

Bellwork
04/19/12

1. Find the length of a 60° arc in a circle with radius 8 m.

$$\begin{aligned} \text{Arc Length} &= \frac{60}{360} \cdot \frac{16\pi}{1} \\ &= \frac{96\cancel{\pi}}{36\cancel{\pi}} \\ &= \frac{8\pi}{3} \approx 8.38 \text{ m} \end{aligned}$$

$$\begin{aligned} C &= 2r\pi \\ &= 2(8)\pi \\ &= 16\pi \end{aligned}$$

Geometry
11.5 Areas of Circles and Sectors
Standard(s): 4

Vocabulary:

Sector of a Circle: The region bounded by two radii of the circle and their intercepted arc.

THEOREM

For Your Notebook

THEOREM 11.9 Area of a Circle

The area of a circle is π times the square of the radius.

Justification: Ex. 43, p. 761; Ex. 3, p. 769



$$A = \pi r^2$$

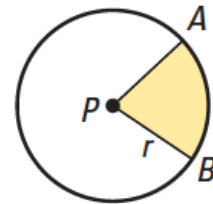
THEOREM

For Your Notebook

THEOREM 11.10 Area of a Sector

The ratio of the area of a sector of a circle to the area of the whole circle (πr^2) is equal to the ratio of the measure of the intercepted arc to 360° .

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



Area of Circles

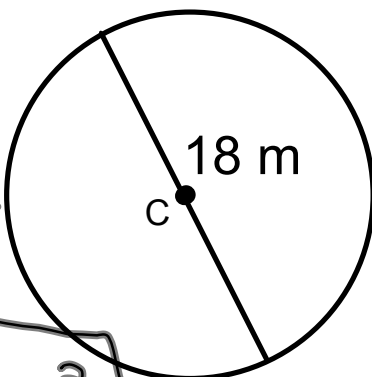
Find the exact area of the circle. Then find the area to the nearest hundredth.

$$A = r^2 \pi$$

$$A = 9^2 \pi$$

$$A = 81\pi \text{ m}^2$$

$$A = 254.47 \text{ m}^2$$



$$d = 18$$
$$r = 9$$

Find Area of Sectors

Find the area of the sector created by $\angle ACB$.

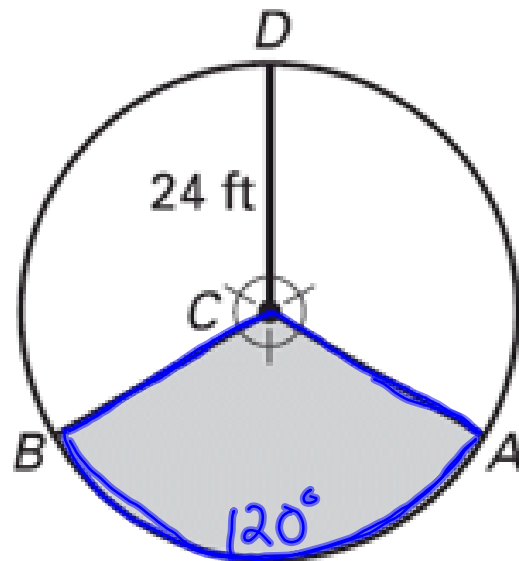
$$\frac{360}{3} = 120^\circ$$

$$A.S. = \frac{120}{360} \cdot \frac{576\pi}{1}$$

$$A.S. = \frac{69120\pi}{360}$$

$$A.S. = 192\pi \text{ ft}^2$$

$$A.S. = 603.19 \text{ ft}^2$$



$$A = r^2 \pi$$

$$A = 24^2 \pi$$

$$A = 576\pi$$

Find Measures

Find the indicated measure.

