

Mark Scheme
Practice papers

GCSE Mathematics
Paper 5AM1F_01

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NOTES ON MARKING PRINCIPLES

- 1 All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- 2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- 3 All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- 4 Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- 5 Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- 6 Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:
 - i) *ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*
Comprehension and meaning is clear by using correct notation and labeling conventions.
 - ii) *select and use a form and style of writing appropriate to purpose and to complex subject matter*
Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.
 - iii) *organise information clearly and coherently, using specialist vocabulary when appropriate.*
The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

7 With working

If there is a wrong 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.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

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, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

8 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, 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.

9 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: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

10 Probability

Probability answers must be given as fractions, percentages or decimals. 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.

11 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated 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.

12 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

13 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 includes all numbers within the range (e.g 4, 4.1)

Guidance on the use of codes within this mark scheme

M1 – method mark
A1 – accuracy mark
B1 – Working mark
C1 – communication mark
QWC – quality of written communication
oe – or equivalent
cao – correct answer only
ft – follow through
sc – special case
dep – dependent (on a previous mark or conclusion)
indep – independent
isw – ignore subsequent working

NOTES ON MARKING PRINCIPLES

1 Types of mark

M marks: method marks

A marks: accuracy marks

B marks: unconditional accuracy marks (independent of M marks)

2 Abbreviations

cao – correct answer only

isw – ignore subsequent working

oe – or equivalent (and appropriate)

indep - independent

ft – follow through

SC: special case

dep – dependent

3 No working

If no working is shown then correct answers normally score full marks

If no working is shown then incorrect (even though nearly correct) answers score no marks.

4 With working

If there is a wrong 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.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

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, and discuss each of these situations with your Team Leader.

If there is no answer on the answer line then check the working for an obvious answer.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks. Discuss each of these situations with your Team Leader.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

5 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working since you can check the answer yourself, 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.

6 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: e.g. incorrect canceling of a fraction that would otherwise be correct

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect e.g. algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

7 Probability

Probability answers must be given as fractions, percentages or decimals. 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.

8 Linear equations

Full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously indicated 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.

9 Parts of questions

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

Question		Working	Answer	Mark	Notes
1	(a)		£1868	2	B1 cao in the correct place B1 one thousand eight hundred and sixty eight in the correct place
	(b)	1868 + 836	£2704	1	B1 ft
2		$\frac{1}{4}$ million = 250000 250000 - 150000	100000	2	B1 $\frac{1}{4}$ million = 250000 B1 ft on conversion of $\frac{1}{4}$ million
3	(a)	$(200 + 175) \times 32 = 375 \times 32$ Or $200 \times 32 = 6400$ $175 \times 32 = 5600$ $5600 + 6400$	12000	3	M1 200 + 175 M1 '375' \times 32 A1 cao Or M1 200×32 or 175×32 M1 '6400' + '5600' A1 cao
	(b)		12	1	B1 ft
4	(a)	A:x B 2x C 3x Total = $x + 2x + 3x$	6x	2	M1 for either 2x or 3x correctly identified A1 6x
	(b)	$6x = 60$; $x = 10$ Or Half of the total is in C	30	2	M1 '6x' = 60 A1 ft Or M1 Half of the total is in C A1 cao

Question		Working		Answer	Mark	Notes															
*5		20.4.2012 28.4.2012 So yes	3282.77 4532.77	Yes	3	B1 3282.77 B1 4532.77 C1 Conclusion based on the final figure in the balance column															
6	(a)	$\frac{4}{16} = \frac{1}{4}$		$\frac{4}{16} = \frac{1}{4}$	2	B2 $\frac{1}{4}$ (B1 $\frac{4}{16}, \frac{2}{8}$)															
	(b)			8m	1	B1 cao															
7	(a)	<table border="1"> <thead> <tr> <th>News Source</th> <th>Tally</th> <th>Freq</th> </tr> </thead> <tbody> <tr> <td>Newspaper</td> <td> </td> <td>4</td> </tr> <tr> <td>Radio</td> <td> </td> <td>6</td> </tr> <tr> <td>Television</td> <td> </td> <td>7</td> </tr> <tr> <td>Internet</td> <td> </td> <td>3</td> </tr> </tbody> </table>	News Source	Tally	Freq	Newspaper		4	Radio		6	Television		7	Internet		3		Correct chart	2	M1 at least 2 columns with an attempt at tallies A1 fully correct
	News Source	Tally	Freq																		
Newspaper		4																			
Radio		6																			
Television		7																			
Internet		3																			
(b)				Correct bar chart	3	M1 Axes drawn with at least 3 bars A1 3 correct heights, ft tally chart A1 all correct heights, labelled ft tally chart NB other charts/diagrams can score full marks															
8	(a)			-7°C	1	B1 cao															
	(b)			5°C	1	B1 ft accept, -5															
	(c)			16°C	1	B1 cao															

