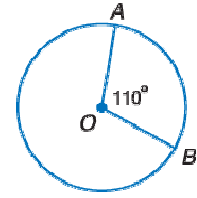


Lesson 10-4

Example 1

LANDSCAPE ARCHITECTURE A portion of the circumference of a circular patio will be tiled with handmade tiles donated by a local school. The portion to be tiled is represented on the plans by arc AB . Find $m\widehat{AB}$.



Solution

$\angle AOB$ is a central angle that intercepts \widehat{AB} . This angle measures 110° .

Therefore, $m\widehat{AB} = 110^\circ$.

Example 2

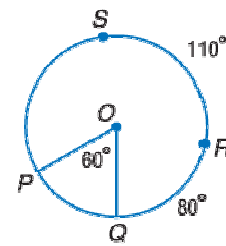
Find the measure of a. \widehat{PQR} b. \widehat{SP}

Solution

$$\begin{aligned} \text{a. } m\widehat{PQR} &= m\widehat{PQ} + m\widehat{QR} \\ &= 60 + 80 = 140 \quad m\widehat{PQ} = 60 \text{ because } m\angle POQ = 60. \end{aligned}$$

$$\begin{aligned} \text{b. } m\widehat{SP} &= 360 - (m\widehat{SR} + m\widehat{RQ} + m\widehat{QP}) \\ &= 360 - (110 + 80 + 60) = 110 \end{aligned}$$

Therefore, $m\widehat{PQR} = 140$ and $m\widehat{SP} = 110$.



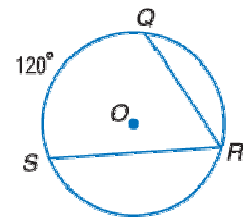
Example 3

Find the measure of $\angle QRS$.

Solution

$\angle QRS$ intercepts \widehat{QS} . $m\widehat{QS} = 120$.

$$m\angle QRS = \frac{1}{2}(120) = 60$$



Example 4

Secants \overline{AB} and \overline{CD} intersect at point E inside a circle.
Find the measure of $\angle AEC$.

Solution

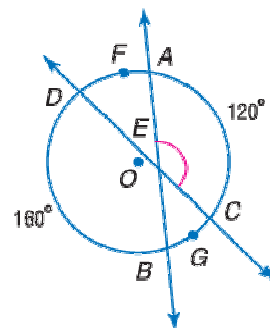
For $\angle AEC$, the two arcs intercepted by the secants are $\overset{\frown}{AC}$ and $\overset{\frown}{BD}$.

$$m\angle AEC = \frac{1}{2}(m\overset{\frown}{AC} + m\overset{\frown}{BD})$$

$$m\angle AEC = \frac{1}{2}(120 + 160)$$

$$m\angle AEC = \frac{1}{2}(280) = 140$$

So, $\angle AEC$ measures 140° .

**Example 5**

Find $m\angle EZW$.

Solution

$\angle EZW$ is formed by secant \overline{EZ} and tangent \overline{WZ} .

$$m\angle EZW = \frac{1}{2}(m\overset{\frown}{EW} - m\overset{\frown}{YW})$$

$$m\angle EZW = \frac{1}{2}(170 - 60)$$

$$m\angle EZW = \frac{1}{2}(110)$$

$$m\angle EZW = 55$$

So, $m\angle EZW$ is 55° .

