OCR
RECOGNISING ACHIEVEMENT

M9

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS C (GRADUATED ASSESSMENT) B279A

MODULE M9 – SECTION A

OCE/17296

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

B279A

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

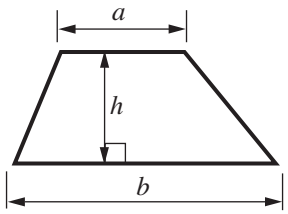
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

WARNING

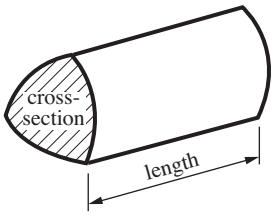
No calculator can be used for Section A of this paper

Formulae Sheet

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



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

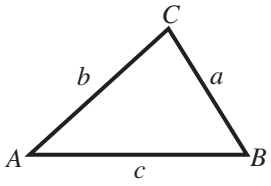


In any triangle ABC

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

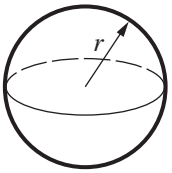
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

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



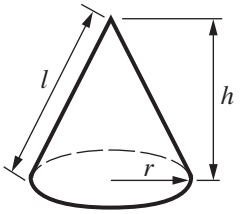
Volume of sphere = $\frac{4}{3}\pi r^3$

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



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

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



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 Work out.

(a) 8^0

(a) ..... **[1]**

(b) $3^{-2} \times 3^6$

(b) ..... **[2]**

(c) $36^{\frac{1}{2}}$

(c) ..... **[1]**

(d) $(6 \times 10^{11}) \times (5 \times 10^{-3})$

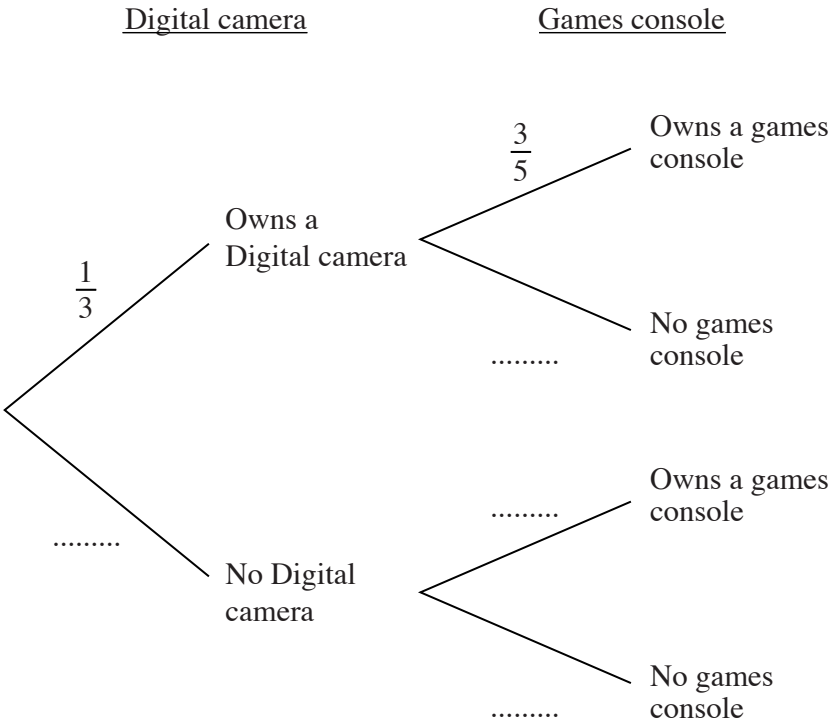
Give your answer in standard form.

(d) ..... **[2]**

2 In a class, the probability that a pupil owns a digital camera is $\frac{1}{3}$.

For the same class, the probability that a pupil owns a games console is $\frac{3}{5}$.
These probabilities are independent.

(a) Complete the probability tree diagram.

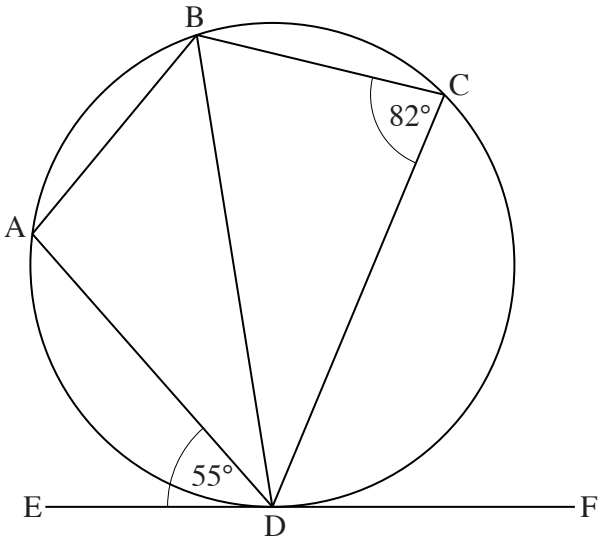


[1]

(b) Calculate the probability that a pupil, chosen at random from the class, owns just one of these items.

(b) ..... **[3]**

3



Not to scale

A, B, C and D are four points on a circle.
EF is the tangent to the circle at D.
Angle BCD = 82° and angle ADE = 55°.

(a) Find angle BAD.
Give a reason for your answer.

Angle BAD = ...° because .....

..... **[2]**

(b) Find angle BDA.
Give a reason for each step of your answer.

Angle BDA = ...° because .....

.....

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

4 **(a)** Expand and simplify.

$$(4x + 3y)(x - 2y)$$

(a) ..... **[3]**

(b) **(i)** Factorise.

$$x^2 - x - 20$$

(b)(i) ..... **[2]**

(ii) Hence simplify.

$$\frac{x^2 - 25}{x^2 - x - 20}$$

(ii) ..... **[2]**

(c) Solve.

$$2x^2 - 7x - 4 = 0$$

(c) ..... **[3]**

PLEASE DO NOT WRITE ON THIS PAGE