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Mark Scheme

Mock Paper – Set 1

Pearson Edexcel GCSE
In Mathematics (1MA1)
Higher (Non Calculator) Paper 1H

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Publications Code

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

Mark scheme GCSE (9 – 1) Mathematics

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
1			$\frac{23}{30}$	3	M1 for conversion to improper fractions, e.g. $\left(\frac{13}{5}-\frac{11}{6}\right)$ or for $\left(\frac{18}{30}-\frac{25}{30}\right)$ M1 for a complete correct method A1 for $\frac{23}{30}$ oe
2	(a)(i)		Fixed charge	1	C1 for correct interpretation e.g. the starting price
	(a)(ii)		The cost per minute	1	C1 for correct interpretation e.g. how much the price increases every minute
	(b)		$y = 1.5x + 0.5$	3	M1 for an attempt to calculate the gradient, with 2 correct values used, e.g. 7.5 ÷ 5, **or** y-intercept found M1 for gradient of 1.5 in an equation **or** $1.5x + 0.5$ A1 for the correct equation

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
3		$\sqrt{5^2 - 4^2} = 3$ $4 \times 8 = 32$ $32 + \frac{1}{2}(3 \times 8)$	44	5	P2 for $\sqrt{5^2 - 4^2}$ or for a height of 3 (P1 for $5^2 - 4^2$) P1 for process to find one area P1 for a complete process to find the total area A1 cao
4		2.5 × 110 = 275 miles 275 + 37 = 312 miles 312 ÷ 3 = 104 mph 110 – 104 = 6 mph	6	4	P1 for process to find distance, e.g. 2.5 × 110 (= 275) P1 for process to find speed for Gill's journey using their distance for Tarek's journey e.g. (275 + 37) ÷ 3 (= 104) P1 for a complete process to find difference in speeds A1 cao

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
5	(a)		White = 36 Green = 6 Blue = 18	5	P1 for process to start to solve the problem, e.g. 600 ÷ 60, or 6 × 1.8 P1 for a complete process to find the total number of tiles (= 60) P1 for $\frac{3}{5} \times 60$ (= 36) P1 for (60 – 36) ÷ 4 A1 cao
5	(b)		Correct statement	1	C1 e.g. Fewer tiles may be needed
6			Result shown	4	M1 for 40 × 0.5 (= 20) **or** *x* axis scaled correctly M1 for total distance of 80 miles **or** *y* axis scaled correctly A1 for 1.25 hours oe or a completed travel graph C1 for correct conclusion with either 16 45 or a correct graph
7			2000	3	B1 for correctly rounding two of the three values (40, 100, 0.2) M1 for partially completing the calculation, e.g. (40 × 10) ÷ 0.2, 400 ÷ 0.2 A1 cao

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
8		$\begin{pmatrix}4\\-7\end{pmatrix}+\begin{pmatrix}-3\\-2\end{pmatrix}$	Translation $\begin{pmatrix}1\\-9\end{pmatrix}$	2	B1 for Translation B1 for $\begin{pmatrix}1\\-9\end{pmatrix}$
9			6	3	P1 for a process to start to solve the problem, e.g. 8 × 5 (= 40) machine days, **and** "40" – (4 × 2) (= 32) machine days left **or** $\frac{1}{5}$ complete **or** $\frac{4}{5}$ left P1 For a complete process to solve the problem, e.g. 32 ÷ 8 (= 4) and 2 + "4" or $\frac{4}{5}\times 5$ A1 cao
10			$\frac{1}{16}$	1	cao

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
11			A & Y B & X C & Z D & W	2	B2 for all correct (B1) for two or three correct
12			20	3	M1 for 52 – 41.6 (= 10.4) M1 "10.4" ÷ 52 × 100 A1 for 20
13			Proof	3	M1 for expressions to represent any 2 different odd numbers, e.g. $2n+1$ and $2m+1$ M1 for method to subtract and factorise. C1 correct expression and conclusion
14			$\frac{103}{165}$	3	M1 for method to find 2 multiples of 0.624 that can be used to eliminate the decimals M1 for complete method A1 cao

