

Mark Scheme (Results)

Summer 2025

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

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

11 Number in brackets after a calculation

Where there is a number in brackets after a calculation E.g. 2 × 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 E.g. "12" × 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 E.g. [area] × 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: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	tenths or $\frac{7}{10}$	B1	for (7) tenths **or** $\frac{7}{10}$ **or** 0.7	Condone incorrect spelling provided the intention is clear
2	2.4	B1	oe eg $\frac{12}{5}$	
3	$\frac{19}{100}$	B1	oe eg $\frac{190}{1000}$	
4	$\frac{4}{10}$	B1	oe eg $\frac{2}{5}$, 0.4, 40%	Accept $\frac{4}{10}$ positively indicated in the list (as long as answer line is blank)
5	Two correct factors	B1	for 2 correct factors from 1, 2, 4, 8, 16, 32 and no incorrect factors	Accept one correct product
6	28	P1 P1 A1	for a process to work out the value of the £20 notes, eg 6 × 20 (= 120) oe for a process to work out the value of the £10 notes, eg 400 – "120" (= 280) oe allow £28	Build up processes are allowed. Condone one error in the build-up process. If 28 seen but 10 or 280 on answer line award P2A0 eg '28 notes of £10' then 10 or 280 on answer line
7 (a)	Mark at $\frac{1}{6}$	B1	for mark at $\frac{1}{6}$	Accept indications other than a cross, eg an arrow pointing to the correct position.
(b)	Mark at $\frac{2}{6}$	B1	for mark at $\frac{2}{6}$	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8	CB, CF, CS, TB, TF, TS, LB, LF, LS	B2 (B1	for fully correct list with no repeats for at least 4 correct combinations, condone repeats and incorrect combinations)	Accept unambiguous abbreviations Accept CB or BC etc
9 (a)	–2, 1	B1	cao	
(b)	Point marked at (1, 2)	B1	cao	Accept without label provided unambiguous, ignore any lines drawn
(c)	Point marked at (5, 0)	B1	cao	Accept without label provided unambiguous, ignore any lines drawn
10	No with reason	C1	No with reason **Acceptable reasons:** No, the cube root of 27 is 3 (not 9) No, the answer is 3 No, 9×9×9 is not 27 No, 9×9×9 is 729 No, 3×3×3 is 27 No, 27 ÷ 3 = 9 **and** 9 ÷ 3 = 3 No, he needs to divide by 3 again No, because you don't divide by 3 for cube root No, 9×9 is 81 which is already more than 27 **Not acceptable reasons:** No, the cube root is not 9 3 divided by 27 is 9 No because a cube number is a number times by itself 3 times No, because you don't divide by 3	'No' may be implied by an equivalent statement eg 'Jason is wrong' or 'He is not correct'

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
			Yes…	
11	16	M1	for converting, eg 1.2 × 100 (= 120) **or** 136 ÷ 100 (= 1.36) **or** for an answer of 0.16 **or** for [Elena's height] – 1.2 **or** for 136 – [George's height]	[Elena's height] = 13 600 or 1360 or 13.6 or 1.36 [George's height] = 120 or 12 or 0.12 or 0.012
		A1	cao	
12 (a)	11	B1	cao	
(b)	Yes (supported)	M1	for method to show that 63 is in the sequence, eg starts to list terms of the sequence, with at least 3 correct **or** $6n + 3 = 63$ **or** $(63 – 3) \div 6$ (= 10) **or** $6 \times 10 + 3$ **or (**$63 – 27) \div 6$ **or** $27 + 6 + 6 + 6 + 6 + 6 + 6$	33, 39, 45, 51, 57, 63
		A1	eg Yes **and** 33, 39, 45, 51, 57, 63 Yes **and** $n = 10$ Yes **and** $(63 – 3) \div 6$ is a whole number Yes **and** $6 \times 10 + 3 = 63$ Yes **and** 63 – 27 is divisible by 6, and the sequence goes up in 6's Yes **and** $27 + 6 + 6 + 6 + 6 + 6 + 6 = 63$ **OR** Like all the other terms in the sequence, it is in the 3 times table but not the 6 times table It's the 10th term / 63 is the 10^{th} term	'Yes' can be implied by an equivalent statement eg '63 is in the sequence' Ignore additional incorrect statements but if the statement contradicts award A0 eg '33, 39, 45, 51, 57, 63, and yes and it's the 11^{th} term' would be M1A0

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13	105	M1	for a method to find an unknown angle, eg angle *BCD* = 120 **or** angle *BCD* = 360 – 120 – 2 × (180 – 120) (= 120) **or** angle *BCE* = 180 – 120 (= 60) **or** angle *DCF* = 180 – 120 (= 60)	Angles may be seen on diagram. Angles must be clearly labelled on the diagram or otherwise identified.
		M1	for a complete method to find the value of *x*, eg (*x* =) 360 – "120" – 45 – 90 (= 105)	
		C2	for 105 as the answer **and** full reasons for their method, eg vertically opposite angles are equal OR vertically opposite angles are equal angles in a quadrilateral add up to 360 **or** angles on a straight line add up to 180 angles at a point add up to 360 angles in a quadrilateral add up to 360 **or** angles on a straight line add up to 180 angles in a quadrilateral add up to 360	Underlined words need to be shown; reasons need to be linked to their method; if student gives any reasons not linked to their method, award maximum C1 only Accept " ∠s " for "angles" Accept "4-sided shape" for "quadrilateral"
		(C1	(dep M1) for one correct reason)	For C1, ignore any reasons not linked to their method
14 (a)	115	B1	for answer in the range 113 to 117	
(b)	30	M1	for length of *CD* measured in the range 7.3 to 7.7 **or** for 4 × [length]	[length] is their measurement clearly identified as *CD*
		A1	for answer in the range 29.2 to 30.8	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15 (a)	$\frac{87}{200}$	B1	for $\frac{87}{200}$ oe fraction	
(b)	12	B1	cao	
16	15	P1	for process to find the number of games won, eg $48 \div 8 \times 3$ (= 18) oe **or** 48 – [games won] **or** for process to find the fraction of games drawn and lost **or** lost only, eg $1-\frac{3}{8}\left(=\frac{5}{8}\right)$ oe eg 1 – 0.375 (= 0.625) **or** $\left(1-\frac{3}{8}\right)\div 2\left(=\frac{5}{16}\right)$ oe eg $\frac{2.5}{8}$ **or** for representing the games in a ratio eg 3 : 2.5 : 2.5 oe	[games won] needs to be clearly stated and must be an integer less than 48 and not $48 \div 8 \times 3$ (= 18) oe
		P1	for a correct next step, eg 48 – "18" (= 30) **or** $"\frac{5}{8}" \times 48$ (= 30) oe eg "0.625" × 48 (= 30) **or** $"\frac{2.5}{8}" \times 48$ **or** $48 \div 8 \times 2.5$ oe **or** 18 : 15 : 15	
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17 (a)	37, 83 21, 16, 44, 39	B3	for a fully correct frequency tree	If probabilities used instead of frequencies then maximum of B2 can be awarded
		(B2	for at least 4 correct values in the frequency tree)	
		(B1	for at least 1 correct value in the frequency tree)	
(b)	$\frac{83}{120}$	B1	for $\frac{83}{120}$ oe or ft from frequency tree	Accept equivalent fraction or decimal or percentage forms of probability eg 0.69(…) or 69(…)%

