



Pearson
Edexcel

Mark Scheme (Results)

November 2022

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

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November 2022

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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. (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

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 awarded for a fully correct statement(s) with no contradiction or ambiguity
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: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
7 (a)	A	B1	cao	Cross or other indication may be seen on or near line provided within tolerance Accept any equivalent fraction, decimal form 0.125 or percentage form 12.5% Do not accept 1 : 8 or 1 to 8 or 1 out of 8
(b)(i)	Cross at correct position	B1	for cross at $\frac{1}{4}$	
(b)(ii)	$\frac{1}{8}$	B1	for $\frac{1}{8}$ oe	
8 (a)	7	B1	cao	
(b)	6	M1 A1	for $4n (= 24)$ or $24 \div 4$ cao	
9 (a)	290	B1	cao	Accept 290°. May be seen on diagram provided no ambiguity
(b)	reason	C1	for correct reason: <u>Angles</u> at a <u>point</u> add to 360	The key words underlined must be present with the 360 implied if not stated by use in part (a)

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
10 (a)	5	P1	for correct process, eg $23 \div 4 (= 5.75)$ or adds 4s up to at least 20 or repeatedly subtracts 4 up to a remainder of less than 4	
		A1	cao	
(b)	No (supported)	C1	for No with reason Acceptable examples Can buy 11 jars Can buy an extra jar (for the £3 extra) Can buy 10 jars for £20 He will have £3 left Because he can buy more than twice the number of jars Because $23 \div 2 = 11.5$ Not acceptable examples Yes Can buy 10 / Can buy 12	
11 (a)(i)	2	B1	for 2	Accept $2\times$ or $\times 2$ oe
(ii)	cross placed	B1	for cross correctly placed or indicated by intersection of construction lines	
(b)(i)	line drawn	B1	for line $y = x$ drawn	Accept line of any length, dotted or dashed and/or drawn freehand
(ii)	$y = x$	B1	for $y = x$ oe, eg. $x = y$ or $y - x = 0$ or $x - y = 0$ or ft their line drawn in (b)(i)	Accept labelled on the diagram

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	26	P1	for process to find $\frac{1}{6}$ of 120 minutes, eg $\frac{1}{6} \times 120 (= 20)$	May be seen in stages
		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”	
		A1	cao	
(b)	No (supported)	C1	<p>for No with reason or ft (a)</p> <p>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</p> <p>Not acceptable examples Yes she arrived after 3pm</p>	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
13 (a)	60	B1	cao	May be seen on diagram
(b)	50	B1	cao	May be seen on diagram
(c)	80 : 200	P1	for process to use the number of children, 80 or the total number of men and women, 200 in a ratio or for $\frac{80}{200}$	
		A1	for 80 : 200 oe	Award for a correct ratio even if subsequently incorrectly simplified.
14 (a)	81	M1	for $54 \times [\text{time}]$ eg $54 \times 1\frac{1}{2}$ oe, or $54 + 54 \div 2$ oe	[time] could be $1\frac{1}{2}$ oe or any other time that has been changed from $1\frac{1}{2}$, eg 90 (mins) or 1.30 or 130
		A1	cao	
(b)	1.5	P1	for use of scale eg $6 \times 25\ 000$ (= 150 000) or for $25\ 000 \div 100\ 000$ (= 0.25) or $25\ 000 \div 100$ (= 250) or $25\ 000 \div 1000$ (= 25)	
		P1	for “150 000” \div 100 000 (= 1.5) or “150 000” \div 100 (= 1500) or “150 000” \div 1000 (= 150) or for $[0.25] \times 6$ (= 1.5)	
		A1	for 1.5 oe	[0.25] could be found by dividing 25 000 by 100 (= 250) or dividing 25 000 by 1000 (= 25)

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
15	-0.5, 1	M1 A1	<p>for one correct coordinate</p> <p>or midpoint shown on diagram</p> <p>or correct method, eg $\frac{-3+2}{2}$ or $\frac{-2+4}{2}$</p> <p>or for the coordinates reversed, eg 1, -0.5</p> <p>for -0.5, 1 oe</p>	
16	19	P1 A1	<p>for process of finding perimeter in terms of x, eg $2x - 5 + x + 1 + x - 1 + 2x$ oe</p> <p>for process to form equation, eg "$6x - 5$" = 52</p> <p>(dep on P2) for a correct process to find x, eg $(52 + 5) \div 6$ (= 9.5)</p> <p>or for a correct process to find $2x$, eg $(52 + 5) \div 3$</p> <p>or ft an equation of the form $ax + b = c$,</p> <p>cao</p>	<p>This mark may be awarded for a correct but unsimplified equation, eg. $2x - 5 + x + 1 + x - 1 + 2x = 52$ oe</p> <p>Trial & Improvement attempts must be fully correct giving $x = 9.5$ before any credit given</p> <p>a, b and c must be clearly stated but need not be correct</p>

Paper: 1MA1/1F					
Question	Answer	Mark	Mark scheme	Additional guidance	
17 (a)	$\frac{70}{100}$	M1	for $100 - 30 (= 70)$ or $\frac{30}{100}$ oe	Accept any equivalent fraction, decimal form 0.7 or percentage form 70%	
		A1	for $\frac{70}{100}$ oe		
	(b)	45	P1		for start to process, eg $30 \div 2 (= 15)$
(c)	No with reason	A1	cao		If the reason is supported by numerical evidence then that evidence must be accurate. can ft (b) Note: if the answer to part (b) is an even number then 'yes' with supporting evidence is an acceptable answer
		C1	for No with reason or ft (b)		
			<p>Acceptable examples the number of red and yellow counters is an odd number 25 cannot be divided by 2 to give a whole number You can't have half a counter You can't split it evenly</p> <p>Not acceptable examples Yes they are in the ratio 2 : 3 one must be more than the other</p>		

