

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS C (GRADUATED ASSESSMENT)
MODULE M9 – SECTION A

B279A

Candidates answer on the question paper

OCR Supplied Materials:
None

Other Materials Required:

- Geometrical instruments
- Tracing paper (optional)

Tuesday 23 June 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.

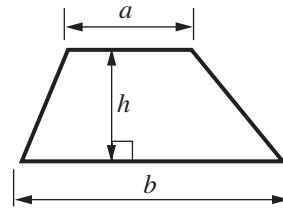
WARNING



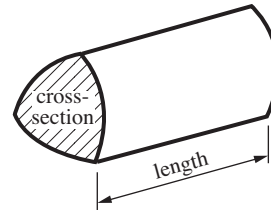
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

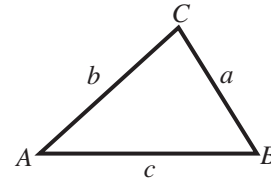


In any triangle ABC

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

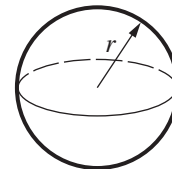
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



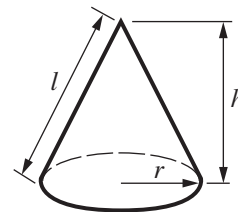
Volume of sphere = $\frac{4}{3}\pi r^3$

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

1 (a) Calculate.

$$(8.4 \times 10^6) \div (2 \times 10^{-3})$$

Give your answer in standard form.

(a) [2]

(b) Find the value of the following.

(i) 2^{-3}

(b)(i) [1]

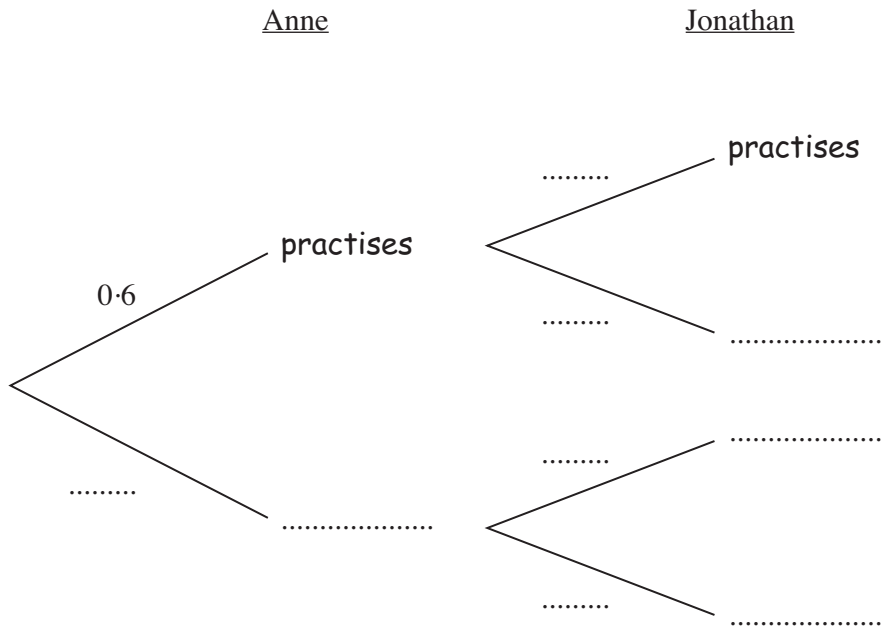
(ii) 5^0

(ii) [1]

(iii) $9^{\frac{1}{2}}$

(iii) [1]

- 2 The probability that Anne will practise playing the piano today is 0.6.
 The probability that Jonathan will practise playing his trumpet today is 0.9.
 These events are independent.
 This tree diagram represents the probabilities.



(a) Complete the tree diagram. [2]

(b) Calculate the probability that at least one of Anne and Jonathan will practise today.

(b) [3]

3 (a) Solve algebraically.

$$\frac{2x+7}{2} - \frac{3(4x+1)}{5} = 5$$

(a)..... [4]

(b) Factorise and solve this equation.

$$3x^2 - 7x + 2 = 0$$

(b)..... [3]

6

- 4** Find the equation of the line parallel to $y = 2x - 1$ which passes through the point $(3, 11)$.
Give your answer in the form $y = mx + c$.

..... **[3]**

5 $y \propto \frac{1}{x}$ and $y = 10$ when $x = 2$.

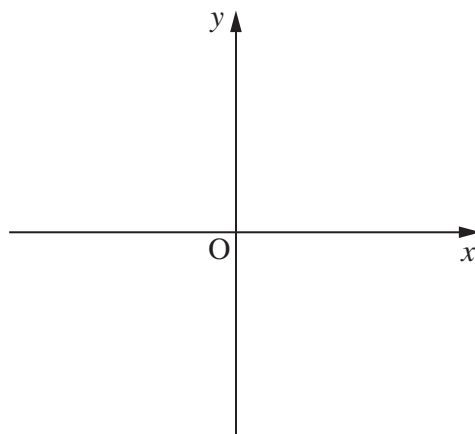
(a) Find the equation connecting x and y .

(a) [2]

(b) Find y when $x = -4$.

(b) [1]

(c) **Sketch** the graph showing this relationship between x and y .



[2]

PLEASE DO NOT WRITE ON THIS PAGE



Copyright Information

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations, is given to all schools that receive assessment material and is freely available to download from our public website (www.ocr.org.uk) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1PB.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.