OCR
RECOGNISING ACHIEVEMENT

M3

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS C (GRADUATED ASSESSMENT) B273B

MODULE M3 – SECTION B

OCE/17284

Candidates answer on the Question Paper

OCR Supplied Materials:
None

Other Materials Required:
- Geometrical instruments
- Tracing paper (optional)
- Electronic calculator

Thursday 21 January 2010
Afternoon

Duration: 30 minutes

B273B

Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

INSTRUCTIONS TO CANDIDATES

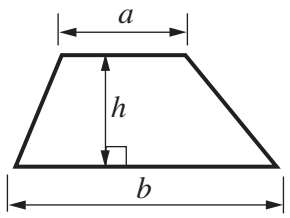
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working.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

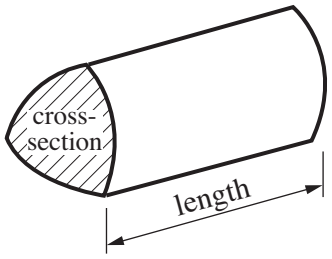
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- Section B starts with question 5.
- You are expected to use a calculator in Section B of this paper.
- The total number of marks for this Section is **25**.
- This document consists of **12** pages. Any blank pages are indicated.

Formulae Sheet

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



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



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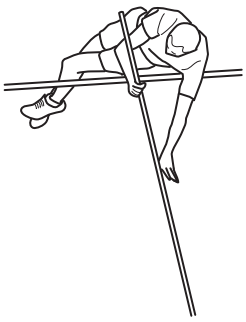
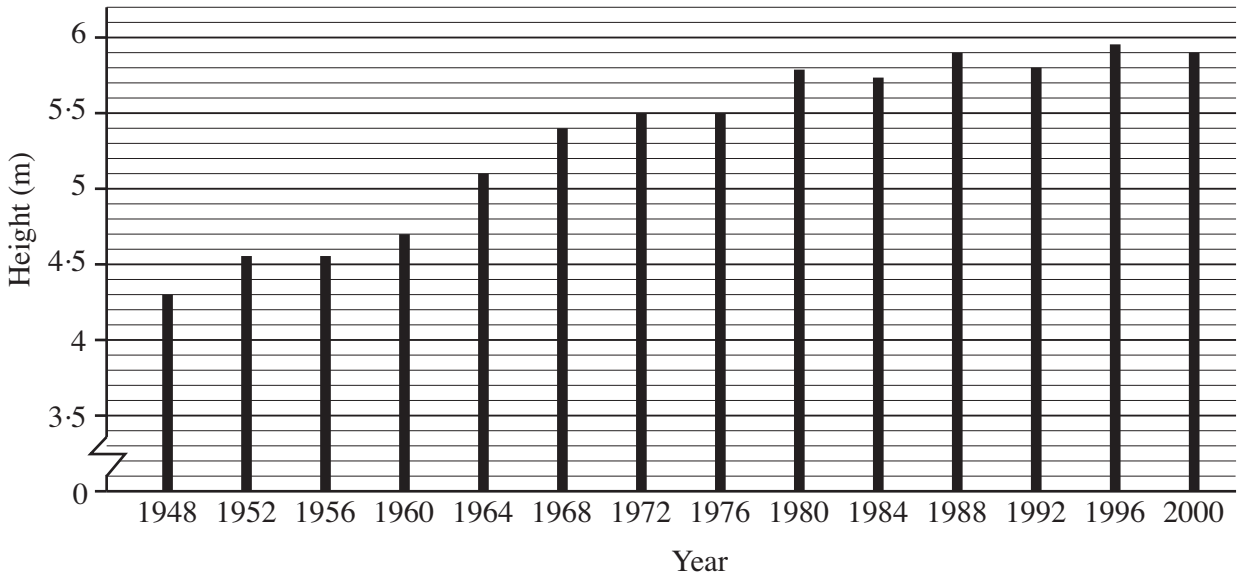
5 **(a)** Here are the winning heights for the men's pole vault at the Olympic Games from 1948 to 2000.



