Name _____ Class _____ Date _____

6-4 Practice

Form K

Applications of Linear Systems

Solve each word problem.

1. The concession stand is selling hot dogs and hamburgers during a game. At halftime, they sold a total of 78 hot dogs and hamburgers and brought in $105.50. How many of each item did they sell if hamburgers sold for $1.50 and hot dogs sold for $1.25?
   32 hamburgers and 46 hot dogs

2. The sum of two numbers is 67. The smaller number is 3 less than the larger number. What are the two numbers?
   35 and 32

3. There are two different jobs Jordan is considering. The first job will pay her $4200 per month plus an annual bonus of $4500. The second job pays $3100 per month plus $600 per month toward her rent and an annual bonus of $500. Which job should she take?
   the first job

4. The perimeter of a rectangle is 66 cm and its width is half its length. What are the length and the width of the rectangle?
   length = 22 cm; width = 11 cm

5. A chemist is mixing one solution that is 32% sodium and another solution that is 12% sodium. How many liters of each type should the chemist use to produce 50 liters of the solution that is 20% sodium?
   20 L of the 32% solution and 30 L of the 12% solution

6-4 Practice (continued) Form K

Applications of Linear Systems

6. A community sponsored a charity square dance where admission was $3 for adults and $1.50 for children. If 168 people attended the dance and the money raised was $432, how many adults and how many children attended the dance?

a. What are the two systems of equations that you could write to solve this problem? $a + c = 168$, $3a + 1.5c = 432$

b. What method would you use to solve the system? Why?

Answers may vary. For example, you would use elimination by multiplying the top equation by -1.5 to eliminate c. This involves fewer steps to solve than substitution or graphing.

c. How many adults and how many children attended the dance?

120 adults, 48 children

Solve each system. Explain why you chose the method you used.

7. $3y = 4x + 1$
$8x - 2y = 10$

(2, 3); Answers may vary. For example, I used elimination because substitution would involve the use of fractions.

8. $-2y = -4x - 2$
$3x + 2y = 9$

(1, 3); Answers may vary. For example, I used substitution because y can be easily isolated without involving fractions.

9. $3x - 3y = -3$
$-2x - 3y = 17$

(−4, −3); Answers may vary. For example, I used elimination because the y-variable is simply eliminated by multiplying either equation by -1.

10. $x - 2y = 9$
$x + 3y = -1$

(5, −2); Answers may vary. For example, I used elimination because the x-variable is simply eliminated by multiplying either equation by -1.

11. Open-Ended Write a system of equations for which you would use substitution to solve.

Answers may vary. For example,
$2x + 3y = 8$
$y = x + 1$

12. A student invested $5000 in two different savings accounts. The first account pays an annual interest rate of 3%. The second account pays an annual interest rate of 4%. At the end of one year, she had earned $185 in interest. How much money did she invest in each account?

$1500 in the 3% account and $3500 in the 4% account