

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

B278B

Candidates answer on the Question Paper

OCR Supplied Materials:
None

- Other Materials Required:**
- Geometrical instruments
 - Tracing paper (optional)
 - Scientific or graphical calculator

Monday 8 March 2010
Morning

Duration: 30 minutes



Candidate Forename		Candidate Surname	
--------------------	--	-------------------	--

Centre Number						Candidate Number				
---------------	--	--	--	--	--	------------------	--	--	--	--

INSTRUCTIONS TO CANDIDATES

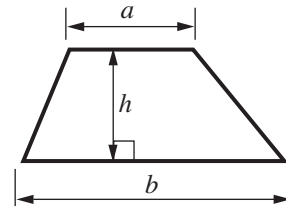
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. 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

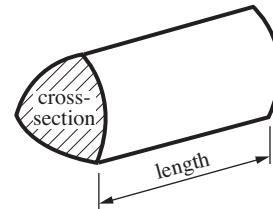
- The number of marks is given in brackets [] at the end of each question or part question.
- Section B starts with question 8.
- You are expected to use a calculator in Section B of this paper.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- The total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

Formulae Sheet

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



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

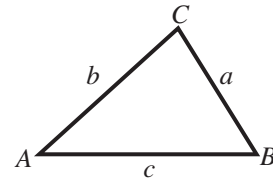


In any triangle ABC

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

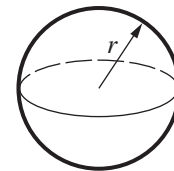
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$

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



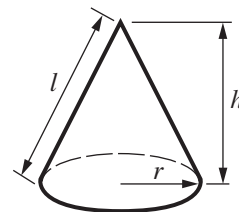
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

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

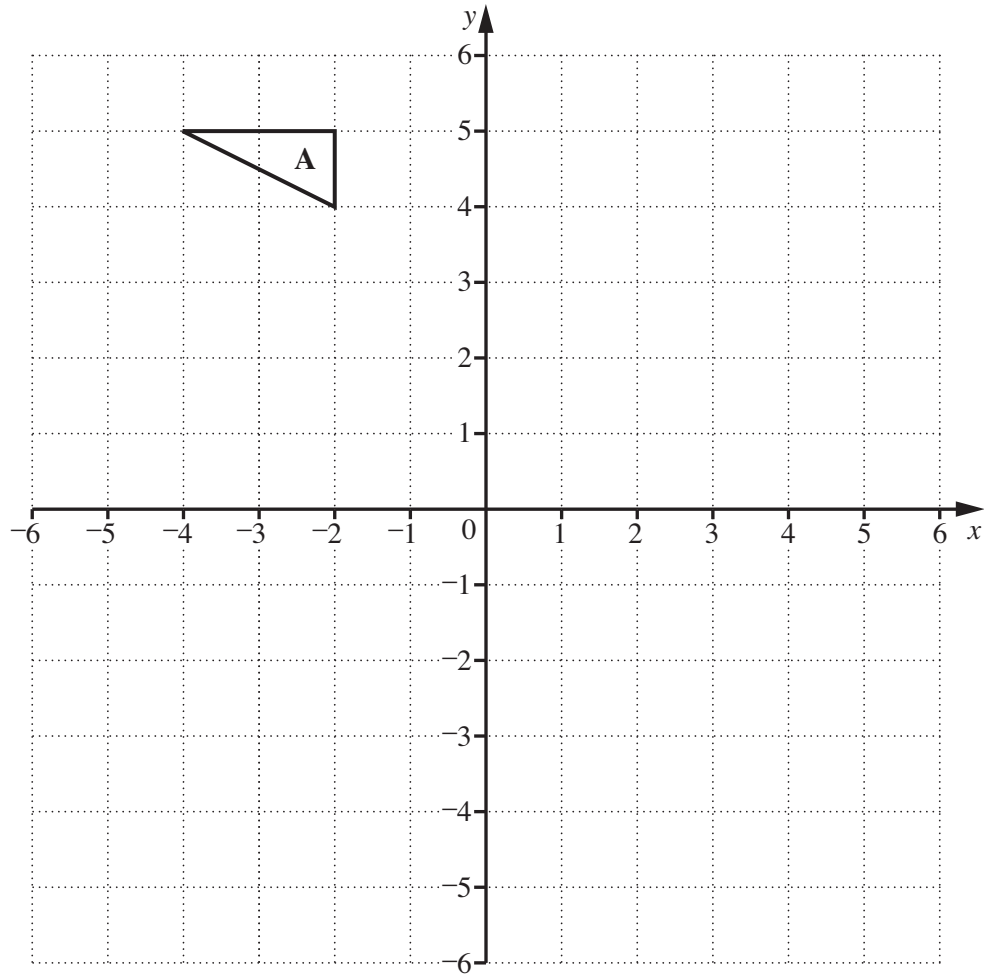


The Quadratic Equation

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



- (a) Rotate triangle **A** through 180° about $(0, 2)$.
Label the image **B**. [2]
- (b) Translate triangle **B** by $\begin{pmatrix} 0 \\ 4 \end{pmatrix}$.
Label the image **C**. [1]
- (c) Describe fully the **single** transformation which maps triangle **A** onto triangle **C**.

