Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B278A

MATHEMATICS C (GRADUATED ASSESSMENT)

MODULE M8 – SECTION A

MONDAY 21 JUNE 2010: Afternoon
DURATION: 30 minutes

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the Question Paper

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments
Tracing paper (optional)

WARNING
No calculator can be used for Section A of this paper.

READ INSTRUCTIONS OVERLEAF

DC (AC/DJ) MEP60059 27434/1

INSTRUCTIONS TO CANDIDATES

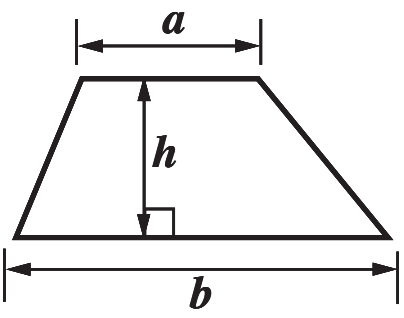
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Answer ALL the questions.**
- **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).**

INFORMATION FOR CANDIDATES

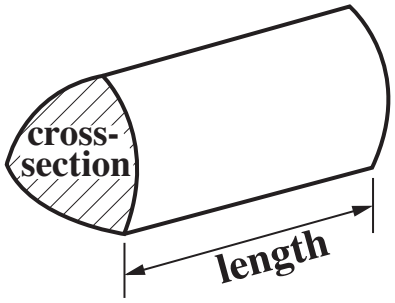
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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



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

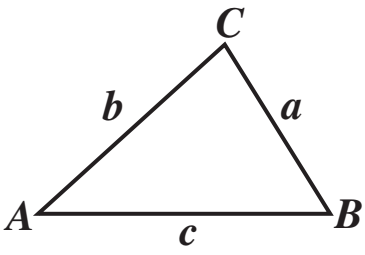


In any triangle ABC

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

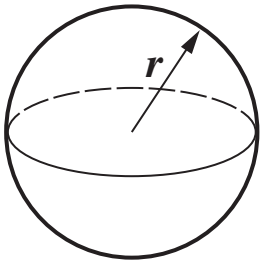
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

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



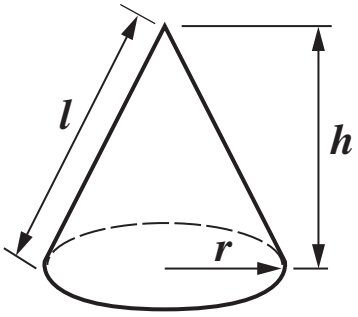
Volume of sphere $= \frac{4}{3}\pi r^3$

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



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

Curved surface area of cone $= \pi rl$



The Quadratic Equation

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

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

1 Work out the following.
Give your answers as mixed numbers in their simplest terms.

(a) $2\frac{1}{3} + \frac{5}{6}$

[2 marks]

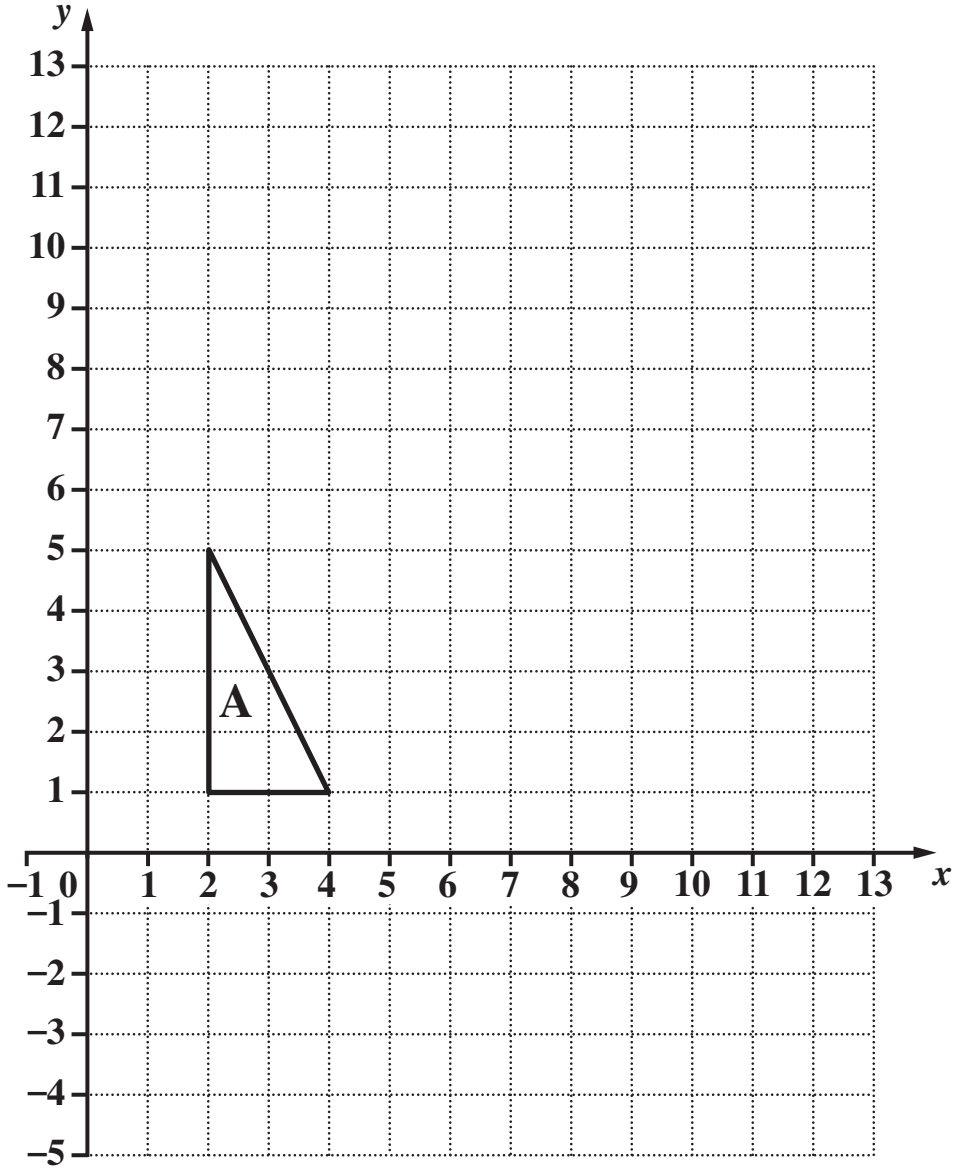
(a) _____

(b) $1\frac{1}{4} \times 5\frac{1}{3}$

[3 marks]

