 **Got It?** 4. What is the solution of each equation? Why did you choose the method you used to solve each equation?

a. $\frac{2b}{5} + \frac{3b}{4} = 3$

b. $\frac{1}{9} = \frac{5}{6} - \frac{m}{3}$

You can clear decimals from an equation by multiplying by a power of 10. First, find the greatest number of digits to the right of any decimal point, and then multiply by 10 raised to that power.

 **Problem 5 Solving an Equation That Contains Decimals**

What is the solution of $3.5 - 0.02x = 1.24$?

Plan

The equation contains tenths (3.5) and hundredths (0.02 and 1.24). The greatest number of digits to the right of any decimal point is 2. So, multiply each side of the equation by 10^2 , or 100, to clear the decimals.

Think

When you multiply a decimal by 10^n , where n is a positive integer, you can move the decimal point n places to the right. For example, $100(3.5) = 350$.

$$3.5 - 0.02x = 1.24$$

$$100(3.5 - 0.02x) = 100(1.24) \quad \text{Multiply each side by } 10^2, \text{ or } 100.$$


$$350 - 2x = 124 \quad \text{Distributive Property}$$

$$350 - 2x - 350 = 124 - 350 \quad \text{Subtract 350 from each side.}$$

$$-2x = -226 \quad \text{Simplify.}$$

$$\frac{-2x}{-2} = \frac{-226}{-2} \quad \text{Divide each side by } -2.$$

$$x = 113 \quad \text{Simplify.}$$

 **Got It?** 5. What is the solution of $0.5x - 2.325 = 3.95$? Check your answer.

 **Lesson Check**

Do you know HOW?

Solve each equation. Check your answer.

1. $7p + 8p - 12 = 59$

2. $-2(3x + 9) = 24$

3. $\frac{2m}{7} + \frac{3m}{14} = 1$

4. $1.2 = 2.4 - 0.6x$

5. **Gardening** There is a 12-ft fence on one side of a rectangular garden. The gardener has 44 ft of fencing to enclose the other three sides. What is the length of the garden's longer dimension?


Do you UNDERSTAND?  **MATHEMATICAL PRACTICES**

Explain how you would solve each equation.

6. $1.3 + 0.5x = -3.41$

7. $7(3x - 4) = 49$

8. $-\frac{2}{9}x - 4 = \frac{7}{18}$

 9. **Reasoning** Ben solves the equation $-24 = 5(g + 3)$ by first dividing each side by 5. Amelia solves the equation by using the Distributive Property. Whose method do you prefer? Explain.



Practice and Problem-Solving Exercises



Practice

Solve each equation. Check your answer.

◀ See Problem 1.

10. $7 - y - y = -1$

11. $72 + 4 - 14d = 36$

12. $13 = 5 + 3b - 13$

13. $6p - 2 - 3p = 16$

14. $x + 2 + x = 22$

15. $b - 9 + 6b = 30$

16. $9t - 6 - 6t = 6$

17. $17 = p - 3 - 3p$

18. $-23 = -2a - 10 + a$

Write an equation to model each situation. Then solve the equation.

◀ See Problem 2.

19. **Employment** You have a part-time job. You work for 3 h on Friday and 6 h on Saturday. You also receive an allowance of \$20 per week. You earn \$92 per week. How much do you earn per hour at your part-time job?

20. **Travel** A family buys airline tickets online. Each ticket costs \$167. The family buys travel insurance with each ticket that costs \$19 per ticket. The Web site charges a fee of \$16 for the entire purchase. The family is charged a total of \$1132. How many tickets did the family buy?

Solve each equation. Check your answer.

◀ See Problem 3.

21. $64 = 8(r + 2)$

22. $5(2x - 3) = 15$

23. $5(2 + 4z) = 85$

24. $2(8 + 4c) = 32$

25. $7(f - 1) = 45$

26. $15 = -2(2t - 1)$

27. $26 = 6(5 - 4f)$

28. $n + 5(n - 1) = 7$

29. $-4(r + 6) = -63$

Solve each equation. Choose the method you prefer to use. Check your answer.

◀ See Problem 4.

