OCR
RECOGNISING ACHIEVEMENT

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

M8

**B278A**
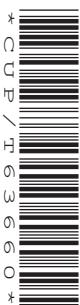
Candidates answer on the question paper

OCR Supplied Materials:
None

Other Materials Required:
* Geometrical instruments
* Tracing paper (optional)

Tuesday 20 January 2009
Morning

Duration: 30 minutes

Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

INSTRUCTIONS TO CANDIDATES

* Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
* Use 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, however additional paper may be used if necessary.

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**.
* This document consists of **8** pages. Any blank pages are indicated.

WARNING

No calculator can be used for Section A of this paper
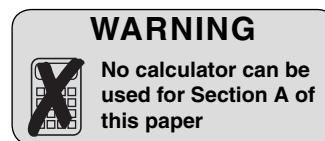
| FOR EXAMINER'S USE	
SECTION A	
SECTION B	
TOTAL	

Turn over

Formulae Sheet

Volume of prism = (area of cross-section) × length
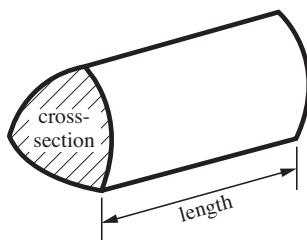
In any triangle *ABC*

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

Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$
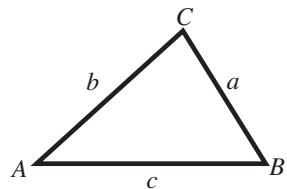
Area of triangle = $\frac{1}{2} ab \sin C$

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

Surface area of sphere = $4\pi r^2$
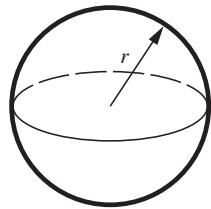
Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$
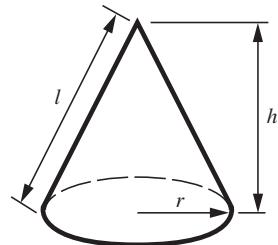
The Quadratic Equation

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 Work out, writing your answers as mixed numbers.

(a) $3\frac{1}{12} - 1\frac{2}{3}$

(a) .... **[3]**

(b) $3\frac{1}{2} \times 1\frac{1}{3}$

(b) .... **[3]**

2 Solve.

$$4x + 3 \leqslant 13$$

.... **[2]**

Turn over

3 Enlarge triangle **P** with scale factor $\frac{1}{3}$ and centre of enlargement $(^-3, 3)$.
Label the image **Q**.
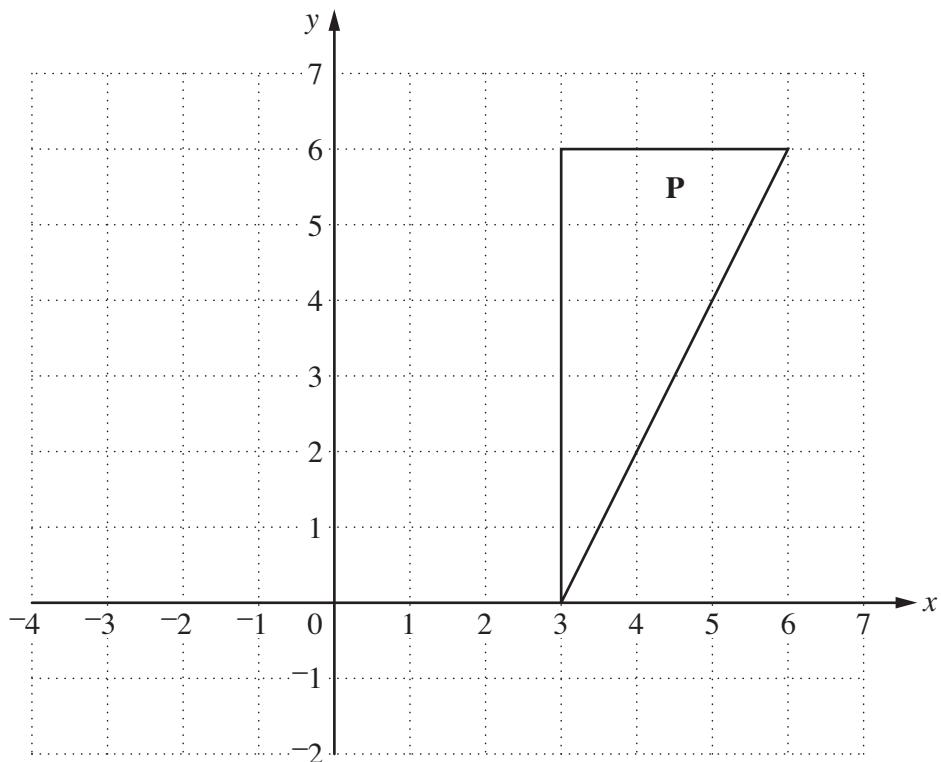
[3]

