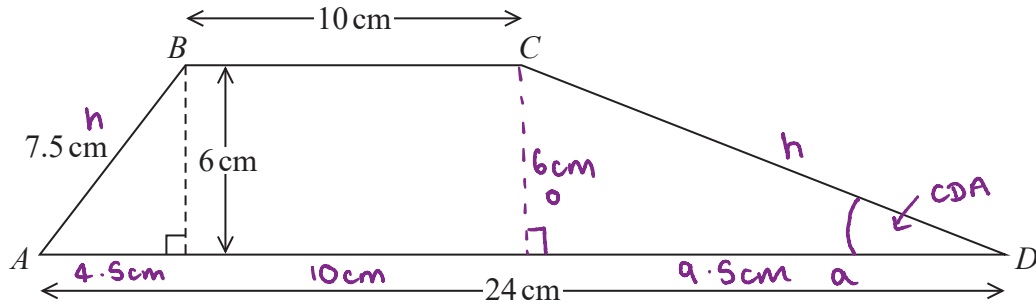


1. $ABCD$ is a trapezium.



Work out the size of angle CDA .

Give your answer correct to 1 decimal place.

$$a^2 + b^2 = c^2$$

$$a^2 = c^2 - b^2$$

$$a^2 = 7.5^2 - 6^2$$

$$a^2 = 20.25$$

$$a = 4.5$$

$$24 - 10 - 4.5 = 9.5 \text{ cm}$$

$$\tan x = \frac{o}{a}$$

$$\tan x = \frac{6}{9.5}$$

$$x = \tan^{-1}\left(\frac{6}{9.5}\right)$$

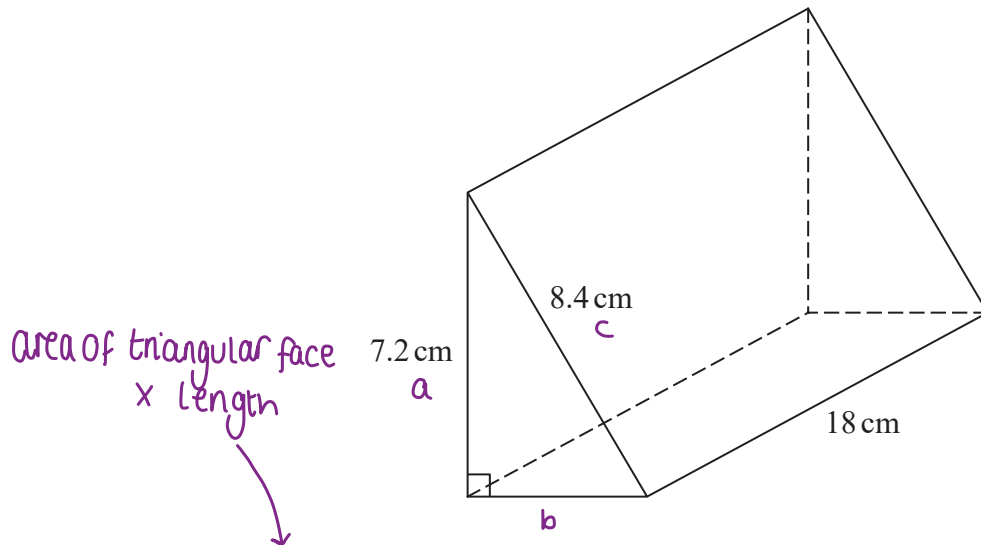
$$x = 32.2756\dots$$

$$x = 32.3^\circ$$

..... 32.3 $^\circ$

(Total for Question is 5 marks)

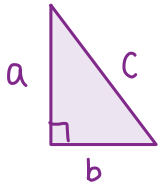
2. Here is a **triangular prism**.



Area of triangular face
× Length

Work out the **volume** of the prism.

Give your answer correct to **3 significant figures**.



Finding b (base of triangle):

$$a^2 + b^2 = c^2 \quad \leftarrow \text{Pythagorean theorem}$$

$$b^2 = c^2 - a^2$$

$$b^2 = 8.4^2 - 7.2^2 \quad \textcircled{1}$$

$$b^2 = 18.72$$

$$b = \sqrt{18.72} \quad \textcircled{1} \leftarrow \text{leave in exact form}$$

Area of triangle:

$$A = \frac{1}{2}bh$$

$$= \frac{1}{2} \times \sqrt{18.72} \times 7.2$$

$$= 15.57598... \quad \textcircled{1}$$

Volume of prism:

