

**Mathematics A**

General Certificate of Secondary Education

Unit **A502/01**: Mathematics B (Foundation Tier)

**Mark Scheme for November 2010**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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**Marking Instructions & Abbreviations****Marking instructions**

1. Mark strictly to the mark scheme.
2. Make no deductions for wrong work after an acceptable answer unless the mark scheme says otherwise.
3. Work crossed out but not replaced should be marked.
4. **M** (method) marks are not lost for purely numerical errors.  
**A** (accuracy) marks depend on preceding **M** (method) marks. Therefore **M0 A1** cannot be awarded.  
**B** marks are independent of **M** (method) marks and are awarded for a correct final answer or a correct intermediate stage.
5. Two additional situations may appear in the mark scheme allowing the award of **A** marks or independent (**B**) marks:
  - i. Correct answer with no working
  - ii. Follows correctly from a previous answer whether correct or not (“FT” on mark scheme).
6. As a general principle, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered, mark the poorer (poorest).
7. When the data of a question is consistently misread in such a way as not to alter the nature or difficulty of the question, please follow the candidate’s work and allow follow through for **A** and **B** marks. Deduct 1 mark from any **A** or **B** marks earned and record this by using the **MR** annotation. **M** marks are not deducted for misreads.
8. If the correct answer is seen in the body and the answer given in the answer space is a clear transcription error allow full marks unless the mark scheme says ‘mark final answer’ or cao. If the answer is missing, but the correct answer is seen in the body allow full marks. If the correct answer is seen in working but a completely different answer is seen in the answer space, then accuracy marks for the answer are lost. Method marks would normally be given.
9. For methods not provided for in the mark scheme give as far as possible equivalent marks for equivalent work.

10. For answers scoring no marks, you must either award NR (no response) or 0, as follows:

Award NR (no response) if:

- Nothing is written at all in the answer space
- There is any comment which does not in any way relate to the question being asked (“can’t do”, “don’t know”, etc.)
- There is any sort of mark that is not an attempt at the question (a dash, a question mark, etc.)

Award 0 if:

- There is any attempt that earns no credit. This could, for example, include the candidate copying all or some of the question, or any working that does not earn any marks, whether crossed out or not.

11. Where a follow through mark is indicated on the mark scheme for a particular part question, you must ensure that you refer back to the answer of the previous part question.
12. Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen. E.g. answer on mark scheme is 15.75 which is seen in the working. The candidate then rounds or truncates this to 15.8, 15 or 16 on the answer line. Allow full marks for the 15.75.
13. Anything in the mark scheme which is in square brackets [...] is not required for the mark to be earned, but if present it must be correct.
14. Ranges of answers given in the mark scheme are always inclusive.
15. Annotating scripts. The following annotations are available:

✓ and ✗

**BOD** - Benefit of doubt

**FT** - Follow through

**ISW** - Ignore subsequent working

**M0, M1, M2** - Method mark awarded 0, 1, 2

**A1** - Accuracy mark awarded

**B1, B2** - Workless mark awarded 1, 2

**MR** - Misread

**SC** - Special case

^ - Omission sign

These should be used whenever appropriate during your marking.

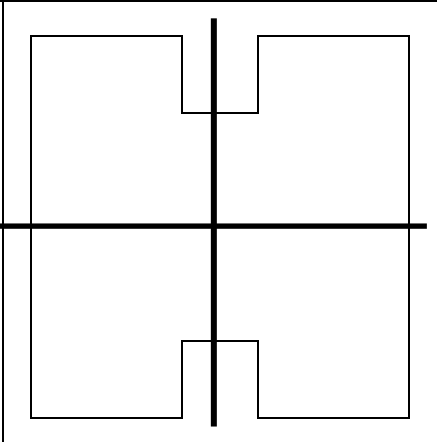
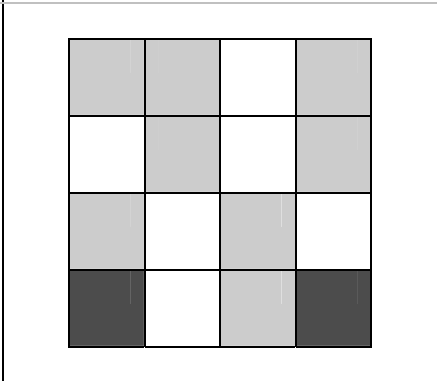
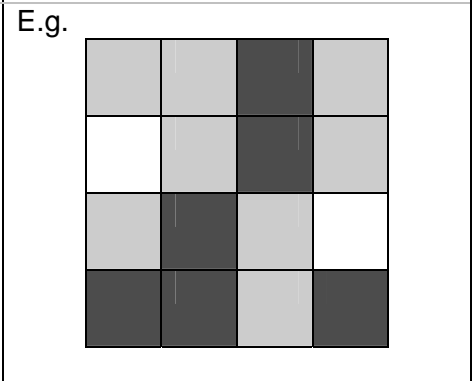
**Abbreviations**

The following abbreviations are commonly found in GCSE Mathematics mark schemes.

