

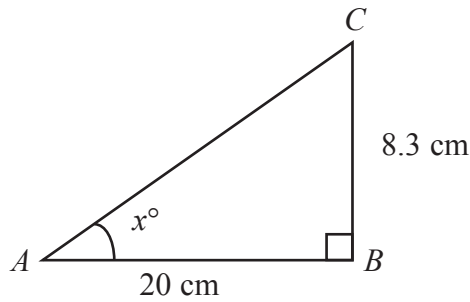
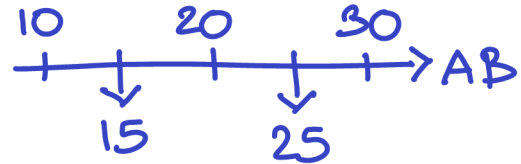


Diagram **NOT**  
accurately drawn

Triangle  $ABC$  is right-angled at  $B$ .

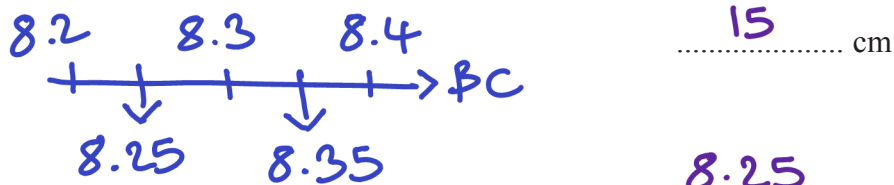
$AB = 20$  cm, correct to 1 significant figure.

$BC = 8.3$  cm, correct to 2 significant figures.



(a) Write down the lower bound for the length of

(i)  $AB$ ,



(ii)  $BC$ .

..... 15 ..... cm  
..... 8.25 ..... cm  
(2)

(b) Calculate the lower bound for the area of triangle  $ABC$ .  $= \frac{bh}{2}$

$$LB\ A = \frac{LB\ b \times LB\ h}{2}$$

$$= \frac{15 \times 8.25}{2} = 61.875 \dots \text{cm}^2$$

(c) Calculate the lower bound for the value of  $\tan x^\circ$ .

.....  
(3)

10.

[4 marks]

Some cases have to be lifted by a crane.

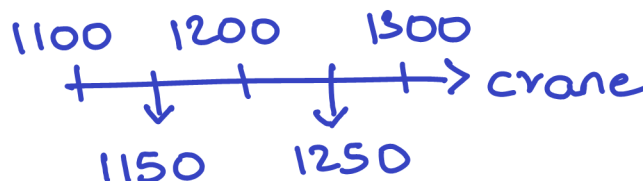
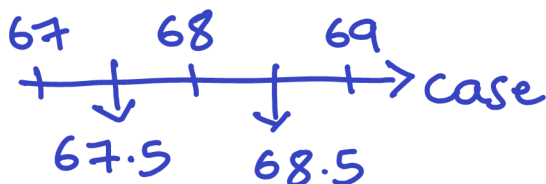
Each case has a mass of 68 kg, correct to 2 significant figures.

- (a) Write down the upper bound of the mass of a case.

..... kg  
(1)

A crane can lift safely a load of 1200 kg, correct to 2 significant figures.

- (b) Find the greatest number of cases that the crane can lift safely in one load.



$$\text{LB \# of cases} = \frac{1150}{68.5} = 16.78... = \boxed{16 \text{ cases}}$$

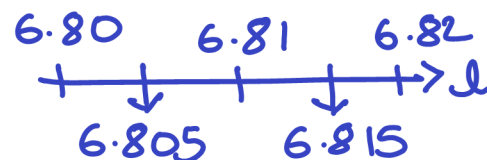
.....  
(3)

11.

[4 marks]

The length of a side of a square is 6.81 cm, correct to 3 significant figures.

- (a) Work out the lower bound for the perimeter of the square.



$$\text{LB } P = 27.22 \text{ cm}$$

..... cm  
(2)

- (b) Give the perimeter of the square to an appropriate degree of accuracy. (suitable)  
You must show working to explain how you obtained your answer.

$$\text{UD } P = 4 \times 6.815 = 27.26 \text{ cm}$$

..... cm  
(2)

LB  $P = 27.22$  cm } Round both values  
UP  $P = 27.26$  cm } from 1 s.f.

|        | LB $P$ | UP $P$ |
|--------|--------|--------|
| 1 s.f. | 30     | 30     |
| 2 s.f. | 27     | 27     |
| 3 s.f. | 27.2   | 27.3   |

$\therefore P = 27$  cm

because both LB and UP rounded to the same when rounded to 2 s.f.

18 - June - 2026

Jackson is trying to find the density, in  $\text{g/cm}^3$ , of a block of wood.  
The block of wood is in the shape of a cuboid.

He measures

the length as 13.2 cm, correct to the nearest mm

the width as 16.0 cm, correct to the nearest mm

the height as 21.7 cm, correct to the nearest mm

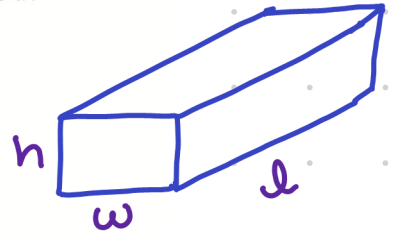
(0.1 cm)

He measures the mass as 1970 g, correct to the nearest 5 g.

By considering bounds, work out the density of the wood.

Give your answer to a suitable degree of accuracy.

You must show all your working and give a reason for your final answer.



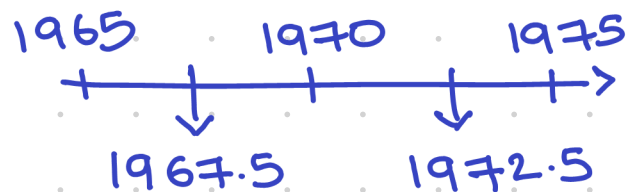
$$\text{Density} = \frac{\text{Mass (g)}}{\text{Volume (cm}^3\text{)}}$$

$$\text{LB } D = \frac{\text{LB } M}{\text{UB } V} = \frac{\text{LB } M}{\text{UB } l \times \text{UB } w \times \text{UB } h}$$

$$13.15 \leq l < 13.25$$

$$15.95 \leq w < 16.05$$

$$21.65 \leq h < 21.75$$



$$\text{LB } D = \frac{1967.5}{13.25 \times 16.05 \times 21.75}$$

$$\text{LB } D = 0.4253677546 \text{ g/cm}^3$$

$$\begin{aligned}
 \text{UB } D &= \frac{\text{UB } M}{\text{LB } V} = \frac{\text{UB } M}{\text{LB } l \times \text{LB } w \times \text{LB } h} \\
 &= \frac{1972.5}{13.15 \times 15.95 \times 21.65}
 \end{aligned}$$

$$\text{UB } D. = 0.4343828506 \text{ g/cm}^3$$

$$\text{LB } D = 0.4253677546$$

$$\text{UB } D. = 0.4343828506$$

$$D = 0.43 \text{ g/cm}^3 \text{ to 2 s.f.}$$

bec. both LB and UB ...