



Lesson Check

Do you know HOW?

Solve each equation. Check your answer.

1. $x + 7 = 3$

2. $9 = m - 4$

3. $5y = 24$

4. **Books** You have already read 117 pages of a book. You are one third of the way through the book. Write and solve an equation to find the number of pages in the book.

Do you UNDERSTAND? MATHEMATICAL PRACTICES

- Vocabulary** Which property of equality would you use to solve each equation? Why?

5. $3 + x = -34$

6. $2x = 5$

7. $x - 4 = 9$

8. $\frac{x}{7} = 9$

- 9. Reasoning** Write a one-step equation. Then write two equations that are equivalent to your equation. How can you prove that all three equations are equivalent?



Practice and Problem-Solving Exercises MATHEMATICAL PRACTICES

Practice

Solve each equation using addition or subtraction. Check your answer.

10. $6 = x + 2$

11. $27 + n = 46$

12. $23 = v + 5$

13. $4 = q + 13$

14. $f + 9 = 20$

15. $-5 + a = 21$

16. $-17 = 3 + k$

17. $5.5 = -2 + d$

18. $c + 4 = -9$

19. $67 = w - 65$

20. $23 = b - 19$

21. $g - 3.5 = 10$

22. $y - 19 = 37$

23. $q - 11 = -9$

24. $-2.5 = p + 7.1$

25. $j - 3 = -7$

Solve each equation using multiplication or division. Check your answer.

26. $-8n = -64$

27. $-7y = 28$

28. $5b = 145$

29. $6a = 0.96$

30. $-96 = 4c$

31. $11 = 2.2t$

32. $17.5 = 5s$

33. $7r = -\frac{7}{2}$

34. $\frac{m}{7} = 12$

35. $35 = \frac{j}{5}$

36. $\frac{k}{7} = 13$

37. $-39 = \frac{q}{3}$

38. $14 = \frac{z}{2}$

39. $\frac{q}{-9} = -9$

40. $-13 = \frac{m}{-5}$

41. $\frac{k}{4} = -\frac{17}{2}$

Solve each equation. Check your answer.

42. $\frac{2}{3}q = 18$

43. $\frac{3}{4}x = 9$

44. $\frac{5}{8}y = -1$

45. $\frac{3}{5}m = -15$

46. $\frac{1}{5}x = \frac{2}{7}$

47. $36 = \frac{4}{9}d$

48. $-6 = \frac{3}{7}n$

49. $\frac{3}{8}p = 9$

Define a variable and write an equation for each situation. Then solve.

50. **Music** You have a rack that can hold 30 CDs. You can fit 7 more CDs on the rack before the rack is full. How many CDs are in the rack?

51. **Population** In a 3-year period, a city's population decreased by 7525 to about 581,600. What was the city's population at the beginning of the 3-year period?

See Problems 1 and 2.

See Problems 3 and 4.

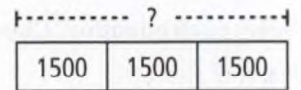
See Problem 5.

See Problem 6.

B Apply

52. Writing If a one-step equation includes addition, should you expect to solve it by using addition? Why or why not?

53. Think About a Plan Costumes for a play at a community theater cost \$1500, which is one third of the total budget. What is the total budget for the play?



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

54. Entertainment On a quiz show, a contestant was penalized 250 points for an incorrect answer, leaving the contestant with 1050 points. How many points did the contestant have before the penalty?

Solve each equation. Check your answer.

55. $\frac{2}{7} = \frac{1}{3} + a$

56. $23 = 7x$

57. $z - 4\frac{2}{3} = 2\frac{2}{3}$

58. $\frac{2}{3}g = -4\frac{1}{2}$

59. $6\frac{1}{4} = \frac{r}{5}$

60. $h + 2.8 = -3.7$

61. $\frac{3}{2}f = \frac{1}{2}$

62. $-4 = \frac{2}{9}d$

63. $1.6m = 1.28$

64. $4d = -2.4$

65. $4\frac{1}{4} = 1\frac{3}{4} + p$

66. $-5.3 + z = 8.9$

67. $-2\frac{1}{2} = \frac{t}{10}$

68. $5b = 8.5$

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

70. Picnics At a party of 102 people, 17 lb of potato salad is served.

- Write and solve an equation to find how many people each pound of potato salad serves.
- Write and solve an equation to find the average number of pounds of potato salad that each person is served. Round your answer to the nearest hundredth.