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
18	60	P1	for $240 \div (5 + 3 + 2) (= 24)$	
		P1	for complete process to find the number of cans of each drink eg $5 \times "24" (= 120)$ and $3 \times "24" (= 72)$ and $2 \times "24" (= 48)$	
		P1	for process to find the number of cans removed eg $"72" \div 2 (= 36)$ and $"48" \div 12 (= 4)$	
		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				
Question	Answer	Mark	Mark scheme	Additional guidance
19	$2^2 \times 5^3$	M1	for a complete method to find prime factors; could be shown on a complete factor tree with no more than one error or by division by prime factors with no more than one error	Condone the inclusion of 1 for the method marks
		M1	for complete factorisation, eg 2, 2, 5, 5, 5	Could be shown on a fully correct factor tree
		A1	for $2^2 \times 5^3$	
20 (a)	$3\frac{17}{20}$	M1	for finding two fractions with a correct common denominator (multiple of 20), with at least one correct corresponding numerator, eg. $\frac{12}{20}, \frac{5}{20}$ or $\frac{32}{20}, \frac{45}{20}$	May be from $\frac{3}{5}$ and $\frac{1}{4}$ or from $\frac{8}{5}$ and $\frac{9}{4}$
		A1	for $3\frac{17}{20}$ or an equivalent mixed number SC: B1 for 3.85 if M0 scored	
(b)	shown	M1	for $\frac{8}{3} \times \frac{1}{6}$ oe or $\frac{4}{9} \times \frac{6}{1}$ oe or $\frac{8}{3} \times \frac{9}{4}$ oe	
		A1	for unsimplified fraction which could lead to $\frac{4}{9}$, eg $\frac{8}{18}$ or for $\frac{4}{3} \times \frac{1}{3}$ or $\frac{24}{9} \div 6$ or for unsimplified fraction which could lead to $2\frac{2}{3}$, eg $\frac{24}{9}$ or for unsimplified fraction which could lead to 6, eg $\frac{72}{12}$	
21	2^6	M1	for the start of a method of simplification, eg 2^{-5+8} (= 2^3) or $2^{-5 \times 2}$ (= 2^{-10}) or $2^{8 \times 2}$ (= 2^{16})	
		A1	cao SC B1 for answer of 64 or 8^2 or 4^3 if M0 scored.	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
22	0.00128	M1 A1	for digits 128 or for correct placement of the decimal point following one arithmetical error, eg. $32 \times 4 = 138$ with an answer of 0.00138 for 0.00128 or 1.28×10^{-3}	
23	7500	M1 A1	for method to find expected number of model B, eg $\frac{15}{80} \times 40000$ oe or $\frac{15}{"23+15+30+12"} \times 40000$ oe cao	

Paper: 1MA1/1F

Question	Answer	Mark	Mark scheme	Additional guidance
24 (a)(i)	2 : 6 : 5	P1	for process to compare ratios, eg $a : b = 2 : 6$ or $b : c = 3 : 2.5$	Could use 3 or any common multiple of 3 and 6
(ii)	$\frac{2}{13}$	M1	for process to find fraction, eg $\frac{[2]}{[2+6+5]}$ or for $\frac{a}{a+b+c}$	
(b)	1 : 10	A1	for $\frac{2}{13}$ oe or ft (a)(i)	
		P1	for process to express all numbers in terms of one number, eg $p = 5 \times 2m (= 10m)$ or $m = \frac{n}{2}$ or for $2m = \frac{p}{5}$ or for assigning values in the ratio given, eg $m = 1, n = 2, p = 10$ or for $n : m : p = 2 : 1 : 10$ oe or 10 : 1 oe	
		A1	for 1 : 10 oe	

Paper: 1MA1/1F				
Question	Answer	Mark	Mark scheme	Additional guidance
25	1250	P1 A1	for process to use area of base in the formula, eg $\frac{10000}{2 \times 4}$ cao	
26 (a)	$x > 6$	M1 M1 A1	for a correct first step, eg subtracts 3 from both sides or multiplies all terms by 2 (dep M1) for a correct second step, eg multiplies both sides by 2 or divides both sides by 5 or gives the critical value, 6. for $x > 6$	Could be seen as an equation for both method marks, eg $5x + 6 = 36$ or $5x = 30$ First 2 marks may be awarded for critical value of 6, eg $x = 6$
(b)	$(x + 9)(x + 1)$	M1 A1	for $(x \pm 1)(x \pm 9)$ or for $(x + a)(x + b)$ where product of a and $b = 9$, eg $(x + 3)(x + 3)$ or $(x - 3)(x - 3)$ or the sum of a and $b = 10$, eg $(x + 5)(x + 5)$ or $(x + 6)(x + 4)$ for $(x + 9)(x + 1)$	

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: ± 5 mm

PAPER: 1MA1_1F

Question		Modification	Mark scheme notes
6		Wording added 'Look at the table for Question 6 in the Diagram Booklet.' The wording 'These are' removed. Wording added 'are shown in the Diagram Booklet.' Information presented as a table.	Standard mark scheme
7		The wording 'Here' removed and replaced with 'Below'. Values changed: A to P, B to Q, C to R and letters left aligned and split on two rows. In part (b)(i) wording added 'Look at the diagram for Question 7(b)(i) in the Diagram Booklet. It shows a probability scale.'; The wording 'with a cross(x)' removed and diagram enlarged.	Standard mark scheme
9		Wording added 'Look at the diagram for Question 9 in the Diagram Booklet.' Diagram enlarged. Angles moved outside the angle arcs and angle arcs made smaller. Wording added 'in the Diagram Booklet'.	Standard mark scheme
11	(a)	Wording added 'Look at the diagram for Question 11(a) in the Diagram Booklet. It shows'. The wording 'Here are' removed. Wording added 'They are labelled Triangle A and Triangle B.' Diagram enlarged. Right column removed. Shading changed. Row added above. Shapes labelled 'Triangle A' and 'Triangle B' and moved above shapes.	Standard mark scheme
11	(a)ii	Wording added 'in the Diagram Booklet'; 'They are labelled Parallelogram C' and 'Parallelogram D'. Shapes relabelled 'Parallelogram C' and 'Parallelogram D' and moved above the diagram. The wording 'with a cross' removed.	Standard mark scheme
11	(b)	Wording added 'Look at the diagram for Question 11(b) in the Diagram Booklet. It shows'; 'They are labelled Parallelogram C and Parallelogram D.' The wording 'Here are' removed. Diagram enlarged. Open headed arrows. Axes labels moved above the vertical axis and right on the horizontal axis.	

