Pearson

Mark Scheme (Results)

November 2024

Pearson Edexcel GCSE
In Mathematics (1MA1)
Foundation (Non-Calculator) Paper 2H

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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: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	4.643(069317)	M1	for 192.6 **or** 8.934 **or** 21.558(09268) **or** answer of 4.64 **or** digits 4643…	
		A1	for 4.643(069317)	Answer must be given to at least 3 decimal places rounded or truncated Check first 3 decimal places only If given to 3 dp or better ignore subsequent rounding
2 (a)	positive	C1	cao	Ignore any description of a relationship and any reference to strength of correlation
(b)	lobf drawn	C1	for straight line passing between (140, 20) and (140, 22.5) and between (220, 30) and (220, 32.5)	
(c)	26.5 – 29.5	C1	for answer in range 26.5 – 29.5 **or** ft single line with positive gradient	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
3	Zurich (supported)	P1	for one process to compare, eg eg Currency conversion, 3.5 × 1.25 (= 4.375) **or** 7.20 ÷ 1.25 (= 5.76) **or** finds 1g in one place £3.50 ÷ 200 (= 0.0175) **or** 7.20 ÷ 360 (= 0.02) **or** finds 200g in Zurich, 7.2 ÷ 360 × 200 (= 4.0) **or** finds 360g in London, 3.5 ÷ 200 × 360 (= 6.30) **or** finds grams per unit cost, 200 ÷ 3.50 (= 57.1..) **or** 360 ÷ 7.20 (= 50**)**	Accept figures rounded or truncated to 2sf throughout
		P1	for a complete process to find comparable figures in the same currency, eg comparing 200g in £ or francs 3.5 × 1.25 (= 4.375) **and** 7.2 ÷ 360 × 200 (= 4.0) **or** "4.0" ÷ 1.25 (= 3.20) **OR** comparing 360g in £ or francs "6.30" × 1.25 (= 7.875) **or** 3.5 ÷ 200 × 360 (= 6.30) **and** 7.20 ÷ 1.25 (= 5.76) **OR** comparing 1g in £ or francs "0.0175" × 1.25 (= 0.0218…) **and** 7.20 ÷ 360 (= 0.02) **or** £3.50 ÷ 200 (= 0.0175) **and** "0.02" ÷ 1.25 (= 0.016) **OR** comparing quantity per unit cost in £ or francs 200 ÷ 3.50 (= 57.1…) **and** 360 ÷ "5.76" (= 62.5) **or** 200 ÷ "4.375" (= 45.7…) **and** 360 ÷ 7.20 (= 50**)**	Accept working in pence Ignore incorrect units for P marks Award if this mark implies the previous
		C1	for Zurich supported by correct comparable values, eg 4.3(75 F) **and** 4(.0 F) **or** (£)3.2(0) **or** 7.8(75 F) **or** (£)6.3(0) **and** (£)5.76 **or** 0.021(8… F) **and** 0.02 (F) **or** (£)0.017(5) **and** (£)0.016 **or** 57(.1… g/£) **and** 62(.5 g/£) **or** 45(.7… g/F) **and** 50 (g/F)	Clear indication that bar is better value for money in Zurich supported by correct values for comparison Units not needed but if given must be correct Table with examples at end of mark scheme

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
4	statements	C1	for identifying that the number 17 should only be in the intersection **Acceptable examples** 17 should only be in the middle Take 17 out of (set) *A* only appropriate 17 crossed out on the Venn diagram **Not acceptable examples** Tom should put 17 in *B* Should have two 17's in the middle Take 17 out of (set) *A* Needs to remove a 17 17 is on twice	Accept correct descriptions using correct set notation for both marks Diagram may be used to support statements
		C1	for identifying that the number 1 is missing from the diagram **Acceptable examples** 1 should be in the outside region He should put 1 outside the circles Tom needs to put the number 1 on the diagram include 1 (outside $A \cup B$) 1 added to the diagram in the correct region **Not acceptable examples** Add the remaining numbers There are missing odd numbers between 0 and 20 put all the odd numbers outside the circles add the odd numbers in the $\mathscr{E}$ box include the even numbers 1 should be outside the Venn diagram	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
5 (a)	5, (0), –3, –4, (−3), 0, 5	B2 (B1	for all 5 correct values for at least 2 correct values)	
(b)	Graph drawn	B2 (B1	for a fully correct graph ft (dep on B1 in (a)) for plotting at least 5 of the points from their table correctly)	Accept freehand curves drawn that are not line segments Ignore anything drawn outside the required range

