

**Monday 16 January 2012 – Morning**

**GCSE MATHEMATICS C (GRADUATED ASSESSMENT)**

**B278B MODULE M8 – SECTION B**

Candidates answer on the Question Paper.

**OCR supplied materials:**  
None

- Other materials required:**
- Geometrical instruments
  - Tracing paper (optional)
  - Scientific or graphical calculator

**Duration:** 30 minutes



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure 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.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

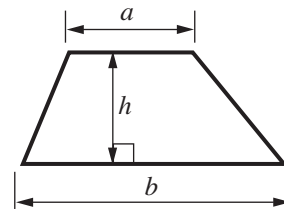
**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- Section B starts with question 6.
- You are expected to use a calculator in Section B of this paper.
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

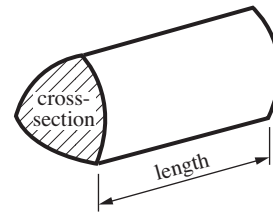
This paper has been pre modified for carrier language

## Formulae Sheet

**Area of trapezium** =  $\frac{1}{2}(a + b)h$



**Volume of prism** = (area of cross-section)  $\times$  length

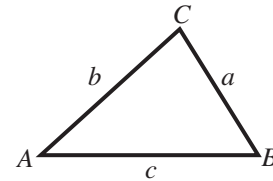


**In any triangle  $ABC$**

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

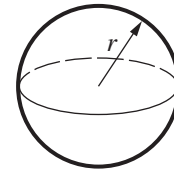
**Cosine rule**  $a^2 = b^2 + c^2 - 2bc \cos A$

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



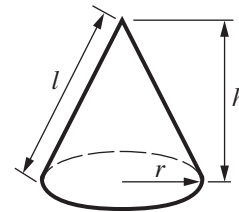
**Volume of sphere** =  $\frac{4}{3}\pi r^3$

**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

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

**PLEASE DO NOT WRITE ON THIS PAGE**

6 (a) Solve.

$$4x > 10 - x$$

(a) ..... [2]

(b) Solve algebraically these simultaneous equations.

$$2x + 3y = 6$$

$$5x - 2y = 34$$

(b)  $x =$  .....

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

7 In the following expressions,  $a$ ,  $b$  and  $c$  represent lengths.

**A**  $\pi ab^2$       **B**  $3a + 3b + 3c$       **C**  $\frac{1}{2}(c + b)a$       **D**  $2\pi b^3(a + c)$

Which of these expressions, **A**, **B**, **C** or **D**, could represent

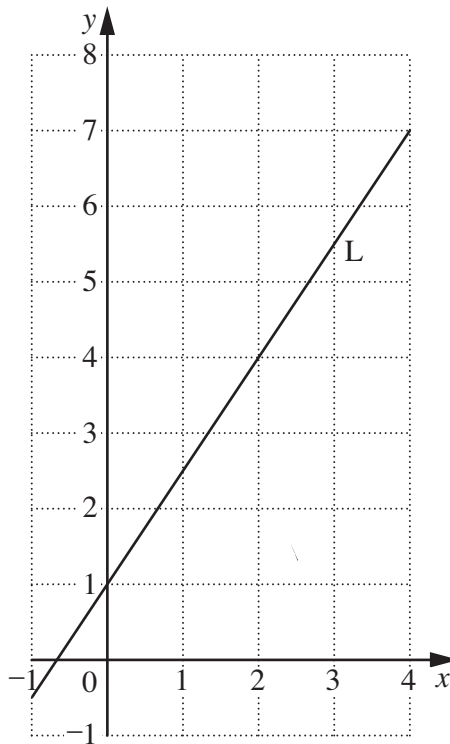
(a) an area,

(a) ..... [1]

(b) a volume?

(b) ..... [1]

8 Find the gradient of line L.



..... [2]