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	Yes (supported)	P1	for process to decrease 12 000 by 20%, eg 12 000 – 12 000 × 0.2 oe (= 9600) or 12 000 × 0.8 oe (= 9600) **or** for process to find the value of 24 monthly payments of £450, eg 450 × 24 (= 10 800) **or** for process to split the cost of the car over 24 months, eg 12 000 ÷ 24 (= 500)	Build up processes are allowed. Condone one error in the build-up process.
		P1	for process to find comparable values, eg "9600" ÷ 24 (= 400) **or** eg 12 000 × 0.8 oe (= 9600) **and** 450 × 24 (= 10 800) **or** 12 000 – "10 800" (= 1200) **or** "9600" ÷ 450 (= 21…) **or** "10 800" + 12 000 × 0.2 oe (= 13 200) **or** eg "500" × 0.8 (= 400) oe	Award P0 for 1200 coming from 12 000 × 0.1 oe
		C1	for Yes **and** correct comparable value(s), eg Yes **and** 400 **or** Yes **and** 9600 **and** 10 800 **or** Yes **and** 10% = 1200 where 1200 comes from 12 000 – "10 800" **or** Yes **and** 21… **or** Yes **and** 13 200	Award no marks for correct decision with no supportive working 'Yes' may be implied by an equivalent statement eg 'Amy is right' or 'She is correct'

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19 (a)	2	B1	cao	
(b)	2.36	M1	for starting method by multiplying ages by frequencies, with at least 3 correct, eg 1×16, 2×15, 3×7, 4×9, 5×3 **or** at least three of 16, 30, 21, 36, 15	Do not award this mark if the final answer comes from an alternative incorrect method, eg $50 \div 5$ May be seen next to table 118 implies this mark
		M1	(dep on M1) for $\sum fx \div \sum f$, eg $118 \div 50$ **or** $118 \div (16 + 15 + 7 + 9 + 3)$ **or** $(1 \times 16 + 2 \times 15 + 3 \times 7 + 4 \times 9 + 5 \times 3) \div 50$	$\sum fx$ must come from 5 products
		A1	accept 2.4 from correct working	If a correct answer is shown and then incorrectly rounded award full marks
20 (a)	0.265(0780261)	M1	for 12.57 **or** 47.42 **or** 0.2 **or** 0.26 **or** 0.27 **or** 0.3 **or** $\frac{1257}{4742}$ oe	
		A1	for 0.265(0780261)	Answer must be given to at least 3 decimal places rounded or truncated Check first 3 decimal places only
(b)	0.27	B1	for 0.27 or ft from part (a) provided answer to (a) has at least 3 sf	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21 (a)	y^8	B1	cao	
(b)	e^6	B1	cao	
(c)	$3x^3 + 5x$	B1	cao	
(d)	$n^2 + 3n - 10$	M1	for 3 out of no more than 4 terms correct with correct signs or 4 correct terms ignoring signs	$n^2 - 2n + 5n - 10$ NB: $n^2 + 3n$ or $3n - 10$ implies 3 correct terms
		A1	cao	
22	Points plotted at (5, 12) (15, 25) (25, 10) (35, 8) (45, 5) and joined with line segments	B2	for correct plotting of all 5 points at midpoints **and** joining with line segments	Ignore any histogram drawn Ignore any part of the frequency polygon outside of the range of the first and last point plotted.
		(B1	for correct plotting of all 5 points at midpoints joined with a curve or missing / no line segments **or** for a frequency polygon with one point incorrect **or** for a frequency polygon with first and last point joined directly	
			or for plotting of all 5 points at the correct heights consistent within intervals (including end points) **and** joining with line segments	for example, at 0, 10, 20, 30, 40 or at 10, 20, 30, 40, 50

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
23 (a)	Mistake identified	C1	for identifying the mistake **Acceptable examples** p −5 should be multiplied by 3 (−)5 should be multiplied by 3 All of left side / everything should be multiplied by 3 He failed to multiply the 5 as well He should have / didn't put brackets around the $p - 5$ (The $3p - 5$) should be $3p - 15$ (The $- 5$) should be $- 15$ / (the 5) should be 15 (The answer should be) $m = 3p - 15$ / $m = 3(p - 5)$ He only times the p by 3 **Not acceptable examples** The first line should be $3p = m + 5$ He should have multiplied everything Ben didn't divide $p - 5$ by 3 He failed to multiply the $p - 5$ He failed to multiply the (–)5 He only times the p He should have multiplied by 3 first He only multiplied one side by 3 He needs to get rid of the fraction Should have used brackets Just circling the $3 \times p - 5$ and / or the $m = 3p - 5$ Needs to multiply the 5 by −3 He should have done $p - 5 \times 3$	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
(b)	$2xy(x^2 + 2y)$	B2	for $2xy(x^2 + 2y)$ oe eg $2(x^2 + 2y)xy$	
		(B1	for $2x(x^2y + 2y^2)$ **or** $2y(x^3 + 2xy)$ **or** $xy(2x^2 + 4y)$	
			or for correctly identifying the HCF in the factorisation of the form $2xy(ax^2 \pm ...)$ **or** $2xy(... \pm by)$ where a and b are integers	... can be numerical or algebraic but not equal to 0 or absent
			or $(x^2 + 2y)$ as a factor eg $2x(x^2 + 2y)$	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
24	60	P1	for process to find SP of 200 oranges or number of bags, eg 200 ÷ 5 (= 40) oe **or** for process to find the overall profit, eg 200 ÷ 5 – 25 (= 15) oe **or** for process to find CP of 1 orange, eg 25 ÷ 200 (= 0.125) oe **or** SP of 1 orange, eg 1 ÷ 5 (= 0.2) oe **or** for process to find CP of 5 oranges, eg 25 ÷ (200 ÷ 5) (= 0.625) oe **or** for process to find number of oranges bought per £, eg 200 ÷ 25 (= 8)	Working can be in either pounds or pence SP = Selling Price CP = Cost Price 1.6 implies P1
		P1	(dep) for start to a process to find percentage profit, eg $\frac{"40"-25}{25}$ (= 0.6) oe **or** $\frac{"15"}{25}$ (= 0.6) oe **or** $\frac{"40"}{25} \times 100$ (= 160) oe **or** $\frac{"0.2"-"0.125"}{"0.125"}$ (= 0.6) oe **or** $\frac{1}{"0.625"} \times 100$ (= 160) oe **or** $\frac{1-"0.625"}{"0.625"}$ (= 0.6) oe **or** $\frac{"8"-5}{5}$ (= 0.6) oe **or** $\frac{"8"}{5} \times 100$ (= 160) oe **or** $\frac{"8"\times"15"}{200}$ (= 0.6) oe	
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
25	New York (supported)	P1	for a conversion between kg and lbs, eg 2 × 2.2 (= 4.4) **or** 5 ÷ 2.2 (= 2.27...)	See page at end of mark scheme
		P1	for a conversion between pounds and US dollars, eg 3.75 × 1.2(0) (= 4.50) **or** 4.9(0) ÷ 1.2(0) (= 4.08...)	
		P1	for a process to find figures to compare, eg 3.75 ÷ "4.4" (= 0.85...) **and** "4.08…" ÷ 5 (= 0.81(6…)) **or** "4.50" ÷ 2 (= 2.25) **and** 4.9(0) ÷ "2.27..." (= 2.15(6...)) **or** "4.4" ÷ 3.75 (= 1.17…) **and** 5 ÷ "4.08" (= 1.22…) **or** 2 ÷ "4.5" (= 0.44…) **and** "2.27" ÷ 4.9(0) (= 0.46 …)	£ per lb US dollars per kg lbs per £ kg per US dollar Condone the incorrect assignment of units for all 3 P marks
		C1	for New York with correct comparable figures, eg 0.85 **and** 0.81(6…) **OR** 2.25 **and** 2.15(6...)	Final comparable values can be truncated or rounded, they just need to be accurate enough to allow a comparison
26	23.75 and 23.85	B1	for 23.75 in the correct position	
		B1	for 23.85 in the correct position	Accept 23.84$\dot{9}$ or 23.8499(9...)

