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Mark Scheme

Pearson Edexcel GCSE (9-1)
Mathematics – 1MA1
Trial of Specimen Papers (Set 1)

Paper 3 (1MA1/3H): Calculator
Higher Tier

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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 then mark both methods **as far as they are identical** and award these 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.

Mark scheme GCSE (9 – 1) Mathematics

Paper 1MA1_3F			
Question	**Working**	**Answer**	**Notes**
1 (a)		(4,10)	B1 cao
(b)(i)		Line drawn	B1 Straight line drawn passing between (2, 16) and (2, 28) AND (13, 80) and (13, 92)
(b)(ii)		Positive	C1 positive OR description of dynamic relationship
(c)		Value between 60 and 70	C1 a correct value given
(d)		Statement	C1 for referring to the danger of extrapolation outside the given range or for a given point
2		$12.5 \leq L < 13.5$	B1 12.5 B1 13.5 or 13.4$\dot{9}$
3		$y = 2x + 1$	M1 for a method to find the gradient M1 for a method to find the c in $y = mx + c$ A1 $y = 2x + 1$
4 (a)	(720+408+304+252)÷50 1684 ÷ 50	33.68	M1 for finding 4 products *fw* consistently within interval (including end points) M1 (dep on 1st M) for 'Σ*fw*'÷50 A1 (accept 33.7 from correct working)
(b)		Manager with reasons	M1 for strategy to compare number of small size sold to number ordered C1 clear comparison that small size is not ¾ and so Jenny is not correct or the manager is correct

Paper 1MA1_3F			
Question	**Working**	**Answer**	**Notes**
5 (a)	160 tiles 18 packs	18	M1 a full method to find the area of the trapezium M1 a full method to calculate both areas in consistent units M1 for the area of the trapezium ÷ area of a tile (with consistent units) M1 (dep on previous M) for complete method to find the number of packs required A1
(b)	176 tiles 20 packs	Supported statement	P1 finding the number of packs for 10% more tiles or 10% of their number of packs, ft from (a) C1 Statement, eg. increase in packs is 2 more which is more than 10%
6		$(x-1)(x+4)$	M1 $(x \pm 1)(x \pm 4)$ A1 $(x-1)(x+4)$ oe
7		A and D	C1 in any order
8 (a)		2500	P1 for use of 1.03 P1 for a full method equivalent to $\div 1.03^2$ A1 2500
(b)		Saver account with support	P1 process to find a comparable total interest figure or to compare investment for a given amount A1 for conclusion with supporting statement or figures seen eg 21.6(65..)>21
9	1.5×1.7−1.7 Or 0.5 × 1.7 = (0.85)	0.664(09..)	P1 for finding the difference in height by ratio or multiplier P1 for use of tan ratio P1 (dep) for "0.85" ÷ tan 52 oe A1 0.664 to 0.6641

Paper 1MA1_3F			
Question	**Working**	**Answer**	**Notes**
10		Region R	M1 for one line correctly drawn M1 for two lines correctly drawn M1 for three lines correctly drawn A1 fully correct region indicated with all lines correct
11		$(x+1)^2-9$	M1 for $(x+1)^2$ or $m = 1$ A1 cao
12		430	P1 for appropriate use of Pythagoras P1 for setting up an equation equivalent to $x^2 = 15^2 - 5^2 - 7^2$ or better eg $\sqrt{151}$ P1 for finding the volume using their "$\sqrt{15^2 - 5^2 - 7^2}$" A1 430 to 430.1
13		168	M1 product of 14 and 12 A1 cao
14		$\frac{3x+10}{x+2}$	B1 for factorising to get $(x+3)(x+2)$ M1 for dealing with the division of $(x+3)$ by $\frac{x^2+5x+6}{x-2}$ M1 for two correct fractions with a common denominator or a correct single fraction prior to subtracting eg $\frac{4(x+2)-(x-2)}{x+2}$ or $\frac{4(x+2)}{(x+2)} - \frac{(x-2)}{(x+2)}$ A1 $\frac{3x+10}{x+2}$
15 (a)		Number of errors	P1 1000 000 ÷ 256 oe A1 3906 or 3907 or 3900 or 3910 or 4000 from correct working
(b)		Decision	C1 Decision and supporting statement Eg no 'model' never zero or yes cannot have a part error Note just yes or no will score zero

Paper 1MA1_3F			
Question	**Working**	**Answer**	**Notes**
16		(6, –1)	M1 for a method showing the translation or reflection in the *x*-axis of a graph or a correct coordinate A1 cao
17	$l = 20x$ $x = 3$	20736	P1 for a first step to solve the problem eg method to find the slant height of the cone or the volume equals $768\pi x^3$ P1 for setting up an equation for the curved surface area in terms of x eg $2160\pi = \pi \times 12x \times 20x$ P1 for complete method to find the value of x P1 for a method to find the volume or value of V A1 cao
18		0.49	P1 for $\sqrt{0.09}$ P1 for (1-"$\sqrt{0.09}$")² A1 cao
19 (a)		4.23×10^{-4}	B1
(b)		45000	B1
20	$\sqrt{(253.5 \div 6)}$ $6.5^3 \times 2 = 549.25$ $549.25 \div 10 = 54.925$	55	P1 a process to find the scale factor of 6.5 P1 for a full process to find the amount of clay required C1 for stating 55 bags
21 (a)		Rearrangement	M1 for re arranging to $x^3 =$ C1 a clear step to show re arrangement
(b)	$x_1 = 3.29296875$ $x_2 = 3.276659786$ $x_3 = 3.279420684$	Values	M1 for substitution of 3.2 into the iterative formula A1 for $x_1 = 3.292(96875)$ A1 for $x_2 = 3.276(659786)$ and $x_3 = 3.279(420684)$
(c)		Statement	C1 Statement eg estimates of a solution to the original equation

Paper 1MA1_3F			
Question	**Working**	**Answer**	**Notes**
22		Proof	B1 state the difference of two squares in algebraic notation eg $p^2 - q^2$ M1 for writing down expressions for two different terms from the sequence eg $6n + 1$ and $6m + 1$ M1 for expanding one squared bracket to obtain 4 terms with all 4 correct without considering signs or for 3 terms out of 4 correct with correct signs A1 for $36(m^2 - n^2) + 12(m - n)$ oe M1 (dep M2) for factorising their expression by 12 C1 for fully correct working with statement justifying $(m - n)$ $(3(m + n) + 1)$ is even eg considering odd and even combinations

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