Question		Working	Answer	Mark	Notes
9	(a)		Marked on grid	3	B1 A correct B1 B correct (ft on A) B1 C correct (ft on B)
	(b)		(7,6)	1	B1 ft on C
	(c)		(6,4)	2	M1 uses formula or draws AC and marks midpoint A1 ft on (7,6)
10	(a)		kite	1	B1 cao
	(b)	Perimeter = $7 + 4.5 + 4.5 + 7 = 23$ miles 23 miles = $23 \times 1.6 = 36.8$ km. 36.8 km = 36800 m No of lengths of wire = $36800 \div 100 = 368$ 368×18 dollars = 6624 dollars	6624	6	M1 $7 + 4.5 + 4.5 + 7$ M1 '23' $\times 1.6$ M1 '36.8' $\times 1000$ M1 '36800' $\div 100 \times 18$ C1 at least 2 steps shown A1 6600 – 6700
11	(a)		0800	1	B1 cao
	(b)		2.5°C	1	B1 2.4 – 2.6
	(c)	0600 to 0800	2 hours	2	M1 0600 and 0800 identified A1 cao

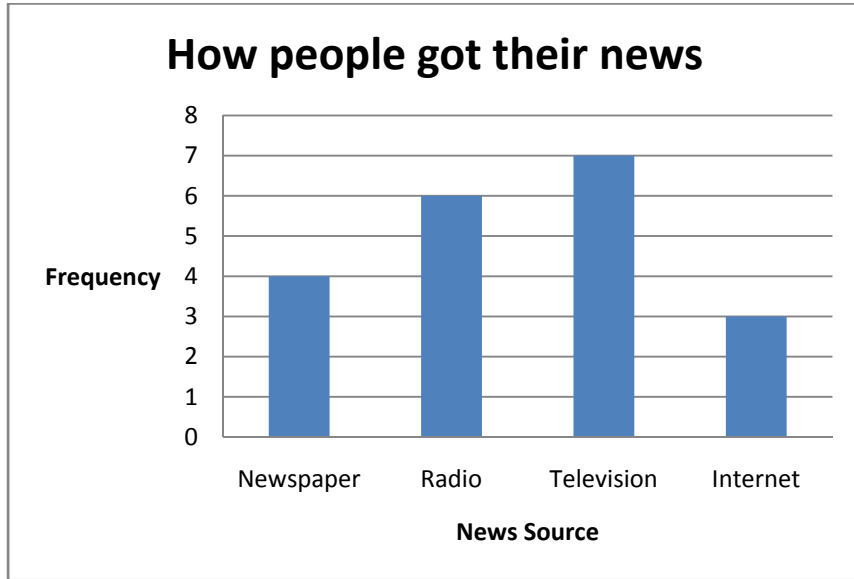
Question		Working				Answer	Mark	Notes																
12	(a)					Correct line	1	B1 cao																
	(b)	90 + 38				128	2	M1 90 + 38 A1 cao																
	(c)	Area of roof = $10 \times 6 = 60\text{m}^2$ 40% of 60 = 24 $24 \div 4 = 6$					4	M1 10×6 M1 '60' $\times 0.4$ oe M1 '24' $\div 4$ C1 conclusion based on $3 \times 2 = 6$																
13	(a)	<table border="1"> <thead> <tr> <th></th> <th>M</th> <th>F</th> <th>Tot</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>18</td> <td>7</td> <td>25</td> </tr> <tr> <td>C</td> <td>26</td> <td>9</td> <td>35</td> </tr> <tr> <td>Tot</td> <td>44</td> <td>16</td> <td>60</td> </tr> </tbody> </table>					M	F	Tot	A	18	7	25	C	26	9	35	Tot	44	16	60	Summarises data in table	3	M1 at least two of 26, 25, 18, 60 in the correct place M1 all other entries completed A1 cao
		M	F	Tot																				
A	18	7	25																					
C	26	9	35																					
Tot	44	16	60																					
(b)					15%	2	M1 $\frac{9}{60} \times 100$ A1 cao																	
14		Weekdays $28 \times \text{£} 6.92 = \text{£}193.76$ Weekends $\left(5\frac{1}{2} + 4\frac{1}{2}\right) \times 1.5 \times \text{£}6.92$ $= \text{£}103.80$				$\text{£}297.56$	6	M1 '28' $\times \text{£}6.92$ B1 $4\frac{1}{2}$ M1 $\left(5\frac{1}{2} + 4\frac{1}{2}\right) \times 1.5$ M1 '15' $\times \text{£}6.92$ M1 ' $\text{£}193.76$ ' + ' $\text{£}103.80$ ' A1cao																

