Candidate forename		Candidate surname	

Centre number						Candidate number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B279B

MATHEMATICS C

(GRADUATED ASSESSMENT)

MODULE M9 – SECTION B

THURSDAY 20 JANUARY 2011: Morning
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)
Scientific or graphical calculator

READ INSTRUCTIONS OVERLEAF

DC (CW/JG) 11MEP01201 40947

INSTRUCTIONS TO CANDIDATES

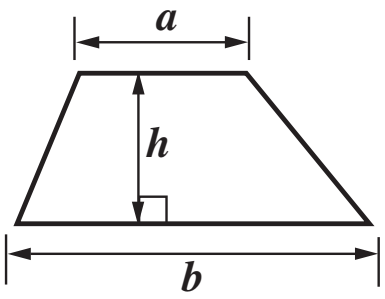
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**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

INFORMATION FOR CANDIDATES

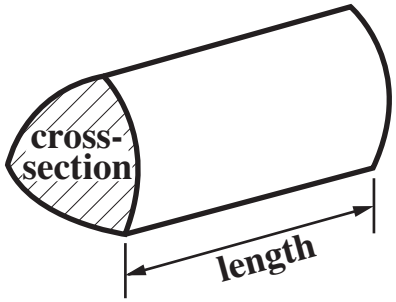
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 7.**
- **You are expected to use a calculator in Section B of this paper.**
- **Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.**
- **The total number of marks for this Section is 25.**

FORMULAE SHEET

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



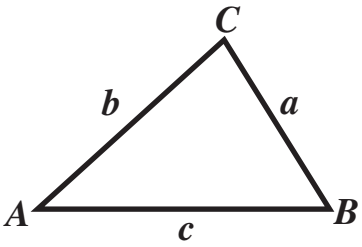
Volume of prism = (area of cross-section) × length



In any triangle ABC

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

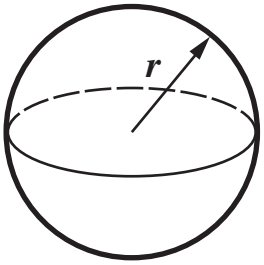
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$



