

# **Mathematics C (Graduated Assessment)**

General Certificate of Secondary Education

Unit **B274**: Module M4 (Sections A&B)

## **Mark Scheme for January 2011**

---

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2011

Any enquiries about publications should be addressed to:

OCR Publications  
PO Box 5050  
Annesley  
NOTTINGHAM  
NG15 0DL

Telephone: 0870 770 6622  
Facsimile: 01223 552610  
E-mail: [publications@ocr.org.uk](mailto:publications@ocr.org.uk)

## Marking instructions for examiners (January 2011)

GCSE Mathematics C (Graduated Assessment) – J517  
Units B271 to B282

## Marking instructions

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)	$\frac{3}{7}$	1	Allow 3 in 7, 3 out of 7, 3÷7 but not 3 to 7 or 3:7	
	(b)	$\frac{4}{7}$	1	Notation as above	if 0 scored in parts (a) and (b), <b>SC1</b> for denominator "7" in both cases.
2	(a)	(i) 34.1 to 34.9	1		
		(ii) peaks in 2006 falls after 2006	1 1	1 for each general point – but maximum of 1 for a specific litres/year 1 for just "goes up then/and down" but no specific peak year mentioned. 1 for comparison between two years e.g. 2001 and 2008 (qualitative or quantitative).	allow all sensible/appropriate responses It goes up / increases by (5 to 8) scores 1 – difference between the start and finish.
	(b)	95 indicated	1		NAMBI
	(c)	$\frac{70}{100}$ or $\frac{7}{10}$	1		do not allow decimals, but isw if $\frac{70}{100}$ or $\frac{7}{10}$ seen
3	(a)	(i) 3	1		
		(ii) 2	1		
	(b)	$x = 60^\circ$ $y = 30^\circ$ $z = 120^\circ$	1 1 1	follow through from "x" ÷ 2	
	(c)	correct	2	<b>M1</b> for two correct vertices or drawn triangle reflection in a (wrong) vertical line	Mark for intent – condone small degree of "wander" in the "straight" lines.

	<b>(d)</b>	$P = 4a + 2b$ or equivalent	<b>2</b>	<b>1</b> for each term and " $P =$ " <b>1</b> " $P =$ " correct but not simplified letters	<b>1</b> for $4a + 2b$ without " $P =$ "
	<b>(e)</b>	(i) correct	<b>1</b>		
		(ii) 9 12	<b>1</b>	both needed	
		(iii) 300 dots because ..... ..... "3 times table" or equivalent	<b>1</b> <b>1</b>	These two marks are independent. Allow: "three per triangle", " $3 \times 100$ ", " $30 \times 10$ ", "times by 3 each time" etc.	i.e. effectively need "3" and some multiplicative reference. ("three" + "increase")
<b>4</b>	<b>(a)</b>	40 (years)	<b>1</b>		
	<b>(b)</b>	11 (shillings)	<b>2</b>	<b>M1</b> for answer of $1X$ where $X \neq 1$ or $132 \div 12$ seen or evidence of repetitive addition and answer of 10 or 12	
	<b>(c)</b>	7.2 (pennies)	<b>2</b>	<b>M1</b> for figs 72 or $2.4 \times 3$ or $2.4+2.4+2.4$ seen can be implied by "6.2" or "6.12".	

Section A Total: 25

## Section B

5	(a)	5(g)	2	M1 for sight of/implication "×5" or $1000 \div 200$ or equivalent or 1000 seen	
	(b)	about half a spoon shaded	1	Condone $\frac{1}{2}$ written in close proximity.	Accept $\frac{1}{2}$ the height of the spoon bulb or anything which is not at spoon level or very obviously a drop in the bottom of the spoon
6	(a)	74	1		
	(b)	53 www	3	M1 for figs 53 M1 for "number" $\div 10$	M1 for 443.6 o.e. (calculator order of operation)
	(c)	$500 \times 0.11$ or "53" $\div 500$ $= 55$ (p) or "0.106"  statement not quite true	1 1 1	This can imply previous mark.  M1 for correct follow through comparison with 0.11p	condone equivalent approaches  condone "yes" or "no" iff supported by the numbers.  Full follow through on candidates "55p"
7		Total of receipt ( - water) $= 508$ $10.00 - 3.60 = 6.40$ $6.40 - 5.08 = 1.32$ "1.32" $\div 4$	1 1 1 1	figs are sufficient  Allow 4 for 33p or equivalent www  _____ or _____  Sight of : M1 for 3.60 or 360 M1 for "number" $\div 4$	Mark to candidate's advantage.  Condone for full credit £0.33p



8	(a)	(2, 1)	1		Reversed coordinates gain no credit.
	(b)	(-1, -2) (-1, 4)	1 1	condone lack of or incorrect labelling of vertices	Condone points in wrong order (NOT the actual coordinate figures)
9	(a)	3.186 or 3.1 or 3.2 or 3.18 or 3.19	2	<b>M1</b> for evidence of $2.36 \times 1.35$	Beware of half-perimeters of 3.71. Condone 3.1 ... or 3.2
	(b)	3.6(344)	1		
10	(a)	4 and 5	1	both needed	
	(b)	18 and 30	1	both needed	
11		3	1		
		60	1		
		5	1		

Section B Total: 25

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**14 – 19 Qualifications (General)**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

**[www.ocr.org.uk](http://www.ocr.org.uk)**

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

**Oxford Cambridge and RSA Examinations**  
**is a Company Limited by Guarantee**  
**Registered in England**  
**Registered Office; 1 Hills Road, Cambridge, CB1 2EU**  
**Registered Company Number: 3484466**  
**OCR is an exempt Charity**



**OCR (Oxford Cambridge and RSA Examinations)**  
**Head office**  
**Telephone: 01223 552552**  
**Facsimile: 01223 552553**

© OCR 2011