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
27	630	M1	for converting time, eg 24 minutes = $\frac{24}{60}$ (= 0.4 (hours)) oe eg $\frac{2}{5}$ (hours) **or** 2 hours 24 minutes = 2 + $\frac{24}{60}$ (= 2.4 (hours)) oe eg $2\frac{2}{5}$ (hours) **or** 2 hours 24 minutes = 2 × 60 + 24 (= 144 (minutes)) oe **or** 2 hours 24 minutes = 2 × 60 × 60 + 24 × 60 (= 8640 (seconds)) oe **OR** for using distance ÷ time, eg 1512 ÷ [time] oe **or** [distance] ÷ [time] oe	10.5 or 0.175 imply M1 [distance] can be 1512 or the result of an attempt to convert 1512 km to a different unit, it must have the digits 1512 eg 151.2 or 1 512 000 [time] can be any value they believe to be the time the plane takes to fly
		M1	for a complete method using distance ÷ time, eg 1512 ÷ "2.4" **or** 1512 ÷ " $2\frac{2}{5}$ " **or** 1512 ÷ "144" × 60 oe **or** 1512 ÷ "8640" × 60 × 60 oe	
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
28	(11, 14.5)	P1	for process to work with coordinates, eg 8 – 2 (= 6) **or** 12 – 7 (= 5) **or** eg (2 + 8) ÷ 2 (= 5) **or** (7 + 12) ÷ 2 (= 9.5)	Working may be seen on the diagram Allow alternative notation eg (6, 5) or (5, 6) or (5, 9.5) or (9.5, 5) Implied by $\frac{.....}{8-2}$ or $\frac{12-7}{.....}$ even if using $\frac{\text{diff in } x}{\text{diff in } y}$
		P1	for process to use proportion, eg "6" ÷ 2 (= 3) oe **or** "5" ÷ 2 (= 2.5) oe **or** 2 + "6" × 1.5 (= 11) **or** 2 + 9 (= 11) oe **or** 7 + "5" × 1.5 (= 14.5) **or** 7 + 7.5 (= 14.5) oe **or** "5" + "6" (= 11) **or** 8 + "5" – 2 (= 11) oe **or** "9.5" + "5" (= 14.5) **or** 12 + "9.5" – 7 (= 14.5) oe **or** (11, a) where $a \neq 14.5$ **or** (b, 14.5) where $b \neq 11$	Allow alternative notation eg (3, 2.5) or (2.5, 3) Implied by 8 + "3" (= 11) or 12 + "2.5" (= 14.5) Award P2 for (14.5, 11)
		A1	for (11, 14.5) oe	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
29	44.9	P1	for process to find an expression for the area of the trapezium, eg ½(12 + *CD*)8 or 8 × 12 + ½ × 8 × *x* **or** for process to find the area of the triangle, eg 112 – 8 × 12 (= 16)	*x* is the length of the line from *C* to where perpendicular from *B* meets *CD* Allow use of other letters in place of *CD* and *x* (do not have to be defined unless otherwise stated) Award P1 for 112 – 8 × 12 (= 16) even if not used
		P1	for forming an equation and isolating terms in the unknown length, eg 4*CD* = 112 – 48 **or** ½ × 8 × *x* = 112 – 8 × 12 **or** ½ × 8 × *x* = "16" **or** *CD* = 16 **or** *x* = 4	Award P2 for *CD* = 16 or *x* = 4 even if not used unless clearly from incorrect working eg 12 – 8 (= 4) Only award P2 for 16 if it is clearly identified as *CD*
		P1	for start of process to find length of *BC*, eg $8^2 + \text{"4"}^2$ (= 80) **or** $8^2 + [\text{their } x]^2$ **or** $\tan^{-1}\left(\frac{\text{"4"}}{8}\right)$ (= 26.5…) oe **or** $\tan^{-1}\left(\frac{8}{\text{"4"}}\right)$ (= 63.4…) where "4" can be [their *x*]	[their *x*] can be any value less than 12 or clearly identified as the length of the line from *C* to where perpendicular from *B* meets *CD* (may be seen on the diagram)
		P1	for $\sqrt{8^2 + \text{"4"}^2}$ or $\sqrt{64 + \text{"16"}}$ or $\sqrt{80}$ or $4\sqrt{5}$ (= 8.9…) oe or $\sqrt{8^2 + [\text{their } x]^2}$ **or** $\frac{\text{"4"}}{\sin\text{"26.5..."}}$ or $\frac{8}{\cos\text{"26.5..."}}$ or $\frac{8}{\sin\text{"63.4..."}}$ or $\frac{\text{"4"}}{\cos\text{"63.4..."}}$ where "4" can be [their *x*]	Award P4 for (*BC* =) $\sqrt{80}$ or $4\sqrt{5}$ or 8.9... unless *x* = 4 is clearly from incorrect working
		A1	for answer in the range 44.9 to 44.95	If an answer is shown in the range in working and then incorrectly rounded award full marks

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
30	$x = 3.5$, $y = 1.5$	M1	for a correct method to eliminate either x or y or method leading to substitution (condone one arithmetic error)	
		M1	(dep M1) for substituting found value in one of the equations **or** correct method after starting again (condone one arithmetic error)	
		A1	(dep M1) for $x = 3.5$, $y = 1.5$ oe SCB1 for $x = 3.5$, $y = 1.5$ with no supportive working	Fractions do not need to be in simplest form

QUESTION 25 – Additional information - NOT Exhaustive

Final comparable values can be truncated or rounded and just need to be accurate enough to allow a comparison