Winning Height for Men's Olympic Pole Vault



(i) What was the winning height in 1976?

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

(ii) In which year was the greatest winning height?

(ii) ..... **[1]**

(iii) How did the winning heights change between 1960 and 1972?

.....

..... **[1]**

(b) In 1985 the world record pole vault height for men was 6 m.
In 1790 the record was one third of the record height in 1985.

What was the pole vault record in 1790?

(b) ..... m **[1]**

(c) This picture shows the members of a pole vault team with a pole.

Estimate the length of the pole.
How did you work out your answer?

..... metres because .....

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

(d) How high a person can vault depends on their speed just before they vault.

Here is a formula for estimating this height.

- Square the speed (in metres per second)
- Divide this result by 20
- This is the height of the vault in metres

Amy's speed, just before she vaults, is 8 metres per second.

Use the formula to work out the height of her vault.

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

(e) In a training session Amy vaults these heights, in metres.

2·88 2·80 2·92 2·80

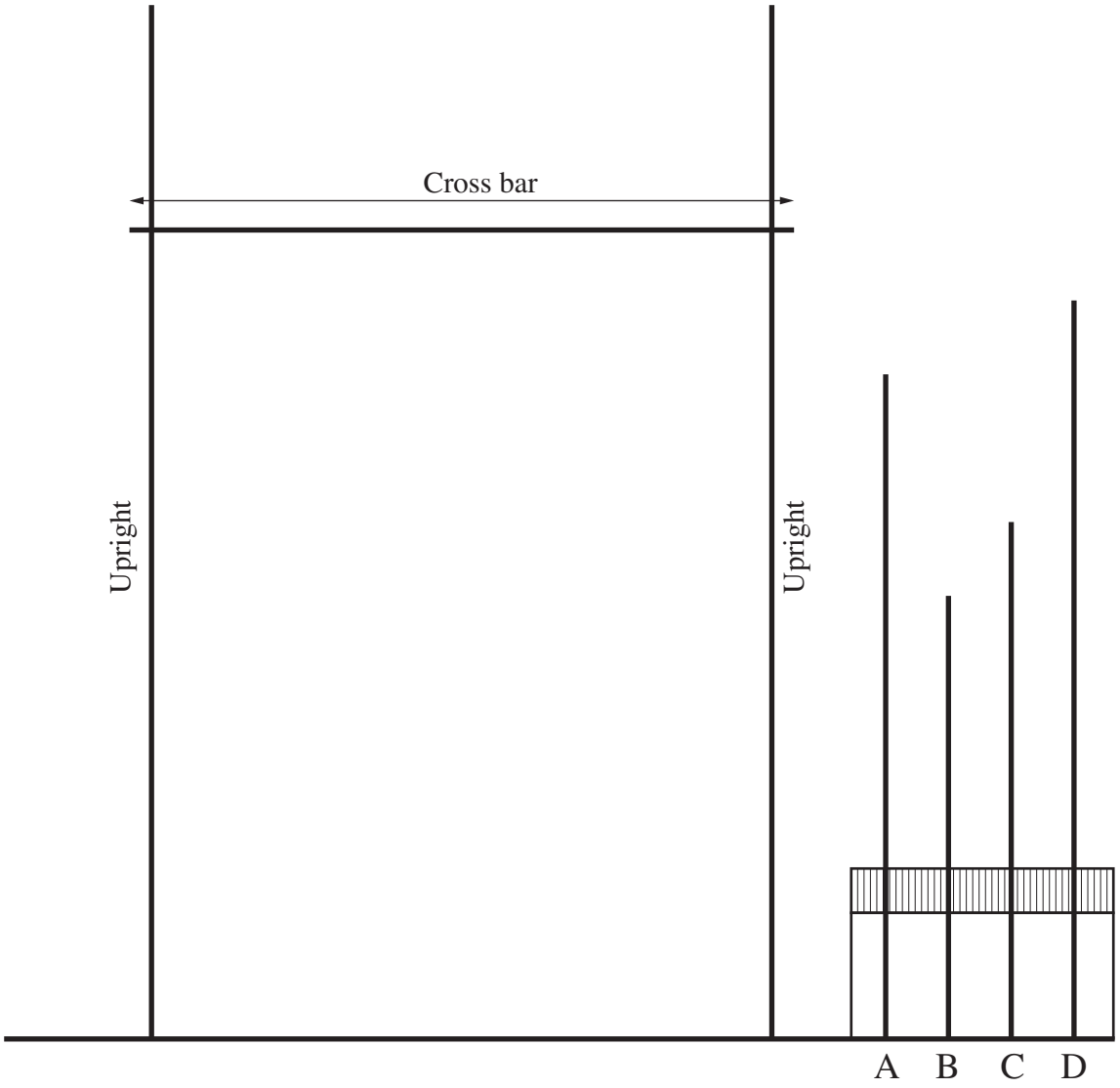
(i) Calculate the mean of these heights.

