

# Warmup 11/

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(Look at the “How to Pass” Poster)

**\*\*\*NEED WHITEBOARD, MARKER, ERASER\*\*\***

- 1) Get y by itself:  $3x + y = 12$
- 2) Find 3 (x, y) pairs that will work:  $2x + 3y = 18$
- 3) Get y by itself:  $2x + 3y = 18$
- 4) Go back to page 19 in your notes. (should just have a title so far)

Solve by Substitution:

$$2x + 3y = 29$$

$$x = 4$$

## Solve by Substitution:

$$2x - y = 15$$

$$x = 3y$$

$$2x - y = 15$$

$$2(3y) - y = 15$$

$$6y - y = 15$$

$$5y = 15$$

$$y = 3$$

Now find x:

$$x = 3y$$

$$x = 3(3)$$

$$x = 9$$

$$(9, 3)$$

CHECK:

Solution: (9, 3)

$$2x - y = 15$$

$$2(9) - 3 = 15$$

$$18 - 3 = 15$$

$$15 = 15 \checkmark$$

# Substitution Strategy:

- If  $y = (\text{stuff})$  you can **replace** the  $y$  from the other equation with the  $(\text{stuff})$ 
  - Same with  $x = (\text{stuff})$

## Solve by Substitution

$$6x + 4y = 8$$

$$y = -2x$$

$$(-4, 8)$$

**Solve by Substitution:**

$$x = 5y$$

$$-2x + 20y = -10$$

$$(-5, -1)$$

# Solve the System of Equations using Substitution

$$y = 2x - 21$$

$$y = 5x - 3$$

$$(-6, -33)$$



Harder?

$$y = 2x - 3$$

$$3x + y = 7$$

$$(2, 1)$$

Even harder?

$$x + 2y = 2$$

$$y = x + 4$$

## Example 2:

$$x + 2y = 2$$

$$y = x + 4$$

$$x + 2y = 2$$

$$x + 2(x + 4) = 2$$

$$x + 2x + 8 = 2$$

$$3x + 8 = 2$$

$$3x = -6$$

$$x = -2$$

$$y = x + 4$$

$$y = -2 + 4$$

$$y = 2$$

$$(-2, 2)$$

- **\*\*\*IMPORTANT\*\*\***

- When you substitute, always put what you are substituting in parentheses

Whiteboard:

$$4x - 6y = 4$$

$$x = 2y - 5$$

**(19, 12)**

Whiteboard:

$$y = 3x + 8$$

$$8x + 4y = 22$$

$$\left(-\frac{1}{2}, 6\frac{1}{2}\right)$$

# Story Problem

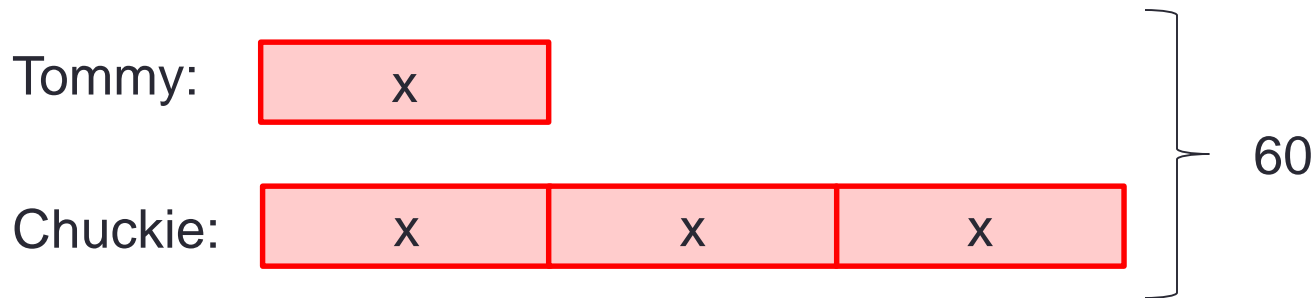
- Tommy and Chuckie have 60 bottles all together. Chuckie has 3 times as many bottles as Tommy. How many bottles do they each have?
- $T + C = 60$
- \*\*\*IS IT:  $T = 3C$  or  $C = 3T$ ??? Discuss.

$$\bullet \begin{cases} T + C = 60 \\ C = 3T \end{cases}$$

Tommy has 15 bottles,  
Chuckie has 45 bottles

# Story Problem

- Tommy and Chuckie have 60 bottles all together. Chuckie has 3 times as many bottles as Tommy. How many bottles do they each have?



$$x + 3x = 60$$



# Story Problem

- Phil and Lill have 42 pacifiers all together. Phil has 8 more pacifiers than Lill. How many pacifiers do they each have?

$$\bullet \begin{cases} P + L = 42 \\ L + 8 = P \end{cases}$$

**Phil has 25 pacifiers,  
Lill has 17 pacifiers**

# Homework:

- p.247 (1 – 10, 15)