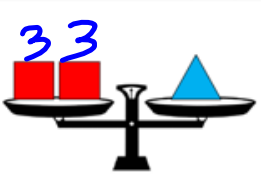

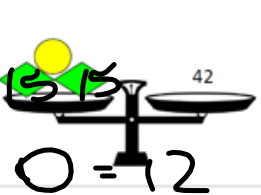
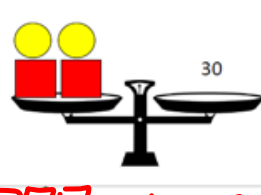
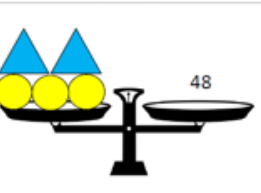


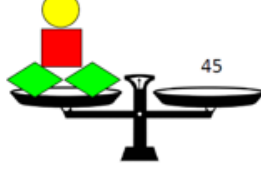


**Unit 5 Day 3: Solving Systems by Substitution**

Use the following information to find the weight of each shape.

Handwritten solutions for the shapes:

- Red square = 3
- Blue triangle = 6
- Green diamond = 15
- Yellow circle = 12

**Practice Solving By Substitution:**

What does it mean to solve a system by substitution?

replacing a variable  $x$  or  $y$  with an equal expression.

a.) Solve the system:  
 $y = 2x - 5$   
 $x = -x + 4$

$(3, 1)$   
 $x \quad y$

$$\begin{aligned} 2x - 5 &= -x + 4 \\ +x & \quad +x \\ \hline 3x - 5 &= 4 \\ +5 & \quad +5 \\ \hline 3x &= 9 \\ \div 3 & \quad \div 3 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} y &= 2x - 5 \\ y &= 2(3) - 5 \\ y &= 6 - 5 \\ y &= 1 \end{aligned}$$

b.) Solve the system:

$$\begin{aligned} 4a + 6b &= -38 \\ 10a + 2b &= 46 \end{aligned}$$

Solve for  $a$  or  $b$  first.

$$\begin{aligned} +10a & \quad +10a \\ \hline 2b &= 46 + 10a \\ \div 2 & \quad \div 2 \\ b &= 23 + 5a \end{aligned}$$

$$\begin{aligned} 4(-5.2) + 6b &= -38 \\ -20.8 + 6b &= -38 \\ +20.8 & \quad +20.8 \\ 6b &= -17.2 \\ \div 6 & \quad \div 6 \\ b &= -2.9 \end{aligned}$$

$$\begin{aligned} 4a + 6(23 + 5a) &= -38 \\ 4a + 138 + 30a &= -38 \\ 34a + 138 &= -38 \\ -138 & \quad -138 \\ \hline 34a &= -176 \\ \div 34 & \quad \div 34 \\ a &= -5.2 \end{aligned}$$

c.) Solve the system:

$$\begin{aligned} 6a &= -17.2 \\ \div 6 & \quad \div 6 \\ a &= -2.9 \end{aligned}$$

$(-5.2, -2.9)$   
 $a, b$

$$\begin{aligned} 34a &= -176 \\ \div 34 & \quad \div 34 \\ a &= -5.2 \end{aligned}$$

8 smileys = 34 L.B.s  
 6 smileys = 16 L.B.s  
 5 smileys = 10 L.B.s  
 4 smileys = 8 L.B.s

8 smileys / 5 L.B.s  
 = 1.6 smileys / L.B.

### Practice/Closure Day 3

Solve the following systems by substitution and graphing (showing you get the same answer no matter how you solve a system is a great way to check your work to make sure your answer is correct).

1.  $\begin{cases} 3x + 4y = 9 \\ y = x - 3 \end{cases}$

Substitution:  $3x + 4(x - 3) = 9$

$3x + 4x - 12 = 9$

$7x - 12 = 9$

$7x = 21$

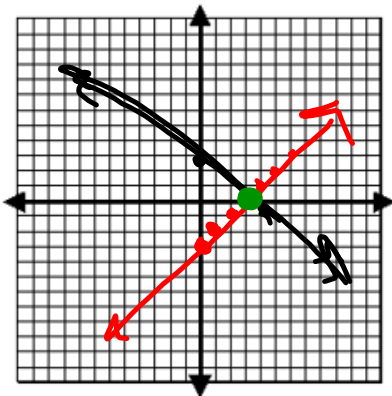
$x = 3$

$y = 3 - 3$

$y = 0$

$(3, 0)$

Graphing:



$\begin{cases} 8x - 14y = 5 \\ x = 3y \end{cases}$

Substitution:

Graphing:

