OCR

RECOGNISING ACHIEVEMENT

**OXFORD CAMBRIDGE AND RSA EXAMINATIONS**
**General Certificate of Secondary Education**

**MATHEMATICS C** **1966/2343B**
**(Graduated Assessment)**

HIGHER TERMINAL PAPER – SECTION B

Tuesday **8 JUNE 2004** Afternoon 1 hour

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

| Candidate Name | Centre Number | Candidate Number |
|---|---|---|
| | | |

**TIME** 1 hour

**INSTRUCTIONS TO CANDIDATES**

- Write your name, Centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, on the dotted lines unless the question says otherwise.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There is a space after most questions. Use it to do your working. In many questions marks will be given for a correct method even if the answer is incorrect.

**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 50.
- Section B starts with question 11.
- Use the $\pi$ button on your calculator or take $\pi$ to be 3·142 unless the question says otherwise.

| FOR EXAMINER'S USE | |
|---|---|
| Section B | |

**This question paper consists of 11 printed pages and 1 blank page.**



Registered Charity Number: 1066969
[Turn over

**11** The equation $x^3 - x - 3 = 0$ has a solution between 1 and 2.

Use trial and improvement to find this solution correct to two decimal places.
You must show all your trials and their outcomes.

.....[4]

4

**12** **(a)** Calculate.

$$\sqrt{2 \cdot 65^3 - 4 \cdot 28^2}$$

Give your answer correct to two significant figures.

**(a)** .....[2]

**(b)** Calculate.

$$\frac{1 \cdot 8 \times 10^9 - 5 \cdot 2 \times 10^8}{1 \cdot 6 \times 10^{11}}$$

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

4

**13** Imran keeps a record of how late his train is on each of 60 days.
His results are summarised in the table below.

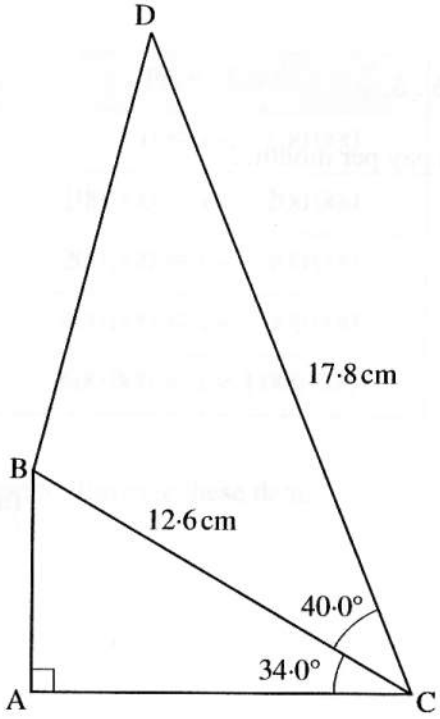
| Minutes late ($t$) | Frequency |
|---|---|
| $0 \leqslant t < 10$ | 35 |
| $10 \leqslant t < 20$ | 15 |
| $20 \leqslant t < 30$ | 5 |
| $30 \leqslant t < 40$ | 1 |
| $40 \leqslant t < 50$ | 3 |
| $50 \leqslant t < 60$ | 1 |

Calculate an estimate of the mean number of minutes late.

.....minutes [4]

4

**14**




**Not to scale**

**(a)** Calculate the length AB.
Give your answer to an appropriate degree of accuracy.

**(a)** .....cm [4]

**(b)** Calculate the length BD.

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

7



**[Turn over**

**15** **(a)** Sadia, Natasha and Heather share a house.

The rent is £825 per month.
They share the rent in the ratio 4 : 5 : 6.

Work out how much rent they each pay per month.

**(a)** Sadia £ .....

Natasha £ .....

Heather £ .....[3]

**(b)** Jane bought a house in 1999.

In 2003 she sold it for £324 000.
The value had increased by 35%.