- Where you see **oe** in the mark scheme it means **or equivalent**.
- Where you see **isw** in the mark scheme it means **ignore subsequent working** (after correct answer obtained), provided the method has been completed.
- Where you see **cao** in the mark scheme it means **correct answer only**.
- Where you see **soi** in the mark scheme it means **seen or implied**.
- Where you see **www** in the mark scheme it means **without wrong working**.
- Where you see **rot** in the mark scheme it means **rounded or truncated**.
- Where you see **seen** in the mark scheme it means that you should award the mark if that number/expression is seen anywhere in the answer space, including the answer line, even if it is not in the method leading to the final answer.
- Figs: for example **figs 237** means any answer with just these digits with leading or trailing zeros disregarding any decimal point. E.g. 237000, 2.37, 2.370, 0.00237 but not 23070 or 2374.

1	(a)	0340 or 1540 oe	1	Accept in words "Twenty to four", "forty minutes past three" oe If 24 hour ignore am, pm unless contradictory	E.g. 0340am ✓ 0340pm×
	(b)	3.7	1	Accept 37 mm (mm must be shown)	
	(c)	(i) 2.4	1		
		(ii) 2400	1FT	( <i>Their</i> 2.4) × 1000	
2	(a)	(i) 71.2	1		
		(ii) 29.9	1		
		(iii) 1.52	2	<b>B1</b> for figs 152	
	(b)	8 × 9 = 72 72 ÷ 9 = 8 or 72 ÷ 8 = 9	1 1		
3	(a)	C	1		
	(b)	D or E or F	1	Ignore other <b>correct</b> letters <b>B0</b> if any <b>wrong</b> letters included	E.g. D and/or E ✓ E.g. D and/or C ×
4	(a)	1000	1		
	(b)	40%	1		
5	(a)	(3, 4)	1		
	(b)	R marked at (0, 1) (0, 1) as answer	1 1	<b>B1</b> for correct coordinate but not plotted	
	(c)	Square drawn Centre of <i>their</i> square	1 1FT	(1.5, 2.5)	

<b>6</b>	<b>(a)</b>	1000g www	<b>4</b>	<b>M1</b> for 450 or $900 \div 9$ soi 50(g) or 100(g) <b>M1</b> for <i>their</i> 50 or $100 \times 8$ soi 400(g) or 800(g) <b>B1</b> for attempt at addition of ingredients soi 1090 or 190	Condone 110+450+450+55+25
	<b>(b)</b>	25	<b>2FT</b>	<b>M1</b> for $\left(\frac{\textit{their}1000 - 750}{\textit{their}1000}\right) \times 100$ In FT cases accept answer to 2sf	
	<b>(c)</b>	150	<b>2</b>	<b>M1</b> for $750 \div 5$	
<b>7</b>	<b>(a)</b>	5	<b>1</b>		
	<b>(b)</b>	No AND Two dots above each other (show equal areas) (but) different prices	<b>1</b> <b>1</b>	No without reason scores <b>0</b> Identify only two dots above each other Identify different height means one more expensive	May use indications on graph
	<b>(c)</b>	Positive	<b>1</b>	Ignore comments regarding strength	
	<b>(d)</b>	No scales marked oe	<b>1</b>		

8	(a)		2 B1 for one correct line only -1 each wrong line included (maximum -2)	Lines intended straight and correct position by eye
	(b)		2 B1 for shape with order 2 but shading more than 2 squares	E.g. 
	(c)	Reflection $x = 4$ oe	1 1 E.g. "Vertical line through 4 on x axis"	
9		45	2 M1 for $180 - 90$ seen or $90 \div 2$ seen	



10	(a)	<table border="1"> <tr> <td>0</td> <td>100</td> <td>200</td> <td>500</td> </tr> <tr> <td>2</td> <td><b>12</b></td> <td><b>22</b></td> <td>52</td> </tr> </table>	0	100	200	500	2	<b>12</b>	<b>22</b>	52	<b>1+1</b>		
	0	100	200	500									
	2	<b>12</b>	<b>22</b>	52									
(b)	Points plotted Straight line through points	<b>1</b> <b>1</b>	Half square One straight line only within half square of points										
(c)	<p>Correct method clearly used to arrive at 360 envelopes. May involve drawing Barry's line on the grid and finding <i>their</i> intersection point (360, 38) <b>or</b> using T&amp;I <b>or</b> creating and solving equations.</p> <p>Correct complete method used but with a minor error <b>or</b> correct answer but with work not clearly set out.</p> <p>An incomplete attempt at one of the methods detailed above which is clearly laid out.</p> <p>No relevant work</p>	<b>5</b>  <b>4-3</b>  <b>2-1</b>  <b>0</b>	<p>For lower mark - more than one error in chosen method <b>or</b> poor layout/notation.</p> <p>For lower mark - an incomplete attempt at one of the methods detailed above which is not clearly laid out <b>or</b> correct answer seen with no working.</p>										

<b>11</b>	<b>(a)</b>	7 points plotted $\pm 2\text{mm}$	<b>2</b>	<b>B1</b> for 3 correct points	
	<b>(b)</b>	20 Oct	<b>1</b>		
	<b>(c)</b>	Any 2 of 29 Oct – 1 Nov	<b>1</b>		
	<b>(d)</b>	(i) 5 points correct	<b>1</b>		
		(ii) John is better oe His scores are lower	<b>1</b> <b>1</b>	Allow specific references to scores	
<b>12</b>	<b>(a)</b>	(i) 125	<b>1</b>		
		(ii) 13	<b>1</b>		
	<b>(b)</b>	(i) $5^{10}$	<b>1</b>		
		(ii) $r^9$	<b>1</b>		

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