

# **Mathematics C (Graduated Assessment)**

General Certificate of Secondary Education

Unit **B275**: Module M5 (Sections A&B)

## **Mark Scheme for March 2011**

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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 for examiners (March 2011)****GCSE Mathematics C (Graduated Assessment) – J517  
Units B272 to B280**

1. Mark strictly to the mark scheme.
2. Make no deduction for omission of units except as indicated on the mark scheme (although if this leads to a later error this will of course be penalised).
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.  
**W** (workless) marks are independent of **M** (method) marks and are awarded for a correct final answer or a correct intermediate stage.
5. Subject to 4, two situations may be indicated on the mark scheme conditioning the award of **A** marks or independent marks:
  - i. Correct answer correctly obtained (no symbol)
  - ii. Follows correctly from a previous answer whether correct or not (“FT” on mark scheme and on the annotations tool).
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. Always mark the greatest number of significant figures seen, even if this is then rounded or truncated on the answer line, unless the question asks for a specific degree of accuracy.
8.
  - i. Allow full marks if the correct answer is seen in the body and the answer given in the answer space is a clear transcription error, unless the mark scheme says ‘mark final answer’ or ‘cao’.
  - ii. Allow full marks if the answer is missing but the correct answer is seen in the body.
  - iii. Accuracy marks for an answer are lost if the correct answer is seen in the working but a completely different answer is seen in the answer space. Method marks would normally be given.
9. 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 **W** marks. Deduct 1 mark from any **A** or **W** marks earned and record this by using the **MR** annotation. **M** marks are not deducted for misreads.

10. For methods not provided for in the mark scheme give as far as possible equivalent marks for equivalent work.
11. For answers scoring no marks, you must either award NR (no response) or 0, as follows:  
Award NR if:
  - Nothing is written at all in the answer space
  - There is a 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.
12. Where a follow through (FT) 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.
13. In cases where there is clear evidence that a calculator has been used in section A, mark the script as normal then raise an exception
14. 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.

**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 **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 on the answer line, even if it is not in the method leading to the final answer.
- Where you see **figs 237**, for example, this means any answer with only these digits. You should ignore leading or trailing zeros and any decimal point e.g. 237000, 2·37, 2·370, 0·00237 would be acceptable but 23070 or 2374 would not.

## Section A

1	(a)	36	1	cao	
	(b)	64	1	cao	
	(c)	-10	1	cao	
	(d)	8	1	cao	
2		B, 25(%) is more than 15(%)	2	W1 for B with comparison seen Or M1 for 25(%) seen or $\frac{15}{100}$ o.e. seen	Condone $\frac{1}{4}$ in place of B For 2 marks must see comparison of two correct values in equivalent form W1 only scored for B because $\frac{1}{4}$ is more than 15% Award 0 if incorrect conversion seen eg $\frac{1}{4} = 40\%$
3	(a)	5835	1		Mark digits ignoring any brackets, commas, decimal points etc Condone 6 figure reference eg 58(...) 35(...)
	(b)	200 - 215°	1		Mark angle, ignore any additional compass directions
	(c)	3 - 4	2	M1 for 6 - 8 (cm) seen or 'their 6 - 8 (cm)' ÷ 2	
4	(a)	9 × 30 = (£) 270 or 10 × 28 = (£) 280 or 10 × 30 = (£) 300	2	M1 for 9 or 30 or 10 seen in an estimation calculation	M0 for attempt at exact calculation Condone 900 or 1000 for 9 or 10 for M1, also for 2 if answer given in pounds ie 9000 × 30 = (£) 270 scores 2 but 9000 × 30 = 270000 scores M1
	(b)	Bigger, (both numbers) rounded up	1		award 0 if bigger not seen Must see implication of rounding <b>up</b> to score

