

**No Bellwork  
04/18/12**

## Geometry Review 11.4

### Vocabulary:

**Arc Length:** A portion of the circumference of a circle.

*Note: the measure of the arc (in degrees) can be used to find the length (in units).*

**Circumference:** The distance around a circle.

*Note: We no longer use 3.14 as Pi. You will use the  $\pi$  button on your calculator.*

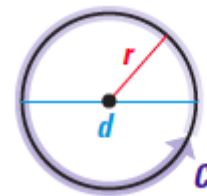
### THEOREM

*For Your Notebook*

#### THEOREM 11.8 Circumference of a Circle

The circumference  $C$  of a circle is  $C = \pi d$  or  $C = 2\pi r$ , where  $d$  is the diameter of the circle and  $r$  is the radius of the circle.

*Justification:* Ex. 2, p. 769



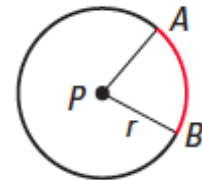
$$C = \pi d = 2\pi r$$

### COROLLARY

*For Your Notebook*

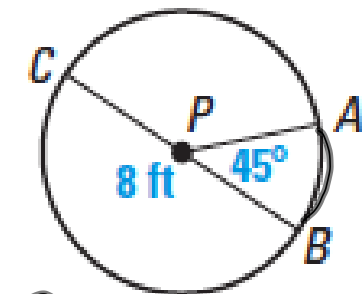
#### ARC LENGTH COROLLARY

In a circle, the ratio of the length of a given arc to the circumference is equal to the ratio of the measure of the arc to  $360^\circ$ .



$$\frac{\text{Arc length of } \widehat{AB}}{2\pi r} = \frac{m\widehat{AB}}{360^\circ}, \text{ or Arc length of } \widehat{AB} = \frac{m\widehat{AB}}{360^\circ} \cdot 2\pi r$$

## Find and Use Arc Length

Find length  $\widehat{AB}$ .Find  $r$ .

$$C = d\pi$$

$$C = 8\pi$$

$$\widehat{AB} = \frac{45}{360} \cdot \frac{8\pi}{1}$$

$$\widehat{AB} = \frac{360\pi}{360}$$

$$\widehat{AB} = \pi$$



$$38.95 = \frac{260}{360} \cdot 2\pi r$$

$$38.95 = \frac{520\pi}{360} \cdot r \cdot \frac{360}{520\pi}$$

$$r = 38.95 \cdot \frac{360}{520\pi}$$

$$r = \frac{14,022}{520\pi}$$

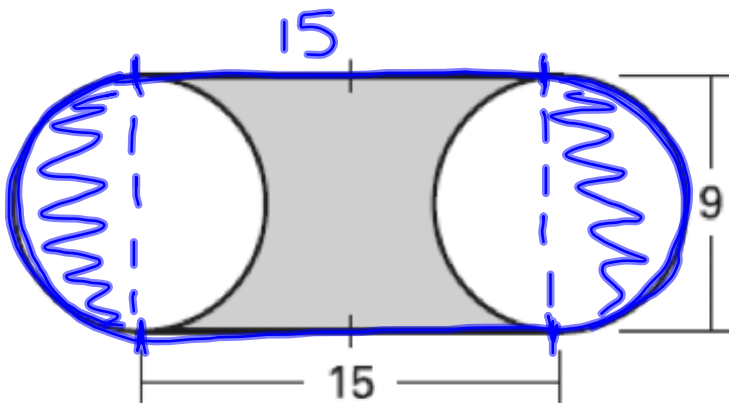
$$r = \frac{7011}{260\pi}$$

$$r = 8.583 \dots$$

$$r = 8.6$$

## Find Perimeter

Find the perimeter of the region.



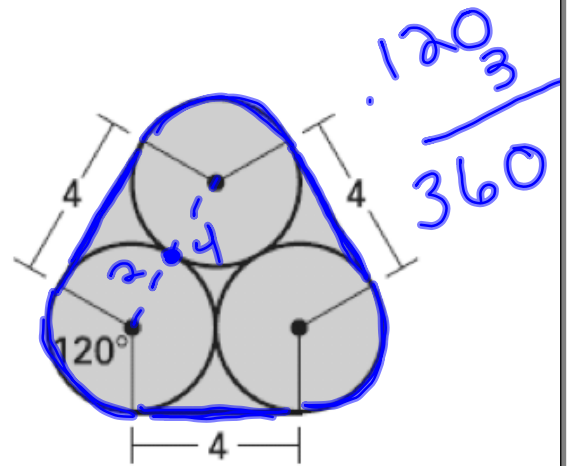
$$15 + 15 + 9\pi$$

$$C = 2r\pi \text{ or } d\pi$$

$$C = 9\pi$$

$$30 + 9\pi$$

$$\approx 58.3 \text{ in.}$$



$$4 + 4 + 4 + 4\pi$$

$$C = 2r\pi$$

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

$$C = 4\pi$$

$$12 + 4\pi$$

$$\approx 24.6 \text{ in.}$$

The diameter of a bicycle tire is 30 in. To the nearest ft., how far does the tire travel when it makes 100 revolutions?

## Homework Assignment

### Worksheet 11.4B