



Mark Scheme (Results)

Predicted Paper 3 - Set 1

Edexcel-style GCSE

In Mathematics (PA-1MA1/3F)

Foundation (Calculator) Paper 3F

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-1MA1/3F				
Question	Answer	Mark	Mark Scheme	Additional guidance
1	84	B1	cao	Accept 84 only.
2	$\angle BOC = 135^\circ$, $\angle DOC = 45^\circ$	M1 A1	for a correct method, e.g. $180 - 45 (= 135)$ using angles on a straight line for $\angle BOC = 135^\circ$ and $\angle DOC = 45^\circ$	Reasons (angles on a straight line sum to 180; vertically opposite angles are equal) should support the values; angles must be clearly identified. Award 1 mark if there is any one answer correct.
3	25 (miles)	P1 P1 A1	for starting a process e.g. using the ratio 2 : 3 to form comparable expressions for Adam's and James's miles for forming a correct equation using the total £125 cao	Accept any equivalent valid method; embedded/unidentified solutions – see general guidance note 9.
4	0.56	M1 A1	for 0.7×0.8 (independent events, multiply) oe	Accept 0.56, 56/100 or 14/25. Do not award for $0.7 + 0.8$.
5	42 (ice-creams)	M1 A1	for $48 - 23 + 17$ oe (correct order of operations) cao	Working must show both operation and If only answer 42 is given, award 0 marks
6(a)	53.13°	M1 A1	for $\tan x = 8/6$ oe 53.13 (Accept awrt 53.13)	Full-precision calculator value must be seen before rounding. Do not accept 53.14 or above. Do not award A1 for 53.1 due to explicit 2 d.p. instruction in the question.

Paper: PA-1MA1/3F				
Question	Answer	Mark	Mark Scheme	Additional guidance
6(b)	10 (cm)	B1	cao	From $\sqrt{(6^2 + 8^2)} = \sqrt{100}$; accept 10 with or without working.
6(c)	Decreases	M1 C1	for a correct comparison e.g. new tan $x = 8/8 (= 1)$ for "decreases" supported by $1 < 1.33$ oe	Reasoning required.
7(i)	Correct distance–time graph	B2	for a fully correct graph (0–6 min rising to 8 miles; 6–8 min horizontal; 8–11 min rising to 12 miles)	Line segments must be clearly drawn.
		B1	for at least two segments correct	
7(ii)		M1 A1	for gradient e.g. $(12 - 8)/(11 - 8) \times 60$ oe cao	Accept equivalent speed working.
8	$x^2 + x - 12$	M1 A1	for expanding $(x + 4)(x - 3)$ with at least 3 of the 4 terms correct ($x^2 - 3x + 4x - 12$) cao	FOIL or grid/distribution method acceptable.
9	9	M1 A1	For a systematic attempt to list the combinations (e.g., at least 4 correct pairs with no duplicates).oe For a fully correct list of all 9 combinations (e.g., Hyde Park & Bigben, Hyde Park & Loch Ness, etc.), cao	Accept a full, correct list of all 9 pairings. Accept initials like HP-B, HP-LN.
10(a)	Correct Venn diagram ($A \cap B = \{2\}$)	B2	for a fully correct Venn diagram	$U = \{1 \dots 20\}$; A = even numbers; B = prime numbers.
		B1	for the majority of elements placed correctly	

Paper: PA-1MA1/3F				
Question	Answer	Mark	Mark Scheme	Additional guidance
10(b)	$P(A \cap B) = 1/20$	M1 M1 A1	for identifying $A \cap B = \{2\}$ (one element) for a correct probability process, e.g. $1/20$ from " 1 "/ 20 oe	Accept $1/20$, 0.05 or 5% .
11(a)	$T = (L - L_0)/0.02$	M1 A1	for a correct first step e.g. $L - L_0 = 0.02T$ oe	
11(b)	$10\text{ }(^{\circ}\text{C})$	M1 A1	for $(2.2 - 2.0) \div 0.02$ oe cao	
12(a,)	6.05×10^9	M1 A1	for a correct process e.g. writing both terms to a common power of 10 ($6.5 \times 10^{10} - 0.45 \times 10^{10}$) for 6.05×10^{10}	
12(b)	Correct order (smallest to largest)	M1 A1	for converting values to a comparable form for the fully correct order	
13(a)	Line $y = x + 2$ drawn	B2 B1	for a correct straight line for x from -3 to 3 for a line of gradient 1 or y -intercept 2 , or at least two correct points plotted	Graph must be reasonably accurate
13(b)	$(2, 4)$ and $(-1, 1)$	B1	for both intersection points	Both points must be correct to award the mark. Do not award partial credit if only one coordinate pair is correct.
14	257.4 (inches)	B1	cao	From $(21.45 \div 3) \times 36$; accept correct rounding of a correct method.
15	10	M1 A1	for a correct relationship e.g. exterior angle $= 36^{\circ}$ or interior angle $= 144^{\circ}$ from the $4 : 1$ ratio (sum 180°) cao	Accept methods using $n = 360 \div$ exterior angle.