5	(a)	10	1		accept embedded answers throughout, but complete expression must be seen
	(b)	4	2	<b>M1</b> for $2x = 13 - 5$ or better Or complete reverse flow diagram with answer not clearly identified	Minimum required for mark for reversed flow diagram is $\leftarrow \div 2 \leftarrow - 5 \leftarrow 13$
6	(a)	-3, 5	1	both correct	
	(b)	3 points plotted correctly correct ruled line	1 1	FT <i>their</i> table no FT	Line must be completely correct to score 2 marks, going between at least (0, -3) and (4, 5). Plotting of points can be implied by correct line drawn. A bar chart scores 0
7	(a)	(i) 20.5	2	<b>W1</b> for 19 or 22 or both as answer or ordered list of at least 8 numbers	13, 15, 15, 18, 19, 22, 23, 24, 25, 27
		(ii) 14	1		27 – 13 scores 0
	(b)	No, range on Friday is less	1	FT their range	also accept e.g. no, the ranges are almost the same Must be clear that they are comparing ranges
8		Complete correct equilateral triangle drawn with two arcs	2	<b>W1</b> vertex of triangle positioned correctly or <b>W1</b> arcs seen	

Section A Total: 25

## Section B

9	(a)	only one pair of parallel sides	1		Need to see parallel or implication of parallel to score Award mark for correct reason, ignore additional comments unless contradictory
	(b)	trapezium	1		Condone incorrect spelling if intention is clear
	(c)	parallelogram drawn	1		Accept clear intention at quadrilateral with two pairs of parallel sides Condone unruled lines <b>SC1</b> for square, rectangle or rhombus drawn
10	(a)	6 with correct combinations seen	2	<b>W1</b> for 6 as answer with no list or for 9 as answer or at least 3 correct combinations seen	The 6 correct combinations are HH, HM, HP, MM, MP, PP With correct listing the doubles can be implied by eg H, M, P If reversals seen (ie MP and PM) without rejecting repeats score max W1
	(b)	60 (%)	2	<b>M1</b> for $\frac{48}{80}$ or $\frac{60}{100}$ o.e. or figs 6 as answer	Award M0 for estimation method eg 50% = 40, etc, unless correct answer of 60 given
	(c)	four-sector pie chart with all sectors labelled and at least 3 sectors correct pizza: 180°, 50% chicken: 90°, 25% pasta: 54°, 15% burger: 36°, 10%	4	allow $\pm 3^\circ$ tolerance <b>W3</b> for 2 correct with labels or 3 correct no/incorrect labels <b>W2</b> for 1 correct with label or 2 correct no/incorrect labels <b>W1</b> for all angles/percentages seen	Label is word, not angle/percentage Unlabelled pie charts can only score if they have <b>just</b> 4 sectors  Measure angle where line crosses circle

11	(a)	(i) $3t$	1	final answer	
		(ii) $2a + 7b$	2	final answer <b>W1</b> for $2a$ or $7b$ seen	Do not ISW for 'simplifying' final answer, but score W1 if a correct term seen For example $2a \times 7b$ or $2a7b$ scores W1 Do not accept $-7b$ for $7b$ , so eg $4a - 7b$ scores 0
	(b)	0.5	2	<b>M1</b> for $5 \times 2.5 - 3 \times 4$ or both 12.5 <u>and</u> 12 seen	
12		correct pattern (6 triangles only shaded to give rotation order 3)	2	<b>W1</b> for 6 triangles shaded with order 6 or order 3, with other than 6 shaded	Accept clear intention for shading Condone clear use of light and dark shading of six triangles to give order 3
13		750 $\text{cm}^3$	2 1	<b>M1</b> for $15 \times 10 \times 5$ or figs 75	Units mark not dependent
14		$650 \times 0.15$ $97.5(0)$  'their 97.5' + $24 \times 25$ (= 697.5) (£)47.5(0) www	<b>M1</b> <b>A1</b>  <b>M1</b> <b>A1</b>	Or $600 \times 0.15$  <b>W4</b> for answer (£)47.5(0) www  <b>SC3</b> for answer (£)40 www	Accept any complete equivalent method for finding 15% with either $10\% = 65$ or $5\% = 32.5$ seen  'their 97.5' can be any value

Section B Total: 25

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