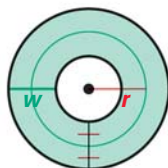


GEOMETRY Solve the formula for the variable in red. Then use the given information to find the value of the variable. Round to the nearest tenth.

18. Area of a circular ring

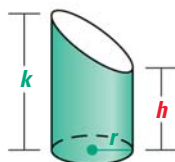
$$A = 2\pi r w$$



Find r if $w = 4$ ft and $A = 120$ ft².

19. Lateral surface area of a truncated cylinder

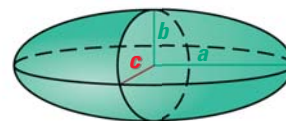
$$S = \pi r(h + k)$$



Find h if $r = 2$ cm, $k = 3$ cm, and $S = 50$ cm².

20. Volume of an ellipsoid

$$V = \frac{4}{3}\pi abc$$



Find c if $a = 4$ in., $b = 3$ in., and $V = 60$ in.³

EXAMPLE 4

on p. 28
for Exs. 21–26

REWRITING EQUATIONS Solve the equation for y . Then find the value of y for the given value of x .

21. $xy - 3x = 40$; $x = 5$

22. $7x - xy = -18$; $x = -4$

23. $3xy - 28 = 16x$; $x = 4$

24. $9y + 6xy = 30$; $x = -6$

25. $y - 2xy = 15$; $x = -1$

26. $4x + 7y + 5xy = 0$; $x = 1$

27. **★ SPORSTREISBÜHNE** Consider the equation $15x - 9y = 27$. To find the value of y when $x = 2$, you can use two methods.

Method 1 Solve the original equation for y and then substitute 2 for x .

Method 2 Substitute 2 for x and then solve the resulting equation for y .

Show the steps of the two methods. Which method is more efficient if you need to find the value of y for several values of x ? Explain.

REASONING Solve for the indicated variable.

28. Solve $xy = x + y$ for y .

29. Solve $xyz = x + y + z$ for z .

30. Solve $\frac{1}{x} + \frac{1}{y} = 1$ for y .

31. Solve $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$ for z .

32. **CHALLENGE** Write a formula giving the area of a circle in terms of its circumference.

PROBLEM SOLVING

EXAMPLE 5

on p. 29
for Exs. 33–38

33. **TREE DIAMETER** You can estimate the diameter of a tree without boring through it by measuring its circumference. Solve the formula $C = \pi d$ for d . Then find the diameter of an oak that has a circumference of 113 inches.

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34. **DESIGN** The fabric panels on a kite are rhombuses. A formula for the length of the long diagonal d is $d = s\sqrt{3}$ where s is the length of a side. Solve the formula for s . Then find the value of s when $d = 15$ inches.

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