

Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION**

B273B

**MATHEMATICS C
(GRADUATED ASSESSMENT)**

MODULE M3 – SECTION B

THURSDAY 21 JANUARY 2010: Afternoon

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)

Electronic calculator

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

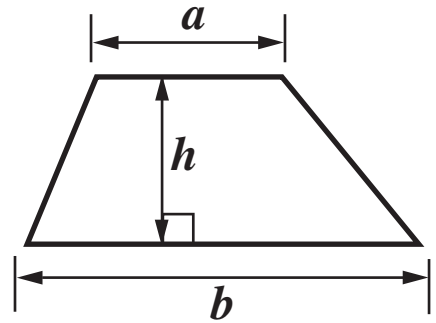
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Answer ALL the questions.**
- **Write your answer to each question in the space provided, however additional paper may be used if necessary.**

INFORMATION FOR CANDIDATES

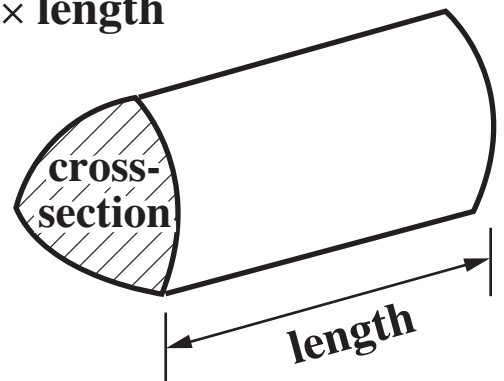
- **The number of marks is given in brackets [] at the end of each question or part question.**
- **Section B starts with question 5.**
- **You are expected to use a calculator in Section B of this paper.**
- **The total number of marks for this Section is 25.**

Formulae Sheet

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



$$\text{Volume of prism} = (\text{area of cross-section}) \times \text{length}$$



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

**(i) What was the winning height in 1976?
[1 mark]**

(a)(i) _____ m

**(ii) In which year was the greatest winning height?
[1 mark]**

(ii) _____

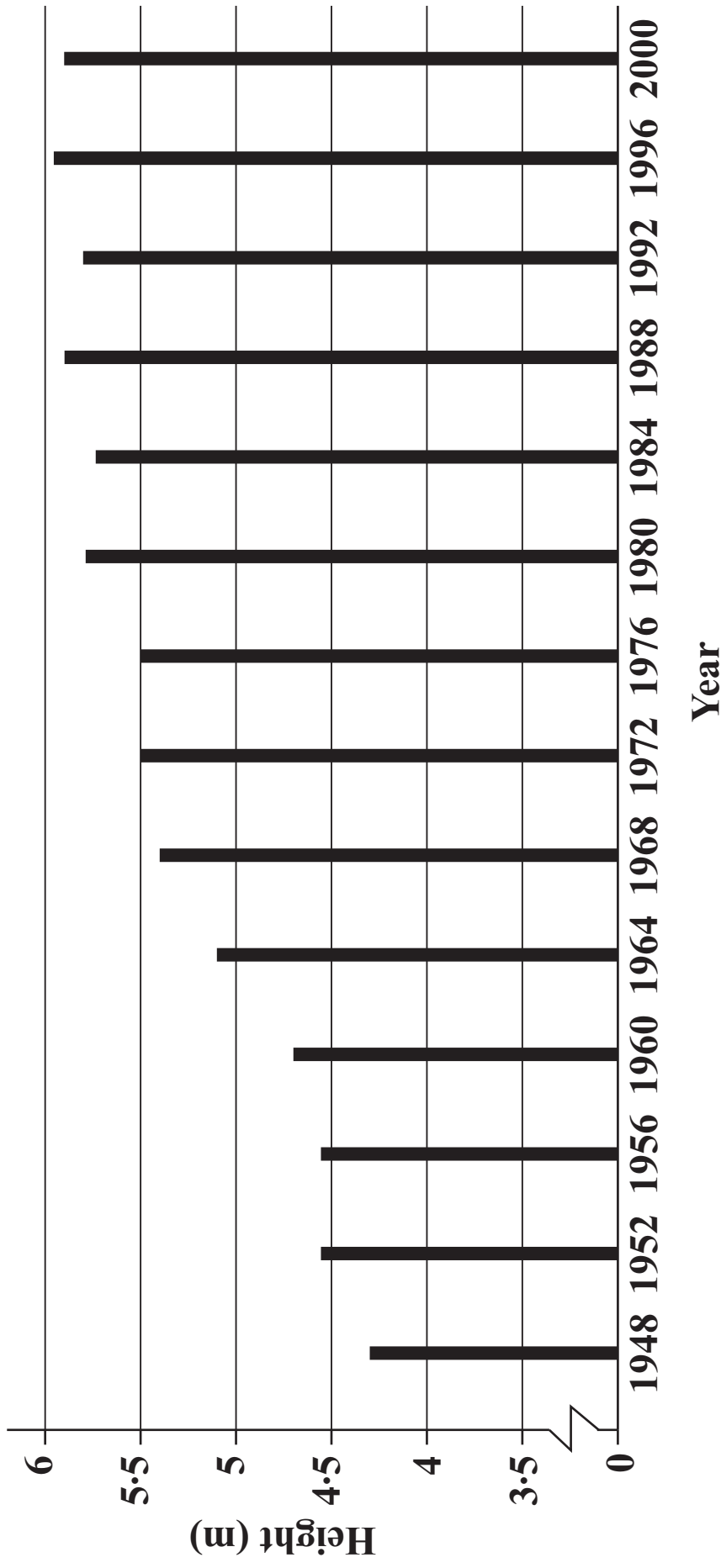
**(iii) How did the winning heights change between 1960 and 1972?
[1 mark]**

