MATHEMATICS C
(Graduated Assessment)

1966/2338B

MODULE M8 – SECTION B

Wednesday   **28 JUNE 2006**   Morning   30 minutes

Candidates answer on the question paper.
Additional materials:
  Geometrical instruments
  Tracing paper (optional)
  Scientific or graphical calculator

Candidate
Name

Centre
Number

Candidate
Number

TIME   30 minutes

INSTRUCTIONS TO CANDIDATES

* Write your name, Centre number and candidate number in the boxes above.
* Answer **all** the questions.
* Use blue or black ink. Pencil may be used for graphs and diagrams only.
* Read each question carefully and make sure you know what you have to do before starting your answer.
* In many questions marks will be given for a correct method even if the answer is incorrect.
* Do **not** write in the bar code.
* Do **not** write outside the box bordering each page.
* WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

* You are expected to use a calculator in Section B of this paper.
* 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.
* Section B starts with question 8.
* Use the π button on your calculator or take π to be 3·142 unless the question says otherwise.

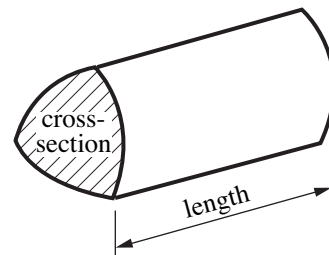| FOR EXAMINER'S USE	
Section B	

This question paper consists of 7 printed pages and 1 blank page.

[Turn over

Formulae Sheet

Area of trapezium $= \frac{1}{2}(a + b)h$
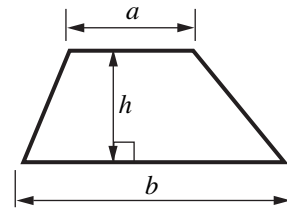
Volume of prism = (area of cross-section) × length

PLEASE DO NOT WRITE ON THIS PAGE

8 Calculate the total **compound interest** earned on £800,
invested for 3 years at 4% per year.
Give the **interest** to the nearest penny.

£ ....[4]

<div style="text-align: right">4</div>

9 **(a)** The mass of a gold ring is $4\cdot825 \times 10^{-3}$ kg.
The density of gold is $1\cdot93 \times 10^{4}$ kg/m^3.

Use   volume $= \dfrac{\text{mass}}{\text{density}}$ to calculate the volume of gold in the ring.

Give your answer in standard form.

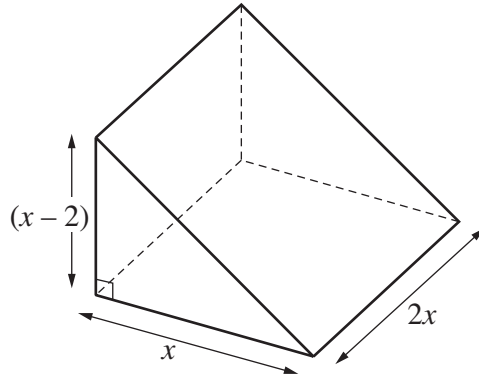**(a)** ....m^3 [2]

(b) The volume of another ring is 320 cubic millimetres.

Change 320 mm^3 into cubic centimetres.

(b) ....cm^3 [2]

<div style="text-align: right">4</div>

[Turn over

10

In this question all measurements are in centimetres.
The cross section of a triangular prism is a triangle with base x and perpendicular height $(x - 2)$.
The prism has length $2x$.

(a) Show algebraically that the volume, V, of the prism, in terms of x, is given by

$$V = x^3 - 2x^2.$$

....

....

....

....[2]

(b) The volume of the prism is $20 \, \text{cm}^3$ which gives this equation

$$x^3 - 2x^2 = 20.$$

   (i) Show that one solution of this equation lies between 3 and 4.

....

....

....

....[1]

(ii) Use trial and improvement to find this solution correct to 1 decimal place.
Show all your trials and their outcomes.