Cost per lb in $: 2 × 2.2 (= 4.4) 3.75 × 1.2(0) (= 4.5) "4.5" ÷ "4.4" (= 1.02…) and 4.9(0) ÷ 5 (= 0.98) New York **and** 1.02… **and** 0.98	**Cost per lb in £:** 2 × 2.2 (= 4.4) 4.9(0) ÷ 1.2(0) (= 4.08…) 3.75 ÷ "4.4" (= 0.85…) and "4.08…" ÷ 5 (= 0.81(6…)) New York **and** 0.85… **and** 0.81(6…)
Cost per kg in $: 5 ÷ 2.2 (= 2.27…) 3.75 × 1.2(0) (= 4.5) "4.5" ÷ 2 (= 2.25) and 4.9(0) ÷ "2.27…" (= 2.15(6)) New York **and** 2.25 **and** 2.15(6)	**Cost per kg in £:** 5 ÷ 2.2 (= 2.27…) 4.9(0) ÷ 1.2(0) (= 4.08…) 3.75 ÷ 2 (= 1.87(5)) and "4.08…" ÷ "2.27…" (= 1.79(6…)) New York **and** 1.87(5) **and** 1.79(6…)
Number of lbs per $: 2 × 2.2 (= 4.4) 3.75 × 1.2(0) (= 4.5) "4.4" ÷ "4.5" (= 0.97(7…)) and 5 ÷ 4.9(0) (= 1.02…) New York **and** 0.97(7…) **and** 1.02…	**Number of lbs per £:** 2 × 2.2 (= 4.4) 4.9(0) ÷ 1.2(0) (= 4.08…) "4.4" ÷ 3.75 (= 1.17…) and 5 ÷ "4.08…" (= 1.22…) New York **and** 1.17… **and** 1.22…
Number of kg per $: 5 ÷ 2.2 (= 2.27…) 3.75 × 1.2(0) (= 4.5) 2 ÷ "4.5" (= 0.44…) and "2.27…" ÷ 4.9(0) (= 0.46…) New York **and** 0.44… **and** 0.46…	**Number of kg per £:** 5 ÷ 2.2 (= 2.27…) 4.9(0) ÷ 1.2(0) (= 4.08…) 2 ÷ 3.75 (= 0.53…) and "2.27…" ÷ "4.08…" (= 0.55(6…)) New York **and** 0.53… **and** 0.55(6…)
Cost of 5 lb in $: 2 × 2.2 (= 4.4) 3.75 × 1.2(0) (= 4.5) "4.5" ÷ "4.4" × 5 (= 5.11…) New York **and** 5.11…	**Cost of 5 lb in £:** 2 × 2.2 (= 4.4) 4.9(0) ÷ 1.2(0) (= 4.08…) 3.75 ÷ "4.4" × 5 (= 4.26…) New York **and** 4.08… **and** 4.26…
Cost of 2 kg in $: 5 ÷ 2.2 (= 2.27…) 3.75 × 1.2(0) (= 4.5) 4.9(0) ÷ "2.27…" × 2 (= 4.31…) New York **and** 4.5 **and** 4.31…	**Cost of 2 kg in £:** 5 ÷ 2.2 (= 2.27…) 4.9(0) ÷ 1.2(0) (= 4.08…) "4.08…" ÷ "2.27…" × 2 (= 3.59…) New York **and** 3.59…

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: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
4		Wording changed: 'Five fractions are shown below.'	Standard mark scheme
7	(a)	Wording added: 'Look at the diagram for Question 7(a) in the Diagram Booklet. It shows a probability scale.' Wording removed: 'below' and 'with a cross (x)' Diagram enlarged.	Standard mark scheme
	(b)	Wording added: 'Look at the diagram for Question 7(b) in the Diagram Booklet. It shows another probability scale.' Wording removed: 'below' and 'with a cross (x)' Diagram enlarged.	Standard mark scheme
8		Wording changed: 'Look at the table for Question 8 in the Diagram Booklet. It shows a menu.'	Standard mark scheme
9		Wording added: 'Look at the diagram for Question 9 in the Diagram Booklet. It shows points A, B and C marked on a grid.' Diagram enlarged. Crosses changed to dots. Open headed arrows. Vertical axis cropped at 4 and horizontal axis cropped at -4. Braille: Vertical axis cropped at 4 and -4 and horizontal axis cropped at -4.	
	(b)	Wording removed: 'with a cross (x)' Braille: Wording removed 'cross (x)' and replaced with 'square bumpon' Wording added: 'Square Bumpons are provided if you wish to use them.'	Standard mark scheme
	(c)	Wording removed: 'with a cross (x)' Braille: Wording removed 'cross (x)' and replaced with 'round bumpon' Wording added: 'Round Bumpons are provided if you wish to use them.'	Standard mark scheme
12	(b)	Wording changed: 'The first four terms of a different sequence are shown below.'	Standard mark scheme

13		Wording changed: 'Look at the diagram for Question 13 in the Diagram Booklet. It shows quadrilateral ABCD.' Wording added: 'Angle ECF = 120° Angle ADC = 45° Angle BAD is a right angle Angle ABC is marked x' Diagram enlarged. Angles moved outside of angle arcs and angle arcs made smaller.	Standard mark scheme
14	 (a) (b)	Wording added: 'Look at the diagram for Question 14 in the Diagram Booklet.' North lines extended to measure 9cm. Open headed arrows. Bearing at C made to be 115° Length of CD changed to 15 cm	 B1 for answer in the range 110 to 120 M1 for length of *CD* measured in the range 14.5 to 15.5 **or** for 4 × [length] where [length] is their measurement clearly identified as *CD* A1 for answer in the range 58 to 62
17		Wording added: 'Look at the diagram for Question 17 in the Diagram Booklet. It shows an incomplete frequency tree.' Wording added: 'in the Diagram Booklet' Braille: Wording added 'By writing the missing values labelled (i) to (vi).' Diagram enlarged.	Standard mark scheme
19		Wording added: 'Look at the table for Question 19 in the Diagram Booklet.' Wording added: 'in the Diagram Booklet'	Standard mark scheme
21b		Letter 'e' changed to 'p'.	B1 for p^6

22		Wording added: ‘Look at the diagram for Question 22 in the Diagram Booklet. It shows a grid.’ Wording added ‘below’. Wording added: ‘on the grid in the Diagram Booklet’ Values in the table changed: 12 changed to 15, 8 changed to 5 Braille: 12 changed to 15, 8 changed to 5 and final value removed. Diagram enlarged. Open headed arrows. Braille: Horizontal axis cropped at 40.	Standard mark scheme but note change of values (heights at 15, 25, 10, 5, 5) Braille: heights at 15, 25, 10, 5
28		Wording changed: ‘Look at the diagram for Question 28 in the Diagram Booklet. It shows straight line ABC on a set of axes.’ Diagram enlarged. Open headed arrows. Crosses changed to dots.	Standard mark scheme
29		Wording changed: ‘Look at the diagram for Question 29 in the Diagram Booklet. It shows…’ Wording added: ‘Angle DAB and angle ADC are right angles.’ Diagram enlarged.	Standard mark scheme

