Mark Scheme

Mock Set 2

Pearson Edexcel GCSE Mathematics (1MA1)
Higher Tier (Calculator)
Paper 3H

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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 answer is given on the answer line using both incorrect and correct notation, award the 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.

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

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

Higher tier Paper 3 (Calculator): Mock (Set 2) Mark Scheme

Question	Working	Answer	Mark	Notes
1		22	P1	Process to use gradient, e.g. $\frac{d-10}{5-2} = 4$
			P1	for a complete process to rearrange equation formed to isolate d
			A1	cao
2		24.6	P1	Process to use conversion rate, e.g. $100 \div 1.38 \; (= 72.46(37.))$ OR $222 \times 1.38 \; (= 306.36)$
			P1	(dep P1) for complete process to find percentage required,
			A1	e.g. $72.46(37.) \div (\,72.46(37.) +222) \times 100$ OR $100 \div (100 + 306.36) \times 100$ Answer of 24.6; Accept 25 if supportive working seen

Question	Working	Answer	Mark	Notes
3 (a)		4	P1	for process to find area of at least 2 different faces, e.g. 95×18 and 80×18
			P1	for a complete process to find the surface area of one cushion, e.g. $(95 \times 18 + 80 \times 18 + 95 \times 80) \times 2$
			P1	for process to convert units, e.g. $80 \div 100$ (=0.8)
			P1	(dep on P2) for their area multiplied by 6 and divided by 4
			A1	cao
(b)		Reduces (supported)	B1	for showing 4.4 is now covered or 2.93 tins or 3 tins
			C1	(dep) Statement that the number required of tins will be reduced
4 (a)(i)		$\binom{4}{6}$	B1	cao
(ii)		$\binom{11}{14}$	M1	for $\binom{2}{8}$ oe or $\binom{9}{6}$oe
			A1	cao
(b)		Diagram	B1	Correct vector drawn

Question	Working	Answer	Mark	Notes
5 (a)		Graph drawn	M1 C1	for a line of gradient of $\frac{16}{9}$ drawn or at least two correct points plotted for a fully correct graph drawn
(b)		48-52	B1	for answer in the range 48–52
6		9	M1 A1	for $\sin 30° = \frac{x}{18}$ or $18 \times \sin 30$ cao
7		512.4	P1 P1 A1	for a process to find the journey time, e.g. timeline or non-decimal calculation (= 2hrs 48mins) for a complete process to find the distance travelled, e.g. 2hrs 48mins is 2.8 hrs and 183 $\times$ 2.8 (=512.4) for 512.4 or 512 from correct working.
8 (a)		$\frac{1}{3}$	P1 P1 A1	for a process to find volume of cylinder, e.g. $\pi r^2 \times 6r$ for complete process, e.g. volume of 3 spheres divided by the volume of the cylinder, e.g. $(3 \times \frac{4}{3}\pi r^3) \div \pi r^2 \times 6r$ or $\frac{2}{3}$ $\frac{1}{3}$ oe
(b)		Statement	C1	e.g. Proportion between number of spheres and relevant height cylinder remains constant

Question	Working	Answer	Mark	Notes
9		1150	P1	for process to use density and mass, e.g. 8600÷15
			P1	for process to use ratio to find one other density, e.g. 8600÷15×13 or looking at difference in ratios
			P1	for a full process to find mass of either A or C, e.g. 8600 ÷ 15 × 13 × 5 (= 37266.6 …)
			P1	for a full process to find the difference between the mass e.g. 8600 ÷ 15 × 13 × 5 – 8600 ÷ 15 × 21 × 3
			A1	1146 to 1150
10		4.5×10^{-3}, 0.45×10^{-1},	M1	for conversion to same format or 3 in correct order
		0.045×10^{3}, 450	A1	fully correct answer
11		× marked	M1	Measures length *AB* and uses figure in next step or uses 56 and 35 to get scale factor
			M1	for a complete method to find correct scaled length for 35 km
			M1	Draws an arc from *A* of "5"
			M1	Draws a bearing of 300° from *B*
			A1	Clearly indicates intersection as required point

Question	Working	Answer	Mark	Notes
12		288	M1	for 24×12
			A1	cao
13 (a)		$6x^3 + 5x^2 - 17x - 6$	M1	for multiplying out two brackets with at least three terms out of four correct
			M1	(dep M1) for a complete method
			A1	cao
(b)		$n^{\frac{7}{2}}$	B1	oe
14		1:3	M1	for a valid first step, e.g. $\sqrt{9 \times 7} + \sqrt{9c}$
			M1	for a complete method to show a multiplicative relationship, e.g. $3(\sqrt{7} + \sqrt{c})$
			A1	cao
15		1:4	M1	for method to find the volume scale factor, e.g. $960 \div 120 \ (=8)$
			M1	(dep M1) for a complete process to find the area sf $(\sqrt[3]{\text{"8"}})^2$
			A1	oe

Question	Working	Answer	Mark	Notes
16		$\dfrac{8}{56}$	P1	for process to start e.g. $\frac{1}{8} \times \frac{2}{7}$ or $\frac{2}{8} \times \frac{3}{7}$
			P1	for complete process e.g. $\frac{1}{8} \times \frac{2}{7}$ + $\frac{2}{8} \times \frac{3}{7}$
			A1	$\frac{8}{56}$ oe
17 (a)		$99(a-c)$	M1	for forming $100a + 10b + c$ or $100c + 10b + a$
		with	M1	for finding the difference for their expressions
		conclusion	C1	for a concluding statement with $99(a-c)$
(b)		statement	C1	e.g. has no effect , b's cancel
18 (a)		68	M1	for working with frequency density or using squares
			M1	for finding at least 4 of 10, 8, 12, 15, 15, 8
			A1	cao
(b)(i)		412–417	M1	For a complete correct method to divide the area of the histogram into two equal parts **OR** for a complete correct method to interpolate for the 34.5$^{\text{th}}$ value
			A1	Answer within the range 412–417
(ii)		Statement	C1	e.g. Only an estimation dependent on distribution within the interval

Question	Working	Answer	Mark	Notes
19		$x < \dfrac{-3}{2}$	M1	for factorising, e.g. $(2x + 3)(x - 4)$
		$x > 4$	A1	for critical values of $\dfrac{-3}{2}$ and 4
			A1	for correct inequalities
20		0.09	P1	for start to process e.g. $0.11 \div 0.55$ $(= 0.2)$ oe
			P1	(dep P1) for complete process "0.2" $\times (1 - 0.55)$ oe
			A1	oe
21 (a)		$\dfrac{9}{14}$	M1	for correct substitution
			A1	$\dfrac{9}{14}$ oe
(b)		−2 or 3	B1	for −2 or 3
(c)		$\dfrac{3 \pm \sqrt{101}}{4}$	M1	for representing the equation as a single fraction
			M1	for simplifying and rearranging to a quadratic equal to zero
			A1	for $4x^2 - 6x - 23 = 0$
			M1	for a complete method to solve their quadratic
			A1	oe