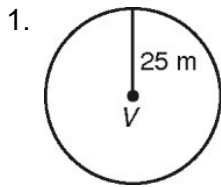


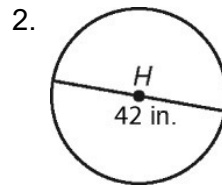
## 16-1 Circumference and Area of a Circle

---

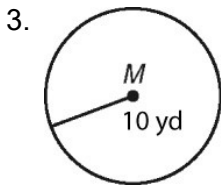
For each figure, calculate the indicated circumference or area. Give your answers in terms of  $\pi$ .



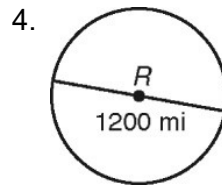
the circumference of  $\odot V$



the circumference of  $\odot H$



the area of  $\odot M$



the area of  $\odot H$

**For Problems 5 and 6, determine the indicated measures.**

5. What is the radius of a circle with a circumference of  $2\pi$  centimeters?
6. What is the diameter of a circle with an area of  $16\pi$  square meters?

**Stella wants to cover a tabletop with nickels, dimes, or quarters. She decides to find which coin would cost the least to use.**

7. Stella measures the diameters of a nickel, a dime, and a quarter. They are 21.2 mm, 17.8 mm, and 24.5 mm, respectively. Find the areas of each coin. Round to the nearest tenth.
8. Divide each coin's value in cents by the coin's area. Round to nearest hundredth.
9. Which coin has the least value per unit of area?

**In Exercises 10 - 17, find the indicated measure.**

10. area of a circle with a radius of 6.8 feet.
  
  
  
  
  
  
  
  
  
  
11. area of a circle with a diameter of 19.2 centimeters
  
  
  
  
  
  
  
  
  
  
12. radius of a circle with an area of 1017.9 square meters
  
  
  
  
  
  
  
  
  
  
13. diameter of a circle with an area of 707 square inches
  
  
  
  
  
  
  
  
  
  
14. radius of a circle with a circumference of  $42\pi$  meters
  
  
  
  
  
  
  
  
  
  
15. circumference of a circle with a radius of 27 feet
  
  
  
  
  
  
  
  
  
  
16. circumference of a circle with a diameter of 15 inches
  
  
  
  
  
  
  
  
  
  
17. diameter of a circle with circumference 39 centimeters

**For Problems 18–21, determine the indicated measures.**

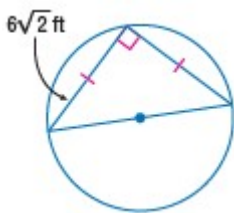
18. What is the diameter of a circle with a circumference of  $4\pi$  yards?
  
  
  
  
  
  
  
  
  
  
19. What is the radius of a circle with a circumference of  $20\pi$  meters?
  
  
  
  
  
  
  
  
  
  
20. What is the radius of a circle with an area of  $25\pi$  square inches?
  
  
  
  
  
  
  
  
  
  
21. What is the diameter of a circle with an area of  $100\pi$  square miles?

22. The circumference of the circular swimming pool shown is about 56.5 feet. What are the diameter and radius of the pool? Round to the nearest hundredth.

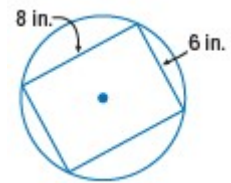


Find the exact circumference of each circle by using the given inscribed or circumscribed polygon.

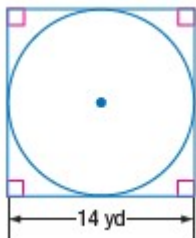
23.



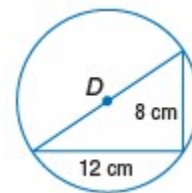
24.



25.