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
15			22.5	4	P1 for $\frac{1}{10}(x^2 - 30x)$ P1 for process to complete the square, e.g. $\frac{1}{10}((x-15)^2 - 225)$ P1 for $\frac{-225}{10}$ or substitution of $x = 15$ A1 cao **OR** P1 for $\frac{1}{10}x^2 - 3x = 0$ P1 for $x = 0$ and $x = 30$ P1 for substitution of $x = 15$ A1 cao
16	(a)		Evaluation	1	C1 for correct evaluation of method seen, e.g. should have used $\frac{1}{3}$ instead of $\frac{1}{2}$
16	(b)		Evaluation	1	C1 for correct evaluation of result shown, e.g. the constant term should be −6 not +6 or complete simplified expansion

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
17			66	4	M1 for method to find *ODB* or *OAB* M1 for complete method to find *AOB* C2 for 66 with all reasons appropriate for their method (C1 (dep on M1) for one appropriate circle theorem reason for their method) Alternate segment theorem Base angles of an isosceles triangle are equal Angles in a triangle add up to 180° **OR** The tangent to a circle is perpendicular (90°) to the radius (diameter) Base angles of an isosceles triangle are equal Angles in a triangle add up to 180° Angles on a straight line add up to 180° **OR** The tangent to a circle is perpendicular (90°) to the radius (diameter) Base angles of an isosceles triangle are equal The exterior angle of a triangle is equal to the sum of the interior opposite angles

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
18			$\frac{1}{2}n^2 + 1$	3	P1 for process to find common second differences P1 for $\frac{1}{2}n^2$ as part of an algebraic expression A1 oe
19		$CAD = ACB = 90°$ (given) $ABC = ABD$ (common) $ADC = 180 - 90 - ABD$ $= 180 - 90 - ABC$ $= BAC$ $\therefore \Delta\ ABD$ is similar to $\Delta\ CBA$ (AAA)	Proof	3	C1 one correct relevant statement C1 all correct relevant statements C1 correct conclusion with reasons
20			$x = 3, y = 3$ $x = -4.2,$ $y = -0.6$	5	M1 for $(2y - 3)^2 + y^2 = 18$ M1 for expansion of bracket: e.g. $4y^2 - 6y - 6y + 9$ M1 for quadratic ready for solving, e.g. $5y^2 - 12y - 9 = 0$ M1 for factorising, e.g. $(5y + 3)(y - 3) = 0$ oe A1 for $x = 3, y = 3$ and $x = -4.2, y = -0.6$

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
21			$\frac{11-\sqrt{2}}{17}$	3	M1 for intention to multiply numerator and denominator by $(5-\sqrt{8})$ M1 for correct expansion of either $(3+\sqrt{2})(5-\sqrt{8})$ or $(5+\sqrt{8})(5-\sqrt{8})$, at least 3 terms correct or 4 correct terms ignoring signs. A1 for fully correct working leading to $\frac{11-\sqrt{2}}{17}$
22	(a)		$y = f(-x)$	1	B1 cao
	(b)		$y = g(x) + 1$	1	B1 cao
	(c)		$(180,-1)$	1	B1 cao
23			$\frac{61}{118}$	3	P1 for $20 \div 5$ or correct scale on FD axis, or use of area. P1 for correctly method to find area of remaining bars, allow one error A1 for $\frac{61}{118}$ oe

Mock Paper 1MA1: 1H					
Question		**Working**	**Answer**	**Mark**	**Notes**
24			$\frac{76}{110}$	3	P1 for $\frac{6}{10}\times\frac{8}{11}$ or $\frac{4}{10}\times\frac{7}{11}$ P1 for $\left(\frac{6}{10}\times\frac{8}{11}\right)+\left(\frac{4}{10}\times\frac{7}{11}\right)$ A1 for $\frac{76}{110}$ oe