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

72. U.S. History Between 1788 and 2008, the U.S. Constitution was amended 27 times. How many years have passed on average between one amendment and the next, to the nearest tenth of a year?

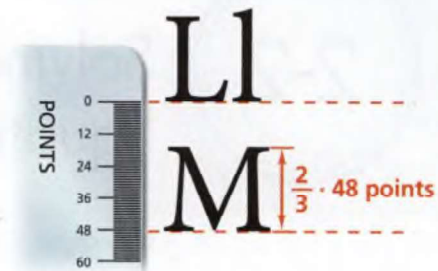
$$\begin{array}{l} -36 = \frac{x}{9} \\ \left(\frac{1}{9}\right)(-36) = \left(\frac{1}{9}\right)\left(\frac{x}{9}\right) \\ -4 = x \end{array}$$

73. Volleyball In volleyball, players serve the ball to the opposing team. If the opposing team fails to hit the ball, the service is called an ace. A player's ace average is the number of aces served divided by the number of games played. A certain player has an ace average of 0.3 and has played in 70 games this season. How many aces has the player served?

74. Open-Ended Write a problem that you can model with a one-step equation. Write the equation and solve the problem.

75. Language According to one count, the letter *e* makes up one eighth of a typical document written in English. A document contains 2800 letters. About how many letters in the document are *not e*?

76. **Typography** A point is a unit of length that can be used to measure the distance between two lines of text. Font sizes are often stated in points. Capital letters measure two thirds of the stated point size, as shown in the diagram for a font size of 48 points. There are 72 points in 1 inch. What point size produces capital letters that are $\frac{1}{2}$ in. tall?



77. **Reasoning** In a school's musical, a choir member sang in the backup chorus for half the songs in the show, which was 12 songs. A student concludes that one half of 12 is 6, so there were 6 songs in the show. Write an equation that would help the student understand the correct number of songs in the musical.
78. **Cooking** Uncooked rice has about $\frac{4}{13}$ the weight of cooked rice. You want to make 6.5 lb of rice for a recipe. How many pounds of uncooked rice do you need?

Standardized Test Prep



79. Luis helped raise money for his school by jogging in the school jog-a-thon. The total amount of money he raised can be represented by the expression $1.75m$, where m is the number of miles he jogged. If Luis raised a total of \$21, how many miles did he jog?
- (A) 12 (B) 19.25 (C) 22.75 (D) 36.75
80. What operation should you use to solve $14 + c = 39$?
- (F) squaring (G) subtraction (H) multiplication (I) division
81. Sonya is checking orders at the fabric store where she works. Some of the orders are in decimals and some are in fractions. Which of the following statements is *not* true?
- (A) $\frac{10}{4} = 2.5$ (B) $1.3 = 1\frac{1}{3}$ (C) $0.03 = \frac{3}{100}$ (D) $\frac{6}{5} = 1.2$

Mixed Review

82. If the pattern shown in the table continues, what amount will have been raised by Week 5?

Scholarship Funds				
Week	0	1	2	3
Amount (thousands)	0	2	4	6

◀ See Lesson 1-9.

Simplify each expression. Justify each step.

83. $4(13x)$

84. $2.2 + (3.8 - x)$

85. $(m + 4.5) - 0.5$

◀ See Lesson 1-4.

Get Ready! To prepare for Lesson 2-2, do Exercises 86–88.

Simplify each expression.

86. $2[2 - (2 - 3) - 2]$

87. $(\frac{1}{2} + \frac{1}{3})^2$

88. $-1 + 2 \cdot 3 - 4$

◀ See Lesson 1-2.