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

11 Number in brackets after a calculation

Where there is a number in brackets after a calculation E.g. 2 × 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 E.g. "12" × 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 E.g. [area] × 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: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	tenths or $\frac{7}{10}$	B1	for (7) tenths **or** $\frac{7}{10}$ **or** 0.7	Condone incorrect spelling provided the intention is clear
2	2.4	B1	oe eg $\frac{12}{5}$	
3	$\frac{19}{100}$	B1	oe eg $\frac{190}{1000}$	
4	$\frac{4}{10}$	B1	oe eg $\frac{2}{5}$, 0.4, 40%	Accept $\frac{4}{10}$ positively indicated in the list (as long as answer line is blank)
5	Two correct factors	B1	for 2 correct factors from 1, 2, 4, 8, 16, 32 and no incorrect factors	Accept one correct product
6	28	P1 P1 A1	for a process to work out the value of the £20 notes, eg 6 × 20 (= 120) oe for a process to work out the value of the £10 notes, eg 400 – "120" (= 280) oe allow £28	Build up processes are allowed. Condone one error in the build-up process. If 28 seen but 10 or 280 on answer line award P2A0 eg '28 notes of £10' then 10 or 280 on answer line
7 (a)	Mark at $\frac{1}{6}$	B1	for mark at $\frac{1}{6}$	Accept indications other than a cross, eg an arrow pointing to the correct position.
(b)	Mark at $\frac{2}{6}$	B1	for mark at $\frac{2}{6}$	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8	CB, CF, CS, TB, TF, TS, LB, LF, LS	B2 (B1	for fully correct list with no repeats for at least 4 correct combinations, condone repeats and incorrect combinations)	Accept unambiguous abbreviations Accept CB or BC etc
9 (a)	–2, 1	B1	cao	
(b)	Point marked at (1, 2)	B1	cao	Accept without label provided unambiguous, ignore any lines drawn
(c)	Point marked at (5, 0)	B1	cao	Accept without label provided unambiguous, ignore any lines drawn
10	No with reason	C1	No with reason **Acceptable reasons:** No, the cube root of 27 is 3 (not 9) No, the answer is 3 No, 9×9×9 is not 27 No, 9×9×9 is 729 No, 3×3×3 is 27 No, 27 ÷ 3 = 9 **and** 9 ÷ 3 = 3 No, he needs to divide by 3 again No, because you don't divide by 3 for cube root No, 9×9 is 81 which is already more than 27 **Not acceptable reasons:** No, the cube root is not 9 3 divided by 27 is 9 No because a cube number is a number times by itself 3 times No, because you don't divide by 3 Yes…	'No' may be implied by an equivalent statement eg 'Jason is wrong' or 'He is not correct'

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11	16	M1	for converting, eg 1.2 × 100 (= 120) **or** 136 ÷ 100 (= 1.36) **or** for an answer of 0.16 **or** for [Elena's height] – 1.2 **or** for 136 – [George's height]	[Elena's height] = 13 600 or 1360 or 13.6 or 1.36 [George's height] = 120 or 12 or 0.12 or 0.012
		A1	cao	
12 (a)	11	B1	cao	
(b)	Yes (supported)	M1	for method to show that 63 is in the sequence, eg starts to list terms of the sequence, with at least 3 correct **or** $6n + 3 = 63$ **or** $(63 – 3) \div 6$ (= 10) **or** $6 \times 10 + 3$ **or (**$63 – 27) \div 6$ **or** $27 + 6 + 6 + 6 + 6 + 6 + 6$	33, 39, 45, 51, 57, 63
		A1	eg Yes **and** 33, 39, 45, 51, 57, 63 Yes **and** $n = 10$ Yes **and** $(63 – 3) \div 6$ is a whole number Yes **and** $6 \times 10 + 3 = 63$ Yes **and** 63 – 27 is divisible by 6, and the sequence goes up in 6's Yes **and** $27 + 6 + 6 + 6 + 6 + 6 + 6 = 63$ **OR** Like all the other terms in the sequence, it is in the 3 times table but not the 6 times table It's the 10th term / 63 is the 10^{th} term	'Yes' can be implied by an equivalent statement eg '63 is in the sequence' Ignore additional incorrect statements but if the statement contradicts award A0 eg '33, 39, 45, 51, 57, 63, and yes and it's the 11^{th} term' would be M1A0

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13	105	M1	for a method to find an unknown angle, eg angle *BCD* = 120 **or** angle *BCD* = 360 – 120 – 2 × (180 – 120) (= 120) **or** angle *BCE* = 180 – 120 (= 60) **or** angle *DCF* = 180 – 120 (= 60)	Angles may be seen on diagram. Angles must be clearly labelled on the diagram or otherwise identified.
		M1	for a complete method to find the value of *x*, eg (*x* =) 360 – "120" – 45 – 90 (= 105)	
		C2	for 105 as the answer **and** full reasons for their method, eg vertically opposite angles are equal OR vertically opposite angles are equal angles in a quadrilateral add up to 360 **or** angles on a straight line add up to 180 angles at a point add up to 360 angles in a quadrilateral add up to 360 **or** angles on a straight line add up to 180 angles in a quadrilateral add up to 360	Underlined words need to be shown; reasons need to be linked to their method; if student gives any reasons not linked to their method, award maximum C1 only Accept " ∠s " for "angles" Accept "4-sided shape" for "quadrilateral"
		(C1	(dep M1) for one correct reason)	For C1, ignore any reasons not linked to their method
14 (a)	115	B1	for answer in the range 113 to 117	
(b)	30	M1	for length of *CD* measured in the range 7.3 to 7.7 **or** for 4 × [length]	[length] is their measurement clearly identified as *CD*
		A1	for answer in the range 29.2 to 30.8	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15 (a)	$\frac{87}{200}$	B1	for $\frac{87}{200}$ oe fraction	
(b)	12	B1	cao	
16	15	P1	for process to find the number of games won, eg 48 ÷ 8 × 3 (= 18) oe **or** 48 – [games won] **or** for process to find the fraction of games drawn and lost **or** lost only, eg $1-\frac{3}{8}\left(=\frac{5}{8}\right)$ oe eg 1 – 0.375 (= 0.625) **or** $\left(1-\frac{3}{8}\right)\div 2\left(=\frac{5}{16}\right)$ oe eg $\frac{2.5}{8}$ **or** for representing the games in a ratio eg 3 : 2.5 : 2.5 oe	[games won] needs to be clearly stated and must be an integer less than 48 and not 48 ÷ 8 × 3 (= 18) oe
		P1	for a correct next step, eg 48 – "18" (= 30) **or** $"\frac{5}{8}"\times 48$ (= 30) oe eg "0.625" × 48 (= 30) **or** $"\frac{2.5}{8}"$ × 48 **or** 48 ÷ 8 × 2.5 oe **or** 18 : 15 : 15	
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17 (a)	37, 83 21, 16, 44, 39	B3	for a fully correct frequency tree	If probabilities used instead of frequencies then maximum of B2 can be awarded
		(B2	for at least 4 correct values in the frequency tree)	
		(B1	for at least 1 correct value in the frequency tree)	
(b)	$\frac{83}{120}$	B1	for $\frac{83}{120}$ oe or ft from frequency tree	Accept equivalent fraction or decimal or percentage forms of probability eg 0.69(…) or 69(…)%

