OCR
RECOGNISING ACHIEVEMENT

GCSE

# Mathematics C (Graduated Assessment)

General Certificate of Secondary Education

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

# Mark Scheme for January 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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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

**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)** | Thorpe (Farm) | **1** | | |
| | **(b)** | 5487 | **1** | | condone separators eg comma, full stop or brackets<br>condone 54*x* 87*y* |
| | **(c)** | 2200 – 3600 | **1** | allow 2·2 - 3·6 if km is stated | |
| **2** | **(a)** | 37·2 | **1** | | NOT 37·20 |
| | **(b)** | 40 | **1** | | |
| **3** | **(a)** | 5*a* + 13*b* final answer | **2** | **M1** for 5*a* or 13*b* seen<br>or 3*a* + 2*a* + 6*b* + 7*b* oe | NOT −13*b* |
| | **(b)** | (i) 7 | **1** | | condone embedded answer including 7+5 |
| | | (ii) ¯3 | **2** | **M1** for 4*x* = 5 — 17 or better<br>or for $x = \frac{c}{4}$ soi after 4*x*=*c* seen.<br>Award 2 marks if flowchart used correctly and the correct answer is seen at the end if the answer line is blank | condone fully embedded answer<br><br>a fully correct flowchart scores **M1** |
| **4** | **(a)** | $3^5$ | **1** | | 5 must not be on the line |
| | **(b)** | 73 | **2** | **M1** for 64 or 9 soi | |
| **5** | **(a)** | $\frac{3}{5}$ | **1** | | |
| | **(b)** | (i) $\frac{3}{10}$ | **1** | | ISW if there is a clear attempt at simplification |
| | | (ii) ¯15 | **1** | | |

| | | | | | |
|---|---|---|---|---|---|
| **6** | | (0)·65 (or $\frac{65}{100}$ oe) and (both probabilities) add to 1 or one of 35 and 65 adding to 100<br>Or<br>65% and (both probabilities) add to 100 | **2** | **1** for either (0)·65 oe or 'add to give 1(100)'<br>accept any correct statement about the probabilities adding to 1 or 100 | condone "add to a whole (or hole) …" or implied : "1 - 0·35 " or "you take (0) ·35 from 1 ....."<br>NOT "add to a whole number.."<br>**SC2** for (0)·65 (or $\frac{65}{100}$ oe) and "add to (subtract from) 100 and put a 0· in front" |
| **7** | **(a)** | one correct comment on the mean such as "11A have a higher average (or mean)"<br><br>and<br><br>one correct comment on the range such as "11B have a larger spread(or range)" | **1**<br><br><br><br>**1** | allow any correct comment | accept two correct comments in one space and mark the best two comments |
| | **(b)** | 63 | **1** | | |
| **8** | **(a)** | C and M | **1** | | |
| | **(b)** | 72 www<br>Or<br>72 000 www<br><br><br><br>$cm^3$ (with 72)<br>Or<br>$mm^3$ (with 72 000) | **2**<br><br><br><br><br><br>**1** | **1** for two correct measurements seen from 6, 4 and 3 or 60, 40 and 30<br>*( these may be on the diagram)*<br>Or **M1** for *their* three measurements multiplied together<br><br>**1** for units $cm^3$ or $mm^3$ if answer > 1000 or one measurement > 10 | Note : $72^3$ scores 2,0<br><br>'<br><br><br><br>Condone cc for $cm^3$ |

**Section A Total: 25**

**Section B**

| | | | | | |
|---|---|---|---|---|---|
| **9** | **(a)** | 472 | **2** | **M1** for 35 × 14 − 18 seen or better **or** 490 seen | |
| | **(b)** | 536 | **2** | **M1** for 7 × 48 + 12·5 × 16 seen or better **or** either 336 or 200 seen<br><br>allow £5·36(p) for **2** marks if units included | |
| **10** | | 68 | **2** | **M1** for $\frac{17}{25} \times 100$ , 100 ÷ 25 or 4 seen | not $\frac{1}{4}$ |
| **11** | **(a)** | 12 | **2** | **M1** for 90 or $\frac{1}{4}$ or ÷4 seen | allow marks for work on pie chart |
| | **(b)** | correct and labelled sector | **2** | allow angle 117° - 123°<br>**M1** for $\frac{16}{48}$ × 360, 120 or $\frac{1}{3}$ seen<br>or correct unlabelled sector | allow freehand line |
| **12** | **(a)** | ✓ ✓ ✓<br>✓ ✓ ✓<br>× × ✓ | **3** | **1** for each correct row (count correct columns and award marks for these if this gives a better result than rows) | |
| | **(b)** | Q | **1** | allow any indication of property Q | |
| **13** | **(a)** | correct triangle<br>ie sides AC and BC within tolerance | **2** | allow sides to be 5·8 - 6·2 cm<br>**M1** for either AC or BC within tolerance and ABC must be a triangle | |
| | **(b)** | 5 - 5·4 | **1** | must FT *their* diagram if 0 or 1 scored in (a) | |

| | | | | | |
|---|---|---|---|---|---|
| **14** | **(a)** | 2 (6) 10 14 | **1** | | |
| | **(b)** | correct ruled line | **2** | **M1** for three points plotted correctly (FT *their* table) | |
| **15** | | correct drawing | **1** | | condone a freehand line |
| **16** | | 4·50 www | **4** | **M1** for 65 × 0·3 oe<br>**M1** for 65 – *their* '19·5(0)'<br>(Or **M2** for 65 × 0·7)<br><br>**M1** for 50 – *their* '45·5(0)' soi<br>Or<br>numbers seen;<br>**3** for answer of 4·5<br>**2** for 45·5(0) or 30·5(0)<br>**1** for 19·5(0) | ignore p on the answer line<br><br><br><br>can be implied by answer eg their 45·5 + their answer = 50 eg 35 with answer of 15 scores M1 |

**Section B Total: 25**

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

**OCR Customer Contact Centre**

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Telephone: 01223 553998
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**Head office**
**Telephone: 01223 552552**
**Facsimile: 01223 552553**

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