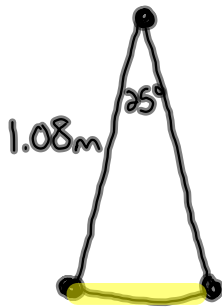


④



$$r = 1.08\text{m}$$

$$\text{angle} = 25^\circ$$

$$\text{arc length} = ?$$

$$\textcircled{1} C = 2\pi r$$

$$C = 2\pi(1.08)$$

$$C = 6.79\text{cm}$$

$$\textcircled{2} \frac{\text{arc length}}{\text{circumference}} = \frac{\text{angle}}{360}$$

$$\frac{x}{6.79} = \frac{25}{360}$$

$$\frac{360x}{360} = \frac{169.75}{360}$$

$$x = 0.47\text{ m}$$

⑧



Given:
arc length = 15
radius = 100cm
angle = ?

$$\begin{aligned} \textcircled{1} C &= 2\pi r \\ C &= 2\pi(100) \\ C &= 628.32 \text{ cm} \end{aligned}$$

$$\textcircled{2} \frac{\text{arc length}}{\text{Circumference}} = \frac{\text{angle}}{360}$$

$$\frac{15}{628.32} = \frac{x}{360}$$

$$\frac{628.32x}{628.32} = \frac{5400}{628.32}$$

$$x = 8.6^\circ$$

SOLUTIONS => EXERCISE 6.18

1 a) radius = 50.4 m
angle = 90°

$$\begin{aligned} \textcircled{1} C &= 2\pi r \\ &= 2\pi(50.4) \\ &= 316.67 \text{ m} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \frac{\text{L of A}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{\text{L of A}}{316.67} &= \frac{90^\circ}{360^\circ} \\ \frac{\text{L of A}(360^\circ)}{360^\circ} &= \frac{(316.67)(90^\circ)}{360^\circ} \\ \text{L of A} &= \underline{79.2 \text{ m}} \end{aligned}$$

b) radius = 256 km
angle = 24°

$$\begin{aligned} \textcircled{1} C &= 2\pi r \\ &= 2\pi(256) \\ &= 1608.5 \text{ km} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \frac{\text{L of A}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{\text{L of A}}{1608.5} &= \frac{24^\circ}{360^\circ} \\ \frac{\text{L of A}(360^\circ)}{360^\circ} &= \frac{(1608.5)(24^\circ)}{360^\circ} \\ \text{L of A} &= \underline{107.2 \text{ km}} \end{aligned}$$

$$\begin{aligned} 2a) \textcircled{1} C &= 2\pi r \\ &= 2\pi(8.0) \\ &= 50.26 \text{ m} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \frac{\text{h of A}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{\text{h of A}}{50.26} &= \frac{80^\circ}{360^\circ} \\ \frac{\text{h of A}(360^\circ)}{360^\circ} &= \frac{(50.26)(80^\circ)}{360^\circ} \\ \text{h of A} &= \underline{11.2 \text{ m}} \end{aligned}$$

$$\begin{aligned} b) \textcircled{1} C &= 2\pi r \\ &= 2\pi(18) \\ &= 113.06 \text{ cm} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \frac{\text{h of A}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{\text{h of A}}{113.06} &= \frac{45^\circ}{360^\circ} \\ \frac{\text{h of A}(360^\circ)}{360^\circ} &= \frac{(113.06)(45^\circ)}{360^\circ} \\ \text{h of A} &= \underline{14.1 \text{ cm}} \end{aligned}$$

$$\begin{aligned} c) \textcircled{1} C &= 2\pi r \\ &= 2\pi(34.1) \\ &= 214.26 \text{ m} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \frac{\text{h of A}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{\text{h of A}}{214.26} &= \frac{120^\circ}{360^\circ} \\ \frac{\text{h of A}(360^\circ)}{360^\circ} &= \frac{(214.26)(120^\circ)}{360^\circ} \\ \text{h of A} &= \underline{71.4 \text{ m}} \end{aligned}$$

$$3. \quad \textcircled{1} \begin{aligned} C &= 2\pi r \\ &= 2\pi(65) \\ &= 408.41 \text{ cm} \end{aligned}$$