9 A population of penguins is increasing by 6% each year.  
The population in December 2008 was 4800.

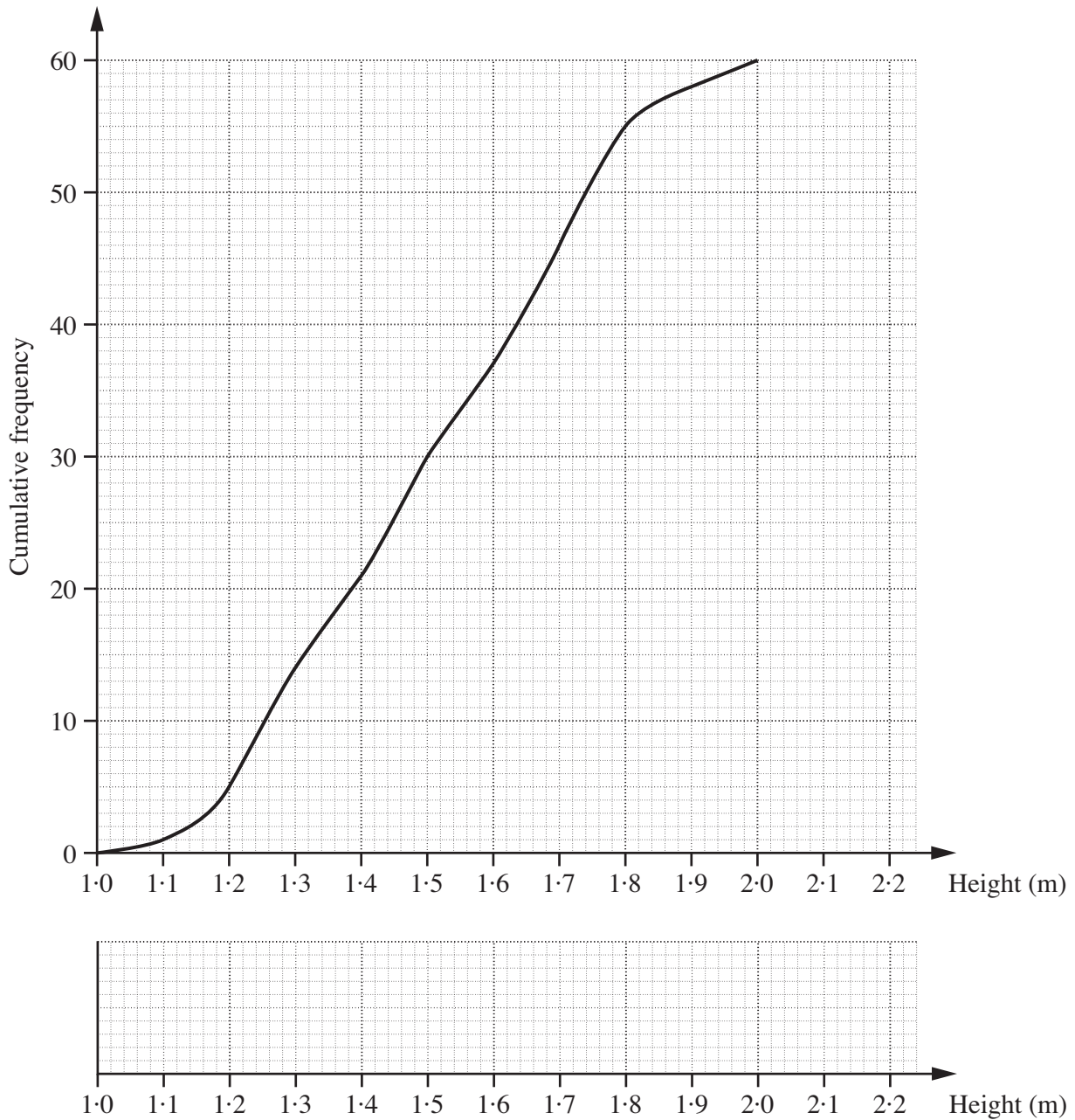
(a) Calculate the population in December 2011.

(a) ..... [3]

(b) Calculate the population in December 2007.

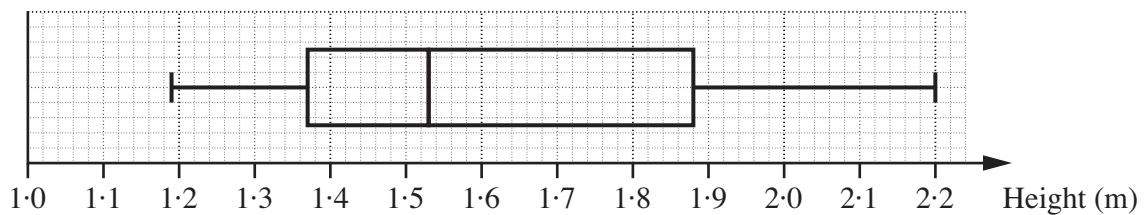
(b) ..... [3]

- 10 This cumulative frequency graph represents the heights of the high tides one month in Cape Town, on the west coast of South Africa.



- (a) On the grid above, construct a box plot to represent this distribution. [3]

- (b) This box plot represents the heights of the high tides the same month in Knysna, on the south coast of South Africa.



(i) Sizwe says:

The high tides in Knysna were higher on average than those in Cape Town.

Is Sizwe correct? Give a reason for your answer.

..... because .....  
..... [1]

(ii) Noor says:

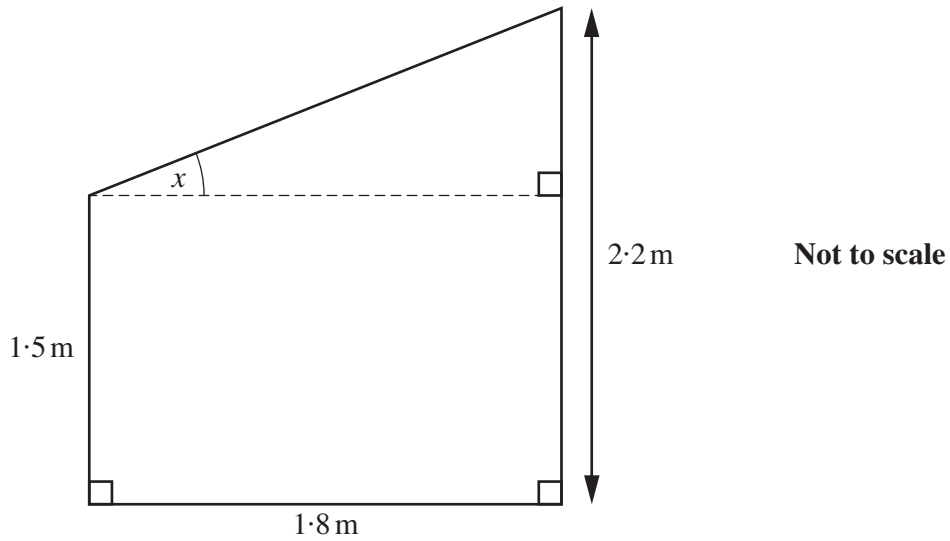
The heights of the high tides in Knysna were more variable than those in Cape Town.

Is Noor correct? Give a reason for your answer.

..... because .....  
..... [1]

**TURN OVER FOR QUESTION 11**

11 The diagram shows the cross-section of a shelter.



Calculate  $x$ , the angle that the roof of the shelter makes with the horizontal.

.....<sup>o</sup> [4]

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