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
6	Yes (supported)	P1	for start to a process to find a percentage increase, eg $87-76\ (=9)$ **or** $66-65\ (=1)$ **or** $\frac{85}{76}\ (=1.118...)$ **or** $\frac{66}{65}\ (=1.015...)$	Accept use of rounded and truncated figures for all marks
		P1	for process to find a % increase, eg $\frac{"9"}{76}\times 100\ (=11.84...)$ **or** $\frac{"1"}{65}\times 100\ (=1.53...)$ **or** $\frac{85}{76}\times 100-100\ (=11.(84...))$ oe **or** $\frac{66}{65}\times 100-100\ \ (=1.53...)$ oe	May work in decimals or equivalent proportions throughout
		P1	for processes to find both % increases, eg $\frac{"9"}{76}\times 100\ (=11.84...)$ **and** $\frac{"1"}{65}\times 100\ (=1.53...)$ **or** $\frac{85}{76}\times 100-100\ (=11.84...)$ oe **and** $\frac{66}{65}\times 100-100\ \ (=1.53...)$ oe	
		C1	for Yes supported by correct figures, eg 11(.842…) ÷ 1.5(38…) = 7.3 to 8 **or** 11(.842...) **and** 1.5(38…) × 7 = 10(.766…) **or** 11(.842…) ÷ 7 = 1.57 to 1.7 **and** 1.5(3…) **or** 0.11(842…) **and** 0.10(766…)	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
7	240	P1	for forming an appropriate equation, eg $2x + 11 = 4x - 4$ **or** $2x + 11 + 4x - 4 + 2x + 5 = 72$ **or** $8x + 12 = 72$	
		P1	(dep P1) for process to isolate terms in x for their equation, eg $4x - 2x = 11 + 4$ **or** $2x + 4x + 2x = 72 - 11 + 4 - 5$ **or** $x = 7.5$ oe	$8x = 60$ **or** $2x = 15$ implies P2 A correct length stated or shown on diagram implies P2 Eg $AB = 20$, $AC = 26$, $CB = 26$
		P1	for correct application of Pythagoras, eg $("26")^2 - \left(\frac{"20"}{2}\right)^2$ **or** $[AC]^2 - \left(\frac{[AB]}{2}\right)^2$ **or** height = 24 **or** a complete method to find the height for a correct trig statement to find CAB or CBA or ACB, eg $\cos CAB = \cos CBA = \frac{"20" \div 2}{"26"}$ **or** $\cos CAB = \cos CBA = \frac{20^2 + 26^2 - 26^2}{2 \times 20 \times 26}$ **or** $\cos ACB = \frac{26^2 + 26^2 - 20^2}{2 \times 26 \times 26}$ **or** $CAB = 67.3\ldots$ **or** $CBA = 67.3\ldots$ **or** $ACB = 45.2\ldots$	[AC] [BC] [AB] [ACB] [CAB] and [BAC] must be clearly identified if incorrect. May be on diagram. $AB = 2 \times "7.5" + 5\ (= 20)$ $AC = 2 \times "7.5" + 11\ (= 26)$ $CB = 4 \times "7.5" - 4\ (= 26)$ Alternative scheme not expected on Foundation tier but may be seen.
		P1	for process to find area of triangle, eg "20" × "24" ÷ 2 **or** $[AB] \times [\text{height}] \div 2$ for process to find area of triangle, eg $\frac{1}{2} \times "26" \times "20" \times \sin "67.3..."$ **or** $\frac{1}{2} \times "26" \times "26" \times \sin "45.2..."$ **or** $\frac{1}{2} \times [AB] \times [AC] \times \sin [BAC]$ **or** $\frac{1}{2} \times [BC] \times [AC] \times \sin [ACB]$	ft incorrect figures providing at least one previous P1 awarded. [height] is what they clearly think is the height of the triangle but not 26 or 20 or 10
		A1	cao	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
8	3.125×10^7	M1	for $(k =)\ (1.25\times10^{-12})\div(4\times10^{-20})$ **or** for the digits 3125	Can condone missing brackets on division 3.1×10^7 or 3.12×10^7 or 3.13×10^7 will score M1A0
		A1	cao	
9	shown	M1	for method to find the interior angle eg $(9 – 2) \times 180 \div 9$ (= 140) **or** exterior angle eg $360 \div 9$ (= 40) of a regular nonagon	Angles may be shown on the diagram Any angle labelled correctly as 140 or 40 and not contradicted scores this mark
		M1	for a complete method to find the interior angle *ABC*, eg 360 – "140" – "140" (= 80) **or** "40" × 2 (= 80) or finds the angle sum assuming a square, eg $90+"140"+"140"\ (=370)$	
		A1	for complete solution with correct conclusion, eg interior angle of a square is 90, not 80 or angles around a point sum to 360 not 370	
10	$x = –2.5$, $y = –6$	M1	for a correct method to eliminate one variable (condone one arithmetic error)	
		A1	for either $x = –2.5$ **or** $y = −6$ oe	Fractions do not need to be in simplest form
		M1	(dep M1) for substituting found value into one of the equations **or** correct method after starting again (condone one arithmetic error)	
		A1	for either $x = –2.5$ **and** $y = −6$ oe SCB2 for both correct answers if no more than 1 mark awarded SCB1 for one correct answer if no marks awarded	Fractions do not need to be in simplest form

