Get out your Homework and put it on the corner of your desk.

Solve by Substitution.

1) $2x + y = 3$
$-x + 3y = -12$

2) $5x + 2y = 24$
$x + 3y = 10$

Solve by Substitution.

$2x + y = 3$

$-x + 3y = -12$

Solve. $2x + y = 3$

$y = -2x + 3$

Sub. $-x + 3y = -12$

$-x + 3(-2x + 3) = -12$

Solve. $-x - 6x + 9 = -12$

$-7x + 9 = -12$

$-7x + 9 - 9 = -12 - 9$

$-7x = -21$

$\frac{-7x}{-7} = \frac{-21}{-7}$

$x = 3$

Sub. $2x + y = 3$

$2(3) + y = 3$

$6 + y = 3$

$6 + y - 6 = 3 - 6$

$\boxed{y = -3}$

Solution:

$(3, -3)$

$$5x + 2y = 24$$
$$x + 3y = 10$$

Solve. $x + 3y = 10$

$x = -3y + 10$

Sub. $5x + 2y = 24$

$5(-3y + 10) + 2y = 24$

Solve. $-15y + 50 + 2y = 24$

$-13y + 50 = 24$

$-13y + 50 - 50 = 24 - 50$

$\frac{-13y}{-13} = \frac{-26}{-13}$

$\boxed{y = 2}$

Sub. $x + 3y = 10$

$x + 3(2) = 10$

$x + 6 = 10$

$x + 6 - 6 = 10 - 6$

$\boxed{x = 4}$

Solution:

$(4, 2)$

Systems of Equations~ Real-World

- Highlight the important information in the problem that will help write two equations.
- Define your variables
- Write two equations
- Use one of the methods for solving systems of equations to solve.
- Check your answers by substituting your ordered pair into the original equations.
- Answer the questions in the real world problems. Always write your answer in complete sentences!

Copy the Word Problem & Show all work.

1) Wendy is starting a catering business and is attempting to figure out who she should be using to transport the food to different locations. She has found two trucking companies that are willing to make sure her food arrives intact. Peter's Pick Up charges $0.40 per mile and charges a flat fee of $68. Helen's Haulers charges $0.65 per mile and charges a flat fee of $23.

- Define your variables.

- Write a system of equations to model the above situation.

- For what distance would the cost of transporting to the produce be the same for both companies? What is that equal cost? Use mathematics to explain how you determined your answer. Use words, symbols or both in your explanation.

- Define your variables.

  $x =$ number of miles the truck drove
  $y =$ total cost of transporting the food

- Write a system of equations to model the above situation.

  Peter's Pick Up: $y = 0.40x + 68$
  Helen's Haulers: $y = 0.65x + 23$

- For what distance would the cost of transporting to the produce be the same for both companies? What is that equal cost? Use mathematics to explain how you determined your answer. Use words, symbols or both in your explanation.

$$0.65x + 23 = 0.40x + 68$$
$$-0.40x \qquad -0.40x$$
$$0.25x + 23 = 68$$
$$-23 \quad -23$$
$$\frac{0.25x}{0.25} = \frac{45}{0.25}$$
$$x = 180$$

$y = 0.40x + 68$
$y = 0.40(180) + 68$
$y = 72 + 68$
$y = 140$

or

$y = 0.65x + 23$
$y = 0.65(180) + 23$
$y = 117 + 23$
$y = 140$

At 180 miles, the cost for the two companies will both be \$140.