Question		Working	Answer	Mark	Notes
15	(a)	1 tin lasts 4 days so $4 + 4 + 2$	10	2	M1 1 tin lasts 4 days A1 cao
	(b)	$128 \div 500 = 0.256$ $2 \times 108 = 216$ $216 \div 900 = 0.240$	The supermarket is cheaper.	4	M1 $128 \div 500$ M1 $216 \div 900$ A1 0.256 or 0.240 C1 correct conclusion ft based on at least M1
16	(a)	250×0.45	£112.50	2	M1 250×0.45 A1 cao
	(b)	$100 \times 0.30 = 30$	£165	2	M1 100×0.30 A1 cao
	(c)	800 miles gets $\pounds 135 + \pounds 150 \neq 2 \times 165$	No, with reason	2	M1 'Expenses per mile are variable' A1 'Between below 300 and above' Or M1 gives an example A1 example is correctly worked out
17	(a)		26%	1	B1 cao
	(b)	$90 - 50$	40	2	M1 $90 - 50$ A1 40
	(c)	Only shows percentages not absolute values	Explanation	1	B1 refers to percentages as opposed to absolute values
	(d)	20% of £8000	£1600	3	B1 20% M1 8000×0.2 oe A1 ft on 20%

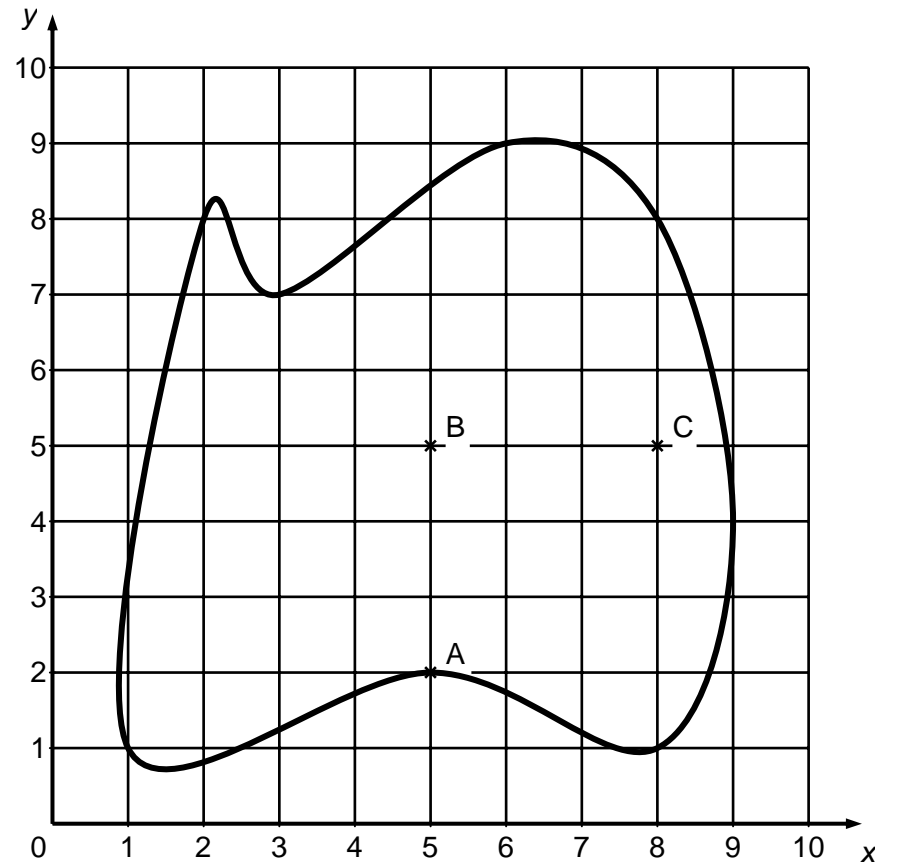
Question		Working	Answer	Mark	Notes
18	(a)		0.75	2	M1 $75 \div 100$ oe A1 0.75
	(b)	Difference is £60 $\text{£}60 \times 0.75$	£45	3	M1 $160 - 100$ M1 $\text{£}60 \times '0.75'$ A1 ft on '0.75'
19	(a)		Rhombus	1	B1 cao
	(b)	$180 - 2 \times 36$	108	2	M1 $180 - 2 \times 36$ A1 cao
	(c)	$180 - 90 - 36 = 54$ $180 - 2 \times 54$ Sum of angles in a triangle is 180° Sum of angles on a straight line is 180°	72	3	M1 $180 - 90 - 36 = 54$ and $180 - 2 \times 54$ A1 cao C1 Sum of angles in a triangle is 180° Sum of angles on a straight line is 180°
20	(a)		Correct plots	2	B1 cao B1 cao
	(b)	Using Line of best fit with temp = 30	75	2	M1 Using Line of best fit with temp = 30 A1 71 – 79
	(c)		Correct explanation	1	C1 Line of best fit predicts negative time oe

