

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

B278A

Candidates answer on the Question Paper

OCR Supplied Materials:
None

Other Materials Required:

- Geometrical instruments
- Tracing paper (optional)

Thursday 21 January 2010
Afternoon

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 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.

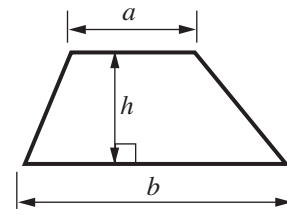
WARNING



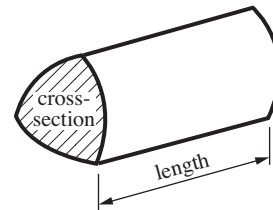
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

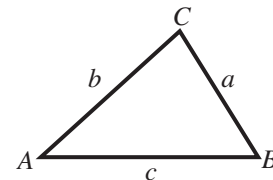


In any triangle ABC

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

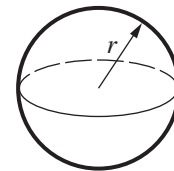
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



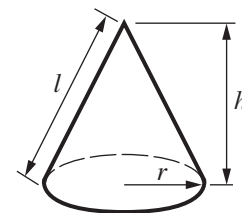
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

Curved surface area of cone = $\pi r l$



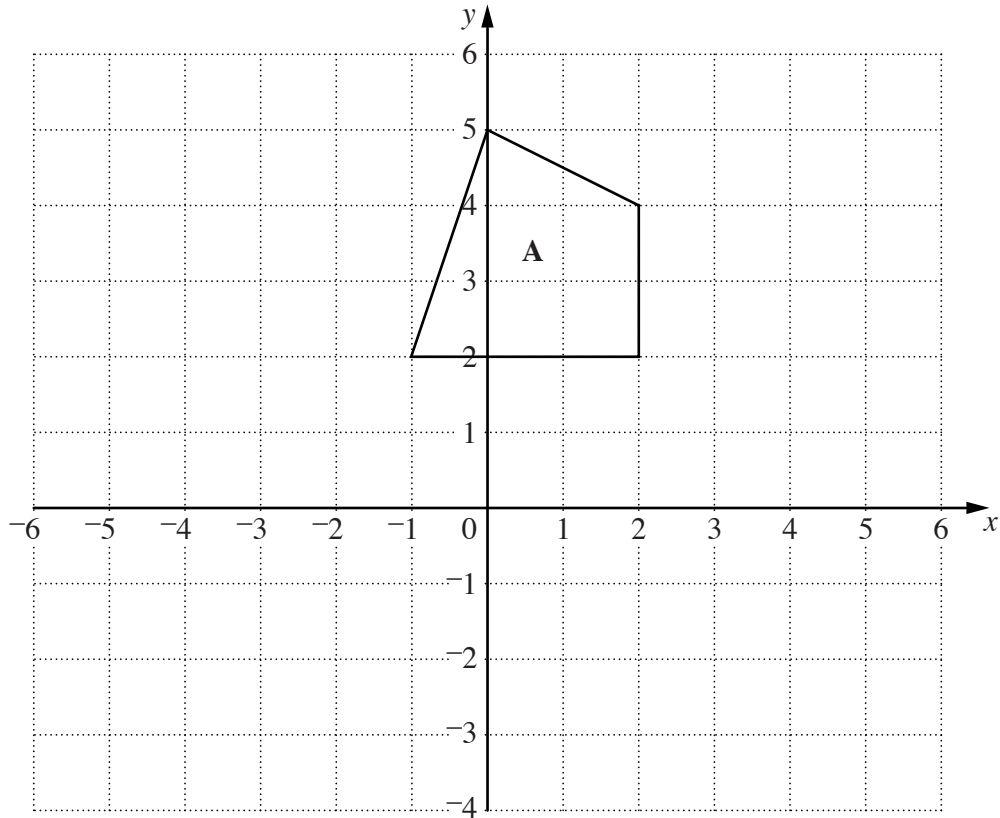
The Quadratic Equation

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

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

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1



(a) Rotate shape **A** through 180° with centre $(2, 2)$.
Label the image **B**. [2]

