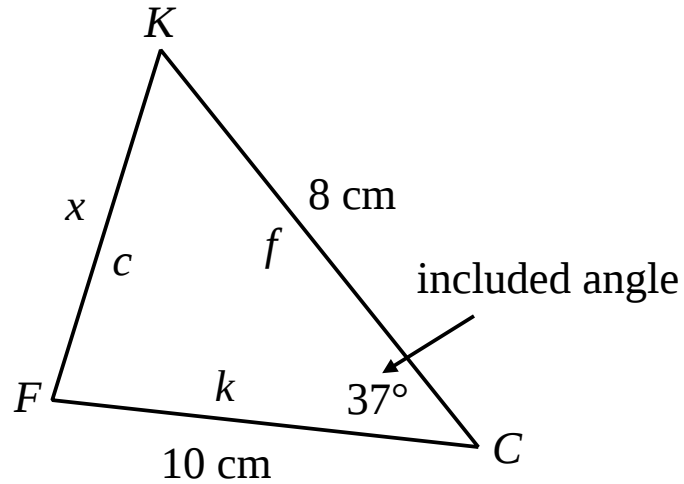


5.5.3 Solutions to 5.4 Homework

GCSE Mathematics Non-Right Angled Trigonometry

Answer 1

(i)



(ii) and (iii)

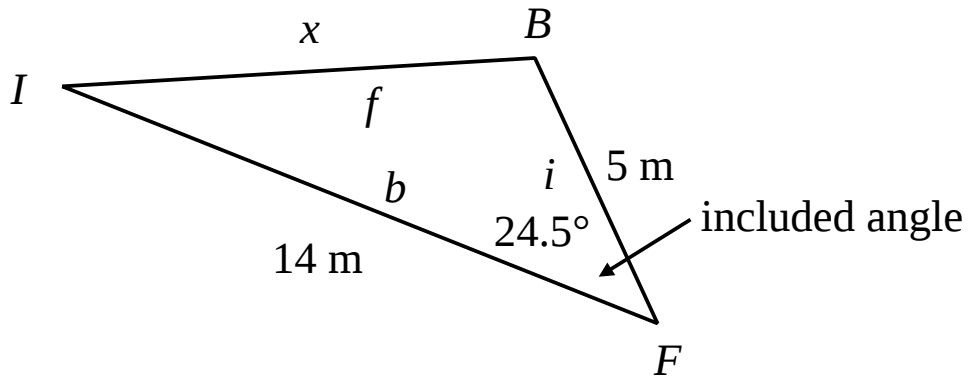
$$\begin{aligned}c^2 &= k^2 + f^2 - 2kf \cos C \\&= 10^2 + 8^2 - 2 \times 10 \times 8 \times \cos 37 \\&= 36.22 \\c &= 6.02 \text{ m (2 decimal places asked for)}\end{aligned}$$

(iv)

$$\begin{aligned}\text{Area } \Delta &= \frac{1}{2}fk \sin C \\&= \frac{1}{2} \times 10 \times 8 \times \sin 37 \\&= 24.07 \text{ m}^2 \text{ (2 decimal places asked for)}\end{aligned}$$

Answer 2

(i)



(ii) and (iii)

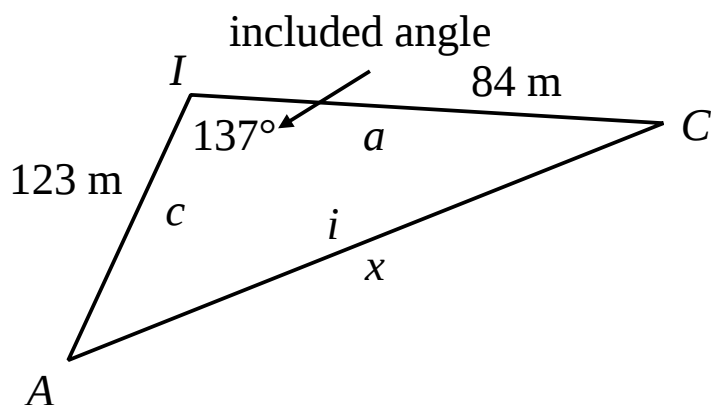
$$\begin{aligned}f^2 &= b^2 + i^2 - 2bi \cos F \\&= 14^2 + 5^2 - 2 \times 14 \times 5 \times \cos 24.5 \\&= 93.6 \\f &= 9.67 \text{ m}\end{aligned}$$

(iv)

$$\begin{aligned}\text{Area } \Delta &= \frac{1}{2} bi \sin F \\&= \frac{1}{2} \times 14 \times 5 \times \sin 24.5 \\&= 14.51 \text{ m}^2\end{aligned}$$

Answer 3

(i)



(ii) and (iii)

$$\begin{aligned}i^2 &= a^2 + c^2 - 2ac \cos I \\&= 84^2 + 123^2 - 2 \times 84 \times 123 \times \cos 137 \\&= 37297 \\i &= 9193 \text{ m (3 significant figures asked for)}\end{aligned}$$

(iv)

$$\begin{aligned}\text{Area } \Delta &= \frac{1}{2} ac \sin I \\&= \frac{1}{2} \times 84 \times 123 \times \sin 137 \\&= 3520 \text{ m}^2\end{aligned}$$