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

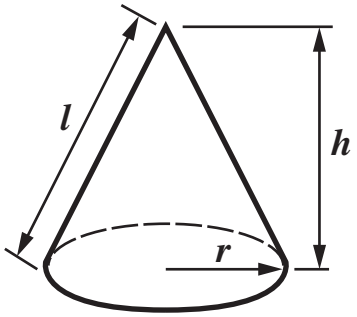
Volume of sphere $= \frac{4}{3}\pi r^3$

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



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

Curved surface area of cone $= \pi rl$

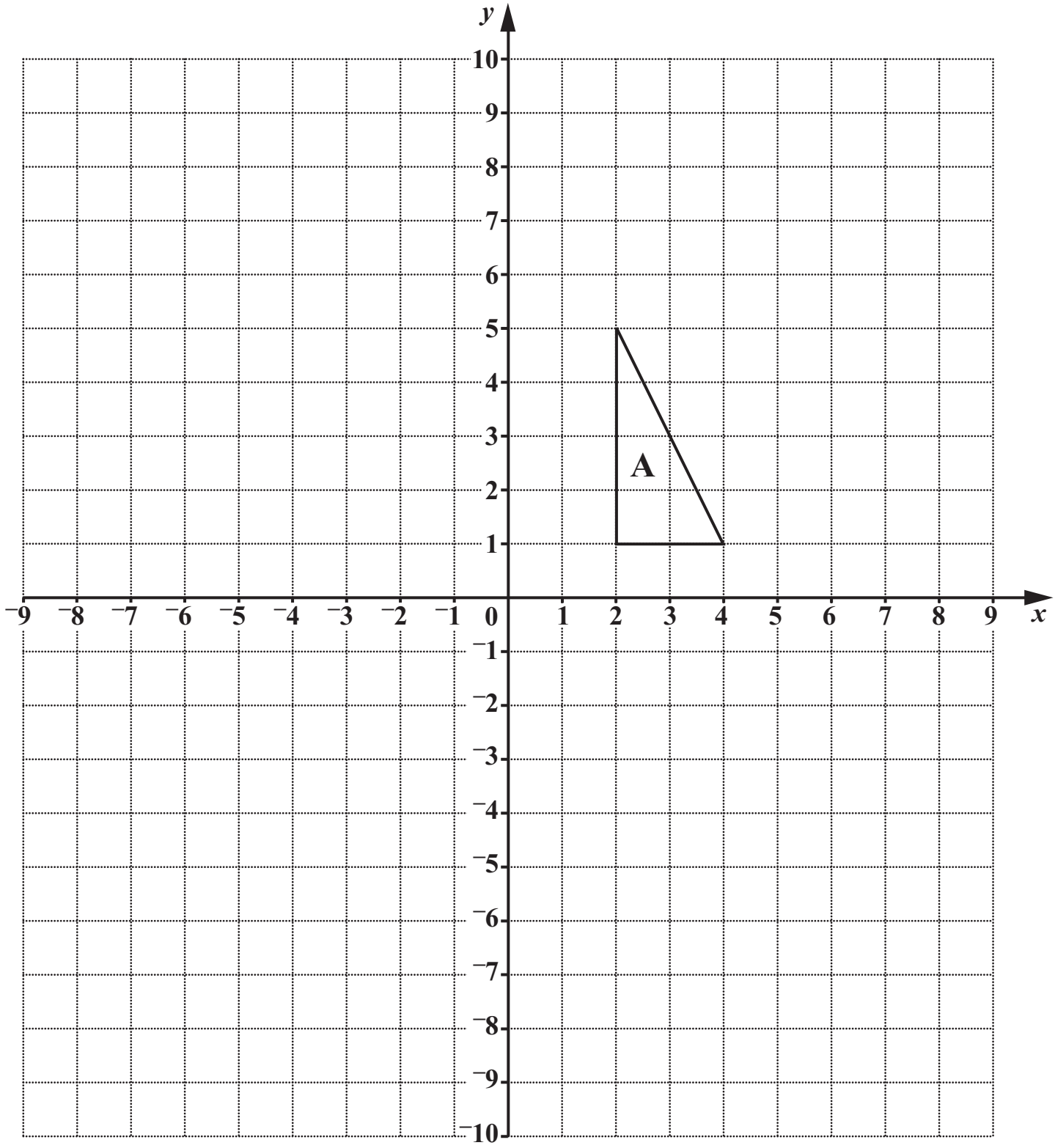


The Quadratic Equation

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

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

7 Triangle A is drawn on a coordinate grid.

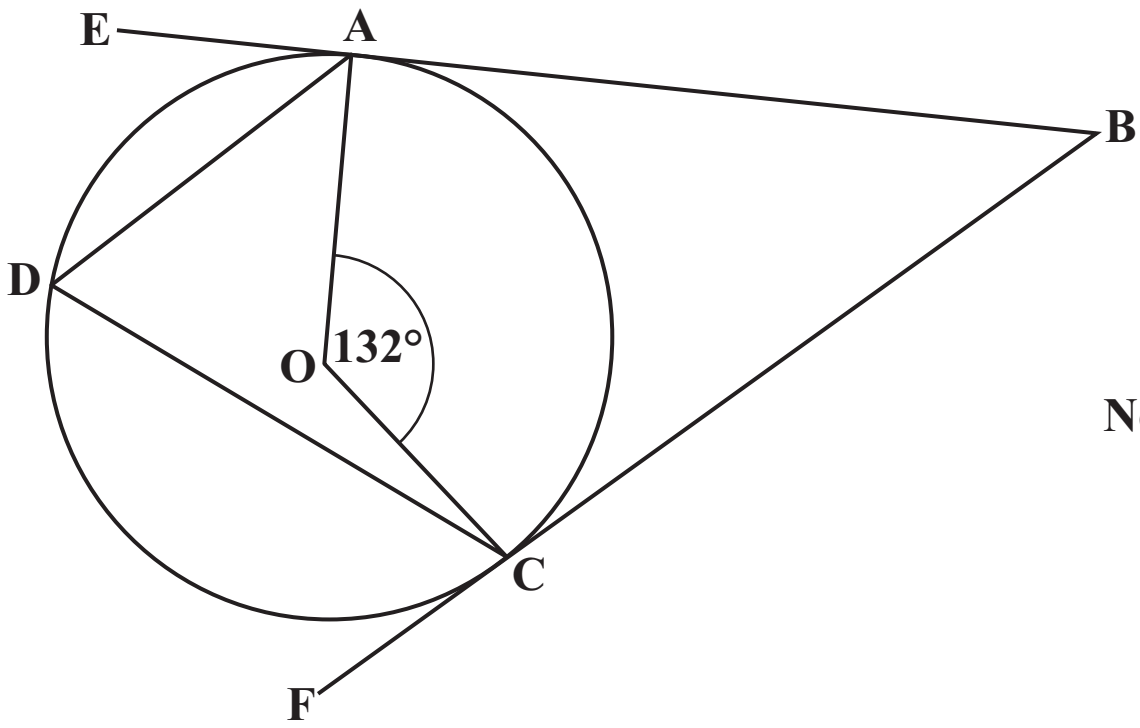


(a) Enlarge triangle A with centre (0, 0) and scale factor $^{-}2$. Label the image B. [2]

(b) Write down the scale factor of the enlargement that maps triangle B onto triangle A.

(b) _____ [1]

8 **A, D and C are points on a circle, centre O.**
BAE and BCF are tangents to the circle.
Angle AOC = 132°.



Not to scale

(a) Find the size of angle ADC, giving your reason.

Angle ADC = _____° because _____

_____ [2]

(b) Find the size of angle ABC, giving your reasons.

Angle ABC = _____° because _____

_____

_____ [3]

9 A rectangular rug measures 185 cm by 120 cm, each correct to the nearest centimetre.

Calculate the upper bound of the area of the rug.