(b) Translate shape **B** by the vector $\begin{pmatrix} -6 \\ 0 \end{pmatrix}$.
Label the image **C**. [2]

(c) Describe fully the **single** transformation which maps shape **A** onto shape **C**.
.....
..... [2]

- 2 Heather has some shares in a company.
She paid £5 for each share.
Each share is now worth £8.50.

Work out the percentage increase in the value of each share.

..... % [3]

- 3 Work out.

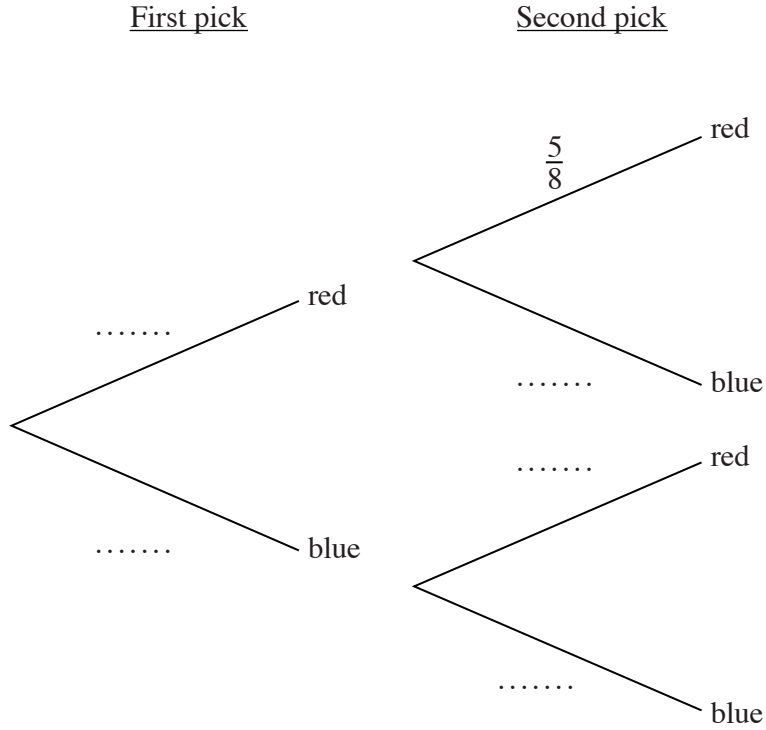
$$3\frac{1}{4} \times 1\frac{1}{3}$$

Give your answer as a mixed number in its simplest form.

..... [3]

- 4 A bag contains 8 counters, of which 5 are red and 3 are blue.
 Umar picks a counter at random and then replaces it.
 Umar then picks a second counter at random.

(a) Complete the tree diagram.



[2]

(b) Work out the probability that Umar picks one counter of each colour.

(b) [3]

- 5 Craig has completed some algebra homework. In each of his answers, he has made a mistake.

Explain his mistake in each case.

Question (a)

Expand $x(x + 3)$.

Craig's answer

$$x(x + 3) = 2x + 3x = 5x$$

Mistake is

..... [1]

Question (b)

Expand $(x - 3)(x + 4)$.

Craig's answer

$$(x - 3)(x + 4) = x^2 - 12$$

Mistake is

..... [1]

Question (c)

Factorise $x^2 - 36$.

Craig's answer

$$x^2 - 36 = (x - 6)(x - 6)$$

Mistake is

..... [1]

6 (a) Solve.

$$x^2 - 5x - 14 = 0$$

(a) [3]

(b) Rearrange this formula to make p the subject.

$$m = \sqrt{\frac{p}{7}}$$

(b) [2]

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