# Warmup $11/2^{2^2}$ 1. Find two points that would be on the graph of the equation 5x + 2y = 60. 2. Early finishers: find as many MORE points as you can. (12, 0) (6, 15) (14, -5) (4, 20) (0, 30) (10, 5) (2, 25) (8, 10) (1, 27.5) (20, -20) (9, 7.5)



#### Another way to solve systems...

· Look at #2 on your homework.

$\begin{cases} y = 2x - 8\\ y = -3x + 7 \end{cases}$	Since y = both, you can set them equal to each other
2x - 8 = -3x + 7	
Then solve	

x = 3 (Does this match your original answer?)
How can we get y?



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WHITEBOARDS

Solve the System of Equations using  
Substitution  
$$x + y = 10$$
$$y = 2$$
(8, 2)



Solve the System of Equations using  
Substitution  
$$y = x + 100$$
$$y = 45$$
(-55, 45)

Solve the System of Equations using  
Substitution  

$$3x + 10y = 20$$
  
 $x = 6$   
(6,  $\frac{1}{5}$ )

Solve the System of Equations using  
Substitution  

$$4x + y = 24$$
  
 $y = 2x$   
 $4x + y = 24$   
 $4x + y = 24$   
 $4x + 2x = 24$   
 $4x + 2x = 24$   
 $6x = 24$   
 $x = 4$   
 $(4, 8)$ 

## CHECK: Solution: (4, 8)4x + y = 244(4) + 8 = 2416 + 8 = 2424 = 24

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 = 152(9) - 3 = 1518 - 3 = 1515 = 15

Substitution Strategy:
<ul> <li>If y = (something) you can replace the y from the other equation with the (something)</li> </ul>
• Same with x = (something)

Solve by Substitution  

$$6x + 4y = 8$$
  
 $y = -2x$   
(-4, 8)

Solve the System of Equations using Substitution

$$y = 2x - 21$$
  
 $y = 5x - 3$ 

 $\frac{\text{Solve by Substitution}}{x = 5y}$ -2x + 20y = -10(-5, -1)

$$\frac{\text{Harder?}}{y = 2x - 3}$$
  
3x + y = 7  
(2, 1)

 $\frac{\text{Even harder?}}{x + 2y = 2}$ y = x + 4

Example 2:  

$$x + 2y = 2$$
  
 $y = x + 4$   
 $x + 2y = 2$   
 $x + 2(x + 4) = 2$   
 $x + 2(x + 4) = 2$   
 $x + 2x + 8 = 2$   
 $3x + 8 = 2$   
 $3x = -6$   
 $x = -2$   
(-2, 2)

$$\frac{\text{Whiteboard:}}{4x - 6y = 4}$$

$$x = 2y - 5$$
(19, 12)

 $\frac{\text{Whiteboard:}}{y = 3x + 8}$  8x + 4y = 22  $\left(-\frac{1}{2}, 6\frac{1}{2}\right)$ 

 $\begin{cases} 2x - 8y = 14\\ x = 4y + 2 \end{cases}$ 

#### **NO SOLUTION!**





### Story Problem

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

$${}^{P+L}_{L+8} = P$$

Phil has 25 pacifiers, Lill has 17 pacifiers

