3 CHAPTER REVIEW

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- Multi-Language Glossary
- Vocabulary practice

REVIEW KEY VOCABULARY

- inverse operations, *p. 134*
- equivalent equations, *p. 134*
- identity, *p. 156*
- ratio, *p. 162*
- proportion, *p. 163*
- cross product, *p. 168*
- scale drawing, *p. 170*
- scale model, *p. 170*
- scale, *p. 170*
- literal equation, *p. 184*

VOCABULARY EXERCISES

1. Copy and complete: A(n) ___?___ is a two-dimensional drawing of an object in which the dimensions of the drawing are in proportion to the dimensions of the object.
2. Copy and complete: When you perform the same inverse operation on each side of an equation, you produce a(n) ___?___ equation.
3. *Explain* why the equation $2x + 8x = 3x + 7x$ is an identity.
4. Copy and complete: In the proportion $\frac{7}{8} = \frac{28}{32}$, $7 \cdot 32$ and $8 \cdot 28$ are ___?___.
5. *Describe* the steps you would take to write the equation $6x - 2y = 16$ in function form.

REVIEW EXAMPLES AND EXERCISES

Use the review examples and exercises below to check your understanding of the concepts you have learned in each lesson of Chapter 3.

3.1 Solve One-Step Equations

pp. 134–140

EXAMPLE

Solve $\frac{x}{5} = 14$.

$\frac{x}{5} = 14$ — Write original equation.

$5 \cdot \frac{x}{5} = 5 \cdot 14$ — Multiply each side by 5.

$x = 70$ — Simplify.

EXERCISES

Solve the equation. Check your solution.

6. $x - 4 = 3$ **7.** $-8 + a = 5$ **8.** $4m = -84$

9. $-5z = 75$ **10.** $11 = \frac{r}{6}$ **11.** $-27 = \frac{3}{4}w$

12. PARKS A rectangular city park has an area of 211,200 square feet. If the length of the park is 660 feet, what is the width of the park?

EXAMPLES 1, 2, 3, 4 and 5 on pp. 134–136 for Exs. 6–12

3.2 Solve Two-Step Equations

pp. 141–146

EXAMPLE

Solve $4x - 9 = 3$.

$4x - 9 = 3$	Write original equation.
$4x - 9 + 9 = 3 + 9$	Add 9 to each side.
$4x = 12$	Simplify.
$\frac{4x}{4} = \frac{12}{4}$	Divide each side by 4.
$x = 3$	Simplify.

EXERCISES

EXAMPLES 1 and 2 on pp. 141–142 for Exs. 13–18

Solve the equation. Check your solution.

13. $9b + 5 = 23$

14. $11 = 5y - 4$

15. $\frac{n}{3} - 4 = 2$

16. $\frac{3}{2}v + 2 = 20$

17. $3t + 9t = 60$

18. $-110 = -4c - 6c$

3.3 Solve Multi-Step Equations

pp. 148–153

EXAMPLE

Solve $5x - 2(4x + 3) = 9$.

$5x - 2(4x + 3) = 9$	Write original equation.
$5x - 8x - 6 = 9$	Distributive property
$-3x - 6 = 9$	Combine like terms.
$-3x = 15$	Add 6 to each side.
$x = -5$	Divide each side by -3.

EXERCISES

EXAMPLES 1, 2, 3 and 4 on pp. 148–149 for Exs. 19–28

Solve the equation. Check your solution.

19. $3w + 4w - 2 = 12$

20. $z + 5 - 4z = 8$

21. $c + 2c - 5 - 5c = 7$

22. $4y - (y - 4) = -20$

23. $8a - 3(2a + 5) = 13$

24. $16h - 4(5h - 7) = 4$

25. $\frac{3}{2}(b + 1) = 3$

26. $\frac{4}{3}(2x - 1) = -12$

27. $\frac{6}{5}(8k + 2) = -36$

28. FOOTBALL You purchase 5 tickets to a football game from an Internet ticket agency. In addition to the cost per ticket, the agency charges a convenience charge of \$2.50 per ticket. You choose to pay for rush delivery, which costs \$15. The total cost of your order is \$352.50. What is the price per ticket not including the convenience charge?

3 CHAPTER REVIEW

3.4 Solve Equations with Variables on Both Sides

pp. 154–159

EXAMPLE

Solve the equation, if possible.

a. $-2(x - 5) = 7 - 2x$ — **Original equation**

$-2x + 10 = 7 - 2x$ — **Distributive property**

$-2x + 3 = -2x$ — **Subtract 7 from each side.**

▶ The equation $-2x + 3 = -2x$ is not true because the number $-2x$ cannot be equal to 3 more than itself. So, the equation has no solution.

b. $5(3 - 2x) = -(10x - 15)$ — **Original equation**

$15 - 10x = -10x + 15$ — **Distributive property**

$15 - 10x = 15 - 10x$ — **Rearrange terms.**

▶ The statement $15 - 10x = 15 - 10x$ is true for all values of x. So, the equation is an identity.

EXERCISES

EXAMPLES 1, 2, and 4 on pp. 154–156 for Exs. 29–37

Solve the equation, if possible.