$$15.57598... \times 18 = 280.368... \quad \textcircled{1}$$



Use exact value

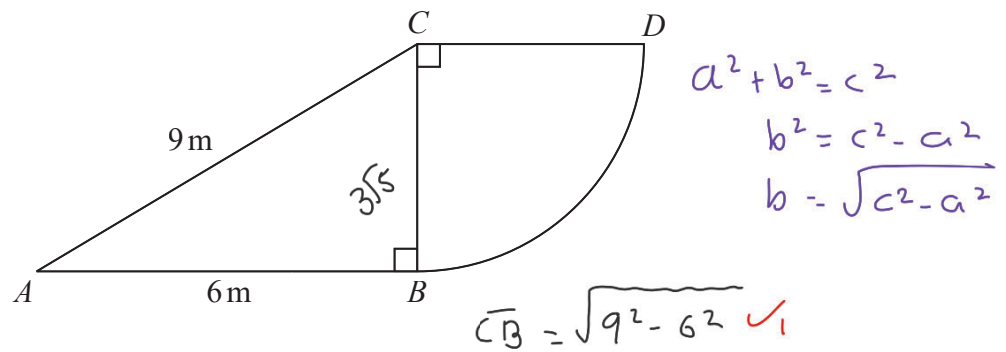
$3 < 5$ so round down

to 280 to 3 SF

..... 280 $\textcircled{1}$ cm^3

(Total for Question is 5 marks)

3. The diagram shows a right-angled triangle and a quarter circle.



The right-angled triangle ABC has angle $ABC = 90^\circ$

The quarter circle has centre C and radius CB .

Work out the area of the quarter circle.

Give your answer correct to 3 significant figures.

You must show all your working.

$$\begin{aligned} a^2 + b^2 &= c^2 \\ b^2 &= c^2 - a^2 \\ b &= \sqrt{c^2 - a^2} \\ CB &= \sqrt{9^2 - 6^2} \checkmark_1 \\ &= \sqrt{81 - 36} = \sqrt{45} \\ &= 3\sqrt{5} \checkmark_2 \end{aligned}$$

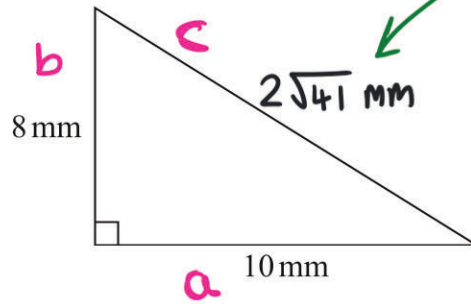
$$\text{area of circle} = \pi r^2$$

$$\begin{aligned} \text{quarter of circle} &= \frac{1}{4} \times \pi \times r^2 \\ &= \frac{1}{4} \times \pi \times (3\sqrt{5})^2 \checkmark_3 \\ &= 35.342\dots \\ &= 35.3 \checkmark_4 \end{aligned}$$

..... 35.3 m²

(Total for Question is 4 marks)

4. Here is a right-angled triangle.



using Pythagoras Theorem

$$a^2 + b^2 = c^2$$

$$10^2 + 8^2 = c^2$$

$$c^2 = 164 \quad \textcircled{1}$$

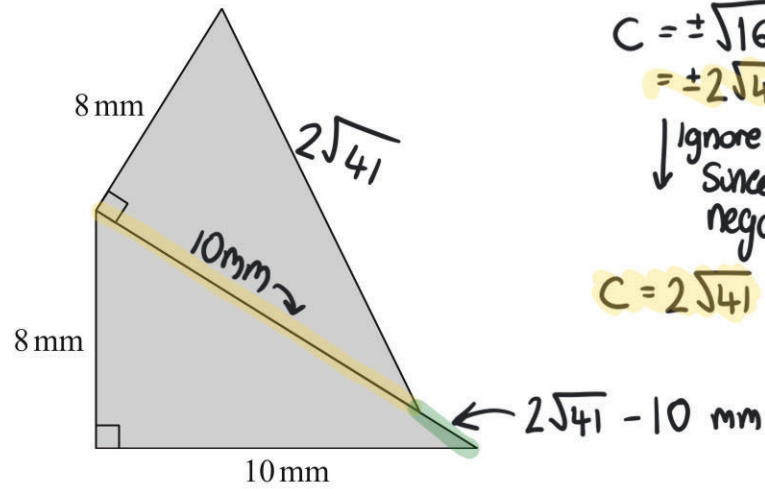
$$c = \pm \sqrt{164}$$

$$= \pm 2\sqrt{41}$$

Ignore negative
Since cannot have negative length

$$c = 2\sqrt{41} \quad \textcircled{1}$$

The shaded shape below is made from two of these triangles.



Work out the perimeter of the shaded shape.

Give your answer correct to 3 significant figures.

$$\text{Perimeter} = 10 + 8 + 8 + 2\sqrt{41} + (2\sqrt{41} - 10) = 41.61249... = 41.6 \text{ mm (3sf)}$$

..... 41.6 mm