Paper: PA-1MA1/3F				
Question	Answer	Mark	Mark Scheme	Additional guidance
16(a)	25 (%)	M1	for $(8 + 2)/40 \times 100$ oethe	Requires midpoints $\times$ frequency to be seen.
		the A1	cao	
16(b)	9.5	M1	for use of midpoints of the grouped intervals	
		M1	for $\Sigma(fx) \div 40$ e.g. $380 \div 40$	
		A1	cao	
17	0.8	B1	oe	Accept 0.8 or 4/5 (reciprocal of 1.25).
18(a)	≈ 400	M1	for rounding each value to 1 significant figure	Estimation requires sensible rounding.
		A1	for an answer 400	
18(b)	$\approx \text{£}40$	M1	for suitable rounding of 23×1.6	Accept a reasonable estimate ($\text{£}30\text{--}\text{£}40$).
		A1	for a reasonable estimate	
19(a)	3500	B1	cao	3459 to the nearest hundred.
19(b)	1300	B1	cao	1284.5 to 2 significant figures.
20(a)	$\triangle RIG \cong \triangle THG$ (proof)	C2	for a fully correct proof stating $\angle RIG = \angle THG = 90^\circ$, $IG = GH$ (marked equal) and $RG = TG$ (common), concluding congruent	Acceptable criteria: SSS, SAS, ASA, RHS.
		C1	for two correct statements with a congruence criterion identified	
20(b)	Complete SAS proof	M1	for identifying the SAS conditions ($AB = AC$, common side AD , included equal angles/marked sides)	Must be linked to the triangles being congruent. Underline it. Do not accept circular reasoning (e.g., "because it is a bisector").
		M1	for correct linked reasoning ($\angle ADB = \angle ADC$ and linear pair $= 180^\circ$)	
		C1	for a complete conclusion e.g. each angle $= 90^\circ$ / $AD \perp BC$ and bisects BC	

Paper: PA-1MA1/3F				
Question	Answer	Mark	Mark Scheme	Additional guidance
21(a)	2	B1	cao	Mode = value with the highest frequency (10).
21(b)	92	M1 A1	for $\Sigma(fx)$ e.g. $(0 \times 5) + (1 \times 2) + (2 \times 10) + (3 \times 6) + (4 \times 8) + (5 \times 4)$ cao	Accept correct total from clear tabulated products.
22	$x = 3/13$	M1 M1 A1	for multiplying both sides by $(1 - x)$ to clear the fraction e.g. $5x + 5 = 8(1 - x)$ for expanding and rearranging to a linear equation e.g. $13x = 3$ oe	
23(a)	64	B1	cao	5th term of 4, 8, 16, 32, 64.
23(b)	2^{n+1}	M1 A1	for identifying the common ratio 2 / correct structure ($2^2, 2^3, 2^4 \dots$) oe	Accept 2^{n+1} , $2(2^n)$ or any equivalent correct form.
24	192 (N)	M1 M1 A1	for $F = k/x^2$ with $k = 480000$ (from $1200 = k/20^2$) oe for $480000 \div 50^2$ e.g. $480000 \div 2500$ cao	Constant k and the inverse-square relationship must be shown.
25	15 (cookies)	M1 A1	for a complete process e.g. $(20\% \text{ of } 60) + (\frac{1}{4} \text{ of } 60) + (0.3 \times 60) = 45$ oe cao	Each type may be calculated separately; $60 - 45 = 15$.
26	$x = 13, y = 18$	P1 P1 P1 A1	for forming a correct first equation from ratio 2 : 3 e.g. $3(x - 3) = 2(y - 3)$ oe ($\rightarrow 3x - 2y = 3$) For forming a correct second equation from the ratio 3: 4 e.g. $4(x + 2) = 3(y + 2)$ oe ($\rightarrow 4x - 3y = -2$) for a complete method to solve the two equations simultaneously for $x = 13$ and $y = 18$	Clear working is required for both equations and the solution.
27(a)	17/25	B1	cao	$0.68 = 68/100$ in simplest form; must be fully simplified.
27(b)	0.35	B1	cao	$7/20 = 35/100$.