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11	enlargement scale factor $\frac{2}{3}$ centre (–4, –2)	C2 (C1	for enlargement, scale factor $\frac{2}{3}$ oe , centre (–4, –2) for 2 of the 3 aspects)	Award no marks if more than one transformation is given
12	5.9	P1 P1 P1 P1 A1	for a process to find the volume of the cylinder, eg $\pi \times 3^2 \times 8 \left(= 226.19...\right)$ for process to find mass of cylinder, eg "226.19" × 7.86 (= 1777.89...) **or** [volume$_1$] × 7.86 for process to find volume of cube, eg "1777.89" ÷ 8.5 (= 209.16...) **or** [mass] ÷ 8.5 for process to find side length, eg $\sqrt[3]{"209.16..."}$ **or** $\sqrt[3]{[\text{volume}_2]}$ for answer in range 5.9 to 5.94	Can be implied by 72π [volume$_1$] must be unambiguously the volume of the cylinder but cannot be 3 or 8 [mass] must be unambiguously the mass of the cylinder [volume$_2$] must be unambiguously the volume of the cube

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
13 (a)	No with reason	C1	for No with reason, **Acceptable examples** No, $4 \div 4 \neq 8 \div 6$ No, $4 \div 4 \neq 8 \div 6$ so they don't have the same constant No because $y = kx$ doesn't work No, it wont pass through (0, 0) **Not acceptable examples** Yes, ... No, they don't increase by the same number No, they don't have the same constant	
(b)(i)	49	M1	for stating a correct relationship, eg $w = k \times \sqrt{t}$ **or** $140 = k \times \sqrt{64}$ oe	Condone the use of 'α' instead of '=' for both M marks
		M1	for method to find constant of proportionality, eg $140 \div \sqrt{64}$ (= 17.5 oe)	Award of this mark implies the previous mark
		A1	cao	
(ii)	sketch	C1	for sketch	Sketch at end of mark scheme
14	180	M1	for $10 \times 9 \times 4$ (= 360) **or** $10 \times 9 \times 4 \div 2$ **or** $10 \times 9 \div 2$ $(= 45)$ **or** $(9 \times 4) + (8 \times 4) + (7 \times 4) + (6 \times 4) + (5 \times 4) + (4 \times 4) + (3 \times 4) +$ $(2 \times 4) + (1 \times 4)$ oe	
		A1	cao	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
15 (a)	$5n^2 + 2n - 4$	M1	for a correct start to a method to find the nth term, eg constant 2nd differences and n^2 **OR** states $2a = 10$ **or** $3a + b = 17$	Need to see constant 2nd difference found and n^2 Condone use of a different variable throughout $a = 5$ **or** $b = 2$ implies M1
		M1	for working with $5n^2$, eg $5n^2$,and sequence –2, 0, 2, ... **OR** states $2a = 10$ **and** $3a + b = 17$	$5n^2 + 2n$ implies M2 $5n^2$ is implied by 5, 20, 45, … $a = 5$ **and** $b = 2$ implies M2
		A1	for $5n^2 + 2n - 4$ oe	Condone $+-4$
(b)	1.2	M1	for substituting values, eg $4 = k \times 9 + k$ **or** $4 = k(9+1)$ **or** $(k = 0.4)$	
		M1	for $(u_3 =)$ "0.4" × 4 + "0.4" (= 2)	
		A1	for 1.2 oe	
16	Histogram completed	M1	for method to use area to find at least one other frequency (not 11), eg 10 × 1.5 (= 15) **or** 20 × 0.3 (= 6)	
		M1	for method to find unknown frequencies, eg (60 – 11 – "15" – "6") ÷ 2 (= 14)	Condone one error in reading FD
		M1	ft for method to find an unknown frequency density, eg "14" ÷ 5 (= 2.8) **or** "14" ÷ 10 (= 1.4) **or** one correct bar drawn	Ft one error from reading FD
		C1	cao	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17	shown	M1	for use of a common denominator for 2 correct fractions, eg 2 of $\frac{6x-y}{10xy}$ **or** $\frac{5y}{10xy}$ **or** $\frac{2(2y-7x)}{10xy}$ oe	