PAPER: 1MA1_1F

Question	Modification	Mark scheme notes
13	<p>Wording added ‘Look at the diagram for Question 13 in the Diagram Booklet’ Wording added ‘in the Diagram Booklet’. Diagram enlarged. Axes labels moved above the vertical axis and left on the horizontal axis. Open headed arrows. Shading changed. Key moved above the diagram and left aligned. Right axis labelled. Values changed: 2000 men now 0 to 50; 2010 children now 150 to 200; 2020 children now 200 to 300</p>	<p>(a) B1 cao for 50; check diagram (b) B1 cao for 50; check diagram (c) for process to use the number of children, 100 or the total number of men and women, 200 in a ratio or for 100/200 oe A1 for 100 : 200 oe Award for a correct ratio even if subsequently incorrectly simplified.</p>
15	<p>Wording added ‘Look at the diagram for Question 15 in the Diagram Booklet.’ Diagram enlarged. Axes labels moved above the vertical axis and right on the horizontal axis. Open headed arrows. Crosses changed to solid dots. Wording added ‘in the Diagram Booklet.’ Point at ‘P’ changed to (-4,-2).</p>	<p>M1 for one correct coordinate or midpoint shown on diagram or correct method, eg $\frac{-4+2}{2}$ or $\frac{-2+4}{2}$ or for coordinates reversed, eg 1, - 1 A1 for -1, 1 cao</p>
16	<p>Wording added ‘Look at the diagram for Question 16 in the Diagram Booklet. It shows’. The wording ‘Here is’. Removed. Letter x changed to y Diagram labels changed: $x + 1$ to $(y + 1)$cm; $x - 1$ to $(y - 1)$cm; $2x$ to $(2y)$cm; $2x - 5$ to $(2y - 5)$cm Wording added: $AB = (y + 1)$ cm; $CB = (y - 1)$ cm; $DC = (2y)$ cm; $AD = (2y - 5)$ cm Diagram enlarged and rotated with DC horizontal.</p>	<p>Standard mark scheme</p>
17	<p>Wording added ‘Look at the table for Question 17 in the Diagram Booklet.’ Wording added ‘in the Diagram Booklet’. Table enlarged and turned vertical.</p>	<p>Standard mark scheme</p>
18	<p>Wording added ‘Look at the information for Question 18 in the Diagram Booklet. It shows a ratio.’</p>	<p>Standard mark scheme</p>

PAPER: 1MA1_1F

PAPER: 1MA1_1F			
Question		Modification	Mark scheme notes
23		Wording added 'Look at the table for Question 23 in the Diagram Booklet.' Wording added 'in the Diagram Booklet'. Table enlarged.	Standard mark scheme
24	(a)	Text left aligned. Values changed: a to p ; b to q ; c to r	Standard mark scheme but note change of letter
24	(b)	Text left aligned. Values changed: m to w ; n to x ; p to y	Standard mark scheme but note change of letter
25		Wording added 'Look at Diagram 1 and Diagram 2 for Question 25 in the Diagram Booklet. You may be provided with a model. It is not accurate.' Wording added 'Diagram 1 and the model show'. Wording added 'that'. Diagram enlarged. Base view added with measurements. Wording added 'Diagram 2 shows the base view.' Frame removed from formula and moved above the diagram to the left	Standard mark scheme



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Foundation (Calculator) Paper 2F