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	Yes (supported)	P1	for process to decrease 12 000 by 20%, eg 12 000 – 12 000 × 0.2 oe (= 9600) or 12 000 × 0.8 oe (= 9600) **or** for process to find the value of 24 monthly payments of £450, eg 450 × 24 (= 10 800) **or** for process to split the cost of the car over 24 months, eg 12 000 ÷ 24 (= 500)	Build up processes are allowed. Condone one error in the build-up process.
		P1	for process to find comparable values, eg "9600" ÷ 24 (= 400) **or** eg 12 000 × 0.8 oe (= 9600) **and** 450 × 24 (= 10 800) **or** 12 000 – "10 800" (= 1200) **or** "9600" ÷ 450 (= 21…) **or** "10 800" + 12 000 × 0.2 oe (= 13 200) **or** eg "500" × 0.8 (= 400) oe	Award P0 for 1200 coming from 12 000 × 0.1 oe
		C1	for Yes **and** correct comparable value(s), eg Yes **and** 400 **or** Yes **and** 9600 **and** 10 800 **or** Yes **and** 10% = 1200 where 1200 comes from 12 000 – "10 800" **or** Yes **and** 21… **or** Yes **and** 13 200	Award no marks for correct decision with no supportive working 'Yes' may be implied by an equivalent statement eg 'Amy is right' or 'She is correct'

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19 (a)	2	B1	cao	
(b)	2.36	M1	for starting method by multiplying ages by frequencies, with at least 3 correct, eg 1×16, 2×15, 3×7, 4×9, 5×3 **or** at least three of 16, 30, 21, 36, 15	Do not award this mark if the final answer comes from an alternative incorrect method, eg $50 \div 5$ May be seen next to table 118 implies this mark
		M1	(dep on M1) for $\sum fx \div \sum f$, eg $118 \div 50$ **or** $118 \div (16 + 15 + 7 + 9 + 3)$ **or** $(1 \times 16 + 2 \times 15 + 3 \times 7 + 4 \times 9 + 5 \times 3) \div 50$	$\sum fx$ must come from 5 products
		A1	accept 2.4 from correct working	If a correct answer is shown and then incorrectly rounded award full marks
20 (a)	0.265(0780261)	M1	for 12.57 **or** 47.42 **or** 0.2 **or** 0.26 **or** 0.27 **or** 0.3 **or** $\frac{1257}{4742}$ oe	
		A1	for 0.265(0780261)	Answer must be given to at least 3 decimal places rounded or truncated Check first 3 decimal places only
(b)	0.27	B1	for 0.27 or ft from part (a) provided answer to (a) has at least 3 sf	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21 (a)	y^8	B1	cao	
(b)	e^6	B1	cao	
(c)	$3x^3 + 5x$	B1	cao	
(d)	$n^2 + 3n - 10$	M1	for 3 out of no more than 4 terms correct with correct signs or 4 correct terms ignoring signs	$n^2 - 2n + 5n - 10$ NB: $n^2 + 3n$ or $3n - 10$ implies 3 correct terms
		A1	cao	
22	Points plotted at (5, 12) (15, 25) (25, 10) (35, 8) (45, 5) and joined with line segments	B2	for correct plotting of all 5 points at midpoints **and** joining with line segments	Ignore any histogram drawn Ignore any part of the frequency polygon outside of the range of the first and last point plotted.
		(B1	for correct plotting of all 5 points at midpoints joined with a curve or missing / no line segments **or** for a frequency polygon with one point incorrect **or** for a frequency polygon with first and last point joined directly	
			or for plotting of all 5 points at the correct heights consistent within intervals (including end points) **and** joining with line segments	for example, at 0, 10, 20, 30, 40 or at 10, 20, 30, 40, 50

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
23 (a)	Mistake identified	C1	for identifying the mistake **Acceptable examples** p −5 should be multiplied by 3 (−)5 should be multiplied by 3 All of left side / everything should be multiplied by 3 He failed to multiply the 5 as well He should have / didn't put brackets around the $p - 5$ (The $3p - 5$) should be $3p - 15$ (The $- 5$) should be $- 15$ / (the 5) should be 15 (The answer should be) $m = 3p - 15$ / $m = 3(p - 5)$ He only times the p by 3 **Not acceptable examples** The first line should be $3p = m + 5$ He should have multiplied everything Ben didn't divide $p - 5$ by 3 He failed to multiply the $p - 5$ He failed to multiply the (–)5 He only times the p He should have multiplied by 3 first He only multiplied one side by 3 He needs to get rid of the fraction Should have used brackets Just circling the $3 \times p - 5$ and / or the $m = 3p - 5$ Needs to multiply the 5 by −3 He should have done $p - 5 \times 3$	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
(b)	$2xy(x^2 + 2y)$	B2	for $2xy(x^2 + 2y)$ oe eg $2(x^2 + 2y)xy$	
		(B1	for $2x(x^2y + 2y^2)$ **or** $2y(x^3 + 2xy)$ **or** $xy(2x^2 + 4y)$	
			or for correctly identifying the HCF in the factorisation of the form $2xy(ax^2 \pm ...)$ **or** $2xy(... \pm by)$ where a and b are integers	... can be numerical or algebraic but not equal to 0 or absent
			or $(x^2 + 2y)$ as a factor eg $2x(x^2 + 2y)$	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
24	60	P1	for process to find SP of 200 oranges or number of bags, eg 200 ÷ 5 (= 40) oe **or** for process to find the overall profit, eg 200 ÷ 5 – 25 (= 15) oe **or** for process to find CP of 1 orange, eg 25 ÷ 200 (= 0.125) oe **or** SP of 1 orange, eg 1 ÷ 5 (= 0.2) oe **or** for process to find CP of 5 oranges, eg 25 ÷ (200 ÷ 5) (= 0.625) oe **or** for process to find number of oranges bought per £, eg 200 ÷ 25 (= 8)	Working can be in either pounds or pence SP = Selling Price CP = Cost Price 1.6 implies P1
		P1	(dep) for start to a process to find percentage profit, eg $\frac{"40"-25}{25}$ (= 0.6) oe **or** $\frac{"15"}{25}$ (= 0.6) oe **or** $\frac{"40"}{25} \times 100$ (= 160) oe **or** $\frac{"0.2"-"0.125"}{"0.125"}$ (= 0.6) oe **or** $\frac{1}{"0.625"} \times 100$ (= 160) oe **or** $\frac{1-"0.625"}{"0.625"}$ (= 0.6) oe **or** $\frac{"8"-5}{5}$ (= 0.6) oe **or** $\frac{"8"}{5} \times 100$ (= 160) oe **or** $\frac{"8"\times"15"}{200}$ (= 0.6) oe	
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
25	New York (supported)	P1	for a conversion between kg and lbs, eg 2 × 2.2 (= 4.4) **or** 5 ÷ 2.2 (= 2.27...)	See page at end of mark scheme
		P1	for a conversion between pounds and US dollars, eg 3.75 × 1.2(0) (= 4.50) **or** 4.9(0) ÷ 1.2(0) (= 4.08...)	
		P1	for a process to find figures to compare, eg 3.75 ÷ "4.4" (= 0.85...) **and** "4.08…" ÷ 5 (= 0.81(6…)) **or** "4.50" ÷ 2 (= 2.25) **and** 4.9(0) ÷ "2.27..." (= 2.15(6...)) **or** "4.4" ÷ 3.75 (= 1.17…) **and** 5 ÷ "4.08" (= 1.22…) **or** 2 ÷ "4.5" (= 0.44…) **and** "2.27" ÷ 4.9(0) (= 0.46 …)	£ per lb US dollars per kg lbs per £ kg per US dollar Condone the incorrect assignment of units for all 3 P marks
		C1	for New York with correct comparable figures, eg 0.85 **and** 0.81(6…) **OR** 2.25 **and** 2.15(6...)	Final comparable values can be truncated or rounded, they just need to be accurate enough to allow a comparison
26	23.75 and 23.85	B1	for 23.75 in the correct position	
		B1	for 23.85 in the correct position	Accept 23.84$\dot{9}$ or 23.8499(9...)

