1.1 Practice WITH CalcChat® AND CalcView®

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In Exercises 1–10, solve the equation. Justify each step. Check your solution. *Example 1*

1. $x + 5 = 8$
2. $m + 9 = 2$
3. $y - 4 = 3$
4. $s - 2 = 1$
5. $w + 3 = -4$
6. $n - 6 = -7$
7. $5.2 = a - 0.4$
8. $1.7 = 3.1 + c$
9. $\frac{3}{2} + t = \frac{1}{2}$
10. $z - \frac{3}{4} = -\frac{1}{3}$

11. **MODELING REAL LIFE** An amusement park offers a ticket for \$12.95 off the original price p. Write and solve an equation to find the original price.

12. **MODELING REAL LIFE** You and a friend are playing a board game. Your final score x is 12 points less than your friend's final score. Write and solve an equation to find your final score.

	ROUND 9	ROUND 10	FINAL SCORE
Your Friend	22	12	195
You	9	25	?

In Exercises 13–22, solve the equation. Justify each step. Check your solution. *Example 2*

13. $5g = 20$
14. $4q = 52$
15. $p \div 5 = 3$
16. $y \div 7 = 1$
17. $-54 = 9s$
18. $\frac{w}{-3} = 6$
19. $-\frac{x}{6} = 1.4$
20. $-7.8 = -2.6t$
21. $-108\pi = 9\pi r$
22. $5 = \frac{h}{4\pi}$

In Exercises 23–32, solve the equation. Check your solution.

23. $-14 = p - 11$
24. $0 = 4 + q$
25. $-8r = 64$
26. $x \div (-2) = 8$
27. $\frac{3}{7}m = 6$
28. $-\frac{2}{5}y = 4$
29. $-3.8 = d \div 1.5$
30. $2a = \frac{1}{5}$
31. $f + 3\pi = 7\pi$
32. $-3\frac{1}{6} = k - \frac{2}{3}$

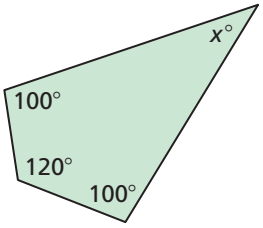
ERROR ANALYSIS **In Exercises 33 and 34, describe and correct the error in solving the equation.**

33. ✗
$$-0.8 + r = 12.6$$
$$r = 12.6 + (-0.8)$$
$$r = 11.8$$

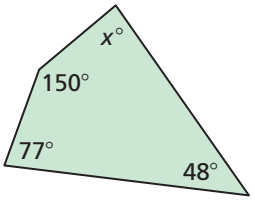
34. ✗
$$-\frac{m}{3} = -4$$
$$3 \cdot \left(-\frac{m}{3}\right) = 3 \cdot (-4)$$
$$m = -12$$

MP USING TOOLS **The sum of the angle measures of a quadrilateral is 360°. In Exercises 35 and 36, write and solve an equation to find the value of x. Use a protractor to check the reasonableness of your answer.**

35.



36.



37. **COLLEGE PREP** A baker orders 162 eggs. Each carton contains 18 eggs. Which equation can you use to find the number x of cartons? Explain your reasoning and solve the equation.

Ⓐ $162x = 18$
Ⓑ $\frac{x}{18} = 162$
Ⓒ $18x = 162$
Ⓓ $x + 18 = 162$

38. MP **REASONING** Are the equations equivalent? Explain.

Equation 1	$x - \frac{1}{2} = \frac{x}{4} + 3$
Equation 2	$4x - 2 = x + 12$

MODELING REAL LIFE **In Exercises 39–42, write and solve an equation to answer the question.**

Examples 3 and 4

39. A swimmer wins the 50-yard freestyle with a time of 24.76 seconds. Find the swimmer's average speed to the nearest hundredth of a yard per second.

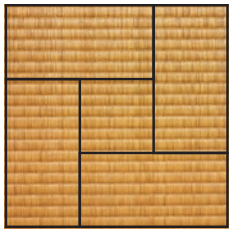
40. The length of an American flag is 1.9 times its width. What is the width of the flag?

41. The temperature at 5 P.M. is 20°F. The temperature at 10 P.M. is −5°F. How many degrees did the temperature fall?

42. The balance of an investment account is $308.32 greater than the balance 4 years ago. The current balance is $4708.57. What was the balance 4 years ago?

43. MP **PROBLEM SOLVING** You spend $8.64 on 12 cans of cat food. Each can costs the same amount and is on sale for 80% of the original price. The following week, the cans are no longer on sale. You have $10. Can you buy 12 more cans? Explain your reasoning.

44. DIG DEEPER Tatami mats are used as a floor covering in Japan. One possible layout uses four identical rectangular mats and one square mat, as shown. The area of the square mat is half the area of one of the rectangular mats. The length of a rectangular mat is twice the width. Find the dimensions of one rectangular mat. Justify your answer.



CONNECTING CONCEPTS **In Exercises 45–48, find the height h or the area B of the base of the solid.**

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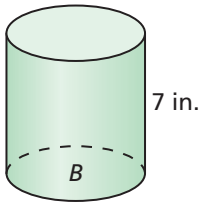
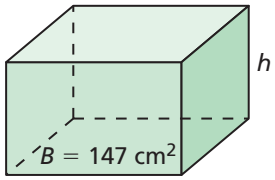
45.



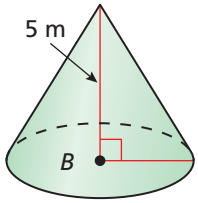
Volume = 84π in.^{3}

46.