(e)(i) ..... m **[3]**

(ii) What is the range of these heights?

(ii) ..... m **[1]**

(f) This is a scale drawing of some pole vaulting equipment.



Scale: 2 cm represents 1 m

(i) Find the **real** length of the cross bar.

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

(ii) Which of the poles, A, B, C or D, has a real length of 3·5 m?

(ii) ..... **[1]**

6 Solve.

(a) $2x = 18$

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

(b) $x + 3 = 7$

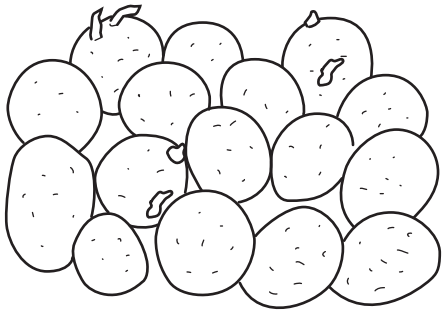
(b) ..... **[1]**

(c) $x - 6 = 13$

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

7 Jerzy wants to cook potatoes in their jackets.

(a) He has these potatoes.



Three of the potatoes have started to sprout.
He picks one of the potatoes without looking.

What is the probability that the potato has

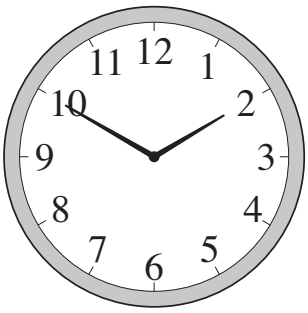
(i) started to sprout,

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

(ii) **not** started to sprout?

(ii) ..... **[1]**

(b) Jerzy puts the potatoes into the oven at this time.

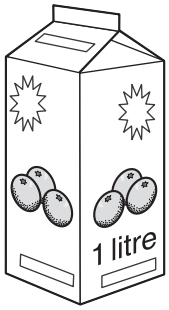


They need to be cooked for $1\frac{1}{2}$ hours.

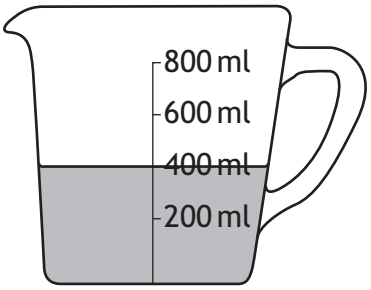
What time will they be ready?

(b) ..... **[1]**

(c) Jerzy has this 1 litre carton of orange juice.



Jerzy drinks half of the orange juice.
He then pours this amount into a measuring jug:



How many millilitres of orange juice are left in the carton?

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

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