Must Do

- Solve the equation
$$2x - 14 = 6 - 3x$$

$$x = 4$$

- Solve the equation when $a = 7x$ by substitution

$$7 + a = -2x - 11$$

$$x = -2$$
$$a = -14$$

Math 8C
Unit 4 – Day 10

Standards:

✓ Identify constraints and write a system of equations for a context.

✓ Use substitution to solve a system of equations.

Symbolic Representations

- At the local Farmer's Market, you bought 7 apples and 4 peaches for $4.80. Your friends bought 5 apples and 2 peaches for $3.00. When you got home, your sister asked how much each fruit cost. You didn't remember but you can use mathematics to figure it out! What are the constraints?

Constraints:
- 7 apples and 4 peaches for $4.80
- 5 apples and 2 peaches for $3

= $4.80

+ = $3.00

🍏🍏🍏🍏
🍏🍏🍏 + 🍑🍑
🍑🍑 = $4.80

🍏🍏🍏
🍏🍏 + 🍑🍑 = $3.00

🍏🍏 + 🍑🍑 = $1.80

🍏 + 🍑 = $0.90

🍏🍏🍏 = $1.20   🍏 = $0.40

🍑 = $0.50

The Substitution Method

- Things that are equal to the same thing are equal to each other.

- Transitive Property of Equality

$$\text{If } a = b, \text{and } b = c, then \ a = c$$

- Reflexive Property of Equality

$$\text{If } x = y \ \text{then } y = x$$

Example

- Solve the system of equations using substitution. (find *x* and *y*)

$$y = -x - 7$$

$$5y + 3x = -13$$

$$x = -11$$
$$y = 4$$
Solution: $(-11, 4)$

Example

- Solve by substitution

$$y = 6x - 11$$

$$-2x - 3y = -7$$

$$x = 2$$
$$y = 1$$
Solution: $(2, 1)$

You Try!

- Solve by substitution

$$2x - 3y = -1$$

$$y = x - 1$$

$$x = 4$$
$$y = 3$$
Solution: $(4, 3)$

Example

- Solve by substitution

$$-4x + y = 6$$

$$-5x - y = 21$$

$$x = -3$$
$$y = -6$$
Solution: $(-3, -6)$

You Try!

- Solve by substitution

$$-7x - 2y = -13$$
$$x - 2y = 11$$

$$x = 3$$
$$y = -4$$
Solution: $(3, -4)$

In Class Practice

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