		M1	for a correct method to write as single fraction, eg $\frac{6x-y}{10xy}+\frac{5y}{10xy}-\frac{4y-14x}{10xy}$ **or** $\frac{6x-y}{10xy}+\frac{5y}{10xy}-\frac{(4y-14x)}{10xy}$ **or** $\frac{6x-y+5y-4y+14x}{10xy}$ **or** $\frac{20x}{10xy}$ oe	If seen in steps all arithmetic must be correct
		C1	for correct working leading to $\frac{2}{y}$	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
18	Proof	M1	begins proof to show that triangles *ABO* and *CBO* or triangles *ABD* and *CBD* are congruent by giving one pair of equal sides or equal angles with reason	Where *D* is point such that *BOD* is diameter
		M1	for different pair of equal sides or angles with reason	
		C1	for full proof that triangles *ABO* and *CBO* are congruent, SSS, or triangles *ABD* and *CBD* are congruent, RHS, and therefore angle *ABO* = angle *CBO* *AB* = *CB* (given) *BO* (or *BD*) is common *AO* = *CO* radii of circle angle *BAD* = angle *BCD* angles in a semicircle are 90 (*BO* = *AO* = *CO* radii of circle) counts as two sides with reasons **OR**	
		M1	draws *OA*, *OC* and *AC* and labels angle *OAC* = *x* and angle *OCA* = *x* with reason given, *AO* = *CO* radii of circle and base angles of an isosceles triangle are equal **or** *BAC* = *BCA* since *ABC* is isosceles	
		M1	shows *OAC* = *OCA* **and** shows *BAC* = *BCA* **and** uses these to show *OAB* = *OCB* with all reasons given	
		C1	for full proof concluding with angle *ABO* = *y* **and** angle *CBO* = *y* with reason given, eg *OA* = *OB* = *OC* radii of circle and *OBC* and *OAC* are isosceles	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	60 and reason	B1	for 432.5 **or** 437.5 **or** 9.75 **or** 9.85 **or** 2.45 **or** 2.55	
		M1	for a correct process to find a bound for T eg [LB of w] ÷ [UB of a – LB of c] where 432.5 „ [LB of w] < 435 and 9.8 < [UB of a] „ 9.85 and 2.45 „ [LB of c] < 2.5 **or** [UB of w] ÷ [LB of a – UB of c] where 435 < [UB of w] „ 437.5 and 9.75 „ [LB of a] < 9.8 and 2.5 < [UB of c] „ 2.55	**Letter** / **Given** / **LB** / **UB** w / 435 / 432.5 / 437.5 a / 9.8 / 9.75 / 9.85 c / 2.5 / 2.45 / 2.55 UB **Letter** / **Given** / **LB** / **UB** w / 435 / 432.5 / **437.5** a / 9.8 / **9.75** / 9.85 c / 2.5 / 2.45 / **2.55**
		M1	for a correct process to find both LB and UB bound for T eg [LB of w] ÷ [UB of a – LB of c] where 432.5 „ [LB of w] < 435 and 9.8 < [UB of a] „ 9.85 and 2.45 „ [LB of c] < 2.5 **and** [UB of w] ÷ [LB of a – UB of c] where 435 < [UB of w] „ 437.5 and 9.75 „ [LB of a] < 9.8 and 2.5 < [UB of c] „ 2.55	LB **Letter** / **Given** / **LB** / **UB** w / 435 / **432.5** / 437.5 a / 9.8 / 9.75 / **9.85** c / 2.5 / **2.45** / 2.55
		A1	(dep on all previous marks) for 58.44(5...) **and** 60.76(3...) with both values clearly coming from working with correct values	Accept bounds rounded or truncated to at least 4 sf
		C1	for 60 from 58.44... and 60.76... **and** statement that both LB and UB round to 60	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
20	10.8	P1	for process to find *FC*, eg $\tan 52 = \frac{8}{FC}$ (*FC* = 6.25(028..))	
		P1	for process that will lead to side length of *ABC*, eg $\sin 60 = \frac{"6.25" \times 1.5}{BC}$ **or** $\cos 30 = \frac{"6.25" \times 1.5}{BC}$ **or** ("6.25" × 1.5)^2 + (0.5*x*)^2 = *x*^{2} oe	
		A1	for answer in range 10.8 to 10.83	

