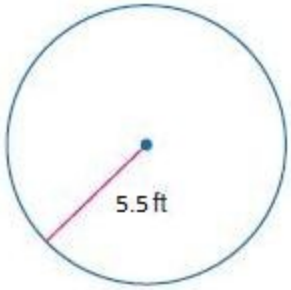
11-3 Areas of Circles and Sectors

APPLY MATH Find the area of each circle. Round to the nearest tenth.

8. Refer to the figure on page 801.



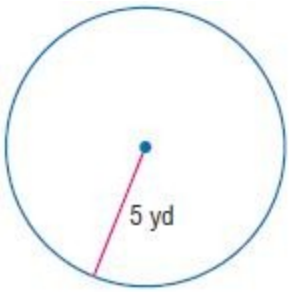
SOLUTION:

$$A = \pi r^2$$
$$= \pi(5.5)^2$$
$$\approx 95.0 \text{ ft}^2$$

ANSWER:

95.0 ft^2

9. Refer to the figure on page 801.



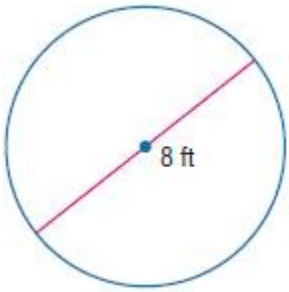
SOLUTION:

$$A = \pi r^2$$
$$= \pi(5)^2$$
$$\approx 78.5$$

ANSWER:

78.5 yd^2

10. Refer to the figure on page 801.



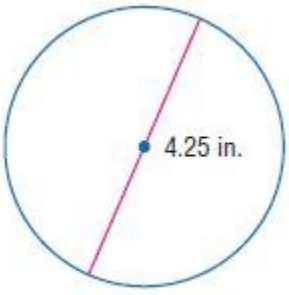
SOLUTION:

$$A = \pi r^2$$
$$= \pi(4)^2$$
$$\approx 50.3$$

ANSWER:

50.3 ft^2

11. Refer to the figure on page 801.



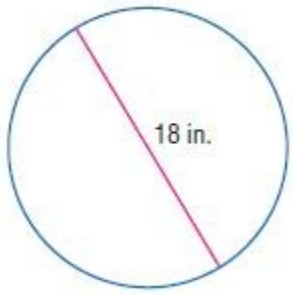
SOLUTION:

$$A = \pi r^2$$
$$= \pi\left(\frac{4.25}{2}\right)^2$$
$$\approx 14.2$$

ANSWER:

14.2 in^2

12. Refer to the figure on page 801.



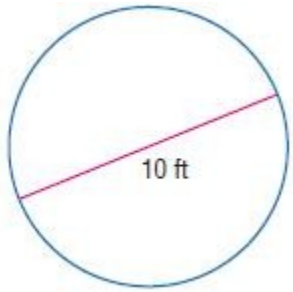
SOLUTION:

$$A = \pi r^2$$
$$= \pi(9)^2$$
$$\approx 254.5$$

ANSWER:

254.5 in^2

13. Refer to the figure on page 801.



SOLUTION:

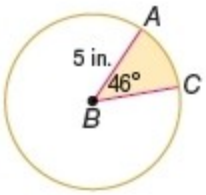
$$\text{area} = \pi r^2$$
$$= \pi(5)^2$$
$$= 25\pi$$
$$\approx 78.5$$

ANSWER:

78.5 ft^2

Find the area of each shaded sector. Round to the nearest tenth, if necessary.

18.



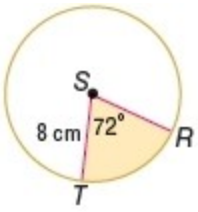
SOLUTION:

$$A = \frac{x}{360} \cdot \pi r^2$$
$$= \frac{46}{360}\pi(5)^2$$
$$= \frac{46}{360}\pi(25)$$
$$\approx 10.0$$

ANSWER:

10 in^2

19.



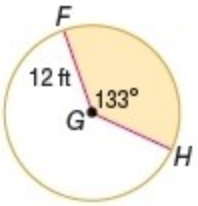
SOLUTION:

$$A = \frac{x}{360} \cdot \pi r^2$$
$$= \frac{72}{360}\pi(8)^2$$
$$= \frac{1}{5}\pi(64)$$
$$\approx 40.2$$

ANSWER:

40.2 cm^2

11-3 Areas of Circles and Sectors

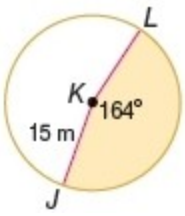
20. 

SOLUTION:

$$A = \frac{x}{360} \cdot \pi r^2$$
$$= \frac{133}{360}\pi(12)^2$$
$$= \frac{133}{360}\pi(144)$$
$$\approx 167.1$$

ANSWER:

167.1 ft^2

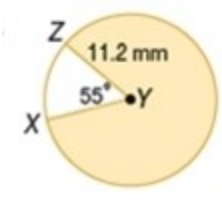
21. 

SOLUTION:

$$A = \frac{x}{360} \cdot \pi r^2$$
$$= \frac{164}{360}\pi(15)^2$$
$$= \frac{164}{360}\pi(225)$$
$$\approx 322.0$$

ANSWER:

322 m^2

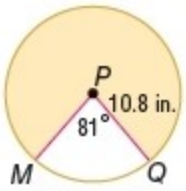
22. 

SOLUTION:

$$A = \frac{x}{360} \cdot \pi r^2$$
$$= \frac{360-55}{360}\pi(11.2)^2$$
$$= \frac{305}{360}\pi(125.44)$$
$$\approx 333.9$$

ANSWER:

333.9 mm^2

23. 

SOLUTION:

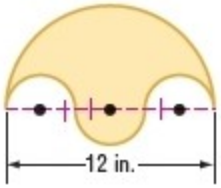
$$\text{sector area} = \frac{x}{360} \cdot \pi r^2$$
$$= \frac{360-81}{360} \cdot \pi(10.8)^2$$
$$= \frac{279}{360} \cdot \pi \cdot 116.64$$
$$\approx 284.0$$

ANSWER:

284 in^2

11-3 Areas of Circles and Sectors

Find the area of each shaded region.

41. 

SOLUTION:

The larger circle has a radius of 6 in.

The three smaller circles are congruent and the sum of their diameters is 12 in. So, each has a radius of 2 in.

The area of the shaded region is half of the large circle minus half of one of the small circles. Note that the shaded half circle offsets one of the unshaded half circles.

$$\begin{aligned} A(\text{shaded}) &= \tfrac{1}{2}A(\text{lg.circle}) - \tfrac{1}{2}A(\text{sm.circle}) \\ &= \tfrac{1}{2}\pi(6)^2 - \tfrac{1}{2}\pi(2)^2 \\ &= 18\pi - 2\pi \\ &\approx 50.3 \end{aligned}$$

ANSWER:

50.3 in^2