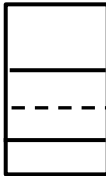
Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	-7, -2, -1, 0, 7	B1	cao	Accept reverse order
2	$\frac{37}{100}$	B1	oe fraction	
3	13	B1	cao	
4	530	B1	cao	
5	3476	B1	cao	
6 (a)	4.5	B1	accept answer in the range 4.3 to 4.7	
(b)	110	B1	accept answers in the range 108 to 112	
7	49.01	P1 P1 B1 A1	for process to work with the number of miles, eg $12845 - 12468 (= 377)$ or $12845 \times 13 (= 166985)$ or $12468 \times 13 (= 162084)$ for process to find the cost, eg " 377 " $\times 13 (= 4901)$ or " 166985 " - " 162084 " ($= 4901$) (indep) for converting from pence to pounds, eg " 4901 " $\div 100$ or $13 \div 100$ or miles divided by 100 eg " 377 " $\div 100 (= 3.77)$ or $12845 \div 100 (= 128.45)$ and $12468 \div 100 (= 124.68)$ 49 or 49.01	This mark can be awarded at any stage in the process
8	315	M1 A1	for 45×7 cao	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
9	Chart	B1 M1 A1	for correct day labels or a linear scale for correct bars showing information for at least 3 days for a fully correct bar chart	Accept key in place of labels Condone bars of varying widths Condone no gaps or inconsistent gaps Labels of Day and Frequency not essential
10 (a)	49	M1 A1	for attempt to find the difference between 07 20 and 08 09 cao	May be seen in stages eg 10+30+9
(b)	Yes with correct working	P1 P1 C1	for a process shown to add a time to a departure time, eg 0800 + 7 or 0800 + 15 or 0800 + 7 + 15 or process for time at work after Bolton bus stop arrival, eg “0858” + 15 or find accumulated additional time, eg 7 + 15 (= 22) or starts to work backwards, eg 0920 – 15 for a process to select correct bus time from Blackrod to Bolton eg 0809 to 0858 for conclusion of “yes” supported by correct comparable figures, eg states 0913 or 0858 and 22 (spare)	8 09 stated as bus start time or 7 40 (from Wigan) is enough for this mark NOTE other comparisons may be seen
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 $“200” \times 35 \div 100 (= 70)$ or process to find the multiplier for the percentage of children not wearing a hat, eg $(100 - 35) \div 100 (= 0.65)$ for full process to find the number of children not wearing a hat, eg $“200” - “70”$ or $“200” \times “0.65”$ or $214 - “70” - 14$ cao	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	82.5	M1	for a complete method, eg $132 \div 8 \times 5$	$132 - 82.5 (= 49.5)$ M1 implied
		A1	cao	
(b)	$\frac{1}{4}, \frac{9}{32}, \frac{21}{64}, \frac{3}{8}$	M1	converts into decimals or percentages or equivalent fractions, at least 2 conversions correct or for any 3 fractions in correct order	0.25, 0.28(125), 0.32(8125), 0.37(5)
		A1	cao	Accept in reverse order for this mark Accept expressed in equivalent decimals or percentages or fractions or in mixed numerical form
13	4 pint with correct figures	P1	for a process to find the price for one deal, eg 6 pints on 1 st deal, $75 \times 2 (= 150)$ or 8 pints on 2 nd deal, $128 \times 1.5 (= 192)$ oe	
		P1	for a process to find the price for both deals, eg 6 pints on 1 st deal, $75 \times 2 (= 150)$ and 8 pints on 2 nd deal, $128 \times 1.5 (= 192)$ oe	
		P1	for a process to find the cost per pint for both deals, eg “150” $\div 6 (= 25)$ and “192” $\div 8 (= 24)$ or for prices for a consistent number of pints for both deals eg for 2 pints “1.5” $\div 3 (= 0.5)$ and “1.92” $\div 4 (= 0.48)$ or a comparison using a unit price eg “150” $\div 6 \times 8 (= 200)$ and $128 \times 1.5 (= 192)$ oe	Accept in mixed units of pence and pounds Might look at a price difference for a consistent number of pints
		C1	“4 pint” with two correct comparative costs calculated making full use of both offers	“4 pint” can be indicated in words or other indication

Paper: 1MA1/2F																													
Question	Answer	Mark	Mark scheme	Additional guidance																									
14 (a)	$7c + 6d$	M1	for $7c$ or $6d$	Condone use of b and p																									
		A1	for $7c + 6d$																										
	(b)	7	M1		for correct method to expand, eg $5 \times 2m - 5 \times 6$, or divides both sides by 5 as a first step.																								
			M1		for correct method to isolate terms in m , eg $10m - 30 + 30 = 40 + 30$																								
			A1		cao																								
	(c)	$3x + 2y$	M1		for $3x$ or $2y$																								
A1			cao																										
15 (a)	Diagram	B2	for a fully correct ordered diagram	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>7</td><td> </td><td>1</td><td>1</td><td>4</td><td>5</td><td>7</td></tr> <tr><td>8</td><td> </td><td>2</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> <tr><td>9</td><td> </td><td>1</td><td>4</td><td>7</td><td>8</td></tr> <tr><td>10</td><td> </td><td>3</td></tr> </table> <p>Accept stem of 70, 80, 90, 100 Can be in reverse vertical order (with matching leaves) eg 10, 9, 8, 7 Errors can be omissions; one number in the wrong position is one error.</p>	7		1	1	4	5	7	8		2	4	5	6	7	8	9	9		1	4	7	8	10		3
		7			1	1	4	5	7																				
		8			2	4	5	6	7	8	9																		
	9		1		4	7	8																						
	10		3																										
(B1)	for a complete unordered diagram or for an ordered diagram with at most one error or omission)																												
B1	for correct key eg $7 1$ or $70 1$ represents 71 Key must be consistent with the stem																												
(b)	86	M1	for identifying the median, eg “6” circled or an answer of 6 or ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)																										
		A1	for 86 or ft their list or diagram for selection of middle value (allow up to two errors or omission in listing)																										

Paper: 1MA1/2F																
Question	Answer	Mark	Mark scheme	Additional guidance												
16	2	P1 P1 A1	for a calculation from within the list $4 \times 12 \div 4 \div 6$ eg $4 \times 12 (= 48)$ or $12 \div 4 (= 3)$ or $6 \div 4 (= 1.5)$ or $4 \div 6 (= 0.66..)$ for a complete process, eg $(“48” \div 6) \div 4$ or for $“0.\dot{6}” \times 12 \div 4$ cao	Accept $12 \div 6$ as a full process												
17	176	M1 M1 A1	for a method to find 5 products within intervals (including end points) for $\Sigma“fx” \div (8 + 14 + 24 + 30 + 4)$ or $(155 \times 8 + 165 \times 14 + 175 \times 24 + 185 \times 30 + 195 \times 4) \div (8 + 14 + 24 + 30 + 4)$ or $(“1240” + “2310” + “4200” + “5550” + “780”) \div “80”$ or $“14080” \div “80”$ cao	<table border="1"> <thead> <tr> <th>Min <i>fx</i></th> <th>Max <i>fx</i></th> </tr> </thead> <tbody> <tr> <td>1200</td> <td>1280</td> </tr> <tr> <td>2240</td> <td>2380</td> </tr> <tr> <td>4080</td> <td>4320</td> </tr> <tr> <td>5400</td> <td>5700</td> </tr> <tr> <td>760</td> <td>800</td> </tr> </tbody> </table> $\Sigma“fx”$ must come from 5 products <i>fx</i> within intervals (including end points)	Min <i>fx</i>	Max <i>fx</i>	1200	1280	2240	2380	4080	4320	5400	5700	760	800
Min <i>fx</i>	Max <i>fx</i>															
1200	1280															
2240	2380															
4080	4320															
5400	5700															
760	800															
18 (a)	(2, 1)	B1	cao	Accept negative correlation Ignore any comment about strength Any numbers used in the description must be within tolerance												
(b)	Description	C1	correct description, eg as the amount of rainfall decreases the number of hours of sunshine increases													
(c)	3 to 4	M1 A1	for a suitable line of best fit drawn, or for a point marked at $(x, 7)$, or a horizontal line drawn from 7 across to $(x, 7)$ where x is in the range 2.5 to 4 answer in the range 3 to 4													