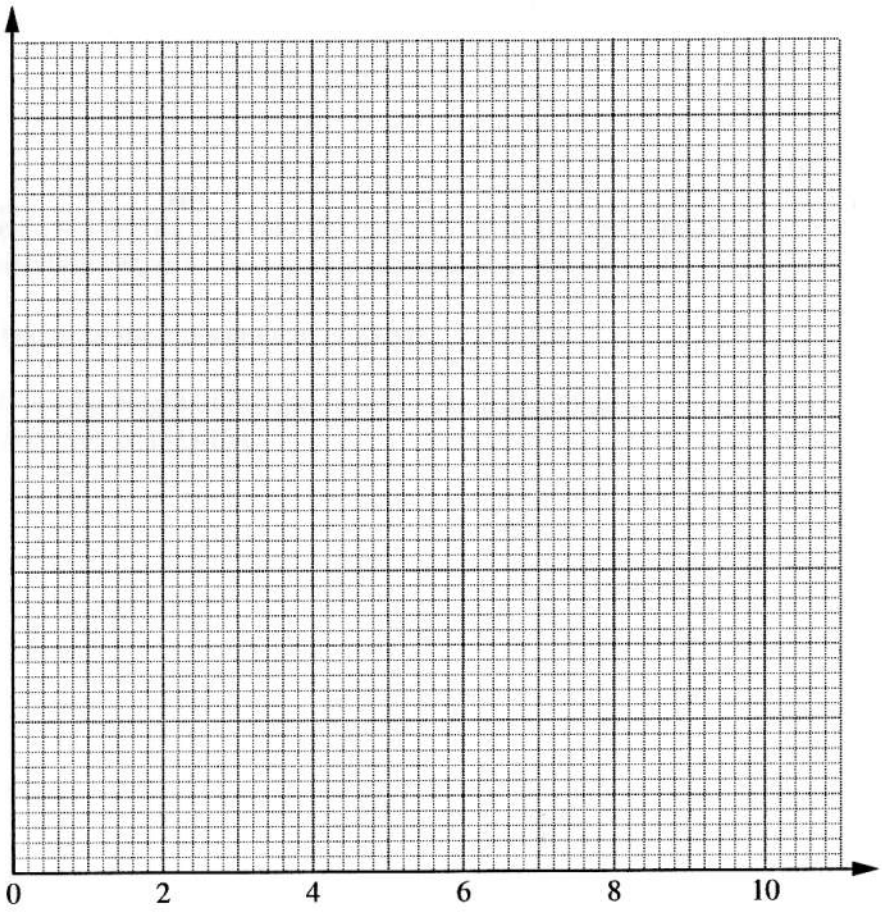
Calculate how much she paid for the house.

**(b)** £ ..... [3]

**(c)** This table shows the distribution of the prices, £$x$, of 100 houses.

| Price (£$x$) | Number of houses |
|---|---|
| $0 \leqslant x < 100\,000$ | 20 |
| $100\,000 \leqslant x < 200\,000$ | 34 |
| $200\,000 \leqslant x < 400\,000$ | 26 |
| $400\,000 \leqslant x < 600\,000$ | 16 |
| $600\,000 \leqslant x < 1\,000\,000$ | 4 |

Draw a histogram to illustrate these data.




[4]

10



**[Turn over**

**16** **(a)** Factorise completely.

$$3x^2 - 75y^2$$

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

**(b)** Rearrange the formula $3a^2 + a^2b = 7c$ to make $a$ the subject.

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

6

**17** A standard cylindrical can of *Lemfizz* holds 400 ml of drink.
A special offer can is advertised as '10% bigger'.


**(a)** Pete thinks that the special offer can will be an enlargement of the standard can with all dimensions increased by 10%.

Work out the capacity of the special offer can using Pete's interpretation of the offer.

**(a)** .....ml [2]

**(b)** Mike thinks that the special offer can will be an enlargement of the standard can with the capacity increased by 10%.

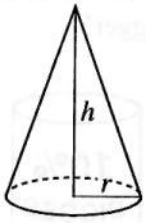
The height of the standard can is 15 cm.

Work out the height of the special offer can using Mike's interpretation of the offer.

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

5

**18**




The radius, $r$, of this cone is 5·8 cm, correct to two significant figures.

The volume, $V$, of this cone is 415 $cm^3$, correct to three significant figures.

Use the formula $h = \frac{3V}{\pi r^2}$ to find the minimum possible height of the cone.

Show your calculation clearly.

.....cm [3]

3

**19** The straight line with equation $y = 3x - 1$ intersects the circle with equation $x^2 + y^2 = 40$ at two points A and B.

Solve these equations simultaneously to find the coordinates of A and B.

(....., .....) and

(....., .....) [7]

7