4 Solve.

$$\frac{4x-7}{2} = x-1$$

....[3]

5 The graph shows the distribution of the lengths of worms found in two gardens, **A** and **B**.
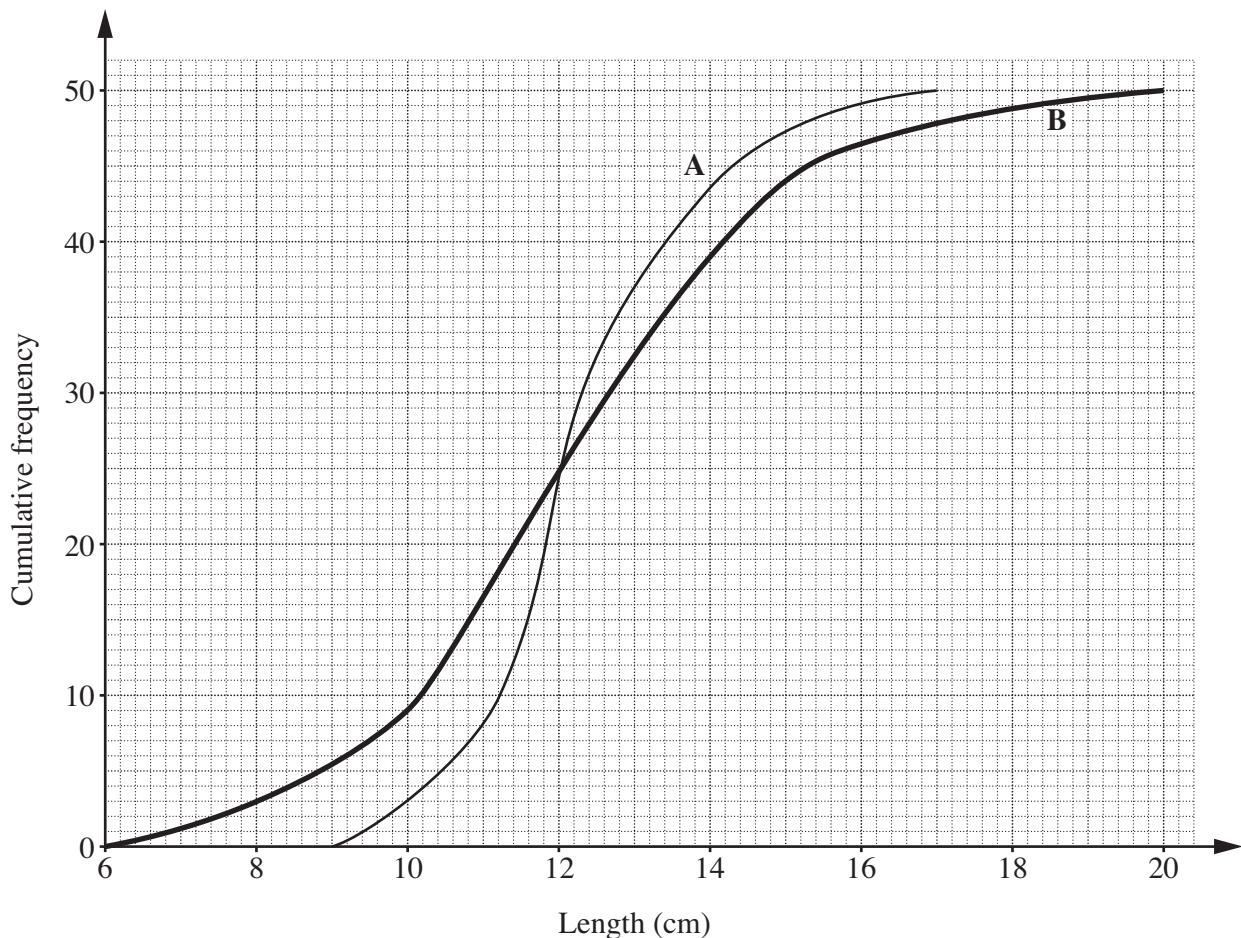
(a) What is the median length of the worms in garden **A**?

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

(b) How many worms in garden **B** were **longer than** 15 cm?

(b) .... **[2]**

(c) Make two comments comparing the distribution of the lengths of the worms in the two gardens.

1 ....

....

2 ....

....**[2]**

6 **(a)** **(i)** Factorise.

$$x^2 - 12x + 20$$

(a)(i) .... **[2]**

(ii) Hence solve this equation.

$$x^2 - 12x + 20 = 0$$

(ii) .... **[1]**

(b) Make y the subject of this formula.

$$5y = 3(x + y) - 4$$

(b) .... **[3]**

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