

**HIGHER TIER
MINI PRACTICE EXAM 1**

**CALCULATOR ALLOWED
20 MINUTES ALLOWED**

1.

Alice is preparing hot drinks for an event.
She needs to make 90 cups of coffee and 125 cups of tea.
Each cup of coffee requires 6 grams of coffee.
Each cup of tea requires 1 teabag.
Coffee is sold in 150 gram jars which cost £3.50 each.
Teabags are sold in boxes of 80 which cost £3.20 each.

How much will it cost to buy the coffee and tea that she needs?

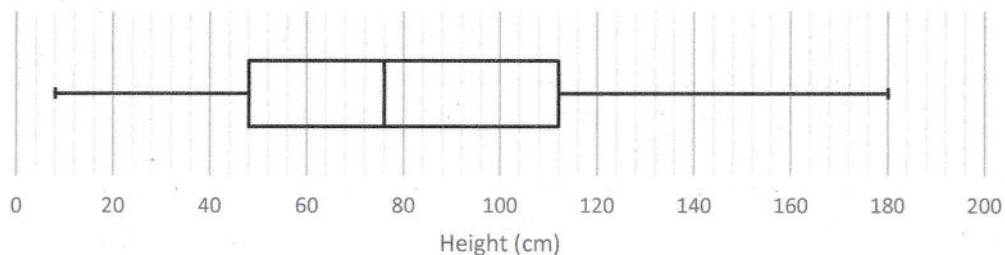
$90 \times 6 = 540\text{g}$ of coffee required
 $540 \div 150 = 3.6 = 4$ jars of coffee required
 $125 \div 80 = 1.5625 = 2$ boxes of teabags required.

$4 \times £3.50 = £14$
 $2 \times £3.20 = £6.40$ $14 + 6.40 = \underline{\underline{£20.40}}$

(5)

2.

The box plot below shows the scores a group of people scored in a game.



(a) Find the interquartile range.

$$112 - 48 = \underline{\underline{64\text{ cm}}}$$

(2)

(b) What percentage of the group scored more than 112?

25%

(1)

3.

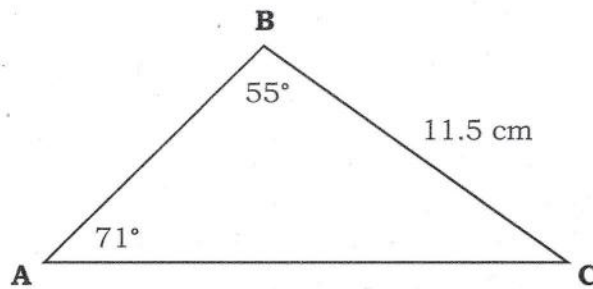
Find the solutions to the equation $4x^2 + 11x - 1 = 0$ to 2 decimal places.

$$\begin{aligned} a &= 4 \\ b &= 11 \\ c &= -1 \end{aligned}$$

$$x = \frac{-11 \pm \sqrt{11^2 - 4 \times 4 \times -1}}{2 \times 4} = \begin{matrix} 0.09 \\ \text{or} \\ -2.84 \end{matrix}$$

(3)

4.
Find the length of AC, to 3 significant figures.



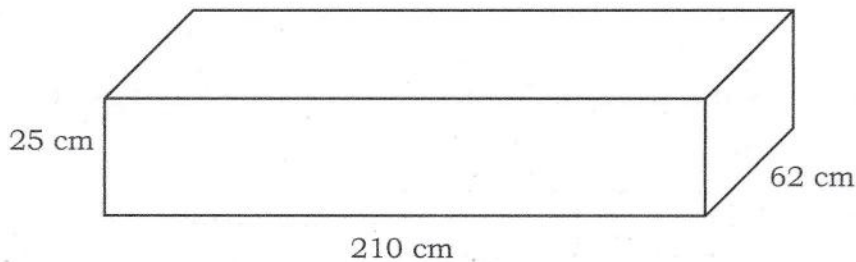
$$\frac{AC}{\sin 55} = \frac{11.5}{\sin 71}$$

$$AC = \frac{11.5 \times \sin 55}{\sin 71} = \underline{\underline{9.96 \text{ cm}}}$$

(3)

5.
The container below is filled with water to 65% of its full capacity.
Water leaks from the container at a rate of 30 millilitres per second.

1 litre = 1000 cm³



Jim says "It will take more than 2 hours for the container to be emptied".
Is Jim correct?

$$\begin{aligned} \text{Volume} &= 25 \times 210 \times 62 = 325,500 \text{ cm}^3 \\ &= 325,500 \text{ ml} \end{aligned}$$

$$65\% \text{ of } 325,500 = 211,575 \text{ ml}$$

$$211,575 \div 30 = 7,052.5 \text{ seconds}$$

$$= 117.5416 \text{ minutes}$$

$$= 1.959 \dots \text{ hours.}$$

Jim is incorrect.

(6)