

### 31.2 - Practice

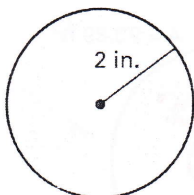
### Circle Area and Sector Area

$$A = \pi r^2$$

$$\frac{\text{central } \angle}{360^\circ} = \frac{\text{sector area}}{\pi r^2}$$

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

1.



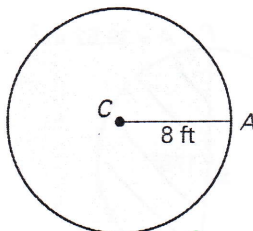
$$A = \pi(2)^2$$

$$A = 4\pi \text{ in}^2$$

or

$$A \approx 12.57 \text{ in}^2$$

2.



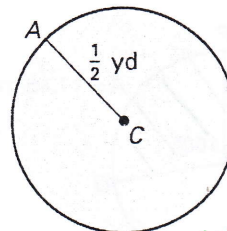
$$A = \pi(8)^2$$

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

or

$$A \approx 201.06 \text{ ft}^2$$

3.



$$A = \pi\left(\frac{1}{2}\right)^2$$

$$A = \frac{\pi}{4} \text{ yd}^2$$

or

$$A \approx 0.79 \text{ yd}^2$$

Find the indicated measure.

4. The area of a circle is 58 square inches. Find the radius.

$$\sqrt{\frac{58}{\pi}} = \sqrt{\pi r^2}$$

$$r \approx 4.30 \text{ in}$$

5. The area of a circle is 37 square meters. Find the radius.

$$\sqrt{\frac{37}{\pi}} = \sqrt{\pi r^2}$$

$$r \approx 3.43 \text{ m}$$

6. The area of a circle is 106 square centimeters. Find the diameter.

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

$$r \approx 5.808687282$$

$$d \approx 11.62 \text{ cm}$$

7. The area of a circle is 249 square feet. Find the diameter.

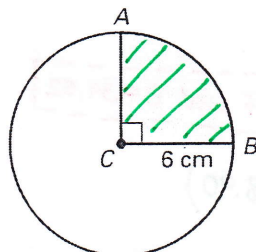
$$\sqrt{\frac{249}{\pi}} = \sqrt{\pi r^2}$$

$$r \approx 8.902761463$$

$$d \approx 17.81 \text{ ft}$$

Find the areas of the sectors formed by  $\angle ACB$ .

8.



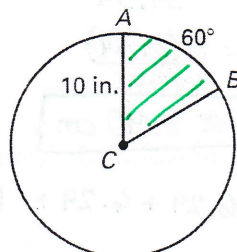
$$\frac{90^\circ}{360^\circ} = \frac{X}{\pi \cdot 6^2}$$

$$\frac{1}{4} \times \frac{X}{36\pi}$$

$$\frac{4X}{4} = \frac{36\pi}{4}$$

$$X = 9\pi \text{ or } \approx 28.27 \text{ cm}^2$$

9.

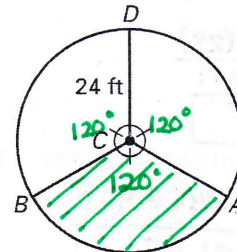


$$\frac{60^\circ}{360^\circ} = \frac{X}{\pi \cdot 10^2}$$

$$\frac{360X}{360} = \frac{60\pi \cdot 100}{360}$$

$$X \approx 52.36 \text{ in}^2$$

10.



$$\frac{120^\circ}{360^\circ} = \frac{X}{\pi(24)^2}$$

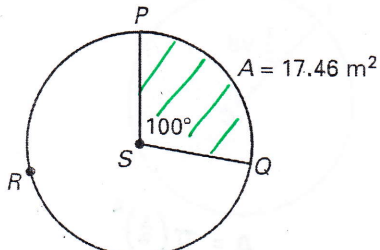
$$\frac{360X}{360} = \frac{120\pi \cdot 576}{360}$$

$$X \approx 603.19 \text{ ft}^2$$

**LESSON 31.2 Practice** *continued*

Use the diagram to find the indicated measure.

11. Find the area of  $\odot S$ .



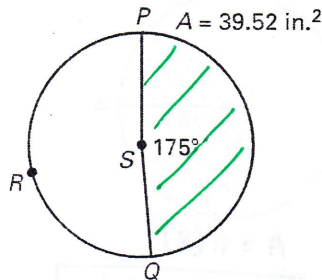
$$\frac{100^\circ}{360^\circ} = \frac{17.46}{x}$$

$$100x = 360(17.46)$$

$$x = 62.856 \text{ (exact)}$$

$$x \approx 62.86 \text{ m}^2$$

12. Find the area of  $\odot S$ .

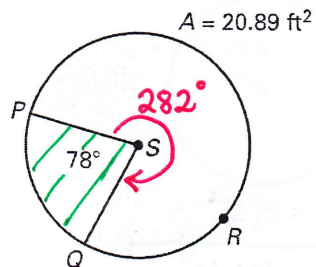


$$\frac{175^\circ}{360^\circ} = \frac{39.52}{x}$$

$$175x = 360(39.52)$$

$$x \approx 81.30 \text{ in}^2$$

13. Find the radius of  $\odot S$ .



$$\frac{282^\circ}{360^\circ} = \frac{20.89}{\pi r^2}$$

$$282\pi r^2 = 360(20.89)$$

$$x \approx 2.91 \text{ ft}$$

The area of  $\odot Z$  is 124.44 square centimeters. The area of sector XZY is 28 square centimeters. Find the indicated measure.

14. Radius of  $\odot Z$

$$A = \pi r^2$$

$$\sqrt{\frac{124.44}{\pi}} = r$$

$$r \approx 6.29 \text{ cm}$$

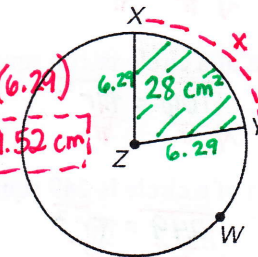
$r = 6.293685902$  ← use this in future calculations

15. Circumference of  $\odot Z$

$$C = 2\pi r$$

$$C = 2\pi(6.293685902)$$

$$C \approx 39.54 \text{ cm}$$



16.  $m\widehat{XY}$

$$\frac{x}{360^\circ} = \frac{28}{124.44}$$

$$124.44x = 360(28)$$

$$x \approx 81^\circ$$

17. Length of  $\widehat{XY}$

$$\frac{81^\circ}{360^\circ} = \frac{l}{39.54}$$

$$360l = 81(39.54)$$

$$l \approx 8.90 \text{ cm}$$

8.89 if used  $C = 39.52$

18. Perimeter of shaded region

$$6.29 + 6.29 + 8.90 =$$

$$\approx 21.48 \text{ cm}$$

$$21.47 \text{ cm}$$

19. Perimeter of unshaded region

$$6.29 + 6.29 + (39.54 - 8.90)$$

$$30.64$$

$$\approx 43.22 \text{ cm}$$

$$43.21 \text{ cm}$$