

Name: _____

Period: _____ Date: _____

Solving Linear Systems Word Problems **Answers**

Section I. Solve using any method (graphing, substitution or linear combination).

1. The SHS school play was attended by 78 students and parents. Student tickets were \$5.00 and parent tickets were \$7.00. If SHS collected \$442.00, how many students and parents attended the play?

$$\begin{aligned} s + p &= 78 \\ 5s + 7p &= 442 \end{aligned}$$

52 Students and 26 Parents

2. Three times one number added to five times another number is 54. The second number is two less than the first. What are the numbers?

$$\begin{aligned} \text{Let: } x &= \text{first number} & 3x + 5y &= 54 \\ y &= \text{second number} & y &= x - 2 \end{aligned}$$

first number is 8 and the second number is 6

3. At the end of the day, a store has \$390.00 in its cash drawer. There are \$20.00 and \$50.00 bills. If there are only 15 bills in the drawer, how many of each type are there?

$$\begin{aligned} \text{Let: } x &= \$20\text{'s} & x + y &= 15 \\ y &= \$50\text{'s} & 20x + 50y &= 390 \end{aligned}$$

there are 12 \$20 bills and 3 \$50 bills

4. A train has a total of 30 passenger cars. Some cars hold 20 people, and the rest hold 15 people each. How many of each type of train car are there if the total train passenger capacity is 510 people?

$$\begin{aligned} \text{Let: } x &= 20 \text{ person cars} & x + y &= 30 \\ y &= 15 \text{ person cars} & 20x + 15y &= 510 \end{aligned}$$

there are 12 20-person cars, and 18 15-person cars

5. On Monday Devin bought 10 cups of coffee and 5 doughnuts for his office at the cost of \$16.50. It turns out that the doughnuts were more popular than the coffee. On Tuesday he bought 5 cups of coffee and 10 doughnuts for a total of \$14.25. How much was each cup of coffee?

$$\begin{array}{l} \text{Let: } x = \text{cups of coffee} \\ \quad y = \text{doughnuts} \end{array} \qquad \begin{array}{l} 10x + 5y = 16.50 \\ 5x + 10y = 14.25 \end{array}$$

each cup of coffee is \$1.25

6. Eric stacked his next door neighbor's wood for a handful of dimes and nickels, 80 coins in all. Upon completing the job he counted out the coins and it came to \$6.60. How many of each coin did he earn?

$$\begin{array}{l} \text{Let: } x = \text{dimes} \\ \quad y = \text{nickles} \end{array} \qquad \begin{array}{l} x + y = 80 \\ .10x + .05y = 6.60 \end{array}$$

he earned 52 dimes and 28 nickles

7. Tickets for the prom cost \$20.00 for a single ticket and \$35.00 for a couple. Total ticket sales for the prom were \$2280, and 128 students attended the dance. How many of each type of ticket were sold?

$$\begin{array}{l} \text{Let: } x = \text{single tickets} \\ \quad y = \text{couples tickets} \end{array} \qquad \begin{array}{l} x + 2y = 128 \\ 20x + 35y = 2280 \end{array}$$

there were 16 single tickets, and 56 couples tickets

8. A chemist wishes to mix an 8 ounce solution with a 20% alcohol content. He has two solutions already made from previous experiments, one with a 50% alcohol content and another with a 10% alcohol content. How much of each solution does he need to mix together to create an 8 ounce solution with a 20% alcohol content?

$$\begin{array}{l} \text{Let: } x = 20 \text{ person cars} \\ \quad y = 15 \text{ person cars} \end{array} \qquad \begin{array}{l} x + y = 30 \\ 20x + 15y = 510 \end{array}$$

there are 12 20-person cars, and 18 15-person cars