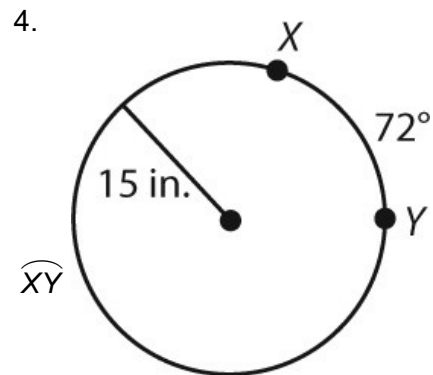
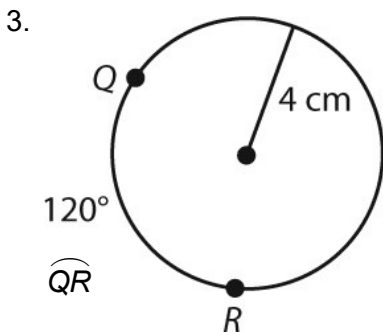
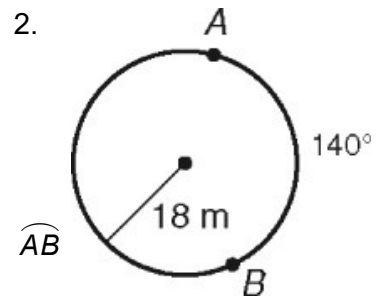
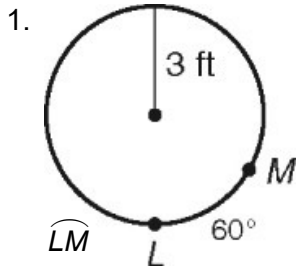


26.

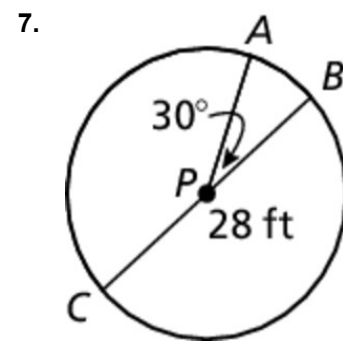
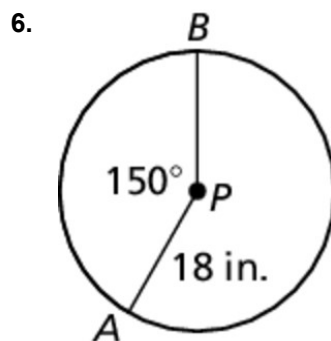
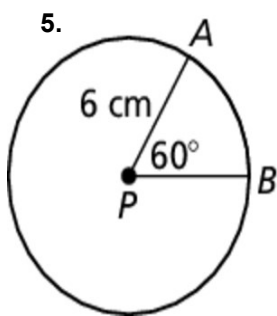


## 16-2 Arc Length

For each figure, calculate the length of the arc. Give your answer in terms of  $\pi$  and rounded to the nearest hundredth.



In Exercises 5 – 7, find the arc length of  $\widehat{AB}$



In Exercises 8-13, use the diagram of circle  $D$  with  $\angle EDF \cong \angle FDG$  to find the indicated measure.

8.  $m\widehat{EFG}$

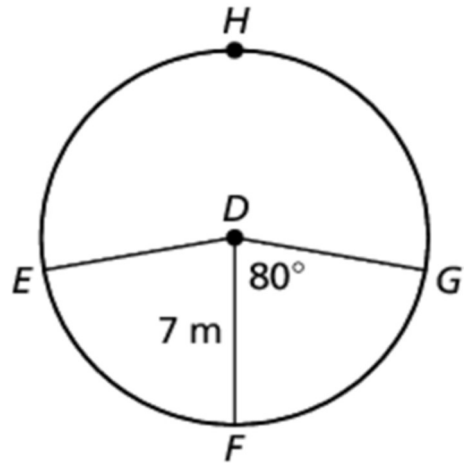
9.  $m\widehat{EHG}$

10. arc length of  $\widehat{EFG}$

11. arc length of  $\widehat{EHG}$

12.  $m\widehat{EHF}$

13. arc length of  $\widehat{FEG}$



14. What is the length of an arc with a measure of  $45^\circ$  in circle with a diameter of 4 miles?

15. What is the length of an arc with a measure of  $120^\circ$  in a circle with a diameter of 30 millimeters?

16. The minute hand on an analog clock is 6 inches long. How far does the tip of the minute hand travel as time goes from 6:35 to 6:45? Round to the nearest tenth.