2 - 11$ or $4 \times (-3)^2 = 36$  cao	Can accept missing brackets
(b)	$p = \frac{d-4}{3}$ oe	M1  A1	for a correct first step, eg. $d - 4 = 3p$ or $\frac{d}{3} = p + \frac{4}{3}$ or for $\frac{d-4}{3}$ as answer  for $p = \frac{d-4}{3}$ oe	May be in unsimplified form, eg $d - 4 = 3p + 4 - 4$

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
24	1.5	P1	for process to develop 3 algebraic expressions, eg. (R =) $n$ , (S =) $2n$ , (T =) $2n - 6$ , oe, at least two must be correct. <b>or</b> for selecting 3 values satisfying the given criteria, eg. (R =) 10, (S =) 20, (T =) 14	Accept 1 : 1.5 etc as answer
		P1	for process to sum 3 algebraic expressions and equating to 54, eg. $n + "2n" + "2n - 6" = 54$ <b>or</b> for finding the correct sum of their values eg. "10" + "20" + "14" = 44	
		P1	for start of process to solve the correct linear equation, eg. $5n = 54 + 6$ ( $n = 12$ ) <b>or</b> for 12, 24, 18	
		P1	for "12" : $2 \times "12" - 6$ oe eg 12 : 18 oe or 18 : 12 linked to T, R	
		A1	for 1.5 or $\frac{3}{2}$ or $1\frac{1}{2}$	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	Chic Decor (supported)	P1	<p>for process to find cost of 15 rolls from Chic Decor, eg <math>\frac{15}{3} \times 36 (= 180)</math></p> <p>or</p> <p>for process to find cost of 15 rolls from Style Papers at normal price, eg <math>\frac{15}{5} \times 70 (= 210)</math></p> <p>or</p> <p>for process to find cost of 1 roll from Chic Decor, eg <math>36 \div 3 (= 12)</math></p> <p>or</p> <p>for process to find cost of 1 roll from Style Papers, eg <math>70 \div 5 (= 14)</math></p> <p>or</p> <p>for process to find the cost of 5 rolls from Chic Decor, eg <math>\frac{36}{3} \times 5 (= 60)</math></p>	Could compare the costs for any number of rolls
		P1	<p>for any first step in using the discount at Style Papers, eg <math>0.12 \times "210" (= 25.2(0))</math> or <math>0.12 \times "14" (= 1.68)</math> or <math>0.12 \times 70 (= 8.4(0))</math></p> <p><b>or</b> <math>1 - 0.12 (= 0.88)</math></p>	
		P1	<p>for full process to find cost from Style Papers, eg. <math>"210" - "25.2" \text{ oe } (=184.8(0))</math> or <math>"0.88" \times "210"</math></p> <p>or for <math>"14" - "1.68" \text{ oe } (= 12.32)</math> or <math>"0.88" \times "14"</math></p> <p>or for <math>70 - "8.4(0)" \text{ oe } (= 61.6(0))</math> or <math>"0.88" \times 70</math></p>	
		C1	<p>for Chic Decor with fully correct figures</p> <p>eg 180 and 184.8(0)</p> <p>or 12 and 12.32</p> <p>or 60 and 61.6(0)</p>	



Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	40 missing from frequency scale  Incorrect point (50, 5)	C2	<p>Two different statements</p> <p><b>Acceptable</b></p> <p>eg (50, 5) / the last point is incorrect the last point should be at (45,5) the last point plotted was placed incorrectly for his last point he has plotted by the end of the data and for the rest he has plotted by the middle he did not use the midpoint, he used 50 instead of 45 40 missing (from vertical axis) vertical scale is not linear the frequency doesn't increase in the same intervals the vertical axis is not right</p> <p><b>Not acceptable</b></p> <p>eg the last point should be at (40, 5) bottom of the polygon should be connected he didn't start the graph at the origin he did not draw a polygon he has plotted the first 4 points at midpoint</p> <p>(C1 One acceptable statement)</p>	Ignore additional statements provided no contradiction
27	10	P1  P1  P1  A1	<p>for a process to use distance = speed × time for either of the parts of Jessica's journey,</p> <p>eg. <math>6 \times \frac{15}{60}</math> (= 1.5) or <math>9 \times \frac{40}{60}</math> (= 6) or <math>6 \times 15</math> (= 90) or <math>9 \times 40</math> (= 360)</p> <p>for a process to add the 2 distances for Jessica,</p> <p>eg <math>6 \times \frac{15}{60} + 9 \times \frac{40}{60}</math> (= 7.5) or <math>6 \times 15 + 9 \times 40</math> (= 450)</p> <p>for complete process to find Amy's average speed, eg. "7.5" ÷ "0.75" oe or "450" ÷ 45</p> <p>cao</p>	Must be consistent units at this stage.

