



Mark Scheme (Results)

Predicted Paper 1- Set 1

Edexcel-style GCSE

In Mathematics (PA-1MA1/1H)

Higher (Non-Calculator) Paper 1H

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: PA-1MA1/1H				
Question	Answer	Mark	Mark Scheme	Additional guidance
1	USA	P1 P1 A1	for a process to convert at least one price to a common currency, eg $975 \div 1.5 (= 650)$ or $910 \div 1.3 (= 700)$ for a complete process to compare all three, eg £780, £650, £700 (all in £) oe for USA (cao), supported by correct comparison figures	$\text{£1} = \$1.5, \text{£1} = \text{€}1.3$ oe: all three converted to \$ or \$ or all to € Accept any valid conversion calculation setup. Award only if the comparison is shown Do not award A1 if working is missing or contains arithmetic errors
2	Proof	M1 M1 C1	for setting up three consecutive integers, eg $n, n + 1, n + 2$ (defined) for forming and simplifying the sum, eg $n + (n + 1) + (n + 2) = 3n + 3$ for $3(n + 1)$ with a correct conclusion that this is a multiple of 3 (oe)	Accept $(n - 1), n, (n + 1)$ or $3n, 3n+1, 3n+2$ Condone one arithmetic slip for factorising to show it is a multiple of 3 and writing a concluding statement, eg $3(n+1)$, which is a multiple of 3, therefore divisible by 3
3 (a)	Vector BE	B1	for a correct route for BE, eg $\text{BE} = \text{BC} + \text{CE}$ (oe) in terms of a and b for $5/2a + 9/10b$ oe	Accept $2.5a + 0.9b$
3 (b)	Shown	M1 C1	for expressing AB (or AE) and BE as scalar multiples, establishing parallel vectors with common point B for a complete, correct conclusion that A, B, E lie on a straight line	dep on M1

Paper: PA-1MA1/1H				
Question	Answer	Mark	Mark Scheme	Additional guidance
4	1536 (cm ²)	P1	for setting up an equation to find the scale multiplier, eg $6x+8x+10x=192$ or $24x=192$	Right-angled triangle, sides in ratio 6 : 8 : 10
		P1	for finding the lengths of the two shorter sides, eg $x=8$, so base =48 and height =64	oe: all three converted to \$ or \$ or all to €
		P1	for a correct process to find the area eg $\frac{1}{2} \times 48 \times 64$ oe	Accept any valid conversion calculation setup. Award only if the comparison is shown Do not award A1 if working is missing or contains arithmetic errors
		A1	for 1536 (cao)	Accept with units cm ²
5 (a)	Venn diagram	B4	for a fully correct Venn diagram: A only {3, 17, 31, 47}; B only {2, 7, 13, 29, 37, 43}; $A \cap B$ {11, 23, 41}; outside both {5, 19}	E = primes 1–50. Ignore all entries except the region being marked
5 (b)	1/5	(B3	for three of the four regions correct)	$A \cap B = \{11, 23, 41\}$ Accept 3/15, 0.2, 20%
		(B2	for two of the four regions correct)	
		(B1	for one of the four regions correct)	
6	Mean 29, Range 68	M1	(ft diagram) for 3/15 oe	
		A1	(ft diagram) for 1/5 oe	
7	0.61 $\dot{1}$	B1	cao for mean = 29	Data: 51, 70, 25, 8, 18, 2, 42, 12, 33 (sum 261 $\div$ 9)
		B1	cao for range = 68	70 – 2
7	0.61 $\dot{1}$	M1	for a complete division method, eg $22 \div 36$ or $11 \div 18$ giving 0.611...	$22/36 = 11/18$
		A1	for 0.61 $\dot{1}$ oe (0.6 with a dot over the 1)	Accept 0.61 $\dot{1}$ or 0.61 with a dot over the 1.
8	900 (m ³)	P1	for a process to find the volume of the cuboid, eg $8 \times 5 \times 15$ (= 600)	House = cuboid + triangular prism
		P1	for a process to find the volume of the triangular prism, eg $\frac{1}{2} \times 8 \times 5 \times 15$ (= 300)	
		P1	(dep) for a complete process, eg "600" + "300"	
		A1	cao for 900	Accept with units m ³