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	Elevation	B2 (B1)	fully correct side elevation 5 high and 3 wide for a rectangle 5 high and 3 wide or correct side elevation in the wrong orientation)	
20 (a)	$6n + 1$	B2 (B1)	oe for $6n + c$ where c is an integer $\neq 1$ or is missing)	
(b)	Shown with supportive working	M1 A1	for $8 - 6n = -58$ or $8 - 6 \times 11 (= -58)$ or starts to list terms of the sequence, with at least 3 correct or any other valid method. shown with working or an explanation , eg Yes and 11 or 2, -4, -10, -16,, -52, -58	2, -4, -10, -16, -22, -28, -34, -40, -46, -52 May stop at -58 or ring if sequence continues
21	186.15	P1 P1 P1 P1 A1	for correctly finding the area of at least three sections, eg 3 of $11 \times 7 (= 77)$, or $9 \times 7 (= 63)$, or $\frac{1}{2} \times 11 \times 9 (= 49.5)$, or $\frac{1}{4} \times \pi \times 7^2 (= 38.4845..)$ for a method to find the number of bags required for one area or a combination of areas eg “77” \div 14 (= 5.5) or “227.9845..” \div 14 (= 16.2846...) for method to work out the total area for all four sections eg “77” + “63” + “49.5” + “38.4845...” (= 227.9845...) or adding the exact number of bags per section for all four sections eg “5.5” + “4.5” + “3.53..” + “2.74..” (= 16.28...) for method to find the cost, eg integer number of bags \times 10.95 cao	Note a trapezium for the rectangle and triangle should be classed as two areas. Accept figures rounded or truncated to 1 dp or better throughout. This mark is dependent upon correct processes seen for all four sections. integer number of bags must come from area \div 14 rounded up

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
22	8.73	M1 A1	for a correct trig statement, eg $14.5 \times \cos 53$ or $\cos 53 = x \div 14.5$ answer in the range 8.726 to 8.73	Can use a combination of skills but must have only one unknown in x to score this mark If an answer is given in the range in working and then rounded incorrectly award full marks.
23	7318.15	M1 M1 A1	for a correct first step eg working out increase for one year $7000 \times (100 + 3) \div 100$ (= 7210) oe or $7000 \times 3 \div 100$ (= 210) oe or find the multiplier for both years eg $(100 + 3) \div 100 \times (100 + 1.5) \div 100$ (=1.04545) for a compound method, eg $7000 \times (100 + 3) \div 100 \times (100 + 1.5) \div 100$ oe or "7210" $\times 1.5 \div 100$ or (= 108.15) oe cao	7315 or 315 implies M1 318.15 implies M1M1A0
24 (a)	4	B1	for 4	Condone (0,4) or 0,4 Accept both solutions given as a coordinate for M1 eg (5.2, 0.8) or (0.8, 5.2) or (5.2, 0) and (0.8, 0)
(b)	(3, -5)	B1	cao	
(c)	5.1 to 5.3 and 0.7 to 0.9	M1 A1	for a correct method, eg marking both intercepts with x -axis or one correct solution for answers in the range 5.1 to 5.3 and 0.7 to 0.9	
25 (a)	1.25	B1	for 1.25 or $\frac{5}{4}$ or $1\frac{1}{4}$	Accept 4749.9 or 4749.99(...)
(b)	4650 and 4750	B1 B1	for 4650 in the correct position for 4750 in the correct position	

Paper: 1MA1/2F				
Question	Answer	Mark	Mark scheme	Additional guidance
26	152000	M1	for a complete method eg $165680 \div 109 \times 100$ or $165680 \div 1.09$ oe	
		A1	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:

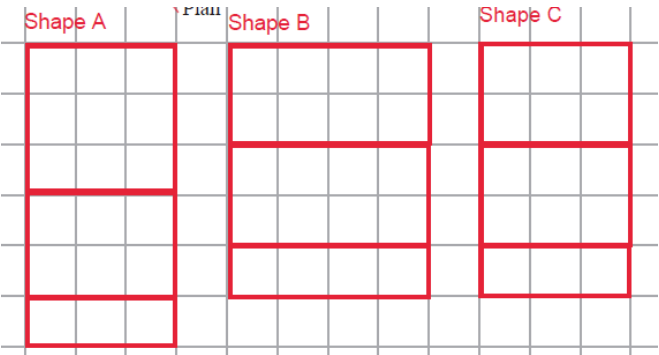
Angles: $\pm 5^\circ$

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	<p>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.</p>	<p>Standard mark scheme but in part (c) widen the range to consider 2.5 to 4.5</p>
19	<p>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.</p> 	<p>Shape C is the correct shape for 2 marks. The dotted line was removed to avoid confusion to visually impaired candidates.</p>
20	<p>The wording ‘Here’ removed and replaced with ‘Below’. Terms left aligned.</p>	<p>Standard mark scheme</p>
21	<p>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’</p>	<p>Standard mark scheme</p>

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



Pearson
Edexcel

Mark Scheme (Results)

November 2022

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

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
1	0.408, 0.41, 0.46, 0.5	B1	for 0.408, 0.41, 0.46, 0.5	Accept written in reverse order
2	2000	B1	cao	Accept two (2) thousand(s) or just thousand(s)
3	0.8	B1	cao	
4	19	B1	cao	
5	18	B1	cao	
6	(a) 6	B1	cao	
	(b) May, October	B1	cao	
7	145.60	P1 P1 A1	for a process to work out the value of the large bars eg $208 \div 4$ (=52 or 5200) for a process to work out the value of the small bars eg $(208 - "52") \times 60$ or $(1 - \frac{1}{4}) \times 208 \times 60$ (=9360 or 93.6(0)) or for 145.6 for 145.60 cao (must be correct money notation)	units may be ignored for the process marks work could be in pence or £
8	(a) 102	B1	cao	
	(b) 82	M1 A1	for a method of extracting the correct 4 numbers from the table, adding all 4 numbers and then dividing by 4 eg $(143+121+45+19) \div 4$ or "328" $\div 4$ cao	