Question	Working	Answer	Mark	Notes
21	$\frac{4+7}{2} \times 6 = 33$ $33 \times 8.99 = \text{£}296.67$	£296.67	3	M1 $\frac{4+7}{2} \times 6$ M1 '33' $\times 8.99$ A1 cao

7.



9.

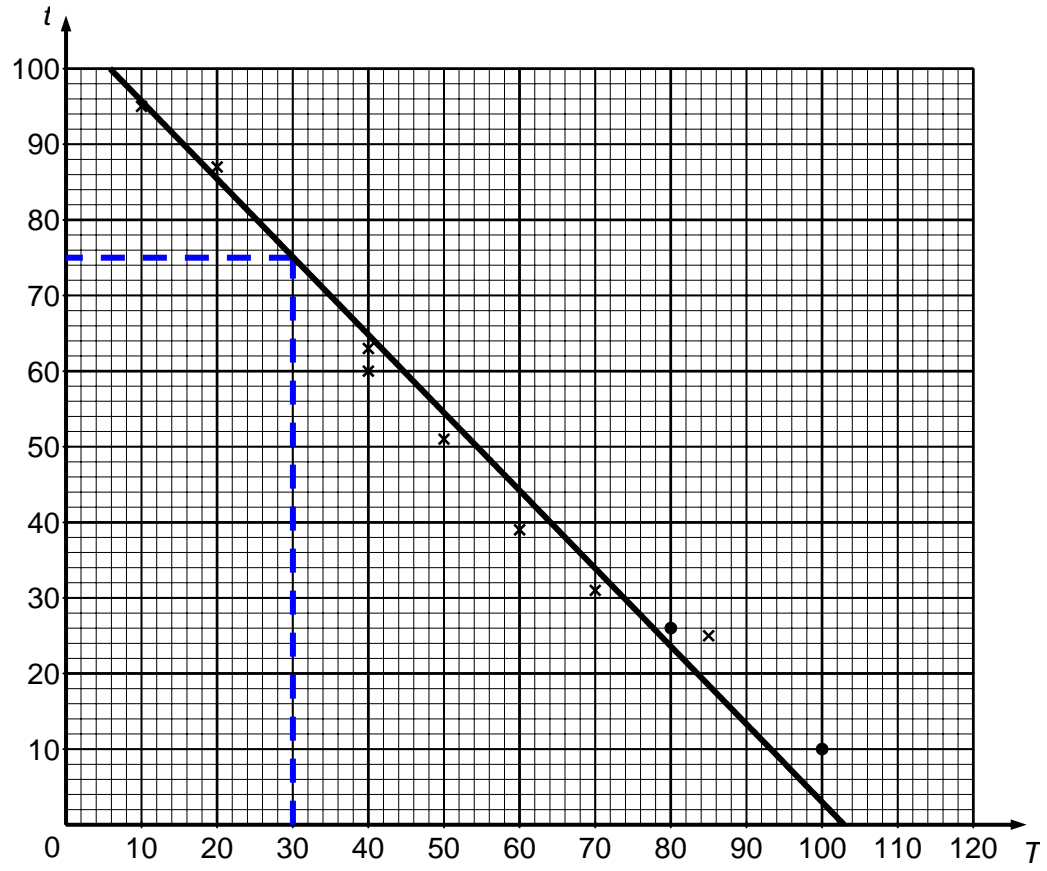


13.

		Gender		
Age		Male	Female	
	Adults	18		25
	Children	26		
				60

		Gender		
Age		Male	Female	
	Adults	18	7	25
	Children	26	9	35
		44	16	60

20.



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