(ii) ....[3]

6

11 **(a)** Solve, algebraically, these simultaneous equations.

$$3x + y = 3$$
$$2x - y = 7$$

(a) $x =$ ....

$y =$ ....[2]

(b) Expand and simplify.

$$(x - 7)(x + 5)$$

(b) ....[2]

(c) **(i)** Factorise.

$$x^2 - 25$$

(c)(i) ....[1]

(ii) Hence solve this equation.

$$x^2 - 25 = 0$$
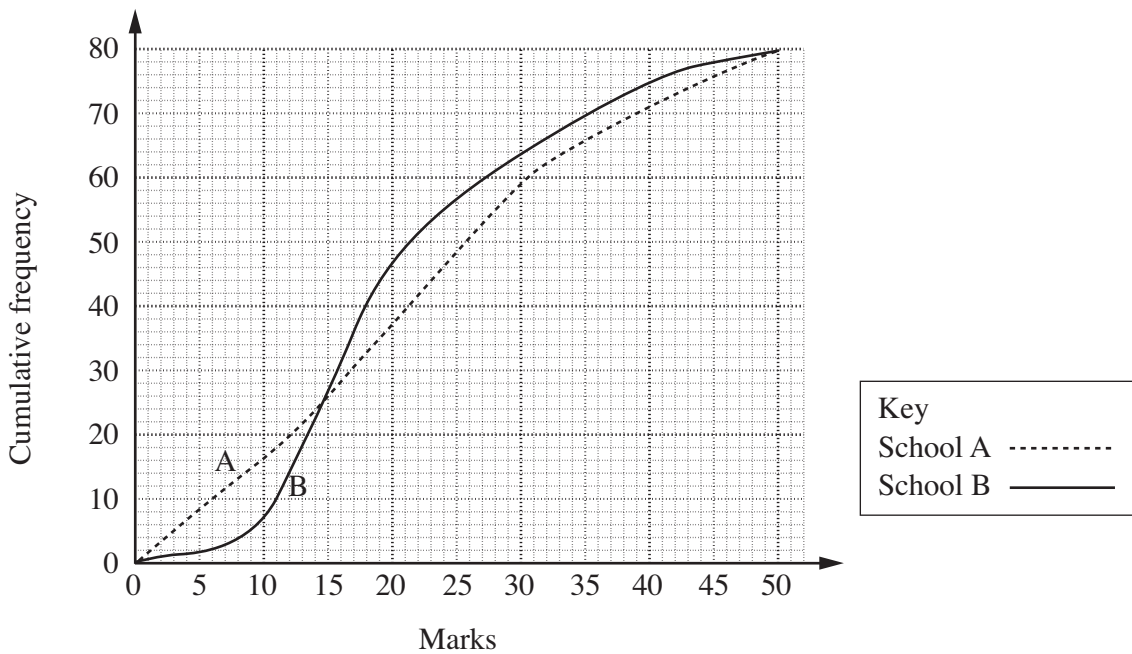
(ii) ....[1]

6

12
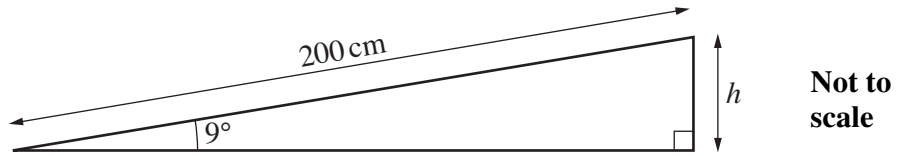
A ramp with triangular cross section makes an angle of 9° to the horizontal.
The ramp is 200 cm long.

Calculate the height, *h*, of the ramp.

.....................................cm [3]

3

13

These cumulative frequency graphs show the distributions of marks scored in a mathematics examination in two schools, A and B.

Use readings from the graphs to explain your answer to the following question.

In which school was the performance of the pupils better on average?

.... because ....

....[2]

2

8

BLANK PAGE

PLEASE DO NOT WRITE ON THIS PAGE