1. The area of a circle is 106 cm^2 . Find the diameter.

$$A = \pi r^2$$

$$\frac{106}{\pi} = \frac{\pi r^2}{\pi}$$

$$\sqrt{r^2} = \sqrt{\frac{106}{\pi}}$$

$$r = \sqrt{\frac{106}{\pi}}$$

$$d = 2\sqrt{\frac{106}{\pi}}$$

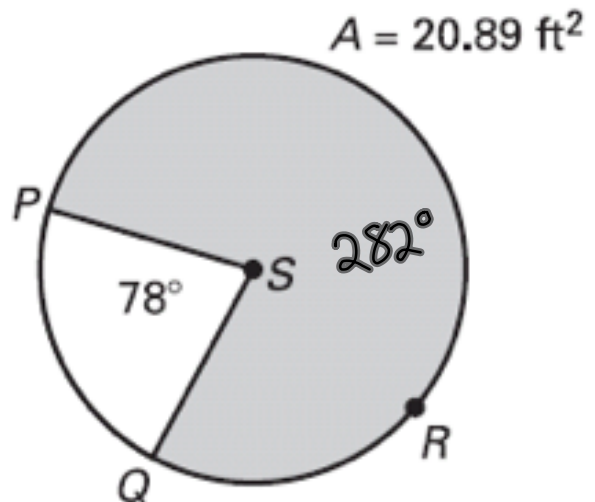
2. Find the area of a circle S.

$$360 - 78 = 282^\circ$$

$$20.89 = \frac{282}{360} \cdot A$$

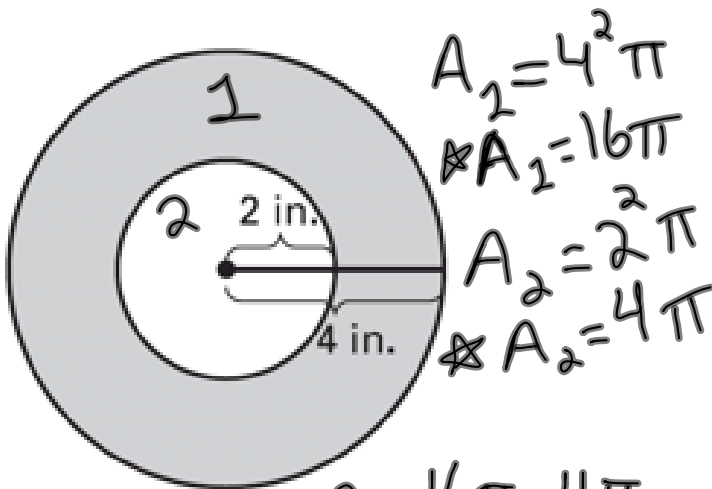
$$\frac{360}{282} \cdot \frac{20.89}{1} = A$$

$$A = 26.67 \text{ ft}^2$$



Area of Shaded Regions

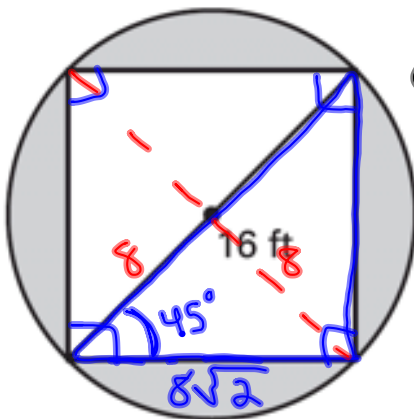
Find the area of the shaded region.



$$A = 16\pi - 4\pi$$

$$A = 12\pi \text{ in}^2$$

$$A = 37.70 \text{ in}^2$$



$$d = 16$$

$$r = 8$$

$$A_1 = 8^2 \pi$$

$$A_1 = 64\pi$$

$$A_2 = (8\sqrt{2})^2$$

$$A = 128 \text{ ft}^2$$

$$\frac{16}{\sqrt{2}} = 8\sqrt{2}$$

$$A = 64\pi - 128 \text{ ft}^2$$

$$A = 73.06 \text{ ft}^2$$

Homework Assignment

Pg. 758-759
#11-31

