Pearson

Mark Scheme

Mock Set 4

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Higher (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 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: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
1	$x < 2$	B2 (B1	for $x < 2$ for x ? 2 where ? is any incorrect inequality sign or =)	Accept $2 > x$
2 (a)	6, 9	B1	cao	
(b)	Yes (supported)	C1	Yes with supporting evidence eg its the 11th term **or** $11^2 + 5 = 126$	
(c)	$-7n + 33$	M1 A1	for $-7n$ **or** $-7n + k$ (where $k \neq 33$) for $-7n + 33$ oe	 Accept eg $T = -7n + 33$ but $n = -7n + 33$ gets M1 A0
3 (a)	$20 < t \leq 30$	B1	cao	
(b)	Points plotted at (5,10), (15,26), (25,23), (35,19), (45,14), (55,8) and joined with line segments	B2 (B1	for correct plotting of 6 points and joining with line segments for points plotted at midpoints of intervals **or** joining points with line segments at the correct heights and consistent within the class interval (including end values) **or** correct frequency polygon with one point incorrect **or** correct frequency polygon with first and last points joined)	 Ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
4	Paris (supported)	P1	for changing between £ and euros eg 0.58 ×1.17 (= 0.67(8..)) **or** 1.05 ÷ 1.17 (= 0.89(7..)) **or** between pints and litres eg 0.58×1.76 (= 1.02(0..)) **or** 1.05÷1.76 (= 0.59(6..))	It is acceptable to round or truncate money values throughout eg 0.67 or 0.68 may be used instead of 0.678 Working may be in pounds or pence or euros or cents throughout.
		P1	for a complete process to give values that can be used for comparison eg "0.678..." × 1.76 (= 1.19(4..)) **or** "0.897..." ÷ 1.76 (= 0.50(9..)) **or** 0.58×1.76 (= 1.02(0..)) **and** 1.05 ÷ 1.17 (= 0.89(7..)) **or** 0.58 ×1.17 (= 0.67(8..)) **and** 1.05÷1.76 (= 0.59(6..))	
		C1	for correct values that can be used for comparison and a correct comparison of their values	
5	2	P1	for listing multiples of 15 and 18 with at least 3 numbers in each list, condone one addition error	May be seen in list of times eg 0015, 0030, 0045
		A1	for identifying LCM as 90 (secs) **or** 1 min 30 (secs)	
		A1	cao	
6	0.28 to 0.283	M1	a complete method, 220 ÷ (12 × 65) (=0.28205…)	
		A1	for answer in range 0.28 to 0.283	Accept any answer in given range If an answer is given in the range but then incorrectly rounded award full marks.

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
7	192	P1	for $64 \div (6 + 5 + 5)$ **or** $24 : 20 : 20$	Side lengths of 24, 20 and 20 gets P1
		P1	(dep P1) for correct application of Pythagoras, eg $\text{“20”}^2 - \text{“12”}^2$	
		P1	for $\sqrt{\text{"400"}-\text{"144"}}$ **or** $\sqrt{\text{"256"}}$ (= 16)	
		P1	for process to find area of triangle, eg “24” × “16” ÷ 2	
		A1	cao	
8 (a)	–1, 3, 0, –1, 3	B2 (B1	for all correct for 3 or 4 correct)	
(b)	Correct graph	M1	(dep on at least B1 in (a)) for at least 4 points from their table plotted correctly and joined	
		A1	for fully correct graph	Plots the five correct points and joins with a curve (not with straight line segments).
9	1.6	M1	for digits 1619... or 4.90245×10^{12} or 3.0276×10^{12}	
		A1	for 1.6 to 1.62	If an answer is given in the range but then incorrectly rounded award full marks.
10 (a)	7	M1	for reading from graph at time = 40 minutes (= 53)	
		A1	cao	
(b)	Explanation	C1	explanation, eg he is wrong because he needs to read a value from the graph at cf = 15	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
11	$\frac{3}{4}$	P1 P1 A1	for 1.25 or 0.6 or expressions for both lengths, eg l and $1.25l$ or 100 and 125 **or** expressions for both widths, eg w and $0.6w$ or 100 and 60 for 1.25×0.6 (= 0.75) **or** for process to find area of each rectangle, eg 100×100 and 125×60 cao	Award 2 marks for an answer given as 0.75 or a fraction that is equivalent to $\frac{3}{4}$
12	33.4	P1 P1 A1	for 30×32.85 (= 985.5) **or** 11×31.9 (= 350.9) (dep P1) for complete process, eg (“985.5”–“350.9”) ÷ 19 cao	
13 (a)	0.2, 0.8, 0.35, 0.65, 0.15, 0.85	B2 (B1	for all 6 correct probabilities for at least 2 correct probabilities)	
(b)	0.19	M1 M1 A1	“0.2” × “0.35” (= 0.07) **or** “0.8” × "0.15” (=0.12) **or** “0.2” × “0.65” + “0.8” × “0.85” (= 0.81) for “0.2” × “0.35” + “0.8” × “0.15” **or** 1 – (“0.2” × “0.65” + “0.8” × “0.85”) for 0.19 oe	Acceptable equivalents are $\frac{19}{100}$ oe or 19%

