Name: _____

2.4.D2(A) – WRITING SYSTEMS OF LINEAR EQUATIONS

Write the system of equations. DO NOT SOLVE.

1. You plan to rent a 14-foot truck for a two-day local move. At truck rental agency A, you can rent a truck for $29.95 per day plus $0.49 per mile. At agency B, you can rent a truck for $50 per day plus $0.25 per mile.

   Let x = the miles driven and let y = the total cost of renting the truck from each agency.

2. You are offered two jobs selling dental supplies. One company offers a straight commission of 6% of sales. The other company offers a salary of $350 per week plus 3% of sales.

   Let x = your sales and y = your weekly salary.

3. A shoe company invests $300,000 in equipment to produce a new line of athletic footwear. Each pair of shoes costs $5 to produce and is sold for $60.

   Write two equations: one for the cost, C, and one for the revenue, R, where x represents the pairs of shoes.

4. A small software company invests $16,000 to produce a software package that will sell for $55.95. Each unit can be produced for $35.45.

   Write two equations: one for the cost, C, and one for the revenue, R, where x represents the number of units.

5. A small fast-food restaurant invests $5000 to produce a new food item that will sell for $3.49. Each item can be produced for $2.16.

   Write two equations: one for the cost, C, and one for the revenue, R, where x represents the number of food items.

6. A manager at a candy stand at a large multiplex cinema has a popular candy that sells for $1.60 per pound. The manager notices a different candy worth $2.10 per pound that is not selling well. The manager decides to form a mixture of both candies to help clear the inventory. How many pounds of each candy should be used to create a 75-pound mixture selling for $1.90 per pound?

   Let x = pounds of the popular candy and y = pounds of the unpopular candy.

7. Nadia's most recent airplane flight was 5 hours long and she travelled a total distance of 640 miles. For the first part of the flight, the average speed of the airplane was 140 miles per hour. The second part of the flight, the average speed was 120 miles per hour.

   Let x = the number of hours in the first part of the flight and y = the number of hours in the second part. (Distance = speed × time)

8. A department store held a sale to sell all of the 214 winter jackets that remained after the season ended. Until noon, each jacket in the store was priced at $31.95. At noon, the price of the jackets was further reduced to $18.95. After the last jacket was sold, total receipts for the clearance sale were $5108.30.

   Let x = the number of jackets sold before noon and y = the number of jackets sold after noon.

9. The Rocket roller-coaster has 10 cars, some that hold 4 people and some that hold 8 people. There is room for 56 people altogether.

Let x = the number of 4-passenger cars and y = the number of 8-passenger cars.

10. Two cheeseburgers and one small order of French fries from a fast-food restaurant contain a total of 850 calories. Three cheeseburgers and two small orders of French fries contain a total of 1390 calories.

Let x = the calories in a cheeseburger and y = the calories in an order of French fries.

11. Lizzy has 30 coins that total $4.80. All of her coins are dimes and quarters.

Let x = the number of dimes and y = the number of quarters.

12. At a local high school championship basketball game, 1435 tickets were sold. A student admission ticket cost $1.50; an adult admission ticket cost $5. The total ticket receipts for the basketball game were $3552.50.

Let x = the number of student tickets sold and y = the number of adult tickets sold.

13. Russ worked a total of 135 hours during the month of September. He earned a total of $3600. Russ earns $25 per hour each weekday and $40 per hour each Saturday that he worked.

Let x = the number of weekday hours he worked and y = the number of Saturday hours worked.

14. A hotel has 200 rooms. Those with kitchen facilities rent for $100 per night and those without kitchen facilities rent for $80 per night. On a night when the hotel was completely occupied, revenues were $17,000.

Let x = the number of rooms with kitchen facilities and y = the number of rooms without.

15. A total of $12,000 is invested in two funds paying 5% and 3% simple interest. The yearly interest earned is $500.

Let x = the amount invested at 5% and y = the amount invested at 3%. *(Interest = amount × rate × time)*

16. A total of $25,000 is invested in two funds paying 6% and 8.5% simple interest. The investor wants a yearly interest income of $2000 from the two investments.

Let x = the amount invested at 6% and y = the amount invested at 8.5%. *(Interest = amount × rate × time)*

17. Ten liters of a 30% acid solution is obtained by mixing a 20% solution with a 50% solution.

Let x = the amount of 20% solution and y = the amount of 50% solution.

18. A jeweler needs to mix an alloy with 16% gold content and an alloy with 28% gold content to obtain 32 ounces of a new alloy with a 25% gold content.

Let x = ounces of an alloy with 16% gold content and y = ounces of an alloy with 28% gold content.

Chapter 2: Linear Functions