

Name: Key Hour:      Date: 9-7-18

## Systems of Equations Word Problems Substitution Practice

Solve the system of linear equations.

1)  $y = 3 - x$

$5x + 3y = -1$

$$5x + 3(3 - x) = -1$$

$$5x + 9 - 3x = -1$$

$$2x + 9 = -1$$

$$\begin{array}{r} -9 \quad -9 \\ \hline \end{array}$$

$$2x = -10$$

$$\frac{2x = -10}{2}$$

$$x = -5$$

$$y = 3 - (-5)$$

$$y = 8$$

$$(-5, 8)$$

For all problems do the following:

- Define variables
- Write a system of equations that model the problem
- Solve for each variable
- Write a sentence to describe the meaning of your solution

No work = No credit

2) The Frosty Ice-Cream Shop sells sundaes for \$2 and banana splits for \$3. On a hot summer day, the shop sold 8 more sundaes than banana splits and made \$156. Determine how many sundaes and how many banana splits were purchased.

$A$  = # of sundaes

$b$  = # of banana splits

$$\left. \begin{array}{l} 2A + 3b = 156 \\ A = b + 8 \end{array} \right\}$$

$$2(b + 8) + 3b = 156$$

$$2b + 16 + 3b = 156$$

$$5b + 16 = 156$$

$$\begin{array}{r} -16 \quad -16 \\ \hline \end{array}$$

$$\frac{5b = 140}{5} \quad \frac{140}{5}$$

$$b = 28$$

The shop sold 36 sundaes

and 28 banana splits that day.

$$A = 28 + 8$$

$$A = 36$$

$$(28, 36)$$

3) You collect baseball and football cards. Your uncle has an old collection of 360 cards that he gives to you. The collection has 30 more baseball cards than twice the number of football cards. How many of each type are in your uncle's collection?

$b$  = # of baseball cards

$f$  = # of football cards

$$b + f = 360$$

$$b = 2f + 30$$

$$2f + 30 + f = 360$$

$$3f + 30 = 360$$

$$\begin{array}{r} -30 \quad -30 \\ \hline \end{array}$$

$$3f = 330$$

$$\frac{3}{3}$$

$$f = 110$$

$$b + 110 = 360$$

$$\begin{array}{r} -110 \quad -110 \\ \hline \end{array}$$

$$b = 250$$

The collection has 110 football cards + 250 baseball cards

$$(110, 250)$$

4) Students at Dearborn High want to order shirts with their school logo. T-Shirts Plus charges \$9.90 per shirt plus a setup fee of \$43. Shirts and More charges \$8.40 per shirt plus a \$58 set-up fee. How many t-shirts do you need to order for the t-shirt company's total cost to be equal?

$y = \text{cost of T-shirt order}$

$x = \text{\# of tee shirts}$

$(10, 142)$

If 10 shirts are ordered, total cost

\$142 at both companies

$$y = 9.9(10) + 43$$

$$y = 99 + 43$$

$$y = 142$$

$$\text{TS+ : } y = 9.90x + 43$$

$$\text{S+M : } y = 8.40x + 58$$

$$\begin{array}{r} 9.90x + 43 = 8.40x + 58 \\ -8.40x \quad -8.40x \\ \hline 1.50x + 43 = 58 \\ -43 \quad -43 \\ \hline 1.50x = 15 \end{array}$$

$$1.50x = 15$$

$$1.5x = 1$$

### SLOT Practice

Find the product of the following binomials. Write your answer in standard form!

1)  $(6x + 2)(2x + 8)$

$$12x^2 + 48x + 4x + 16$$

$$12x^2 + 52x + 16$$

2)  $(5v + 4)(3v - 6)$

$$15v^2 - 30v + 12v - 24$$

$$15v^2 - 18v - 24$$

3)  $(5x + 6)(8x - 4)$

$$40x^2 - 20x + 48x - 24$$

$$40x^2 + 28x - 24$$

4)  $(x - 3)^2$

$$(x - 3)(x - 3)$$

$$x^2 - 3x - 3x + 9$$

$$x^2 - 6x + 9$$