

8.

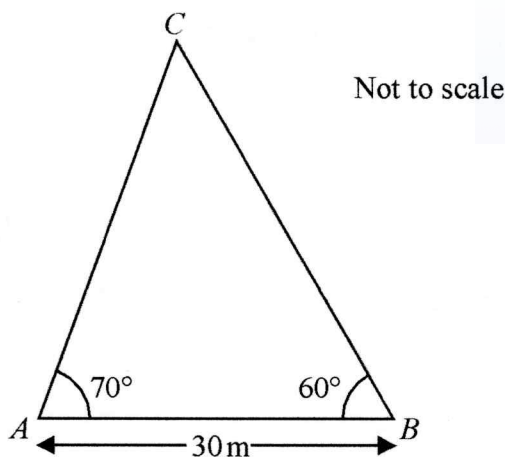


Figure 1

A triangular lawn is modelled by the triangle ABC , shown in Figure 1. The length AB is to be 30 m long.

Given that angle $BAC = 70^\circ$ and angle $ABC = 60^\circ$,

(a) calculate the area of the lawn to 3 significant figures.

(4)

(b) Why is your answer unlikely to be accurate to the nearest square metre?

(1)

$$\begin{aligned} \text{(a)} \quad \angle ACB &= 180^\circ - 70^\circ - 60^\circ \\ &= 50^\circ \end{aligned}$$

by Sine Rule, $\frac{AC}{\sin 60^\circ} = \frac{30}{\sin 50^\circ} \Rightarrow AC = 33.915\dots$

(2 marks)

$$\begin{aligned} \text{Area} &= \frac{1}{2} (AB)(AC) \sin 70^\circ \\ &= \frac{1}{2} (30)(33.915\dots)(0.939\dots) \\ &= 478.05\dots \\ &= 478 \text{ m}^2 \text{ 3sf} \end{aligned}$$

(2 marks)

(b) the input values are not given to 4 sig figs

OR

the lawn may not be flat

OR
<plausible>

(1 mark)