_____ cm^2 [2]

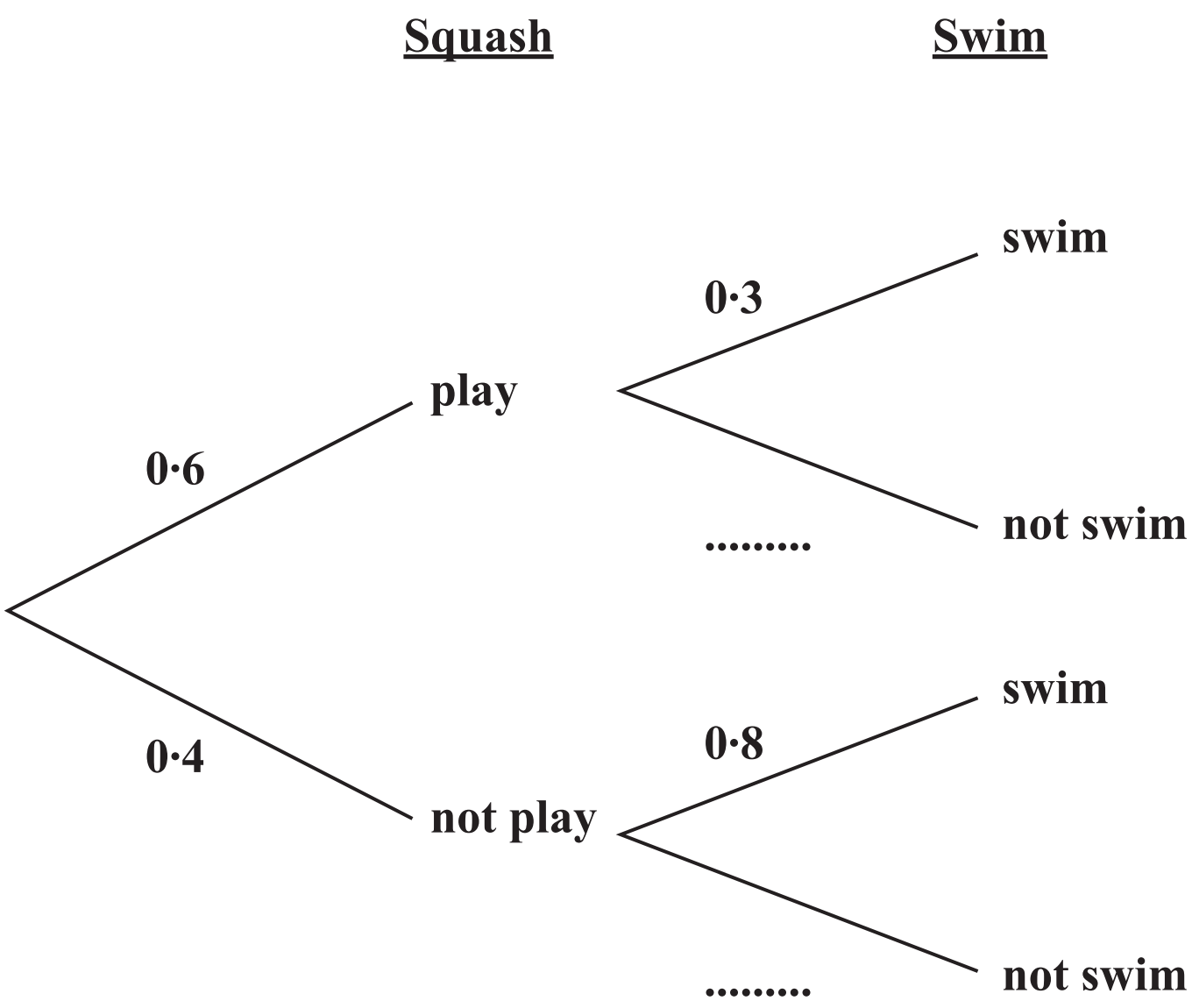
10 Rearrange

$6a + 5c = ac + 9$

to make *a* the subject.

_____ **[3]**

11 (a) Every Saturday, Peter goes to the sports centre. Sometimes he plays squash, sometimes he swims, sometimes he does both, sometimes he doesn't do either. This tree diagram shows the probabilities of Peter playing squash and/or swimming.



(i) Complete the tree diagram. [1]

(ii) Calculate the probability that Peter does at least one of these two sports on a Saturday.

(a)(ii) _____ [3]

(b) Shona wants to find out what sports the students from her school do on Saturdays.
She wants to choose a representative stratified sample of 50 students.
This table shows how many students are in each year group.

Year group	Number of students
7	66
8	84
9	90
10	82
11	78
Total	400

How many students in the sample should be from year 7?
Show how you decide.

(b) _____ [2]

TURN OVER FOR QUESTION 12

12 (a) A child has two wooden bricks which are mathematically similar.
One brick is twice as long as the other.
The smaller brick has volume 12 cm^3.

What is the volume of the larger brick?

(a) _____ cm^3 [2]

(b) A child's foam ball is a sphere of radius 5·2 cm.
The density of the foam is 0·045 g/cm^3.

Calculate the mass of the ball.
Give your answer to an appropriate degree of accuracy.

(b) _____ g [4]

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