Name _____ Date _____

LESSON 6.5

Challenge Practice

For use with the lesson "Solve Special Types of Linear Systems"

In Exercises 1–3, use the linear system.

$ax + \frac{1}{4}y = 7$

$\frac{1}{3}x + \frac{1}{6}y = 3$

1. For what values of a does the system have no solution?
2. For what values of a does the system have infinitely many solutions?
3. For what values of a does the system have exactly one solution?

In Exercises 4 and 5, suppose a, b, and c are non-zero constants. Use the linear system.

$ax + by = 3$

$cax + cby = 12$

4. Does the number of solutions depend on the values of a, b, and c?
5. Describe the number of solutions in each possible case.

In Exercises 6–9, suppose a_1, a_2, b_1, b_2, c_1, and c_2 are non-zero constants. Use the linear system.

$a_1x + b_1y = c_1$

$a_2x + b_2y = c_2$

6. Solve for x and y in terms of a_1, a_2, b_1, b_2, c_1, and c_2.
7. State the relationship between the values of a_1, a_2, b_1, b_2, c_1, and c_2 that will guarantee there is exactly one solution.
8. State the relationship between the values of a_1, a_2, b_1, b_2, c_1, and c_2 that will guarantee there is no solution.
9. State the relationship between the values of a_1, a_2, b_1, b_2, c_1, and c_2 that will guarantee there are infinitely many solutions.

Lesson 6.5 Solve Special Types of Linear Systems, continued

Study Guide

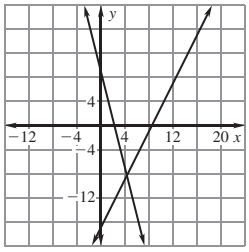
1. infinitely many solutions **2.** no solution

3. infinitely many solutions **4.** one solution

5. one solution

Real-Life Application

1.



Yes, there is a possibility because the two lines intersect.

2. The two equations represent the same line. If the cubs are walking towards you, then yes, you will see them. If the cubs are walking away from you, then no, you will not see them. **3.** No, you will not cross the stream. The two lines are parallel.

Challenge Practice

1. $a = \frac{1}{2}$ **2.** No value of a gives infinitely many solutions. **3.** $a \neq \frac{1}{2}$ **4.** The number of solutions depends only on the value of c. **5.** When $c = 4$ there are an infinite number of solutions. When $c \neq 4$ there are no solutions.

6. $x = \frac{c_1b_2 - c_2b_1}{a_1b_2 - a_2b_1}; y = \frac{a_1c_2 - a_2c_1}{a_1b_2 - a_2b_1}$

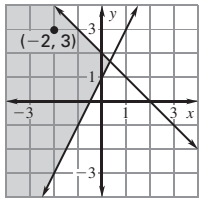
7. $a_1b_2 \neq a_2b_1$ **8.** $a_1b_2 = a_2b_1$ and $c_2 \neq \frac{b_2}{b_1}c_1$

9. $a_1b_2 = a_2b_1$ and $c_2 = \frac{b_2}{b_1}c_1$

Lesson 6.6 Solve Systems of Linear Inequalities

Teaching Guide

1.



2. $y \geq 2x + 1$ **3.** $y \leq -x + 2$

4. The shaded region is the intersection of the regions that are the solutions of the two inequalities.

Spreadsheet Activity

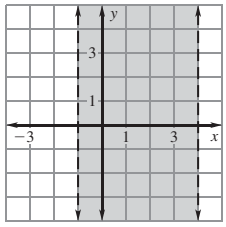
1. not a solution; not a solution; solution; not a solution **2.** solution; not a solution; not a solution; solution

Practice Level A

1. yes **2.** no **3.** yes **4.** no **5.** yes **6.** yes

7. D **8.** B **9.** A **10.** C **11.** F **12.** E

13.



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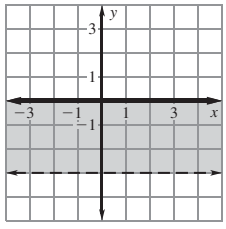

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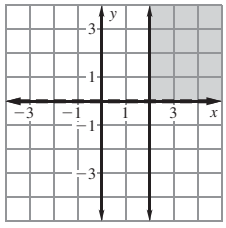

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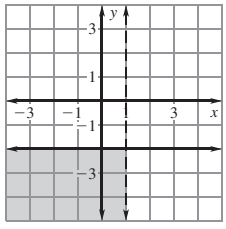

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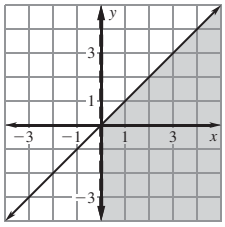

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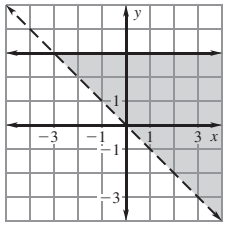
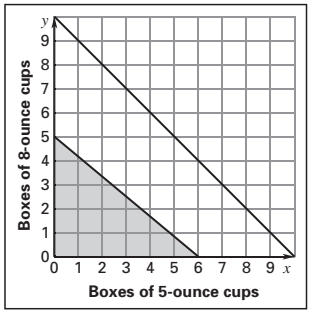


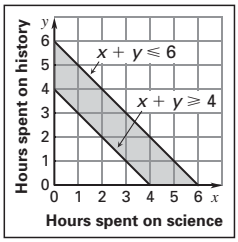
19. a. $x + y \leq 10$ and $15x + 18y \leq 90$

b.



c. Answers will vary.

20. a. 6 h **b.**



c. Answers will vary.