OCR
RECOGNISING ACHIEVEMENT

B278A

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)
MODULE M8 – SECTION A

M8

TUESDAY 24 JUNE 2008

Morning
Time: 30 minutes

Candidates answer on the question paper
Additional materials (enclosed): None

Additional materials (required):
Geometrical instruments
Tracing paper (optional)

CUP/T60670

Candidate Forename		Candidate Surname	
Centre Number		Candidate Number	

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this Section is **25**.

WARNING

You are not allowed to use a calculator in Section A of this paper.

FOR EXAMINER'S USE	
SECTION A	
SECTION B	
TOTAL	

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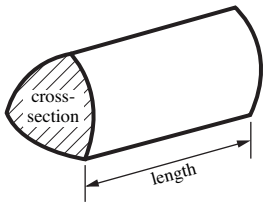
Formulae Sheet

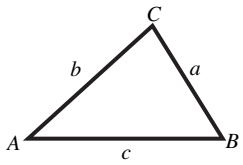
Volume of prism = (area of cross-section) × length



In any triangle *ABC*

Sine rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

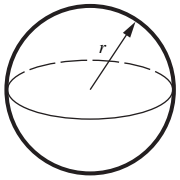
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$



Area of triangle = $\frac{1}{2}ab\sin C$

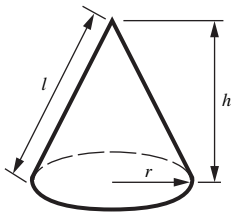
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$



Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = πrl



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$, where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

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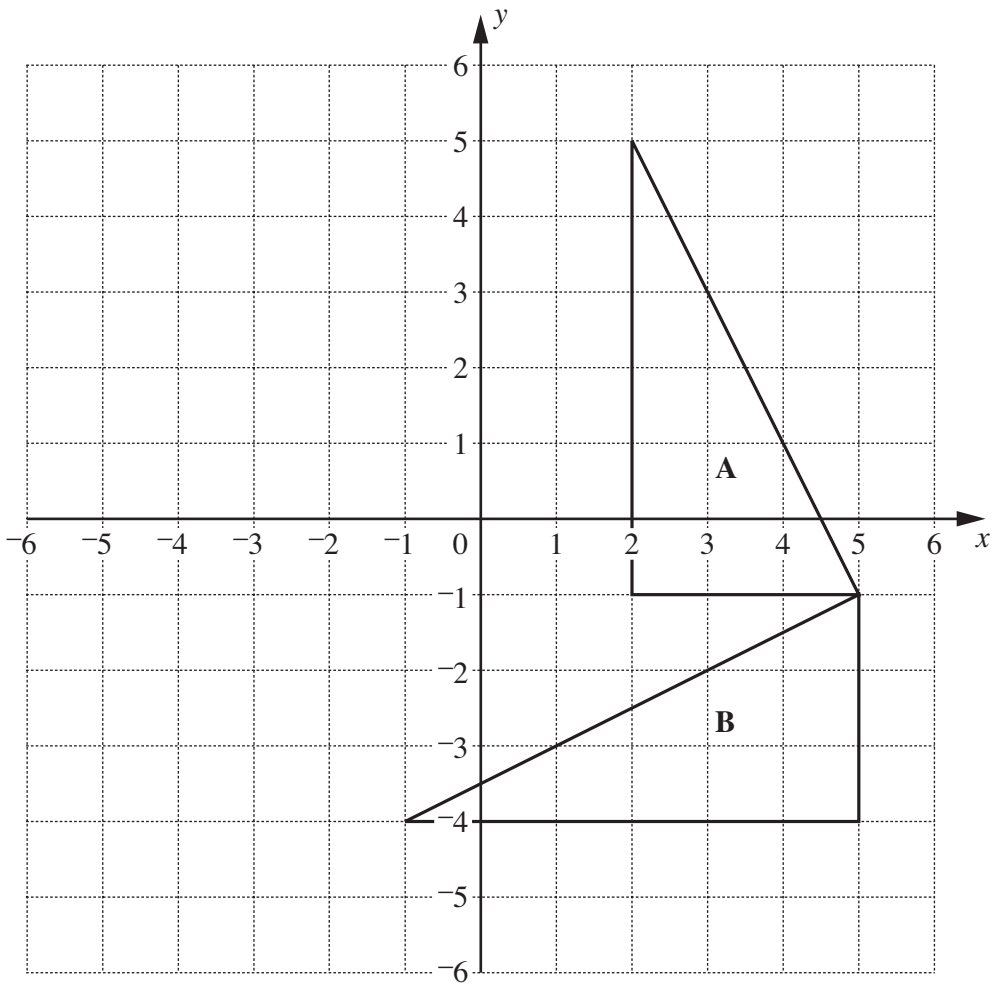
1



(a) Describe fully the **single** transformation which maps triangle **A** onto triangle **B**.

.....

