

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

**M8**

**MONDAY 21 JANUARY 2008**

Morning  
 Time: 30 minutes

Candidates answer on the question paper  
**Additional materials:** Geometrical instruments  
 Tracing paper (optional)



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.
- Do **not** write outside the box bordering each page.
- 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**

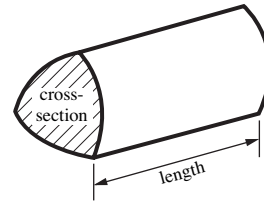
**You are not allowed to use a calculator in Section A of this paper.**

FOR EXAMINER'S USE	
SECTION A	
SECTION B	
TOTAL	

This document consists of **8** printed pages.

## Formulae Sheet

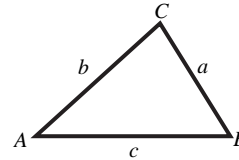
**Volume of prism** = (area of cross-section)  $\times$  length



**In any triangle ABC**

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

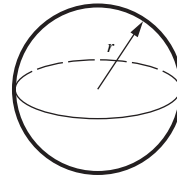
**Cosine rule**  $a^2 = b^2 + c^2 - 2bc \cos A$



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

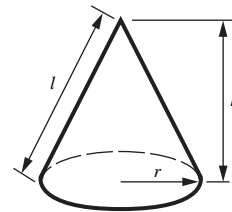
**Volume of sphere** =  $\frac{4}{3}\pi r^3$

**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

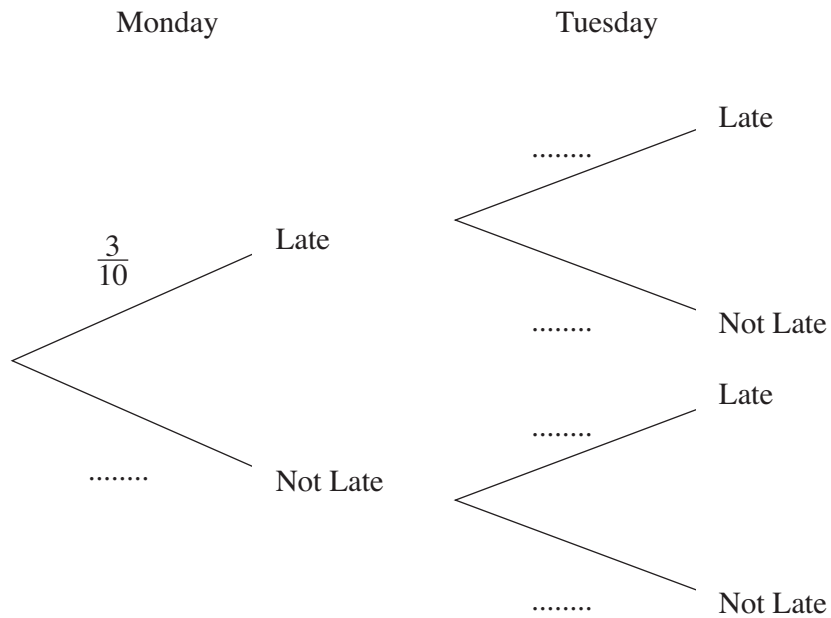
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

**PLEASE DO NOT WRITE ON THIS PAGE**

1 Sophie catches a bus on Monday morning and on Tuesday morning.

On each morning the probability that the bus is late is  $\frac{3}{10}$ .

(a) Complete the tree diagram.



[2]

(b) Work out the probability that the bus is **not late** on Monday morning but is **late** on Tuesday morning.

(b) ..... [2]

4
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- 2 (a) Make  $v$  the subject of this formula.

$$J = mv - mu$$

(a)..... [2]

- (b) Solve.

$$\frac{x}{3} + 5 = 2$$

(b) ..... [2]

- (c) Solve.

$$4x < 9 - 2x$$

(c) ..... [2]

6
---

- 3 In these expressions,  $a$  and  $b$  represent lengths.