(b) _____

2 Use the diagram below to answer the questions which follow.



(a) Enlarge triangle <u>A</u> with centre (0, 3) and scale factor $2\frac{1}{2}$. Label the image <u>B</u>.
[3 marks]

(b) Complete the following statement.
[2 marks]

The single transformation that maps triangle <u>B</u> onto triangle <u>A</u> is an enlargement with centre (_____ , _____) and scale factor _____ .

3 (a) Express 0·0042 in standard form.
[1 mark]

(a) _____

(b) Calculate $(8{\cdot}4 \times 10^4) + (6 \times 10^3)$.
Give your answer in standard form.
[2 marks]

(b) _____

4 (a) Solve.

(i) $3x + 1 = 2(4x - 3)$
[3 marks]

(a)(i) _____

(ii) $3x - 7 > x$
[2 marks]

(ii) _____

(b) Factorise.

$x^2 - 5x + 4$
[2 marks]

(b) _____

5 Here are the equations of five straight lines.

A $y = 3x - 1$
B $y = -2x + 4$
C $y = 2x - 2$
D $y = 3x + 4$
E $y = 4x + 3$

(a) Which of these lines passes through $(0, -2)$?
[1 mark]

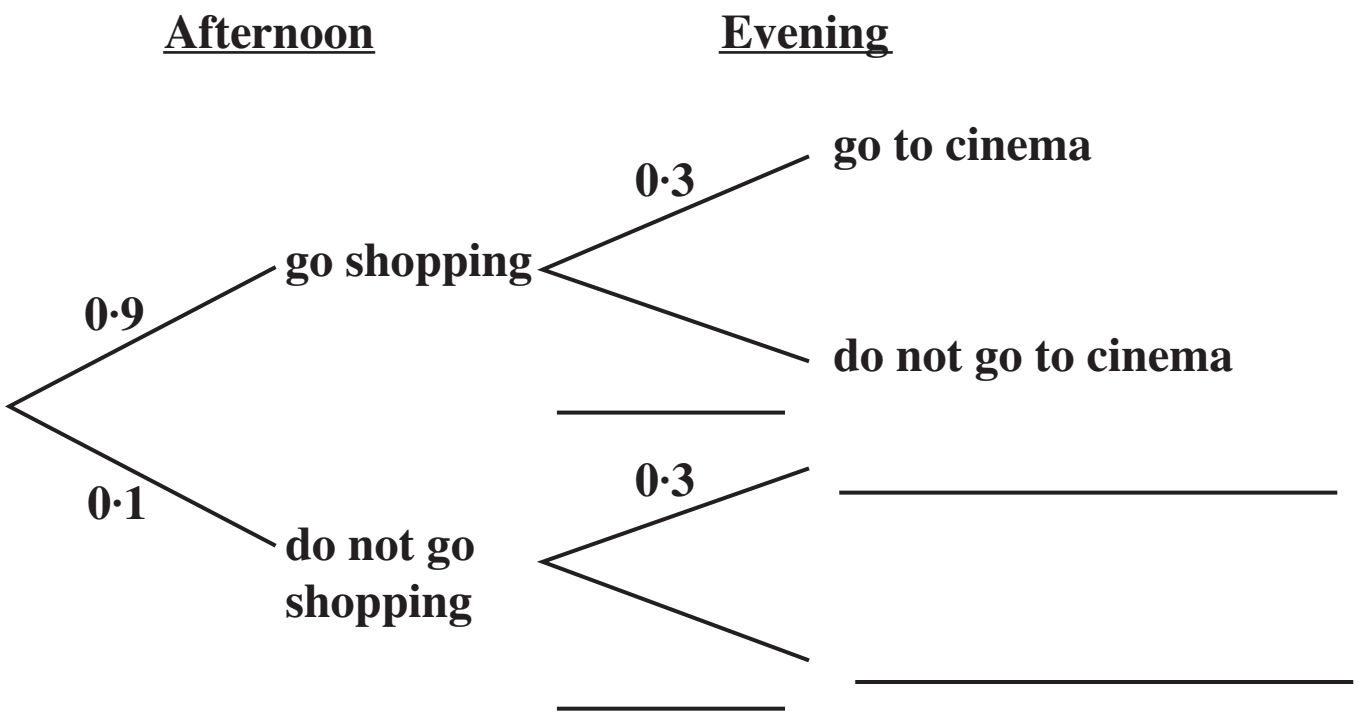
(a) _____

(b) Which two of these lines are parallel?
[1 mark]

(b) _____ and _____

6 **Jane and her friends spend each Saturday afternoon and evening together.**
The probability that they go shopping in the afternoon is 0·9.
The probability that they go to the cinema in the evening is 0·3.
These events are independent.

(a) Complete the tree diagram to represent this information.
[1 mark]



(b) Calculate the probability that, on a Saturday, they do not go shopping and do not go to the cinema.
[2 marks]

(b) _____

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