PRACTICE & PROBLEM SOLVING

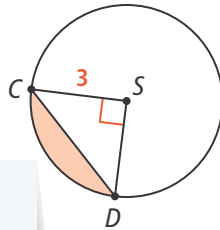## UNDERSTAND

10. Generalize Is it always true that two arcs with the same length have the same measure? Explain.

11. Error Analysis Steve is asked to compute the area of the shaded region. What is his error?
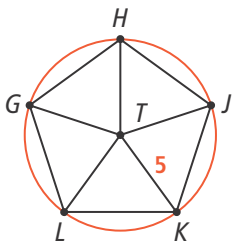
Segment area = sector area − triangle area

$$= \frac{90}{360} \cdot 2\pi(3) - \frac{1}{2}(3)(3)$$

$$\approx 0.21$$

X

12. Mathematical Connections The equation $(x - 2)^2 + (y - 3)^2 = 25$ represents $\odot T$. Points $X(-2, 6)$ and $Y(-1, -1)$ lie on $\odot T$. What is $m\widehat{XY}$? Explain how you know.

13. Reason Figure GHJKL is a regular pentagon. Rounded to the nearest tenth, what percent of the area of $\odot T$ is not part of the area of GHJKL? Explain.

14. Use Structure Explain why the length of an arc with arc measure $a°$ is proportional to the radius of the circle.

15. Higher Order Thinking The areas of sectors ACB and DEF are equal. What expression gives the value of x? Show your work.
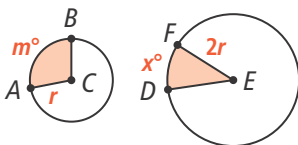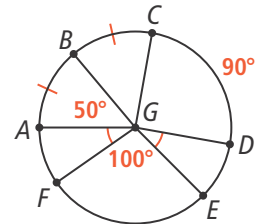
PRACTICE

For Exercises 16–19, find each arc measure.
SEE EXAMPLE 1

16. $m\widehat{FE}$

17. $m\widehat{BC}$
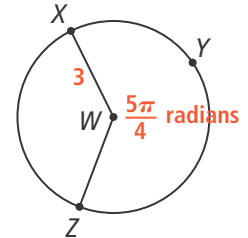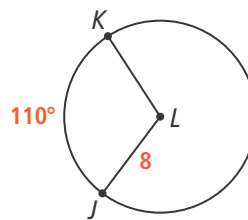
18. $m\widehat{CE}$

19. $m\widehat{CFE}$

For Exercises 20 and 21, find each arc length in terms of π. SEE EXAMPLES 2 AND 3
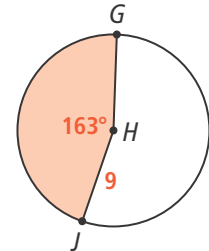
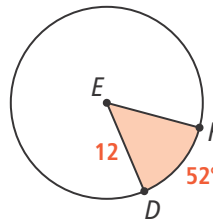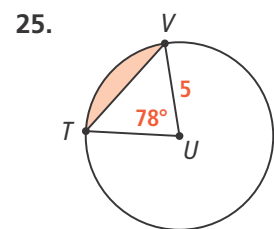**20.** length of $\widehat{JK}$

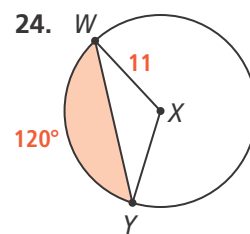**21.** length of $\widehat{XYZ}$

For Exercises 22 and 23, find the area of each sector. Round to the nearest tenth. SEE EXAMPLES 4 AND 6

22. sector DEF

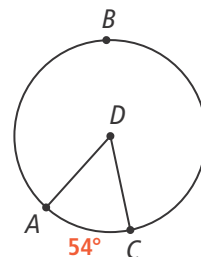**23.** sector GHJ

For Exercises 24 and 25, find the area of each segment. Round to the nearest tenth. SEE EXAMPLE 5
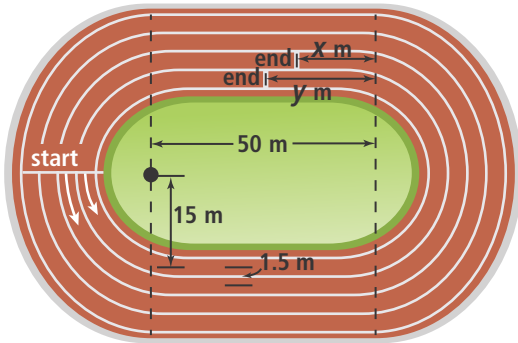
24.