Paper: 1MA1/3F					
Question	Answer	Mark	Mark scheme	Additional guidance	
9	(a) (b) (c)	(-1,2) (1,4) marked $y = -3$ shown	B1 B1 B1	cao for the point (1, 4) unambiguously marked on the grid for correct line unambiguously marked	need not be labelled if clear need not be labelled if clear accept a line drawn freehand
10	(i) (ii)	terms given explanation	B1 C1	states two terms eg 11, 10 or 9, 6 explanation Acceptable examples Take away 2 then 1; take away 4 then 3 The difference goes down by 1 each time -4, -3; -2, -1 The differences are 4 and 3; the differences are 2 and 1 Not acceptable examples It goes down by 1 each time An algebraic rule	May be written on the sequence with no contradiction elsewhere
11		160	M1 A1	for $8 \times 5 \times 4$ cao	
12		1 : 6 : 3	M1 A1	for any two algebraic statements from x , $6x$, $6x/2$ oe or any two numbers as a correct ratio eg 1 : 6 or 6 : 3 or 1 : 3 oe or any 3-term ratio using the numbers 1, 6 and 3 oe	For any equivalent ratio.

Paper: 1MA1/3F					
Question	Answer	Mark	Mark scheme	Additional guidance	
13	(a)(i) (ii) (b)	40 Reason Explanation	B1 C1 C1	cao Reason given <u>Angles</u> in a <u>quadrilateral</u> add up to 360. Accept “4-sided shape” Explanation Acceptable examples 190 > 180 It does not add up to 180 80+60+50=190 Angles in a triangle add up to 180 Not acceptable examples One of the angles needs to be less You cannot draw this triangle	Underlined words need to be shown.
14	(a) (b)	30 2238 to 2296	B1 M1 A1	cao for a complete method eg attempts to read from the graph at a factor of 80 and scales up to 80 using a correct scale or attempts to read from the graph using numbers that sum to 80 and finds the sum of their readings or attempts to read from the graph a number that they then go on to scale up to 80 using a correct scaling factor for an answer in the range 2238 to 2296	Condone some inaccuracy in reading from the graph, which should be given to within the nearest 50g

Paper: 1MA1/3F

Question	Answer	Mark	Mark scheme	Additional guidance
15	Yes (supported)	P1 P1 P1 P1 C1	for finding the cost of 1 kg of carrots eg $1.74 \div 3 (= 0.58)$ for isolating the cost of 2.5 kg of onions eg $2.36 - (2 \times "0.58") (= 1.2(0))$ for the cost of 1 kg of onions or 0.5 kg of onions, eg $"1.20" \div 2.5 (= 0.48)$ or $"1.20" \div 5 (= 0.24)$ or for $4 \div 2.5 (= 1.6)$ for the cost of 4 kg of onions, eg $4 \times "0.48"$ or $8 \times "0.24" (= 1.92)$ or for $"1.6" \times "1.2(0)"$ Yes with correct figures shown eg 192 or 1.92 or "has 8p left" or 166.5	for finding the cost of 1 kg onions eg $2.(00) \div 4 (= 0.5)$ for finding the cost of 2.5 kg of onions eg $2.5 \times "0.5" (= 1.25)$ for finding the cost of 2 kg of carrots eg $2.36 - "1.25" (= 1.11)$ for finding the cost of 3 kg of carrots eg $"1.11" \div 2 \times 3 (= 1.665)$ <i>for comparison with 1.74</i> Allow comparison of mixed units eg 192 with £2

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
16	Comments	C1	<p>makes some comment about the labels</p> <p>Acceptable examples</p> <p>states what labels should be (not angles)</p> <p>labels are missing</p> <p>The label in the table does not match the label with the pie chart</p> <p>Not acceptable examples</p> <p>angles not marked on the pie chart</p>	
		C1	<p>comments about the inaccuracy of the angles in the pie chart</p> <p>Acceptable examples</p> <p>pie chart is not accurate / should be 108, 126, 126</p> <p>angles drawn inaccurately</p> <p>They haven't converted the number of potatoes to angles</p> <p>Need to scale the numbers in the table</p> <p>Not acceptable examples</p> <p>pie chart is wrong/ sectors are the wrong size (the angles) do not add up to 360</p>	
17	(a) 87 600	B1	cao	
	(b) 13.524	M1	for 33.81 or 2.5 or $\frac{3381}{250}$ or digits 13524	
		A1	cao	
18	Rotation drawn	B2	correct shape drawn at (2,-1), (2,-4), (4,-2), (4,-1)	
		(B1)	for a correct shape drawn clockwise 90° about (0,0) or a shape drawn in the correct quadrant with the correct orientation or a shape with at least 3 vertices correct	

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
19	(a) 15 (b) 4.6 (c) 12	B1 B1 M1 A1	cao for an answer in the range 4.4 to 4.8 for a method to calculate speed eg distance \div time (could be implied from figures used) eg $4 \div 20 (= 0.2)$ oe, $4 \div 0.33(\dots)$ oe or $4 \div 1/3$ oe cao	Accept readings from the graph as an indication at this stage
20	100g butter 25g sugar 1 egg	P1 P1 P1 C1	for process to find the amount needed of one ingredient for 25 scones for process to find the amount needed for at least three ingredients for 25 scones or for process to find the correct amount more for at least two of butter, sugar, eggs for complete process to find amount more for each of butter, sugar, eggs for correct amounts more shown for butter, sugar, eggs	amount needed: 200g butter 875 flour 75 sugar 5 eggs Flour can be excluded, but no incorrect information about flour should be given.
21	$a = \frac{p+9}{3}$	M1 A1	for correct first step to rearrange eg $p + 9 = 3a - 9 + 9$ or $\frac{p}{3} = \frac{3a-9}{3}$ oe or answer ambiguously shown eg $a = p + 9 \div 3$ or given as $\frac{p+9}{3}$ oe oe	May be seen in different equivalent forms but must be carried out, not just intention seen.