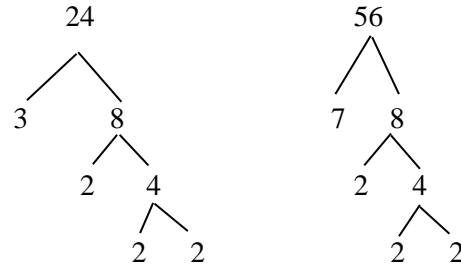
Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
28	Complete chain of reasoning	M1	for (area of trapezium $TQRS = 0.5 \times 4x \times (2x + 3x)$ or for (area of rectangle $TUVS = 4x \times (3x + 5) (= 12x^2 + 20x)$	Evidence for the award of marks may be seen on the diagram
		M1	for (area of trapezium $QUVR = 4x(3x + 5) - 0.5 \times 4x \times (2x + 3x)$	Alternative methods may be seen.
		C1	for correct algebraic processing and simplification to the given form	
		M1	<b>Alternative 1</b> for ( $QU = 3x + 5 - 2x (= x + 5)$	
		M1	for (area of trapezium $QUVR = 0.5 \times 4x \times ((x + 5) + 5)$ or $0.5 \times 4x \times (x + 10)$	
		C1	for correct algebraic processing and simplification to the given form	
		M1	<b>Alternative 2</b> for (area of triangle $= 0.5 \times (3x - 2x) \times 4x$ or for (area of rectangle $= 4x \times 5$	Accept $x$ for $(3x - 2x)$
		M1	for (area of trapezium $QUVR = 0.5 \times (3x - 2x) \times 4x + 4x \times 5$	
		C1	for correct algebraic processing and simplification to the given form	
29	108	M1	for $30 \times 60 \times 60$ (108000 metres per hour) <b>or</b> $30 \div 1000 (= 0.03$ kilometres per second) <b>or</b> $60 \times 60 \div 1000 (=3.6$ scale factor)	
		A1	cao	
30	16 000	M1	for $13600 \div 0.85 (= 16000)$ oe	
		A1	cao	

Notes for question 21.

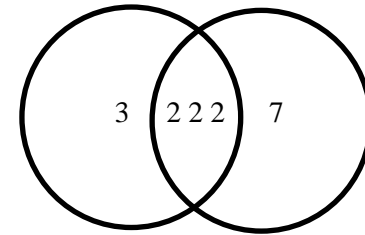
Multiples of 24: 24, 48, 72, 96, 120, 144, 168, 192...

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:  $\pm 5^\circ$

Measurements of length:  $\pm 5$  mm

---

<b>PAPER: 1MA1_3F</b>		
<b>Question</b>	<b>Modification</b>	<b>Mark scheme notes</b>
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	<p>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.</p>	<p>M1 for a correct method to measure and convert one line to a distance in metres,            eg. (AB =) <math>10 \times 75</math> (= 750 or in the range 735 to 765)            or (BC =) <math>8 \times 75</math> (= 600 or in the range 585 to 615)            or (AC =) <math>14 \times 75</math> (= 1050 or in the range 1035 to 1065)            or for <math>10 + 8 - 14</math> (=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") <math>\times</math> 75            A1 for answer in the range 225 to 375            (b) B1 for answer in the range 285 to 295</p>
14	<p>Wording added 'Below is the shoe size...'.            Diagram enlarged.</p>	Standard mark scheme
16	<p>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'</p>	Standard mark scheme
20	<p>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.</p>	Standard mark scheme
22	<p>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.</p>	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