..... [3]

(b) Enlarge triangle **A** with scale factor $\frac{1}{2}$ and centre of enlargement ($^{-}6$, 3).
Label your triangle **C**. [3]

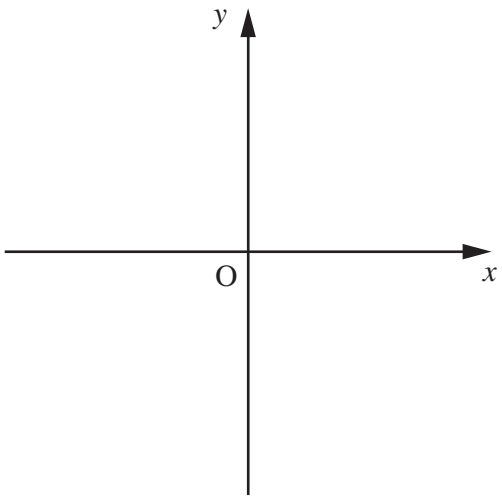
(c) Complete this sentence.

Triangle **C** is **similar** to triangle **A** because .....

..... [1]

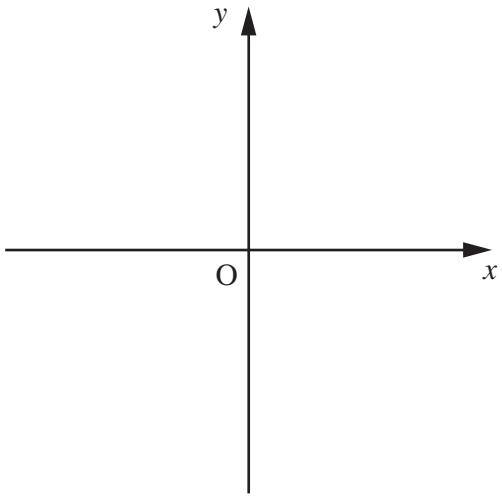
2 Sketch these graphs.

(a) $y = \frac{1}{x}$



[2]

(b) $y = x^3 + 2$



[2]

3 The population of China is estimated to be 1 200 000 000.

(a) Write this population in standard form.

(a) ..... [1]

(b) The population of the UK is estimated to be 6×10^7.
Rebecca says that the population of China is about 200 times the population of the UK.

Explain why she is wrong.

.....

..... [2]

4 Work out.

$$3\frac{1}{4} + 1\frac{2}{5}$$

Give your answer as a mixed number.

..... [3]

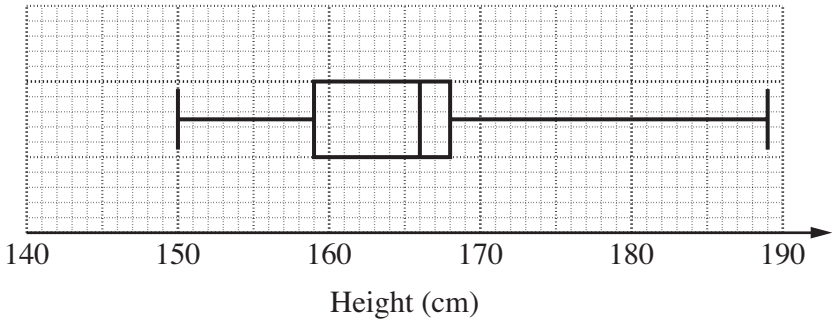
5 Solve algebraically these simultaneous equations.

$$7x + 3y = 11$$
$$4x - 5y = 13$$

$x =$ .....

$y =$ ..... [4]

6 This box plot shows the distribution of heights for a group of Year 9 boys.



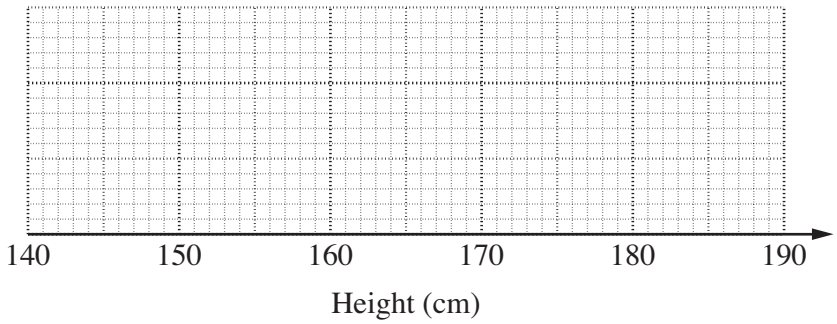
(a) Use this box plot to find the interquartile range of the boys' heights.

(a) ..... cm [1]

(b) The following statements are true for a group of Year 9 girls.

The median is 2 cm less than the boys' median.
The lower quartile is 156 cm.
The interquartile range is 13 cm.
The range is 40 cm.
The tallest girl is 184 cm.

Use these statements to draw the box plot for the distribution of the girls' heights.



[3]

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