25.

**26.** The length of $\widehat{ABC}$ is 110 ft. What is the radius of $\odot D$? Round to the nearest tenth.

APPLY

27. Make Sense and Persevere Aubrey and Fatima will each run 150 m on the two inside lanes of the track, so the end markers need to be placed correctly. To the nearest hundredth, what are x and y?

28. Reason Charlie is designing a dart board and wants the red sections to be 25% of the total area. What should be the radius of the inner circle? Round to the nearest tenth.
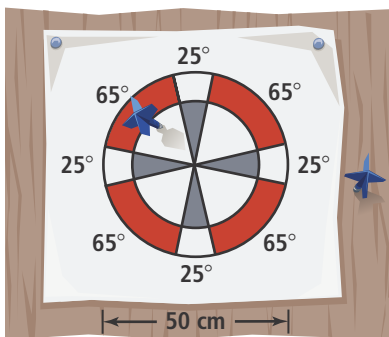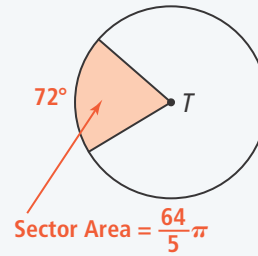

29. Look for Relationships Enrique is selling the drop-leaf table and wants to include the area of the table when the leaves are down in his ad. What is the area of the center section when the leaves are down? Round to the nearest square inch. Explain how you found your answer.
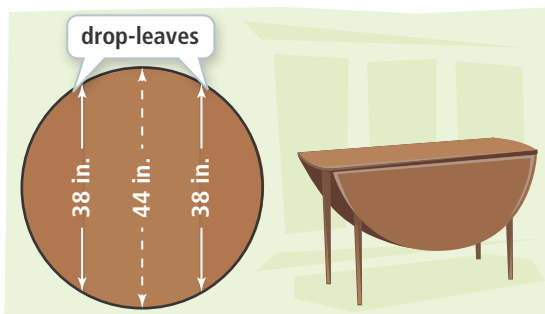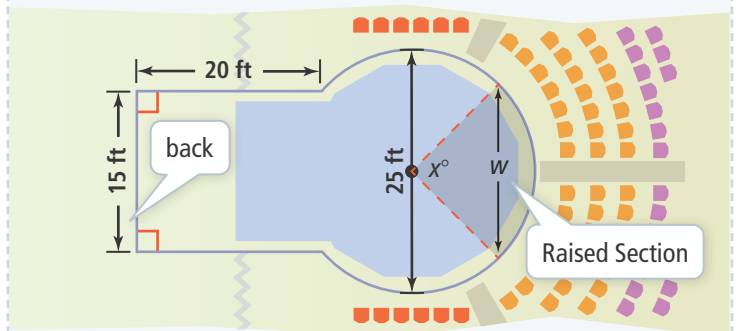

ASSESSMENT PRACTICE

30. What is the diameter of $\odot T$?

72°

Sector Area $= \dfrac{64}{5}\pi$

31. SAT/ACT An arc has a central angle of $\frac{2}{5}\pi$ radians and a length of 6π. What is the circumference of the circle?

Ⓐ 12π　　Ⓑ 15π　　Ⓒ 30π　　Ⓓ 36π

32. Performance Task A carpenter is constructing the stage for a concert.

Part A What is the total amount of flooring needed to cover the stage? Round to the nearest square foot. Explain how you found your answer.

Part B A string of lights will be strung along the sides and front of the stage. What is the total length of light string needed? Show your work.

Part C One portion of the stage can be raised during the concert. The lift mechanism can lift a maximum area of 180 ft^2, but the band needs the width w of the raised area to be at least 20 ft. What could be the value of x? Justify your answer.