Paper: 1MA1/3F																									
Question	Answer	Mark	Mark scheme		Additional guidance																				
22	Description	C1	<p>Identifies a mistake in the working</p> <p>Acceptable examples Rob should divide by 8 He should have added the 3 and 5 first He divided 120 by 3 and 5 instead of 8</p> <p>He did not do it as $120 \times \frac{3}{8}$ and $120 \times \frac{5}{8}$</p> <p>He did not add the two ratios first</p> <p>Not acceptable examples He has done it in two parts but he should do it in one The answer should be 45 : 75 They do not add up to 120 He is supposed to add his numbers 40 + 24 does not equal 120</p>																						
23	22	P1 P1 A1	<p>for process to find total choosing German eg $200 - 104 - 70 (=26)$</p> <p>for complete process to find boys choosing Spanish eg $90 - (60 + ("26" - 18))$</p> <p>cao</p>	<p>for process to find girls choosing French (44) or total number of girls (110)</p> <p>for complete process to find boys choosing Spanish eg $70 - ("110" - "44" - 18)$</p>	<table border="1"> <thead> <tr> <th></th> <th>F</th> <th>S</th> <th>G</th> <th>total</th> </tr> </thead> <tbody> <tr> <td>girls</td> <td>44</td> <td>48</td> <td>18</td> <td>110</td> </tr> <tr> <td>boys</td> <td>60</td> <td>22</td> <td>8</td> <td>90</td> </tr> <tr> <td>total</td> <td>104</td> <td>70</td> <td>26</td> <td>200</td> </tr> </tbody> </table>		F	S	G	total	girls	44	48	18	110	boys	60	22	8	90	total	104	70	26	200
	F	S	G	total																					
girls	44	48	18	110																					
boys	60	22	8	90																					
total	104	70	26	200																					

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
24	Yes (supported)	P1 P1 P1 C1	<p>for a process to find the volume of 1 tank eg $\pi \times 40^2 \times 160$ (= 804247.7... or 804.2...or 256000π)</p> <p>for complete process to find the volume of 4 tanks, [volume of tank] \times 4 eg $\pi \times 40^2 \times 160 \times 4$ (= 3216990.8... or 3216.9... or 1024000π) or for process to find volume of fertiliser available per tank eg $32 \times 1000 \div 4$ (= 8000)</p> <p>for a process to find the amount of mixture for 1 tank eg [volume of tank] \div 101 (= 7962.8...) or 4 tanks (= 31851.3...) OR for a process to find volume of mixture that 32 litres of fertiliser will make eg 32000×101 (= 3232000) or 32×101 (= 3232)</p> <p>for Yes supported by correct figures shown eg a comparable figure in the range 31.8 to 31.9 (litres) or in the range 31800 to 31900 with 32000 (cm³) or in the range 3216 to 3217 with 3232 (litres) or in the range 3216000 to 3217000 with 3232000 (cm³) or in the range 7958 to 7963 with 8000 (cm³)</p>	<p>Could be truncated or rounded</p> <p>For this mark [volume of tank] must come from a calculation involving π, r^2, h</p> <p>For this mark [volume of tank] must come from a calculation involving π, r^2, h or be stated as their volume</p> <p>There are other possible pairs of values which can be used in the comparison</p>
25 (a)	16	M1 A1	<p>for a ratio of $\frac{20}{5}$ or $\frac{5}{20}$ or 4 or 0.25 or $\frac{5}{4}$ or $\frac{4}{5}$ or 1.25 or 0.8 oe</p> <p>cao</p>	
(b)	5.5	M1 A1	<p>for $22 \times \text{“0.25”}$ or $22 \div \text{“4”}$ oe</p> <p>oe</p>	

Paper: 1MA1/3F						
Question	Answer	Mark	Mark scheme	Additional guidance		
26 (a)	0.7	B1	for 0.7 on the first branch	Accept equivalent fractions or percentages for probabilities		
	0.65, 0.65	B1	for 0.65, 0.65 on the second branches			
	(b)	0.105	M1		for 0.3×0.35	
			A1		oe	
27 (a)	0.008	B1	for 0.008 or 8×10^{-3}	May be awarded at any stage		
		(b)	50		M1	for conversion from km to m eg $180 \times 1000 (= 180\ 000)$ or for conversion from hours to seconds eg $180 \div (60 \times 60) (= 0.05)$ or for conversion from km per hour to metres per second, eg $1000 \div (60 \times 60) (= 0.277\dots)$ (Accept $(60 \times 60) \div 1000 (= 3.6)$)
					M1	for a complete process eg $180 \times 1000 \div 3600$
					A1	cao
28	158	P1	for a first step in the process eg $50 \times 167.6 (=8380)$ or $20 \times 182 (=3640)$			
		P1	for a complete process eg $(50 \times 167.6 - 20 \times 182) \div 30$ or $\frac{8380 - 3640}{30}$ or $4740 \div 30$			
		A1	cao			