..... [2]

..... [2]

- 9 In a sale, the price of a bathroom suite is reduced from £490 to £399.

Calculate the percentage reduction.

.....% [3]

- 10 Solve algebraically these simultaneous equations.

$$\begin{aligned}2x + 3y &= 6 \\4x - y &= -9\end{aligned}$$

$x =$

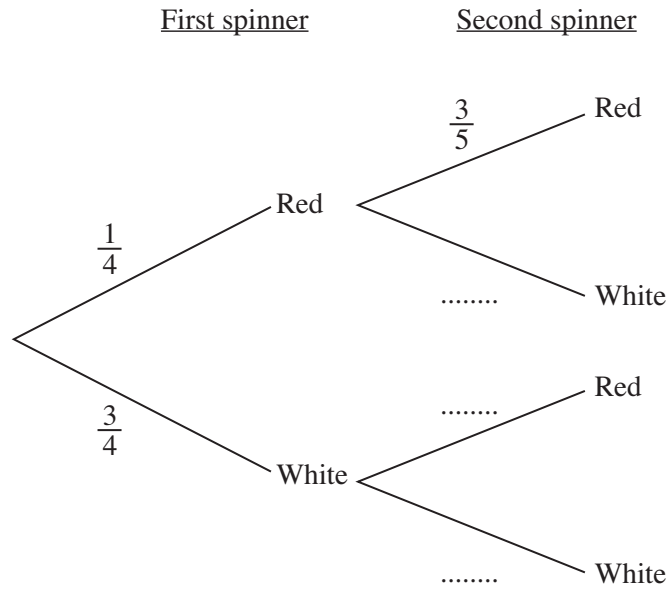
$y =$ [3]

11 Teresa has two spinners.
Each spinner has red sections and white sections only.

The probability of the first spinner stopping on red is $\frac{1}{4}$.

The probability of the second spinner stopping on red is $\frac{3}{5}$.

(a) Complete the probability tree diagram for one spin of each spinner.



[1]

(b) Calculate the probability that both spinners stop on white.

(b) [2]

6

12 Aled invests £2500 in an account which pays 6% compound interest each year.

Calculate the balance in the account after 3 years.

£ [3]

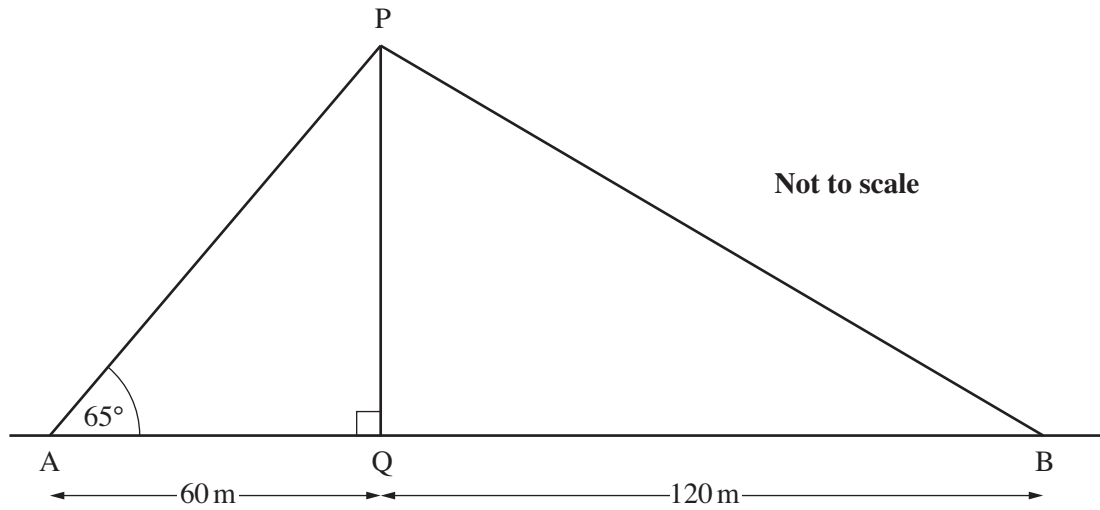
13 This table lists some monthly rainfall figures for a city.
It also shows some 3-month moving averages.

Month	Jan	Feb	Mar	Apr	May	Jun	July
Rainfall (mm)	118.8	92.5	86.3	65.1	68.5	60.2	73.2
Moving average (mm)		99.2	81.3	73.3	64.6	

Calculate the next 3-month moving average.

.....mm [2]

14



A tower, PQ, is built on horizontal ground.

From A, the angle of elevation of the top of the tower is 65° .

Work out the angle of elevation of the top of the tower from B.

..... $^\circ$ [6]

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 1GE.

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.