29. $-3z - 1 = 8 - 3z$

30. $16 - 2m = 5m + 9$

31 $2.9w + 5 = 4.7w - 7.6$

32. $2y + 11.4 = 2.6 - 0.2y$

33. $4(x - 3) = -2(6 - 2x)$

34. $6(2a + 10) = 5(a + 5)$

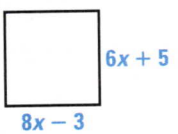
35. $\frac{1}{12}(48 + 24b) = 2(17 - 4b)$

36. $1.5(n + 20) = 0.5(3n + 60)$

37. **GEOMETRY** Refer to the square shown.

a. Find the value of x.

b. Find the perimeter of the square.



3.5 Write Ratios and Proportions

pp. 162–167

EXAMPLE

You know that 5 pizzas will feed 20 people. How many pizzas do you need to order to feed 88 people?

$\frac{5}{20} = \frac{x}{88}$ ← **number of pizzas** ← **number of people**

$88 \cdot \frac{5}{20} = 88 \cdot \frac{x}{88}$ — **Multiply each side by 88.**

$22 = x$ — **Simplify.**

▶ You need to order 22 pizzas.

EXAMPLES 2 and 3 on pp. 163–164 for Exs. 38–44

EXERCISES

Solve the proportion. Check your solution.

38. $\frac{56}{16} = \frac{x}{2}$

39. $\frac{y}{9} = \frac{25}{15}$

40. $\frac{2}{7} = \frac{m}{91}$

41. $\frac{5z}{3} = \frac{105}{6}$

42. $\frac{9}{4} = \frac{3a}{20}$

43. $\frac{c+2}{45} = \frac{8}{5}$

44. PAINTING The label on a can of paint states that one gallon of the paint will cover 560 square feet. How many gallons of that paint are needed to cover 1400 square feet?

3.6 Solve Proportions Using Cross Products

pp. 168–173

EXAMPLE

Solve the proportion $\frac{3}{10} = \frac{12}{x}$.

$\frac{3}{10} = \frac{12}{x}$ Write original proportion.

$3 \cdot x = 10 \cdot 12$ Cross products property

$3x = 120$ Simplify.

$x = 40$ Divide each side by 3.

EXAMPLE

A map has a scale of 1 cm : 15 km. The distance between two cities on the map is 7.2 centimeters. Estimate the actual distance between the cites.

$\frac{1}{15} = \frac{7.2}{d}$ ← centimeters ← kilometers

$1 \cdot d = 15 \cdot 7.2$ Cross products property

$d = 108$ Simplify.

▸ The distance between the two cities is about 108 kilometers.

EXAMPLES 1, 3, and 4 on pp. 168–170 for Exs. 45–52

EXERCISES

Solve the proportion. Check your solution.

45. $\frac{5}{7} = \frac{20}{r}$

46. $\frac{6}{z} = \frac{12}{5}$

47. $\frac{126}{56} = \frac{9}{4b}$

48. $\frac{10}{3m} = \frac{-5}{6}$

49. $\frac{n+8}{5n-2} = \frac{3}{8}$

50. $\frac{5-c}{3} = \frac{2c+2}{-4}$

51. TYPING RATES A student can type 65 words in 2 minutes. How many words can the student type in 20 minutes?

52. MAPS A map has a scale of 1 cm : 12 km. The distance between two cities on the map is 6.8 centimeters. Estimate the actual distance between the cities.

3 CHAPTER REVIEW

3.7 Solve Percent Problems

pp. 176–181

EXAMPLE

42 is 40% of what number?

$a = p\% \cdot b$ Write percent equation.

$42 = 40\% \cdot b$ Substitute 42 for a and 40 for p.

$42 = 0.4 \cdot b$ Write percent as decimal.

$105 = b$ Divide each side by 0.4.

▶ 42 is 40% of 105.

EXERCISES

EXAMPLES 2, 3, 4, and 5 on pp. 177–179 for Exs. 53–57

Use the percent equation to answer the question.

53. What number is 30% of 55?

54. 117 is 78% of what number?

55. What percent of 56 is 21?

56. What percent of 60 is 18?

57. CONCERTS There were 7500 tickets sold for a concert, 20% of which were general admission tickets. How many general admission tickets were sold?

3.8 Rewrite Equations and Formulas

pp. 184–189

EXAMPLE

Write $5x + 4y - 7 = 5$ so that y is a function of x.

$5x + 4y - 7 = 5$ Write original equation.

$5x + 4y = 12$ Add 7 to each side.

$4y = 12 - 5x$ Subtract $5x$ from each side.

$y = 3 - \frac{5}{4}x$ Divide each side by 4.

EXERCISES

EXAMPLES 2 and 3 on p. 185 for Exs. 58–61

Write the equation so that y is a function of x.

58. $x + 7y = 0$

59. $3x = 2y - 18$

60. $4y - x = 20 - y$

61. AQUARIUMS A pet store sells aquariums that are rectangular prisms. The volume V of an aquarium is given by the formula $V = \ell wh$ where ℓ is the length, w is the width, and h is the height.

a. Solve the formula for h.

b. Use the rewritten formula to find the height of the aquarium shown, which has a volume of 5850 cubic inches.