Which one of these expressions could represent an area?  
Give a reason for your answer.

$$a^2 - ab$$

$$\frac{1}{2}a(a^2 + b)$$

$$ab(a + b)$$

$$2a + 3b$$

..... because.....  
.....  
..... [2]

2	
---	--

- 4 Work out.

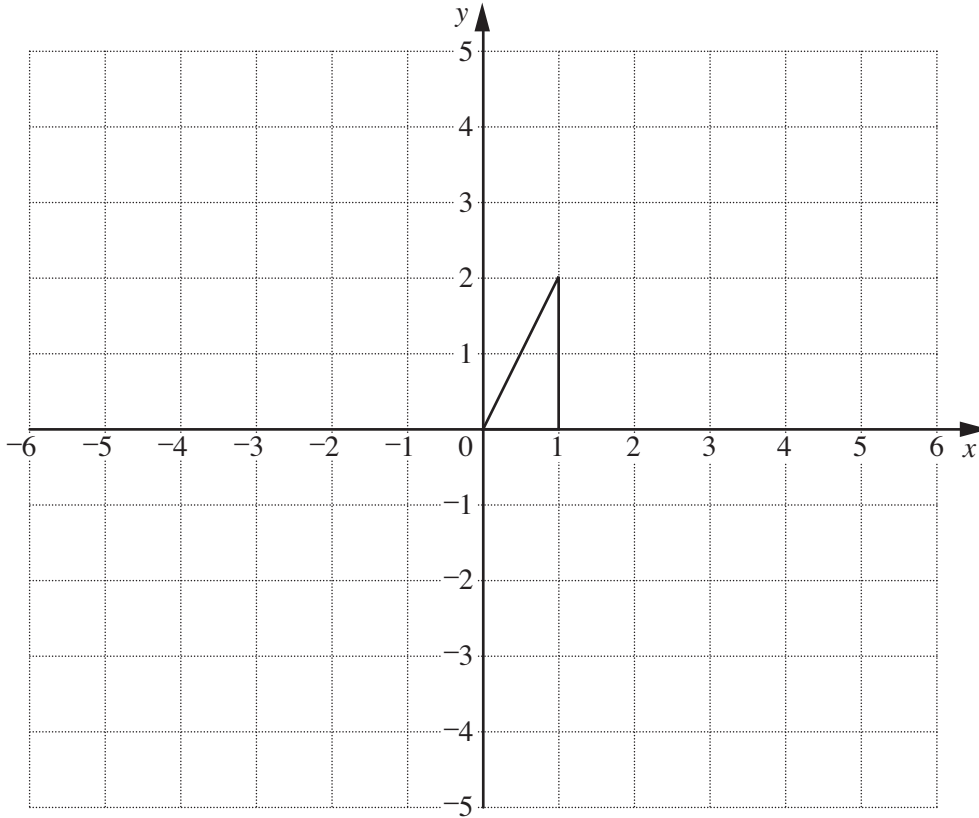
$$4\frac{2}{5} + 2\frac{3}{4}$$

Give your answer as a mixed number.

..... [3]

3	
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5



Find the **single** transformation that is equivalent to

a rotation of  $180^\circ$  about centre  $(0, 0)$  followed by a translation of  $\begin{pmatrix} 4 \\ 2 \end{pmatrix}$ .

Use the diagram above to help you.

The single transformation is .....

..... [4]

4
---

- 6 (a) Write 0.003 65 in standard form.

(a)..... [1]

- (b) Work out  $(6 \times 10^4) \times (2 \times 10^{-2})$ .  
Give your answer in standard form.

(b)..... [2]

3	
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- 7 (a) Factorise.

$$x^2 - 2x - 15$$

(a)..... [2]

- (b) Hence solve this equation.

$$x^2 - 2x - 15 = 0$$

(b)..... [1]

3	
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