**(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?
[1 mark]**

(b) _____ m

Winning Height for Men's Olympic Pole Vault



(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?
[2 marks]**

_____ metres because _____

(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.
[2 marks]**

(d) _____ m

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

2.88 2.80 2.92 2.80

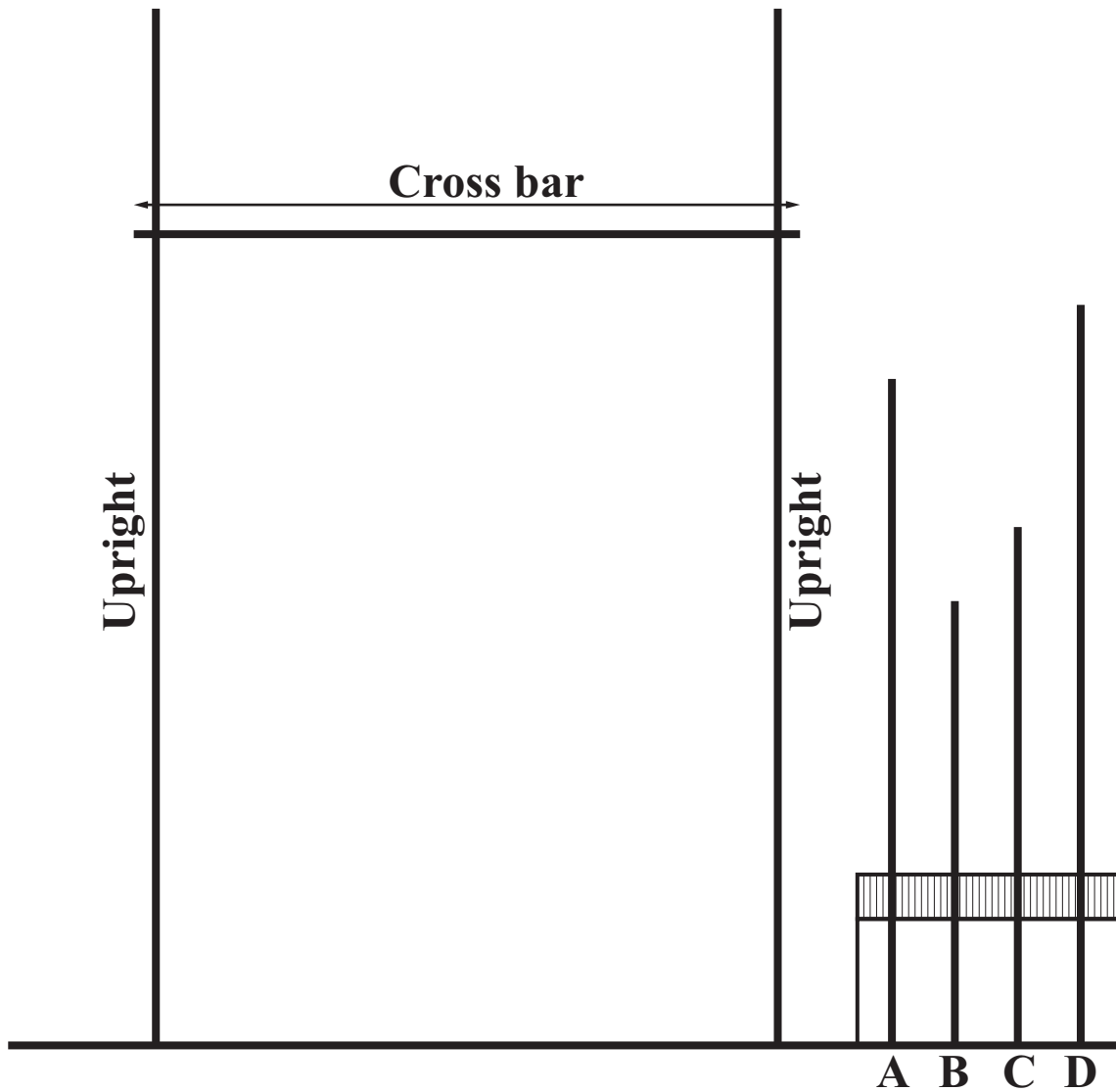
**(i) Calculate the mean of these heights.
[3 marks]**

