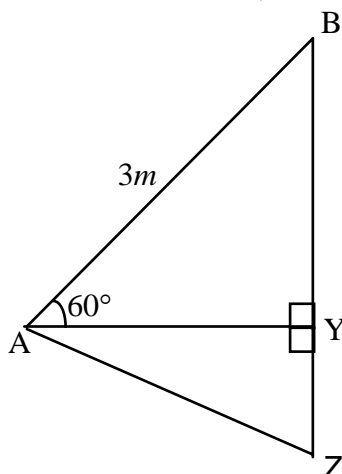


Complete Solutions to Exercise 4a

12. Let Y be the point where BZ cuts the line AC , then diameter $BZ=BY+YZ$.



How can we find length BY ?

BY is opposite to angle $A=60^\circ$, so using (4.4) with $hyp = 3$ we have

$$BY = 3 \times \sin(60^\circ) = 3 \times \left(\frac{\sqrt{3}}{2}\right) = \frac{3\sqrt{3}}{2} m$$

Applying (4.5), $AY = 3 \cos(60^\circ) = \frac{3}{2} m$. We are given angle $BAZ = 90^\circ$. Hence angle

$ZAY = 90^\circ - 60^\circ = 30^\circ$. How can we find YZ ?

YZ is opposite angle 30° and $AY = \frac{3}{2}$ is the adjacent so using $opp = adj \times \tan(\theta)$ we have

$$YZ \underset{\text{by (4.6)}}{=} \frac{3}{2} \times \tan(30^\circ) \underset{\text{by table 1}}{=} \frac{3}{2} \times \frac{1}{\sqrt{3}} = \frac{3}{2\sqrt{3}} = \frac{\sqrt{3}}{2} m$$

$$\text{Diameter } BZ = BY + YZ = \frac{3\sqrt{3}}{2} + \frac{\sqrt{3}}{2} = 2\sqrt{3} m$$