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
14	56.25	P1	starts process, eg shows 0.8 oe	
		P1	for $1 \div 0.8^2$ (= 1.5625)	
		A1	cao	
15	583	P1	starts process using sine rule, eg $\frac{DB}{\sin 70} = \frac{39}{\sin 74}$	Accept any form of the sine rule with the correct values substituted.
		P1	for $(DB =) \frac{39}{\sin 74} \times \sin 70$ (= 38.1...)	
		P1	for angle $BDC = 180 - 70 - 74$ (= 36)	
		P1	(dep P1) for $0.5 \times 52 \times [DB] \times$ sin"36"	
		A1	answer in range 582 to 583	
16 (a)	No and reason	C1	No and reason, eg it is 2.15 times greater	
(b)	15.5	M1	for $(\sqrt[3]{10})^2$ (= 4.64..)	
		A1	answer in range 15.5 to 15.512	If an answer is given in the range but then incorrectly rounded award full marks.

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
17 (a)	No and correct working	B1	stating bound of 2495 or 2505 or 12.45 or 12.55	
		P1	finds the least number of sacks eg uses $2495 \leq LB < 2500$ and $12.5 < UB \leq 12.55$ **or** find the greatest weight of potatoes eg $200 \times 12.5 < UB \leq 12.55$ (=2510)	
		A1	for No and 198(.80..) from correct working **or** No and compares 2510 with 2495	All working must be correct, including figures used for comparison/decision.
(b)	Decision (supported)	C1	'Not affected' and statement eg UB of 12.5 will be greater than 12.55 so number of sacks will be less	
18	$\frac{1}{x+1}$	B1	for $x^2 - 4x - 5 = (x - 5)(x + 1)$, may be seen later	
		M1	for common denominator, eg $\frac{3(x-1)}{(x+1)(x-5)} - \frac{2(x+1)}{(x+1)(x-5)}$ **or** $\frac{3(x-1)(x-5)}{(x^2-4x-5)(x-5)} - \frac{2(x^2-4x-5)}{(x^2-4x-5)(x-5)}$	
		M1	for $\frac{x-5}{(x+1)(x-5)}$	
		C1	cao	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
19	33π	P1	for $\frac{1}{3}\pi \times 3^2 h + \frac{2}{3}\pi \times 3^3$ (= 30π)	Accept substitution of a value of π (or $30 \times \pi$ as a value in the range 94 to 95)
		P1	process to find h (= 4)	
		P1	use of Pythagoras to find l (= 5)	
		P1	full process to find surface area, eg $2\pi \times 3^2 + \pi \times 3 \times$ "5"	
		A1	cao	An answer given in the range 103 to 104 should be awarded P4 If an answer is given in the range but then incorrectly rounded award full marks.
20	$x = -1.5$, $y = -1$ $x = 4$, $y = 10$	M1	for eliminating one variable, eg $2x + 2 = 2x^2 - 3x - 10$	
		M1	(dep) for rearranging to get a quadratic (= 0) in one variable	Condone missing "= 0"
		M1	use of factorisation or correct substitution into quadratic formula or completing the square to solve an equation of the form $ax^2 + bx + c = 0$	Condone missing "= 0" Method used must be complete but can contain some error.
		A1	$x = -1.5$, $x = 4$ **or** $y = -1$, $y = 10$	
		C1	$x = -1.5$, $y = -1$ and $x = 4$, $y = 10$ correctly matched x and y values	

Paper: 1MA1/1H				
Question	**Answer**	**Mark**	**Mark scheme**	**Additional guidance**
21 (a)	1	B1	cao	
(b)	translation	C1	for translation	Do not award if the description includes any reference to another transformation
	by $\begin{pmatrix} 0 \\ 2-2k \end{pmatrix}$	C1	for $\begin{pmatrix} 0 \\ 2-2k \end{pmatrix}$	Use of this notation is essential.
22 (a)	equation	B1	for a correct equation, eg $y = -\cos x$ or $y = \cos(x + 180)$ or $y = \cos(x - 180)$ or $y = \sin(x - 90)$	
(b)	45	B1	for 45 **or** 405 **or** –315 etc	
	1	B1	for 1	
23	Proof	M1	for first step, eg $4x^2 - 8x + 7 = 4(x^2 - \ldots)$	
		M1	for $4(x - 1)^2 + \ldots$	
		C1	for $4(x - 1)^2 + 3$ and statement, eg $4(x - 1)^2 \geq 0$ **or** minimum is at (1, 3) so the value is always positive	Statement must be supported by full working.

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