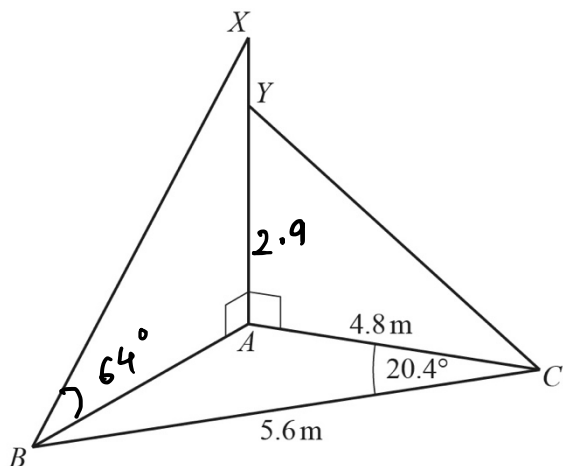


Problem 0580/43/M/J/23 Q5

(a)



NOT TO SCALE

ABC is a scalene triangle on horizontal ground.
 AYX is a straight vertical post, held in place by two straight wires XB and YC .
 $AC = 4.8\text{ m}$, $BC = 5.6\text{ m}$ and angle $ACB = 20.4^\circ$.

(i) Calculate AB . *By cosine R rule*

$$AB = \sqrt{4.8^2 + 5.6^2 - 2 \times 4.8 \times 5.6 \times \cos 20.4}$$

$AB = \underline{2.00} \dots \dots \dots \text{ m [3]}$

(ii) Angle $XBA = 64^\circ$.

Calculate AX .

$$\tan 64^\circ = \frac{AX}{AB}$$

$$AX = 2 \times \tan 64^\circ$$

$AX = \underline{4.10} \dots \dots \dots \text{ m [2]}$

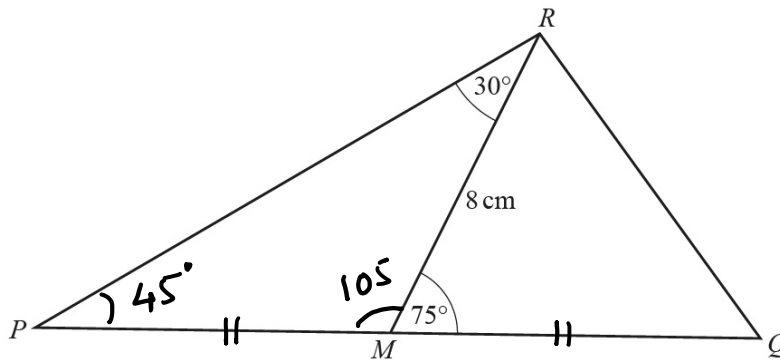
(iii) $AY = 2.9\text{ m}$.

Calculate the area of triangle YAC .

$$\frac{1}{2} \times 4.8 \times 2.9$$

$\underline{6.96} \dots \dots \dots \text{ m}^2 \text{ [2]}$

(b)



NOT TO
SCALE

In triangle PQR , M is the midpoint of PQ .
 $RM = 8$ cm, angle $PRM = 30^\circ$ and angle $RMQ = 75^\circ$.

Calculate PQ .

$$\angle PMR = 180 - 75 = 105$$

$$\angle RPM = 180 - 105 - 30 = 45^\circ$$

By sine rule

$$\frac{PM}{\sin 30} = \frac{8}{\sin 45}$$

$$PM = \frac{8 \times \sin 30}{\sin 45} = 5.66$$

$$PQ = 2 \times PM$$

$$= 2 \times 5.66$$

$$PQ = \dots\dots\dots 11.32 \dots\dots\dots \text{ cm [5]}$$

