

Applied Topics in Math
7.1 & 7.2

Name _____

Word Problems Involving Systems of Linear Equations

**Directions: Write two equations to set up a system and then choose a method to solve.
Be sure to answer the question.**

1. The sum of two numbers is 22, while their difference is 12. Find both numbers.

$$\begin{aligned}x + y &= 22 \\ x - y &= 12\end{aligned}$$

2. At the snack shack for the home football games, coffee is priced at \$1.50 per cup and hot cocoa is sold for \$1.00. The receipts from last week's game indicated a total of \$162.50 on a sale of 135 cups. How many cups of each were sold?

$$\begin{aligned}C + H C &= 135 \\ 1.50C + 1 H C &= 162.50\end{aligned}$$

3. A golfer used 79 strokes in 18 holes. He took either 4 or 5 strokes on each hole. How many holes did he play in 4 strokes?

$$\begin{aligned}x + y &= 18 \\ 4x + 5y &= 79\end{aligned}$$

$$\begin{aligned}x &= 4 \text{ strokes} \\ y &= 5 \text{ strokes}\end{aligned}$$

4. Jake has a whopping 30 coins in his piggy bank, each of which is either a nickel or a dime. The total value in the bank is \$2.15. How many dimes does he have?

$$\begin{aligned}n + d &= 30 \\ .05n + .10d &= 2.15\end{aligned}$$

5. There are 25 students in our math class. If the number of girls is 8 less than twice the number of boys, how many of each gender is there?

$$\begin{aligned}g + b &= 25 \\ g &= 2b - 8 \\ 2b - 8 + b &= 25 \\ 3b &= 33 \\ b &= 11 \\ g &= 14\end{aligned}$$

6. Mr. Jones went apple-picking to bake Mrs. Laird an apple pie. He was so excited at the tree farm that he bought 27 pounds of apples! He bought macintosh apples at \$.26 per pound and green apples at \$.30 per pound and spent \$7.50. How many pounds of each variety did he buy?

$$\begin{aligned} m + g &= 27 \\ \cdot 26m + .3g &= 7.50 \end{aligned}$$

7. Chris has been searching for employment because he has no money. He went searching for jobs and two companies actually hired him! He worked a total of 14 hours at two different part-time jobs, one paying \$7.50 per hour and the other paying \$7.95 per hour. He earned \$108.60. How many hours did he work at each job?

8. Grant just won the lottery and decided to invest his money. He invested a total of \$8,000 for one year, part in a savings account at 4% and part in a CD at 6%. If the total interest for a year from the two investments was \$430, how much did he invest at each rate?

$$\begin{aligned} x + y &= 8000 \\ \cdot 04x + .06y &= 430 \end{aligned}$$

9. Three times one number increased by twice a smaller number equals four. Twice the larger number less twice the smaller number equals six. Find the two numbers.

$$\begin{aligned} 3x + 2y &= 4 \\ 2x - 2y &= 6 \end{aligned}$$

10. Dr. Minkin, a pharmacist, needs 300 milliliters of a 10% solution. He only has 5% solution and 25% solution available. How many milliliters of each solution should he mix to obtain the desired solution?