

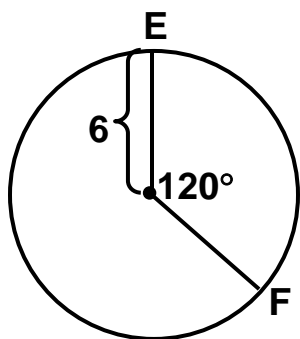
## TOPIC 13-5: ARC LENGTH & AREA OF SECTORS

**ARC LENGTH** is the measure of the length of an arc of the circle. Remember that an arc is a “piece” of the circumference.

Since you are finding a part of the circumference, you can set up a proportion to find the arc length:

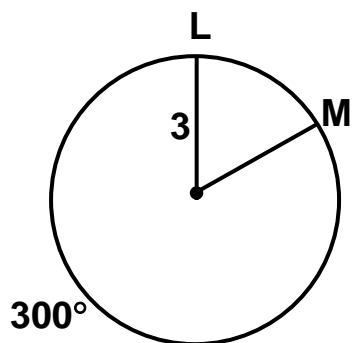
$$\frac{\text{arc length}}{\text{circumference}} = \frac{x^\circ}{360^\circ}$$

**EXAMPLE 1:** Find the EXACT length of  $\widehat{EF}$  below.



$$\widehat{EF} = \underline{\hspace{2cm}}$$

**EXAMPLE 2:** Find the length of  $\widehat{LM}$  below, rounded to the nearest thousandth.



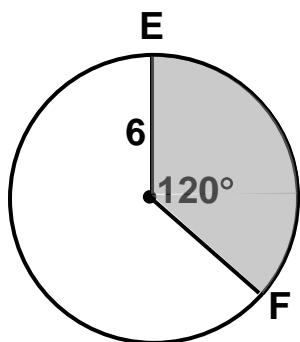
$$\widehat{LM} = \underline{\hspace{2cm}}$$

A **SECTOR** is a “slice” of the circle bounded by \_\_\_\_\_  
 \_\_\_\_\_ and an \_\_\_\_\_. When finding the area of a  
 sector, you are finding part of the area of the circle.

Since you are finding a part of the area, you can set up a proportion to  
 find the sector area:

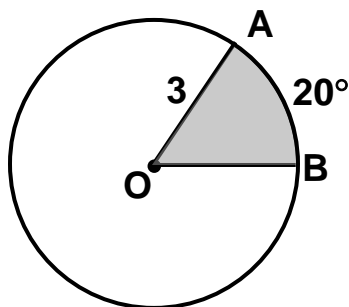
$$\frac{\text{sector area}}{\text{circle area}} = \frac{x^\circ}{360^\circ}$$

**EXAMPLE 3:** Find the EXACT area of the sector:



Sector Area = \_\_\_\_\_

**EXAMPLE 4:** Find the area of the sector to the nearest hundredth.



Sector Area = \_\_\_\_\_

**EXAMPLE 5:** The area of sector AOB is  $22\pi \text{ m}^2$  and the radius is 12 m.  
 Find the measure of  $\angle AOB$ .

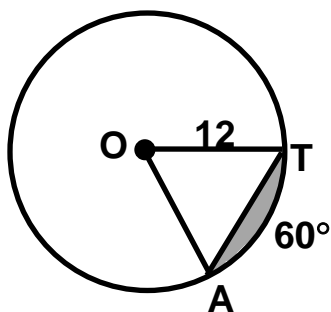
$m\angle AOB =$  \_\_\_\_\_

**EXAMPLE 6:** The length of arc AB is  $2\pi$  ft and the measure of  $\angle AOB$  is  $45^\circ$ . Find the length of the radius.

Radius = \_\_\_\_\_

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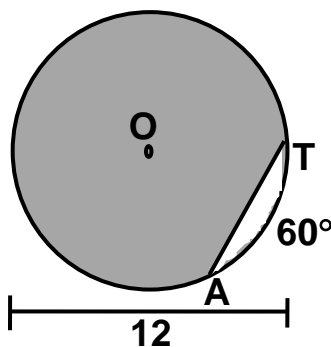
**EXAMPLE 7:** Find the EXACT area of the shaded region.



Area = \_\_\_\_\_

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**EXAMPLE 8:** Find the EXACT area of the shaded region.



Area = \_\_\_\_\_