$$\textcircled{2} \begin{aligned} \frac{\text{h of A}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{\text{h of A}}{408.41} &= \frac{36^\circ}{360^\circ} \\ \frac{\text{h of A}(360^\circ)}{360^\circ} &= \frac{(408.41)(36^\circ)}{360^\circ} \\ \text{h of A} &= \underline{40.8 \text{ cm}} \end{aligned}$$

$$4. \quad \textcircled{1} \begin{aligned} C &= 2\pi r \\ &= 2\pi(1.08) \\ &= 6.79 \text{ m} \end{aligned}$$

$$\textcircled{2} \begin{aligned} \frac{\text{h of A}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{\text{h of A}}{6.79} &= \frac{25^\circ}{360^\circ} \\ \frac{\text{h of A}(360^\circ)}{360^\circ} &= \frac{(6.79)(25^\circ)}{360^\circ} \\ \text{h of A} &= \underline{0.47 \text{ m}} \end{aligned}$$

$$5. \textcircled{1} C = 2\pi r$$

$$= 2\pi(0.523)$$

$$= 3.29 \text{ Km}$$

$$\textcircled{2} \frac{\text{h of A}}{C} = \frac{\text{Angle}}{360^\circ}$$

$$\frac{\text{h of A}}{3.29} = \frac{120^\circ}{360^\circ}$$

$$\frac{\text{h of A}(360^\circ)}{360^\circ} = \frac{(3.29)(120^\circ)}{360^\circ}$$

$$\text{h of A} = \underline{1.1 \text{ Km}}$$

$$6. \textcircled{1} C = 2\pi r$$

$$= 2\pi(25.4)$$

$$= 159.53 \text{ cm}$$

$$\textcircled{2} \frac{\text{h of A}}{C} = \frac{\text{Angle}}{360^\circ}$$

$$\frac{\text{h of A}}{159.53} = \frac{100^\circ}{360^\circ}$$

$$\frac{\text{h of A}(360^\circ)}{360^\circ} = \frac{(159.53)(100^\circ)}{360^\circ}$$

$$\text{h of A} = 44.3 \text{ cm}$$

$$* \text{Perimeter} = 44.3 \text{ cm} + 25.4 \text{ cm} + 25.4 \text{ cm}$$

$$= \underline{95.12 \text{ cm}}$$

7. Arc length = 32m
Radius = 25m

$$\begin{aligned} \textcircled{1} C &= 2\pi r \\ &= 2\pi(25) \\ &= 157.08 \text{ m} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \frac{L \text{ of } A}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{32}{157.08} &= \frac{\text{Angle}}{360^\circ} \\ \frac{(32)(360^\circ)}{157.08} &= \frac{(\cancel{157.08})(\text{Angle})}{\cancel{157.08}} \\ \underline{73.3^\circ} &= \text{Angle} \end{aligned}$$

8. Arc length = 15.0cm
Radius = 1.0m \Rightarrow 100cm
(WATCH UNITS!)

$$\begin{aligned} \textcircled{1} C &= 2\pi r \\ &= 2\pi(100) \\ &= 628.38 \text{ cm} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \frac{L \text{ of } A}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{15.0}{628.38} &= \frac{\text{Angle}}{360^\circ} \\ \frac{(15.0)(360^\circ)}{628.38} &= \frac{(\cancel{628.38})(\text{Angle})}{\cancel{628.38}} \\ \underline{8.6^\circ} &= \text{Angle} \end{aligned}$$

9. Arc length = 17.5 cm
Radius = 1.5 m \Rightarrow 150 cm

$$\begin{aligned} \textcircled{1} \quad C &= 2\pi r \\ &= 2\pi(150) \\ &= 942.48 \text{ cm} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad \frac{\text{LoFA}}{C} &= \frac{\text{Angle}}{360^\circ} \\ \frac{17.5}{942.48} &= \frac{\text{Angle}}{360^\circ} \\ \frac{(17.5)(360^\circ)}{942.48} &= \frac{(942.48)(\text{Angle})}{942.48} \\ \underline{6.7^\circ} &= \text{Angle} \end{aligned}$$