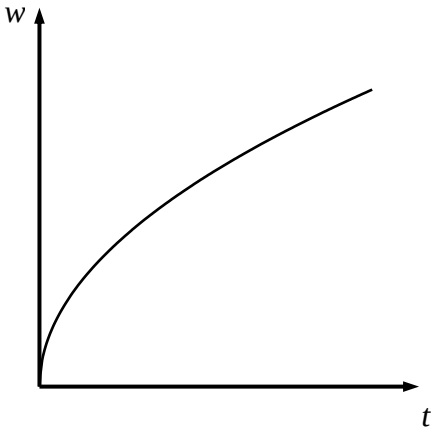
Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21	–6, 3.5	P1	for process to find gradient of *PR* or *QR*, eg $\frac{k+3-5}{k--4}\left(=\frac{k-2}{k+4}\right)$ **or** $\frac{k+3--6}{k-6}\left(=\frac{k+9}{k-6}\right)$ **or** $\frac{5-(k+3)}{-4-k}\left(=\frac{2-k}{-4-k}\right)$ **or** $\frac{-6-(k+3)}{6-k}\left(=\frac{-9-k}{6-k}\right)$ **OR** for start of process to use Pythagoras, eg $PR^2 = (k--4)^2 + (k+3-5)^2$ **or** $RP^2 = (-4-k)^2 + (-5-(k+3))^2$ **or** $QR^2 = (k-6)^2 + (k+3--6)^2$ **or** $RQ^2 = (6-k)^2 + (-6-(k+3))^2$	Condone missing bracket for first P1 only Stating eg Grad *PR* = $\frac{k--4}{k+3-5}$ Or grad *QR* = $\frac{k-6}{k+3--6}$ scores P0 but check SC
		P1	for forming a correct equation, eg $\frac{k+3-5}{k--4}\times\frac{k+3--6}{k-6}=-1$ **or** $\frac{k-2}{k+4}\times\frac{k+9}{k-6}=-1$ **or** $\frac{5-(k+3)}{-4-k}\times\frac{-6-(k+3)}{6-k}=-1$ **or** $\frac{2-k}{-4-k}\times\frac{-9-k}{6-k}=-1$ oe **OR** $(k--4)^2 + (k+3-5)^2 + (k-6)^2 + (k+3--6)^2 = (-6-5)^2 + (6--4)^2$ **or** $(k+4)^2 + (k-2)^2 + (k-6)^2 + (k+9)^2 = (-11)^2 + 10^2$	
		P1	for writing in the form $ak^2 + bk + c$ (= 0), eg $2k^2 + 5k - 42$ (= 0) **or** $4k^2 + 10k - 84$ (= 0)	
		P1	(dep P3) for factorising, eg $(k+6)(2k-7)$ (= 0) **or** $(2k+12)(2k-7)$ **or** $(k+6)(4k-14)$ **OR** use of formula, eg $\frac{-5\pm\sqrt{5^2-4\times2\times-42}}{2\times2}$ **or** $\frac{-10\pm\sqrt{10^2-4\times4\times-84}}{2\times4}$	
		A1	cao SCB4 for correct answer coming from consistent use of reciprocals of gradients	