30. $\frac{b}{13} - \frac{3b}{13} = \frac{8}{13}$

31. $5y - \frac{3}{5} = \frac{4}{5}$

32. $\frac{n}{5} - \frac{3n}{10} = \frac{1}{5}$

33. $\frac{2}{3} + \frac{3m}{5} = \frac{31}{15}$

34. $\frac{n}{2} - \frac{2n}{16} = \frac{3}{8}$

35. $\frac{b}{3} + \frac{1}{8} = 19$

36. $\frac{1}{4} + \frac{4x}{5} = \frac{11}{20}$

37. $\frac{11z}{16} + \frac{7z}{8} = \frac{5}{16}$

38. $\frac{x}{3} - \frac{7x}{12} = \frac{2}{3}$

Solve each equation. Check your answer.

◀ See Problem 5.

39. $1.06g - 3 = 0.71$

40. $0.11k + 1.5 = 2.49$

41. $1.025v + 2.458 = 7.583$

42. $1.12 + 1.25g = 8.62$

43. $25.24 = 5g + 3.89$

44. $0.25n + 0.1n = 9.8$



Apply

Solve each equation.

45. $6 + \frac{v}{8} = \frac{4}{7}$

46. $\frac{2}{3}(c - 18) = 7$

47. $3d + d - 7 = \frac{25}{4}$

48. $0.25(d - 12) = 4$

49. $8n - (2n - 3) = 12$

50. $\frac{2}{3} + n + 6 = \frac{3}{4}$

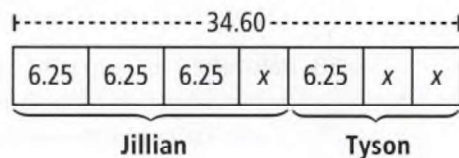
51. $0.5d - 3d + 5 = 0$

52. $-(w + 5) = -14$

53. $\frac{a}{20} + \frac{4}{15} = \frac{9}{15}$

54. **Think About a Plan** Jillian and Tyson are shopping for knitting supplies. Jillian wants 3 balls of yarn and 1 set of knitting needles. Tyson wants 1 ball of yarn and 2 sets of knitting needles. Each ball of yarn costs \$6.25. If their total cost is \$34.60, what is the cost of 1 set of knitting needles?

- How can the model at the right help you solve the problem?
- How does the model tell you which operations to use in the equation?



55. **Online Video Games** Angie and Kenny play online video games. Angie buys 1 software package and 3 months of game play. Kenny buys 1 software package and 2 months of game play. Each software package costs \$20. If their total cost is \$115, what is the cost of one month of game play?

56. **Error Analysis** Describe and correct the error in solving the equation at the right.

57. **Reasoning** Suppose you want to solve $-4m + 5 + 6m = -3$. What would you do as your first step? Explain.

58. **Writing** Describe two ways in which you can solve $-\frac{1}{2}(5x - 9) = 17$.

~~$$\frac{3x}{8} - 1 = \frac{5}{8}$$

$$8\left(\frac{3x}{8} - 1\right) = 8\left(\frac{5}{8}\right)$$

$$3x - 1 = 5$$

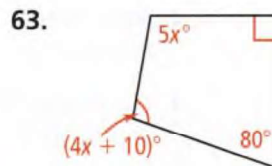
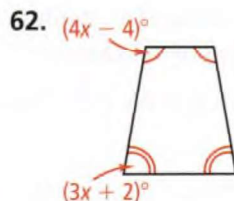
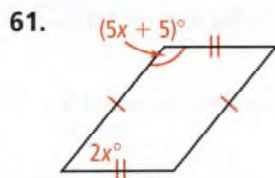
$$3x = 6$$

$$x = 2$$~~

59. **Bowling** Three friends go bowling. The cost per person per game is \$5.30. The cost to rent shoes is \$2.50 per person. Their total cost is \$55.20. How many games did they play?

60. **Moving Expenses** A college student is moving into a campus dormitory. The student rents a moving truck for \$19.95 plus \$.99 per mile. Before returning the truck, the student fills the tank with gasoline, which costs \$65.32. The total cost is \$144.67. How many miles did the student drive the truck?

Geometry Find the value of x . (*Hint: The sum of the angle measures of a quadrilateral is 360° .*)



64. **Dining Out** You are ordering a meal and have \$15 to spend. The restaurant charges 6% sales tax. You plan to leave a 15% tip. The equation $c = x + 0.06x + 0.15x$ gives the total cost c of your meal, where x is the cost before tax and tip. What is the maximum amount you can spend before tax and tip?

65. **Savings** You have \$85 in your bank account. Each week you plan to deposit \$8 from your allowance and \$15 from your paycheck. The equation $b = 85 + (15 + 8)w$ gives the amount b in your bank account after w weeks. How many weeks from now will you have \$175 in your bank account?