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
27	630	M1	for converting time, eg 24 minutes = $\frac{24}{60}$ (= 0.4 (hours)) oe eg $\frac{2}{5}$ (hours) **or** 2 hours 24 minutes = 2 + $\frac{24}{60}$ (= 2.4 (hours)) oe eg $2\frac{2}{5}$ (hours) **or** 2 hours 24 minutes = 2 × 60 + 24 (= 144 (minutes)) oe **or** 2 hours 24 minutes = 2 × 60 × 60 + 24 × 60 (= 8640 (seconds)) oe **OR** for using distance ÷ time, eg 1512 ÷ [time] oe **or** [distance] ÷ [time] oe	10.5 or 0.175 imply M1 [distance] can be 1512 or the result of an attempt to convert 1512 km to a different unit, it must have the digits 1512 eg 151.2 or 1 512 000 [time] can be any value they believe to be the time the plane takes to fly
		M1	for a complete method using distance ÷ time, eg 1512 ÷ "2.4" **or** 1512 ÷ "$2\frac{2}{5}$" **or** 1512 ÷ "144" × 60 oe **or** 1512 ÷ "8640" × 60 × 60 oe	
		A1	cao	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
28	(11, 14.5)	P1	for process to work with coordinates, eg 8 – 2 (= 6) **or** 12 – 7 (= 5) **or** eg (2 + 8) ÷ 2 (= 5) **or** (7 + 12) ÷ 2 (= 9.5)	Working may be seen on the diagram Allow alternative notation eg (6, 5) or (5, 6) or (5, 9.5) or (9.5, 5) Implied by $\frac{.....}{8-2}$ or $\frac{12-7}{.....}$ even if using $\frac{\text{diff in } x}{\text{diff in } y}$
		P1	for process to use proportion, eg "6" ÷ 2 (= 3) oe **or** "5" ÷ 2 (= 2.5) oe **or** 2 + "6" × 1.5 (= 11) **or** 2 + 9 (= 11) oe **or** 7 + "5" × 1.5 (= 14.5) **or** 7 + 7.5 (= 14.5) oe **or** "5" + "6" (= 11) **or** 8 + "5" – 2 (= 11) oe **or** "9.5" + "5" (= 14.5) **or** 12 + "9.5" – 7 (= 14.5) oe **or** (11, a) where $a \neq 14.5$ **or** (b, 14.5) where $b \neq 11$	Allow alternative notation eg (3, 2.5) or (2.5, 3) Implied by 8 + "3" (= 11) or 12 + "2.5" (= 14.5) Award P2 for (14.5, 11)
		A1	for (11, 14.5) oe	

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
29	44.9	P1	for process to find an expression for the area of the trapezium, eg ½(12 + *CD*)8 or 8 × 12 + ½ × 8 × *x* **or** for process to find the area of the triangle, eg 112 – 8 × 12 (= 16)	*x* is the length of the line from *C* to where perpendicular from *B* meets *CD* Allow use of other letters in place of *CD* and *x* (do not have to be defined unless otherwise stated) Award P1 for 112 – 8 × 12 (= 16) even if not used
		P1	for forming an equation and isolating terms in the unknown length, eg 4*CD* = 112 – 48 **or** ½ × 8 × *x* = 112 – 8 × 12 **or** ½ × 8 × *x* = "16" **or** *CD* = 16 **or** *x* = 4	Award P2 for *CD* = 16 or *x* = 4 even if not used unless clearly from incorrect working eg 12 – 8 (= 4) Only award P2 for 16 if it is clearly identified as *CD*
		P1	for start of process to find length of *BC*, eg $8^2 + \text{"4"}^2$ (= 80) **or** $8^2 + [\text{their } x]^2$ **or** $\tan^{-1}\left(\frac{\text{"4"}}{8}\right)$ (= 26.5…) oe **or** $\tan^{-1}\left(\frac{8}{\text{"4"}}\right)$ (= 63.4…) where "4" can be [their *x*]	[their *x*] can be any value less than 12 or clearly identified as the length of the line from *C* to where perpendicular from *B* meets *CD* (may be seen on the diagram)
		P1	for $\sqrt{8^2 + \text{"4"}^2}$ or $\sqrt{64 + \text{"16"}}$ or $\sqrt{80}$ or $4\sqrt{5}$ (= 8.9…) oe or $\sqrt{8^2 + [\text{their } x]^2}$ **or** $\frac{\text{"4"}}{\sin\text{"26.5..."}}$ or $\frac{8}{\cos\text{"26.5..."}}$ or $\frac{8}{\sin\text{"63.4..."}}$ or $\frac{\text{"4"}}{\cos\text{"63.4..."}}$ where "4" can be [their *x*]	Award P4 for (*BC* =) $\sqrt{80}$ or $4\sqrt{5}$ or 8.9... unless *x* = 4 is clearly from incorrect working
		A1	for answer in the range 44.9 to 44.95	If an answer is shown in the range in working and then incorrectly rounded award full marks

Paper: 1MA1/3F				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
30	$x = 3.5$, $y = 1.5$	M1	for a correct method to eliminate either x or y or method leading to substitution (condone one arithmetic error)	
		M1	(dep M1) for substituting found value in one of the equations **or** correct method after starting again (condone one arithmetic error)	
		A1	(dep M1) for $x = 3.5$, $y = 1.5$ oe SCB1 for $x = 3.5$, $y = 1.5$ with no supportive working	Fractions do not need to be in simplest form

QUESTION 25 – Additional information - NOT Exhaustive

Final comparable values can be truncated or rounded and just need to be accurate enough to allow a comparison