Paper: 1MA1/2H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
22	26	P1	for a correct 2nd probability, eg $\frac{2x-1}{5x-1}$ **or** $\frac{3x-1}{5x-1}$ **or** $\frac{2x}{5x-1}$ **or** $\frac{3x}{5x-1}$ or $\frac{\frac{3}{5}n-1}{n-1}$ **or** $\frac{\frac{2}{5}n-1}{n-1}$	
		P1	for a correct product, eg $\frac{3x}{5x}\times\frac{3x-1}{5x-1}$ **or** $\frac{2x}{5x}\times\frac{2x-1}{5x-1}$ **or** $\frac{3}{5}\times\frac{2x}{5x-1}$ **or** $\frac{2}{5}\times\frac{3x}{5x-1}$ **or** $\frac{3}{5}\times\frac{\frac{3}{5}n-1}{n-1}$ or $\frac{2}{5}\times\frac{\frac{2}{5}n-1}{n-1}$ oe	Award of this mark implies P2
		P1	for process to form equation, eg $\frac{3x}{5x}\times\frac{3x-1}{5x-1}+\frac{2x}{5x}\times\frac{2x-1}{5x-1}=\frac{41}{80}$ **or** $2\times\frac{3}{5}\times\frac{2x}{5x-1}=\frac{39}{80}$ **or** $\frac{3}{5}\times\frac{\frac{3}{5}n-1}{n-1}+\frac{2}{5}\times\frac{\frac{2}{5}n-1}{n-1}$ oe	Award of this mark implies P3
		P1	for process to eliminate fractions and reduce equation to linear or quadratic form, eg $1040x - 400 = 1025x - 205$ **or** $960x = 975x - 195$ **or** $1040x^2 - 400x = 1025x^2 - 205x$ **or** $960x^2 = 975x^2 - 195x$ **or** $\frac{208}{5}n - 80 = 41n - 41$ **or** $x = 13$ **or** $n = 65$	
		A1	cao	

Question 3

	London	Zurich
100g	3.5 ÷ 2 = **£1.75** 1.75 × 1.25 = **2.1875 F**	7.2 ÷ 360 = **2.00 F** 2.00 ÷ 1.25 = **£1.60**
200g	**£3.50** 3.5 × 1.25 = **4.375 F**	7.2 ÷ 360 × 200 = **4.0 F** 4.0 ÷ 1.25 = **£3.20**
360g	3.5 ÷ 200 × 360 = **£6.30** 6.30 × 1.25 = **7.875 F**	**7.20 F** 7.20 ÷ 1.25 = **£5.76**
1g	£3.50 ÷ 200 = **£0.0175** × 1.25 = **0.021875 F**	7.20 ÷ 360 = **0.02 F** ÷ 1.25 = **£0.016**
40g	£3.50 ÷ 5 = **£0.70** 0.7 × 1.25 = 0**.875 F**	7.20 ÷ 9 = **0.8 F** 0.8 ÷ 1.25 = **£0.64**
By weight	350 ÷ 200 = **1.75 p/g** 350 × 1.25 = 4.375 4.375 ÷ 200 = **0.021875 F/g**	720 ÷ 360 = **0.02 F/g** 720 ÷ 1.25 = 576 576 ÷ 360 = **1.6 p/g**

Question 13(b) (ii)



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

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_2H			
Question		**Modification**	**Mark scheme notes**
2		Wording changed: 'Look at the diagram for Question 2 in the Diagram Booklet. It is a scatter graph showing information about some ships.' Diagram enlarged. Crosses changed to dots. Vertical axis cropped so it starts at 15. Open headed arrows. m changed to metres.	
	(b)	Wording added: 'in the Diagram Booklet' For Braille: sentence added 'Drawing film is provided if you wish to use it.'	Standard mark scheme
	(c)	Value '194' changed to '190'.	Standard mark scheme
3		Information in boxes removed. g changed to gram.	Standard mark scheme
4		Wording added: 'Look at the diagram for Question 4 in the Diagram Booklet. It shows a Venn diagram.' Wording 'Here is his answer.' removed and replaced with 'His answer is shown in the Diagram Booklet.' Diagram enlarged. Numbers arranged in two rows.	Standard mark scheme
5	(a)	Word added 'below'. Wording added 'There are five spaces to fill.' Table enlarged, turned vertically and left aligned. For Braille: missing values labelled (i), (ii), (iii), (iv) and (v)	Standard mark scheme
	(b)	Wording added: 'Look at the diagram for Question 5(b) in the Diagram Booklet. It shows a grid.' Diagram enlarged. Open headed arrows. Vertical axis cropped at -5. For Braille: sentence added 'Bumpons and drawing film are provided if you wish to use them.'	Standard mark scheme