(e)(i) _____ m

**(ii) What is the range of these heights?
[1 mark]**

(ii) _____ m

(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.
[2 marks]

(f)(i) _____

(ii) Which of the poles, A, B, C or D, has a real length of 3.5 m?
[1 mark]

(ii) _____

6 Solve.

**(a) $2x = 18$
[1 mark]**

(a) _____

**(b) $x + 3 = 7$
[1 mark]**

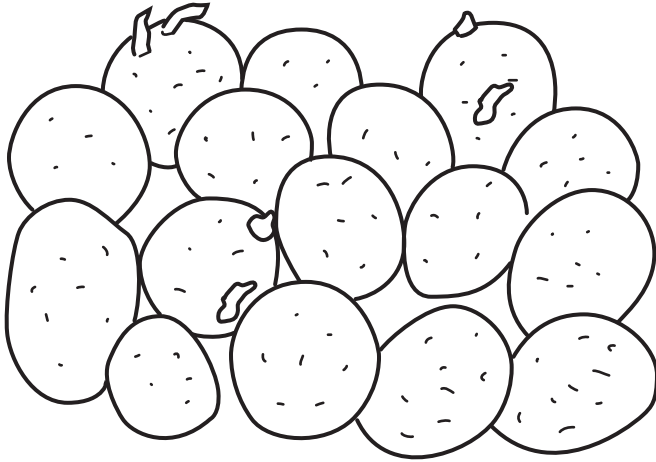
(b) _____

**(c) $x - 6 = 13$
[1 mark]**

(c) _____

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

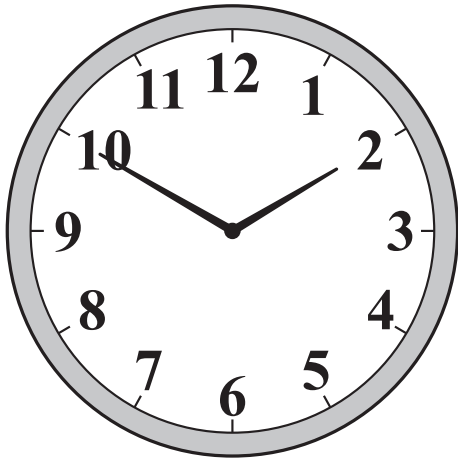
**(i) started to sprout,
[2 marks]**

(a)(i) _____

**(ii) NOT started to sprout?
[1 mark]**

(ii) _____

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

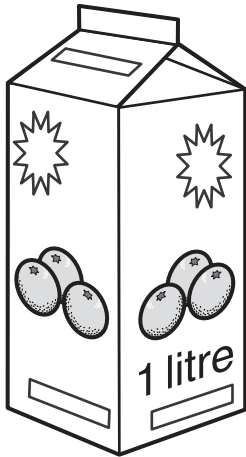


They need to be cooked for $1\frac{1}{2}$ hours.

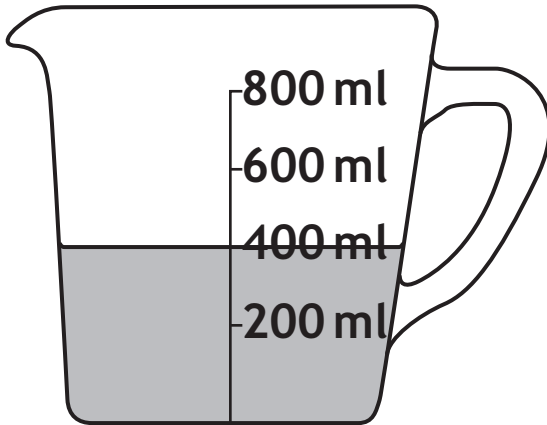
**What time will they be ready?
[1 mark]**

(b) _____

(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?

[3 marks]

(c) _____ ml

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