Paper: 1MA1/3F				
Question	Answer	Mark	Mark scheme	Additional guidance
29	(a) 0.000675	B1	cao	If the answer (for 2 marks) is seen in working and then rounded or truncated, award full marks.
	(b) 6.592×10^5	M1	for 10.5472×10^3 oe or 1.6×10^8 oe or 2.575×10^{-1} oe or for 6.592×10^n where $n \neq 5$ or for 6.59×10^5 or for 6.6×10^5 or for 659200 oe	
		A1	cao	
30	(a)(i) $\begin{pmatrix} 1 \\ 5 \end{pmatrix}$	B1	for $\begin{pmatrix} 1 \\ 5 \end{pmatrix}$	Need not be shown in brackets at this stage
	(ii) $\begin{pmatrix} 0 \\ 5 \end{pmatrix}$	M1	for substitution of values eg $\begin{pmatrix} 2 \times 2 - 4 \\ 3 \times 2 - 1 \end{pmatrix}$ oe OR for $\begin{pmatrix} 0 \\ b \end{pmatrix}$ or $\begin{pmatrix} a \\ 5 \end{pmatrix}$ where a, b are integer values.	
		A1	for $\begin{pmatrix} 0 \\ 5 \end{pmatrix}$	
	(b) correct vector drawn	C1	for a correct vector drawn from point P	Need not be labelled but do not award if there is any ambiguity.

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

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

Angles: $\pm 5^\circ$

Measurements of length: ± 5 mm

PAPER: 1MA1_3F		
Question	Modification	Mark scheme notes
1	Word added 'four'. Numbers left aligned.	Standard mark scheme
5	The wording 'Here is a list of numbers' removed and replaced with 'Below is a list of five numbers'. Numbers left aligned.	Standard mark scheme
6	Wording added 'Look at the diagram for Question 6 in the Diagram Booklet.' The wording 'The graph shows' removed and replaced with 'It shows a graph with'. Diagram enlarged. Axes labels moved to above the vertical axis and left on the horizontal axis. Crosses changed to dots. Right axis labelled. Open headed arrows. Small squares removed	Standard mark scheme
8	Wording added 'Look at the table for Question 8 in the Diagram Booklet.' Table turned vertical. Table enlarged	Standard mark scheme
9	Wording added 'Look at the diagram for Question 9 in the Diagram Booklet. The diagram shows point A on the grid.' Axes labels moved to above the vertical axis and right on the horizontal axis. Cross changed to a dot. Open headed arrows. Diagram enlarged. In part (b) the wording 'with a cross (X)' removed.	Standard mark scheme
11	Wording added 'Look at the diagram for Question 11 in the Diagram Booklet.' The wording 'Here is a cuboid' removed and replaced with 'The diagram shows a cuboid with length 8cm, width 4cm and height 5cm.' Diagram enlarged. '5cm' label moved to left side.	Standard mark scheme
12	Wording added 'Look at the information in the Diagram Booklet. It shows a ratio.' Left align the ratio.	Standard mark scheme
13	(a) Wording added 'Look at the diagram for Question 13(a) in the Diagram Booklet.' Diagram enlarged and rotated to make side CD horizontal. Wording added: 'Angle DAB = Angle ABC = 120°; Angle BCD = 80°; Angle CDA is marked x' Angles moved outside angle arcs. Angle arcs made smaller.	Standard mark scheme
13	(b) Wording added 'Look at the diagram for Question 13(b) in the Diagram Booklet.' The word 'below' removed. Wording added 'The three angles are marked 80°, 60° and 50°.' Diagram enlarged. Angles moved outside angle arcs. Angle arcs made smaller.	Standard mark scheme
14	Wording added 'Look at the diagram for Question 14 in the Diagram Booklet.' Axes labels moved to above the vertical axis and left on the horizontal axis. Open headed arrows. Diagram enlarged. Small squares removed. Right axis labelled. Graph line thickened. Part (b) changed from 80g to 75g	Standard mark scheme in (a) In (b) apply the standard mark scheme for M1 but for 75 instead of 80 A1 2000 to 2250

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Question	Modification	Mark scheme notes
16	Wording added 'Look at the table and the diagram for Question 16 in the Diagram Booklet.' Wording added 'in the Diagram Booklet'. Table enlarged. Diagram enlarged. The word 'this' removed and replaced with 'the' twice. Wording added 'in the Diagram Booklet' twice.	Standard mark scheme
18	Shape labelled 'shape A' and another 'shape B' added. Shading changed. The wording 'Rotate the shaded shape 90° anticlockwise about (0,0)' removed and replaced with 'Describe fully the single transformation that maps shape A onto shape B.'	B2 for (i) rotation (ii) 90 (iii) anticlockwise (iv) (0,0) Accept 270 AND clockwise for (ii) & (iii) and "origin" for (0,0) (B1 for two of the above aspects) If there is any indication of any other transformation award 0 marks.
19	Wording added 'Look at the diagram for Question 19 in the Diagram Booklet.' Wording added 'In the Diagram Booklet'. Diagram enlarged. Small squares removed. Axes labels moved above the vertical axis and left on the horizontal axis. Right axis labelled. Open headed arrows. Graph line thickened.	Standard mark scheme
20	Wording added 'Look at the information for Question 20 in the Diagram Booklet.' The wording 'Here' removed and replaced with 'It shows'. Frame removed. Information left aligned	Standard mark scheme
21	Value changed: a to n	Standard mark scheme but note change of letter.
22	Equations stacked vertically and moved left with equals symbols aligned.	Standard mark scheme
24	Wording added 'Look at the diagram for Question 24 in the Diagram Booklet. You may be provided with a model. It is not accurate.' Diagram enlarged. Model provided. '160cm' label moved to left side.	Standard mark scheme
25	Wording added 'Look at the diagram for Question 25 in the DB.' Diagrams stack vertically and enlarged. Angle arcs made smaller. Arcs at C and F separated more. Wording added: AC = 5 cm; BC = 4 cm; DE = 20 cm; DF = 22 cm; 'Angle ABC = Angle DEF' ; 'Angle ACB = DFE'	Standard mark scheme
26	Wording added 'Look at the diagram for Question 26 in the DB.' Diagram enlarged.	Standard mark scheme
30	(b) Wording added 'Look at the diagram for Question 30(b) in the DB.' Diagram enlarged. Cross changed to a dot.	Standard mark scheme