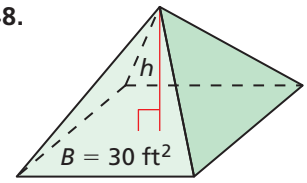
Volume = 1323 cm^3

47.



Volume = 15π m^3

48.



Volume = 35 ft^3

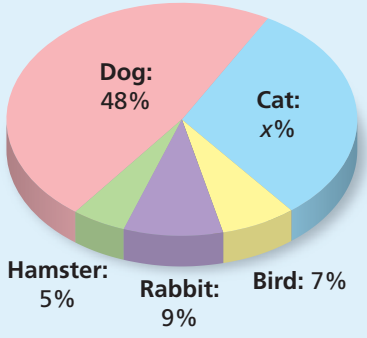
49. MP **STRUCTURE** Use the values −2, 5, 9, and 10 to complete each statement about the equation $ax = b - 5$.

a. When $a =$ ___ and $b =$ ___, x is a positive integer.

b. When $a =$ ___ and $b =$ ___, x is a negative integer.

50. **HOW DO YOU SEE IT?**

The circle graph shows the adoptions from a local animal shelter in 1 year. How does the equation $7 + 9 + 5 + 48 + x = 100$ relate to the circle graph? How can you use this equation to find the percent of adoptions that were cats?



51. MP **REASONING** One-sixth of the girls and two-sevenths of the boys in a school marching band are in the percussion section. The percussion section has 6 girls and 10 boys. How many students are in the marching band? Explain.

52. **ANALYZING RELATIONSHIPS** As c increases, does the value of x *increase, decrease,* or *stay the same* for each equation? Assume c is positive.

Equation	Value of x
$x - c = 0$	
$cx = 1$	
$cx = c$	
$\frac{x}{c} = 1$	

MP **REASONING** **In Exercises 53–56, the letters a, b, and c represent nonzero constants. Solve the equation for x. Then find values of a, b, and c for which the solution is positive.**

53. $bx = -7$

54. $x + a = \frac{3}{4}$

55. $-\frac{x}{c} = 6.5$

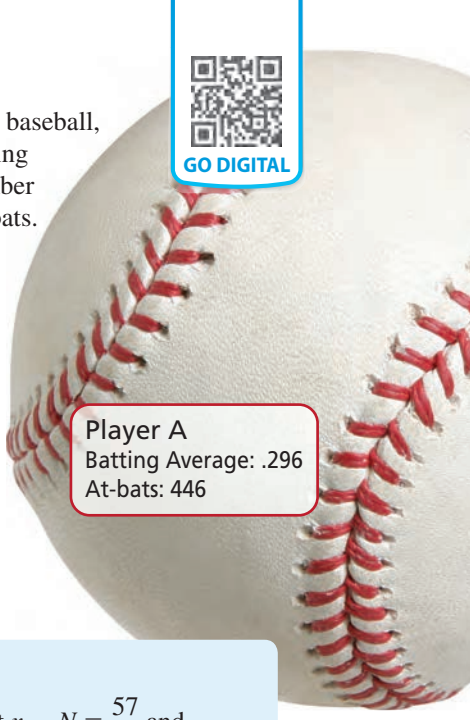
56. $\frac{c}{a}x = -b$

57. **MAKING AN ARGUMENT** In baseball, you calculate a player's batting average by dividing the number of hits by the number of at-bats.

a. How many hits does Player A have?

b. Player B has 33 fewer hits than Player A but has a greater batting average. Your friend concludes that Player B has more at-bats than Player A. Is your friend correct? Explain.

GO DIGITAL



58. **THOUGHT PROVOKING**

Find the value of N such that $x - N = \frac{57}{10}$ and $\frac{x}{N} = -2.8$ are equivalent equations.

REVIEW & REFRESH

WATCH

In Exercises 59–62, multiply or divide.

59. $\frac{3}{5} \cdot \frac{4}{9}$

60. $2\frac{1}{8} \cdot \frac{2}{3}$

61. $\frac{3}{4} \div \frac{9}{10}$

62. $4\frac{1}{3} \div 1\frac{2}{5}$

63. Evaluate $15 - 6(7 + 5) \div 3^2$.

64. Find the missing values in the ratio table. Then write the equivalent ratios.

Calories	50		200	25
Servings	$\frac{1}{2}$	$\frac{3}{2}$		

In Exercises 65–67, simplify the expression.

65. $-5.9x - 4 + 2.3x - 6$

66. $4(-6m + 7)$

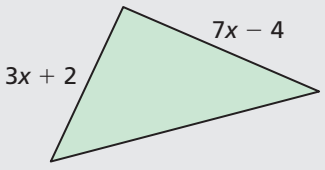
67. $-\frac{1}{3}(9y - 12) + 5y$

68. **MODELING REAL LIFE** You have 63 red roses and 45 white roses to make floral arrangements. Each arrangement must be identical. What is the greatest number of arrangements you can make using every flower?

69. Write $\frac{7}{9}$ as a decimal and a percent.

70. **MODELING REAL LIFE** A pizza shop charges \$10.99 for a large cheese pizza and \$1.50 for each topping. Write an expression that represents the cost (in dollars) of a large pizza with n toppings. How much does a large three-topping pizza cost?

71. The expression $14x + 3$ represents the perimeter of the triangle. What is the length of the third side?



In Exercises 72–75, solve the equation. Justify each step. Check your solution.

72. $7 + x = -5$

73. $-\frac{b}{9} = 3$

74. $-1.8t = -4.5$

75. $w - \frac{1}{4} = -\frac{5}{6}$

76. Find the mean of the data.

Data usage (gigabytes)			
2.5	1.7	3.6	5.4
3.2	1.5	1.8	2.8
4.8	3.5	3.1	4.5