Cost per lb in $: 2 × 2.2 (= 4.4) 3.75 × 1.2(0) (= 4.5) "4.5" ÷ "4.4" (= 1.02…) and 4.9(0) ÷ 5 (= 0.98) New York **and** 1.02… **and** 0.98	**Cost per lb in £:** 2 × 2.2 (= 4.4) 4.9(0) ÷ 1.2(0) (= 4.08…) 3.75 ÷ "4.4" (= 0.85…) and "4.08…" ÷ 5 (= 0.81(6…)) New York **and** 0.85… **and** 0.81(6…)
Cost per kg in $: 5 ÷ 2.2 (= 2.27…) 3.75 × 1.2(0) (= 4.5) "4.5" ÷ 2 (= 2.25) and 4.9(0) ÷ "2.27…" (= 2.15(6)) New York **and** 2.25 **and** 2.15(6)	**Cost per kg in £:** 5 ÷ 2.2 (= 2.27…) 4.9(0) ÷ 1.2(0) (= 4.08…) 3.75 ÷ 2 (= 1.87(5)) and "4.08…" ÷ "2.27…" (= 1.79(6…)) New York **and** 1.87(5) **and** 1.79(6…)
Number of lbs per $: 2 × 2.2 (= 4.4) 3.75 × 1.2(0) (= 4.5) "4.4" ÷ "4.5" (= 0.97(7…)) and 5 ÷ 4.9(0) (= 1.02…) New York **and** 0.97(7…) **and** 1.02…	**Number of lbs per £:** 2 × 2.2 (= 4.4) 4.9(0) ÷ 1.2(0) (= 4.08…) "4.4" ÷ 3.75 (= 1.17…) and 5 ÷ "4.08…" (= 1.22…) New York **and** 1.17… **and** 1.22…
Number of kg per $: 5 ÷ 2.2 (= 2.27…) 3.75 × 1.2(0) (= 4.5) 2 ÷ "4.5" (= 0.44…) and "2.27…" ÷ 4.9(0) (= 0.46…) New York **and** 0.44… **and** 0.46…	**Number of kg per £:** 5 ÷ 2.2 (= 2.27…) 4.9(0) ÷ 1.2(0) (= 4.08…) 2 ÷ 3.75 (= 0.53…) and "2.27…" ÷ "4.08…" (= 0.55(6…)) New York **and** 0.53… **and** 0.55(6…)
Cost of 5 lb in $: 2 × 2.2 (= 4.4) 3.75 × 1.2(0) (= 4.5) "4.5" ÷ "4.4" × 5 (= 5.11…) New York **and** 5.11…	**Cost of 5 lb in £:** 2 × 2.2 (= 4.4) 4.9(0) ÷ 1.2(0) (= 4.08…) 3.75 ÷ "4.4" × 5 (= 4.26…) New York **and** 4.08… **and** 4.26…
Cost of 2 kg in $: 5 ÷ 2.2 (= 2.27…) 3.75 × 1.2(0) (= 4.5) 4.9(0) ÷ "2.27…" × 2 (= 4.31…) New York **and** 4.5 **and** 4.31…	**Cost of 2 kg in £:** 5 ÷ 2.2 (= 2.27…) 4.9(0) ÷ 1.2(0) (= 4.08…) "4.08…" ÷ "2.27…" × 2 (= 3.59…) New York **and** 3.59…

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: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1_3F			
Question		**Modification**	**Mark scheme notes**
4		Wording changed: 'Five fractions are shown below.'	Standard mark scheme
7	(a)	Wording added: 'Look at the diagram for Question 7(a) in the Diagram Booklet. It shows a probability scale.' Wording removed: 'below' and 'with a cross (x)' Diagram enlarged.	Standard mark scheme
	(b)	Wording added: 'Look at the diagram for Question 7(b) in the Diagram Booklet. It shows another probability scale.' Wording removed: 'below' and 'with a cross (x)' Diagram enlarged.	Standard mark scheme
8		Wording changed: 'Look at the table for Question 8 in the Diagram Booklet. It shows a menu.'	Standard mark scheme
9		Wording added: 'Look at the diagram for Question 9 in the Diagram Booklet. It shows points A, B and C marked on a grid.' Diagram enlarged. Crosses changed to dots. Open headed arrows. Vertical axis cropped at 4 and horizontal axis cropped at -4. Braille: Vertical axis cropped at 4 and -4 and horizontal axis cropped at -4.	
	(b)	Wording removed: 'with a cross (x)' Braille: Wording removed 'cross (x)' and replaced with 'square bumpon' Wording added: 'Square Bumpons are provided if you wish to use them.'	Standard mark scheme
	(c)	Wording removed: 'with a cross (x)' Braille: Wording removed 'cross (x)' and replaced with 'round bumpon' Wording added: 'Round Bumpons are provided if you wish to use them.'	Standard mark scheme
12	(b)	Wording changed: 'The first four terms of a different sequence are shown below.'	Standard mark scheme

13		Wording changed: 'Look at the diagram for Question 13 in the Diagram Booklet. It shows quadrilateral ABCD.' Wording added: 'Angle ECF = 120° Angle ADC = 45° Angle BAD is a right angle Angle ABC is marked x' Diagram enlarged. Angles moved outside of angle arcs and angle arcs made smaller.	Standard mark scheme
14	 (a) (b)	Wording added: 'Look at the diagram for Question 14 in the Diagram Booklet.' North lines extended to measure 9cm. Open headed arrows. Bearing at C made to be 115° Length of CD changed to 15 cm	 B1 for answer in the range 110 to 120 M1 for length of *CD* measured in the range 14.5 to 15.5 **or** for 4 × [length] where [length] is their measurement clearly identified as *CD* A1 for answer in the range 58 to 62
17		Wording added: 'Look at the diagram for Question 17 in the Diagram Booklet. It shows an incomplete frequency tree.' Wording added: 'in the Diagram Booklet' Braille: Wording added 'By writing the missing values labelled (i) to (vi).' Diagram enlarged.	Standard mark scheme
19		Wording added: 'Look at the table for Question 19 in the Diagram Booklet.' Wording added: 'in the Diagram Booklet'	Standard mark scheme
21b		Letter 'e' changed to 'p'.	B1 for p^6

22		Wording added: ‘Look at the diagram for Question 22 in the Diagram Booklet. It shows a grid.’ Wording added ‘below’. Wording added: ‘on the grid in the Diagram Booklet’ Values in the table changed: 12 changed to 15, 8 changed to 5 Braille: 12 changed to 15, 8 changed to 5 and final value removed. Diagram enlarged. Open headed arrows. Braille: Horizontal axis cropped at 40.	Standard mark scheme but note change of values (heights at 15, 25, 10, 5, 5) Braille: heights at 15, 25, 10, 5
28		Wording changed: ‘Look at the diagram for Question 28 in the Diagram Booklet. It shows straight line ABC on a set of axes.’ Diagram enlarged. Open headed arrows. Crosses changed to dots.	Standard mark scheme
29		Wording changed: ‘Look at the diagram for Question 29 in the Diagram Booklet. It shows…’ Wording added: ‘Angle DAB and angle ADC are right angles.’ Diagram enlarged.	Standard mark scheme

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