PAPER: 1MA1_2H			
Question		**Modification**	**Mark scheme notes**
6		p changed to pence.	Standard mark scheme
7		Wording changed: 'Look at the diagram for Question 7 in the Diagram Booklet. It…' Wording added: 'AC = 2x + 11 AB = 2x + 5 BC = 4x – 4' Diagram enlarged. Lines on the sides made longer.	Standard mark scheme
9		Wording changed: 'Look at the diagram for Question 9 in the Diagram Booklet. It …' Diagram enlarged.	Standard mark scheme
11		Wording added: 'Look at the diagram for Question 11 in the Diagram Booklet. It shows triangle A and triangle B on a grid.' Diagram enlarged. Open headed arrows. Shapes relabelled 'triangle A' and 'triangle B'. Shading changed.	Standard mark scheme
12		Wording changed: 'Look at Diagrams 1-4 for Question 12 in the Diagram Booklet. You may be provided with two models. They are NOT accurate. The models show a solid cylinder and a solid cube. The cylinder has base radius 3 cm and height 8 cm The cube has side length h cm Diagram 1 shows a 3D view of the cylinder. Diagram 2 shows the base of the cylinder. Diagram 3 shows a side view of the cylinder. Diagram 4 shows a 3D view of the cube. Diagram enlarged. 2 additional 2D views added. Open headed arrows.	Standard mark scheme

PAPER: 1MA1_2H			
Question		**Modification**	**Mark scheme notes**
13	(a)	Wording changed: 'Look at the table for Question 13 in the Diagram Booklet. It shows a…' Table turned vertical.	Standard mark scheme
	(b)	Wording changed: 'Look at the diagram for Question 13(b)(ii) in the Diagram Booklet. It shows axes labelled t and w.' Wording 'below' removed. For Braille: sentence added 'Drawing film is provided if you wish to use it.' Diagram enlarged. Open headed arrows.	Standard mark scheme
16		Wording changed: 'Look at the diagram for Question 16 in the Diagram Booklet. It is a histogram giving …' Value '11' changed to '15' Diagram enlarged. Open headed arrows. Frequency density of first bar changed to 3. Frequency density of the last bar changed to 0.5. For Braille: sentence added 'Drawing film and bumpons are provided if you wish to use them.'	M1 for method to use area to find at least one frequency, eg 10 × 1.5 (= 15) or 20 × 0.5 (= 10) M1 for method to find unknown frequencies, eg (60 – 15 – "15" – "10") ÷ 2 (= 10) M1 for method to find an unknown frequency density, eg "10" ÷ 5 (= 2) or "10" ÷ 10 (= 1) **or** one correct bar drawn
18		Wording changed: 'Look at the diagram for Question 18 in the Diagram Booklet. It shows A, B and C, three points on a circle, centre O' Diagram enlarged. For Braille: sentence added 'Drawing film is provided if you wish to use it.'	Standard mark scheme

PAPER: 1MA1_2H			
Question		**Modification**	**Mark scheme notes**
19		Letter ‘a’ changed to ‘p’ Letter ‘c’ changed to 'q’	Standard mark scheme but note change of letters
20		Wording changed: ‘Look at Diagram 1, Diagram 2 and Diagram 3 for Question 20 in the Diagram Booklet. You may be provided with two models. They are NOT accurate. Model 1 and Diagram 1 show solid pyramid VABC. ABC is the base of the pyramid. V is the vertex above the base. M is the midpoint of AB. F is a point on the line MC. Model 2 shows the base of the pyramid ABC with a framework to show the other three sides. There is a rod, FV, inside the framework, to show the vertex V vertically above point F on the base. Diagram 2 shows side ABC’ Wording added: ‘Diagram 3 shows the cross section VMC’ Diagram enlarged. 2 additional 2D views added.	Standard mark scheme

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