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10-2 Circles and Circumference - Practice and Problem Solving

Find the radius or diameter of each circle with the given dimensions.

11. $d = 5$ mm

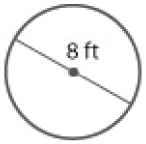
$$r = \frac{d}{2}$$
$$= \frac{5}{2} \text{ or } 2.5 \text{ mm}$$

13. $r = 17$ cm

$$d = 2r$$
$$= 2 \cdot 17 \text{ or } 34 \text{ cm}$$

Estimate the circumference of each circle.

15.



$$C = \pi d$$
$$\approx 3 \cdot 8 \text{ or } 24 \text{ ft}$$

17.

$$C = 2\pi r$$
$$\approx 2 \cdot 3 \cdot 9 \text{ or } 54 \text{ mi}$$

19. $d = 13$ ft

$$C = \pi d$$
$$\approx 3 \cdot 13 \text{ or } 39 \text{ ft}$$

Find the circumference of each circle. Round to the nearest tenth.

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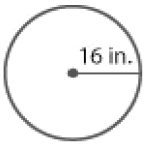
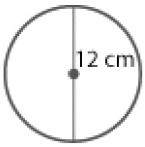
21.



$$C = 2\pi r$$
$$= 2\pi(16)$$
$$\approx 100.5 \text{ in.}$$

23.



$$C = \pi d$$
$$= \pi \cdot 12$$
$$\approx 37.7 \text{ cm}$$

25. $r = 21$ mm

$$C = 2\pi r$$
$$= 2\pi(21)$$
$$\approx 131.9 \text{ mm}$$

27. **MUSIC** The diameter of a music CD is 12 centimeters. Find the circumference of a CD to the nearest tenth.

$$C = \pi d$$
$$= \pi \cdot 12$$
$$\approx 37.7 \text{ cm}$$

The circumference of the CD is about 37.7 cm.

29. **TREES** The largest tree in the world by volume is The General Sherman Tree in Sequoia National Park. The diameter at the base is 36 feet. If a person with outstretched arms can reach 6 feet, how many people would it take to reach around the base of the tree?

Find the circumference of the tree.

$$C = \pi d$$
$$= \pi \cdot 36$$
$$\approx 113.1 \text{ ft}$$
$$\frac{113.1}{6} \approx 19$$

It would take 19 people to reach around the base of the tree.

31. **ESTIMATION** Without calculating, determine if the circumference of a circle with a radius of 4 feet will be greater or less than 24 feet. Explain your reasoning.

Greater than 24 feet; Sample answer: Since the radius is 4 feet, the diameter is 8 feet. Since π is a little more than 3, the circumference will be a little more than 3 times 8, or 24 feet.

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33. **ESTIMATION** Catalina is giving pillar candles as favors at her birthday party. She wants to glue a piece of ribbon around each candle. The diameter of each candle is 4 inches. She has 8 candles and 2 yards of ribbon. Does she have enough ribbon? Explain.

no; Sample answer: The circumference of each candle is about 12.6 inches. So, 12.6 × 8 or 100.8 inches of ribbon are needed to make all of the candles. Since 2 yards is equal to 72 inches, and 72 < 100.8, she does not have enough ribbon for all of the candles.

35. **FIND THE ERROR** Bena and Orlando are using a calculator to find the circumference of a circle whose radius is 7 inches. Who entered the correct keystrokes to find the circumference? Explain your reasoning.

Bena
2 × π × 7 ENTER

Orlando
π × 7 ENTER

Bena entered the correct keystrokes. Orlando did not multiply the radius by 2.

37. **WRITING IN MATH** Explain how you could estimate the diameter of a circle with a circumference of 15.7 meters.

Using compatible numbers, divide the circumference by π; 15 ÷ 3 = 5 m

39. The circumference of the Ferris wheel at the county fair is stated in the local newspaper. Which method can you use to find the diameter of the Ferris wheel?

F Multiply the circumference by π.
G Multiply the circumference by 2 and divide by the radius.
H Divide the circumference by π.
J Divide the circumference by the radius and multiply by 2.

$C = \pi d$

$\frac{C}{\pi} = d$

The answer is H.

Find the perimeter of each rectangle with the dimensions given.

41. 15 feet by 17 feet

$P = 2l + 2w$
$= 2(15) + 2(17)$
$= 30 + 34$
$= 64$ ft

43. 25 miles by 15 miles

$P = 2l + 2w$
$= 50 + 30$
$= 2(25) + 2(15)$
$= 80$ mi

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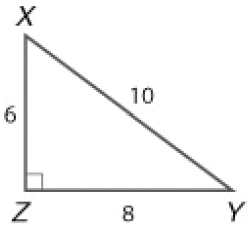
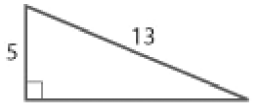
State whether each triangle is similar to triangle *XYZ*.



45.



$\frac{6}{5} \neq \frac{1}{13}$

The ratios of the lengths of corresponding sides are not equal. The triangles are not similar.

47. **GAMES** At the county fair, Alejandra tosses a beanbag onto an alphabet board. It is equally likely that the bag will land on any letter. Find the probability that the beanbag will land on one of the letters in her name.

There are 7 distinct letters in Alejandra's name.

$P = \frac{7}{26}$

PREREQUISITE SKILL Multiply.

49. 6×17

$$\begin{array}{r} 17 \\ \times\, 6 \\ \hline 102 \end{array}$$

51. 20×9

$$\begin{array}{r} 20 \\ \times\ 9 \\ \hline 180 \end{array}$$