Paper: PA-1MA1/1H				
Question	Answer	Mark	Mark Scheme	Additional guidance
9	$x = 4, y = -4$	M1 M1 A1	for a valid method to eliminate one variable, eg multiplying equations to match coefficients or substituting $y = 12 - 4x$ for correctly solving for the first variable, eg $17x = 68$ $x = 4$ cao for both values	$4x + y = 12$; $5x - 3y = 32$ Embedded answers: see general note 9
10 (a)	$3(x - 1)^2 + 9$	M1 A1	for substituting $f(x)$ into $g(x)$, eg $3((x - 1)^2 + 3)$ oe for $3(x - 1)^2 + 9$ oe (eg $3x^2 - 6x + 12$)	$f(x) = (x - 1)^2$, $g(x) = 3(x + 3)$ Accept expanded forms like $3x^2 - 6x + 12$.
10 (b)	1	M1 A1	for evaluating $g(-3)$, eg $3(-3+3) = 0$ cao for 1	
11 (a)	1.35 kg	P1 P1 A1	for a correct process to find sugar per unit, eg $3 \times 150 (= 450)$ g for a complete process to find the sugar for 3kg, eg $450 \times 3 = 1350$ g for 1.35 (kg) oe	for finding the butter needed for 3kg (450g) OR the sugar for 1kg (450g) Accept 1350 g if units given Flour packs are 100 g each Where not exact, number of packs must be rounded up
11 (b)	9	P1 A1	for a process to find number of packs of flour needed cao for 9	
12 (a)	60	B1	cao for median = 60	Read from box plot Lewis (70) is at Q Must be a clear comparison
12 (b)	32	M1 A1	for reading correct quartiles and subtracting, eg $70 - 38$ cao for 32	
12 (c)	75%	B1	cao for 75%	
12 (d)	Explanation	C1	for a correct comparative statement, eg the IQR is not affected by extreme values/ outliers whereas the range is	

Paper: PA-1MA1/1H				
Question	Answer	Mark	Mark Scheme	Additional guidance
13 (a)	Circle drawn	B2	for a correct circle, centre (0, 0), radius 2.5	$x^2 + y^2 = 6.25$
		(B1	for a circle centre origin with incorrect radius, or radius 2.5 not centred at origin)	
13 (b)	(-1.7, 1.8) and (2.5, -0.2)	M1	for the line $2y + x = 2$ correctly drawn	The line must pass through (0,1) and (2,0).
		A1	for one correct intersection point (ft their circle/line)	Accept read-off within tolerance
		A1	for the second correct intersection point	awrt (-1.7, 1.8) and (2.5, -0.2); accept ± 0.2
14 (a)	380	M1	for 20×19 oe	Two different books, order matters
		A1	cao for 380	
14 (b)	92	M1	for calculating the combinations for each pair type,	5 boys, 9 girls; order matters
			eg 5×4 and 9×8	
		M1	for adding the combinations,	
			eg $20 + 72$	
		A1	cao for 92	Adding, not multiplying
15	96	P1	for setting up an algebraic equation for total candles,	White 3/pack, red 6/pack, green 10/pack; packs 6 : 4 : 2
			eg $6x(3) + 4x(6) + 2x(10) = 248$	
		P1	for simplifying and finding x,	
			eg $62x = 248$ $x = 4$	
		P1	for a process to find the number of red candles,	
			eg $4(4) \times 6$	
		A1	cao for 96 (= 16×6)	Answer is candles, not packs
16 (a)	Yes (correct)	C1	for "Yes" with correct reason, eg angles in the same segment (subtended by the same chord BC) are equal	Must explicitly state the circle theorem for the mark
16 (b)	85°	M1	for using the alternate segment theorem, eg angle BAC = 50°	Tangent GF at B, angle CBF = 50° , angle ACB = 45°
		M1	for angle sum, eg $180 - 50 - 45$	
		A1	cao for 85	

Paper: PA-1MA1/1H				
Question	Answer	Mark	Mark Scheme	Additional guidance
17	$k = -37$	P1 P1 A1	for process to find the gradient of Line A, $(-4 - (-5)) \div (9 - 2) = 1/7$ for process to use the perpendicular gradient rule $m \times m = -1$ eg $(-9 - k) \div \{2 - 6\} = -7$ cao for $k = -37$	
18 (a)	5	B1	cao for 5	$125^{(1/3)}$
18 (b)	$16/9$	M1 A1	for dealing with the negative index, eg $(64/27)^{(2/3)}$, or for a correct cube root eg $(27/64)^{(1/3)} = 3/4$ for $16/9$ oe	$(27/64)^{(-2/3)}$
19 (a)	Turning point	B1	for (0.5, 6.25)	Accept y-values between 6.2 and 6.3.
19 (b)	Roots	B1	for correct estimates of both roots of $f(x) = 0$	Accept -2 and 3
20 (a)	Scale diagram	B2 (B1	for a correct scale drawing: PQ on bearing 110° (3 cm) and QR on bearing 030° (2.5 cm) for one leg drawn correctly with correct bearing and length)	Scale 1 cm : 1 mile.
20 (b)	≈ 4 miles	B1 B1	for a correct measurement of PR (ft their diagram) for ≈ 4 (miles) applying the scale	Accept 3.8 – 4.2
21	7 vanilla, 3 chocolate	M1 A1	for finding $\text{LCM}(6, 14) = 42$ oe (or listing multiples to a common value) cao for 7 packs of vanilla and 3 packs of chocolate	Vanilla 6/pack, chocolate 14/pack; equal numbers
22	$(6p - 40)/3$	M1 A1	for the fully correct simplified mean expression	isw further correct simplification
23	$4n - 1$	B1	cao for $4n - 1$	Sequence 3, 7, 11, 15, ... ; $d = 4$