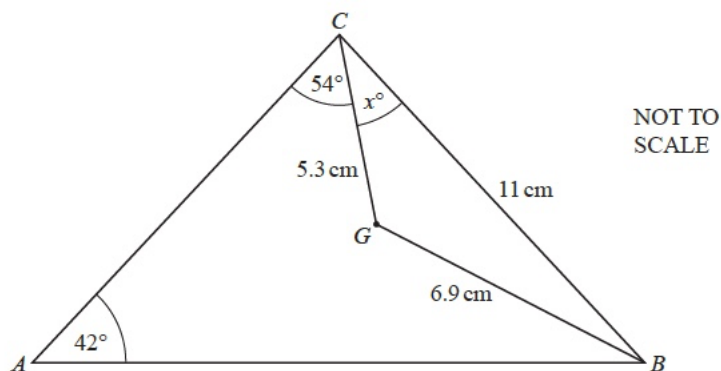


Problem 0580/43/M/J/20 Q6

(a)



The diagram shows triangle ABC with point G inside.
 $CB = 11$ cm, $CG = 5.3$ cm and $BG = 6.9$ cm.
 Angle $CAB = 42^\circ$ and angle $ACG = 54^\circ$.

(i) Calculate the value of x .

$$x = \cos^{-1} \left[\frac{5.3^2 + 11^2 - 6.9^2}{2 \times 5.3 \times 11} \right]$$

$$x = \dots\dots\dots 29.5 \dots\dots\dots [4]$$

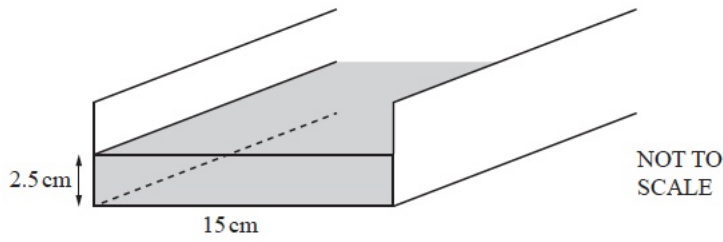
(ii) Calculate AC .

$$\frac{\sin 42}{11} = \frac{\sin 54.5}{AC}$$

$$AC = \frac{\sin 54.5 \times 11}{\sin 42}$$

$$AC = \dots\dots\dots 13.4 \dots\dots\dots \text{cm} [4]$$

(b)



Water flows at a speed of 20 cm/s along a rectangular channel into a lake.
The width of the channel is 15 cm.
The depth of the water is 2.5 cm.

Calculate the amount of water that flows from the channel into the lake in 1 hour.
Give your answer in litres.

$$\begin{aligned} \text{Volume of water} &= 15 \times 2.5 \times 20 \\ \text{per second} &= 750 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} \text{Volume of water} &= 750 \times 3600 \\ \text{in one hour} &= 2700000 \text{ cm}^3 \end{aligned}$$

$$\dots\dots\dots 2700 \dots\dots\dots \text{ litres [4]}$$