7-1 Solving Systems by Graphing

o or more linear equations together form a **system of linear equations**. One way to solve a system of linear equations is by graphing each equation and looking to see if the lines have any point in common. Common points that make each equation true would be a **solution to the system of linear equations.**
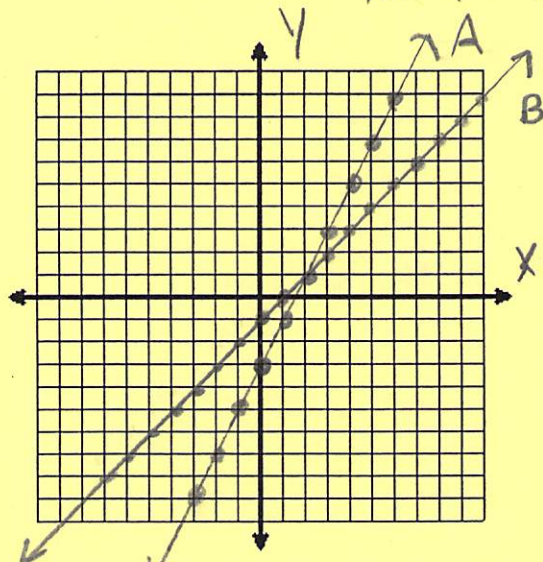
Parallel Lines	Intersecting Lines	Same Line

No Solution	One Solution $(4, 5)$	Infinite Solutions
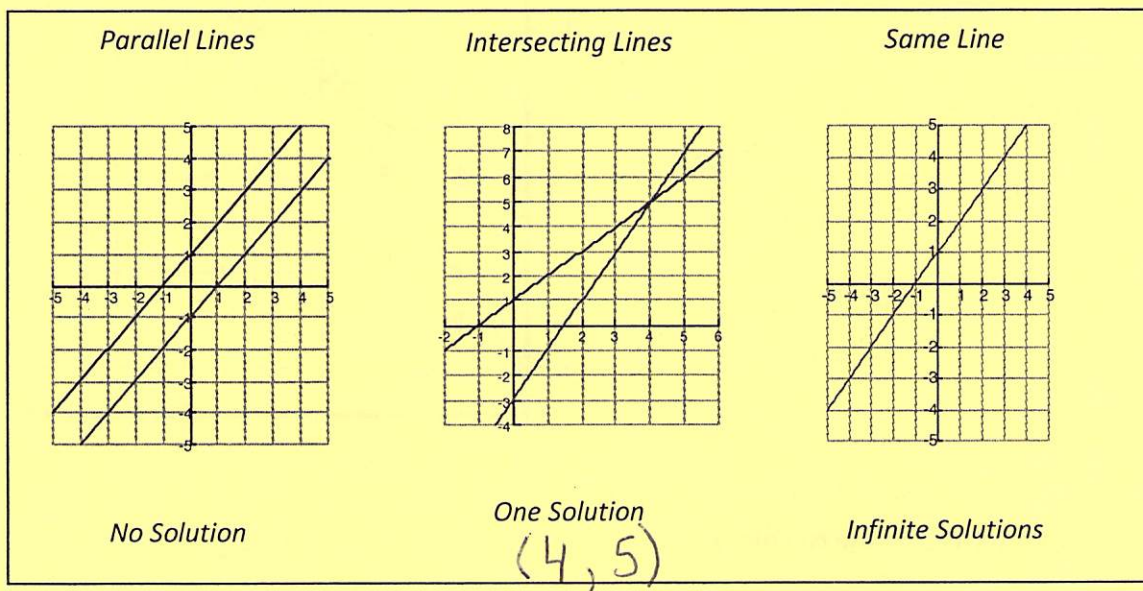
Examples: Solve by Graphing

1. A: $y = 2x - 3$ $m = \frac{2}{1}$ $b = -3$

   B: $y = x - 1$ $m = \frac{1}{1}$ $b = -1$
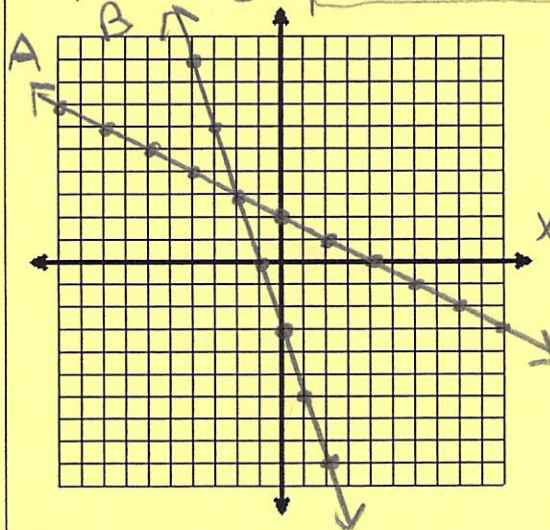

Solution: $(2, 1)$

Check:

:   B:

2. A: $y = -\frac{1}{2}x + 2$ $m = -\frac{1}{2}$ $b = 2$

   B: $\frac{3y}{3} = \frac{-9x}{3} - \frac{9}{3}$ $\boxed{y = -3x - 3}$

Solution: $(-2, 3)$

Check:

A: B:

Real-World Connection:

1. Suppose you have $20 in your bank account and deposit $5 each week. Your friend has $5 in her account and deposits $10 each week. When will you and your friend have the same amount of money in your accounts?
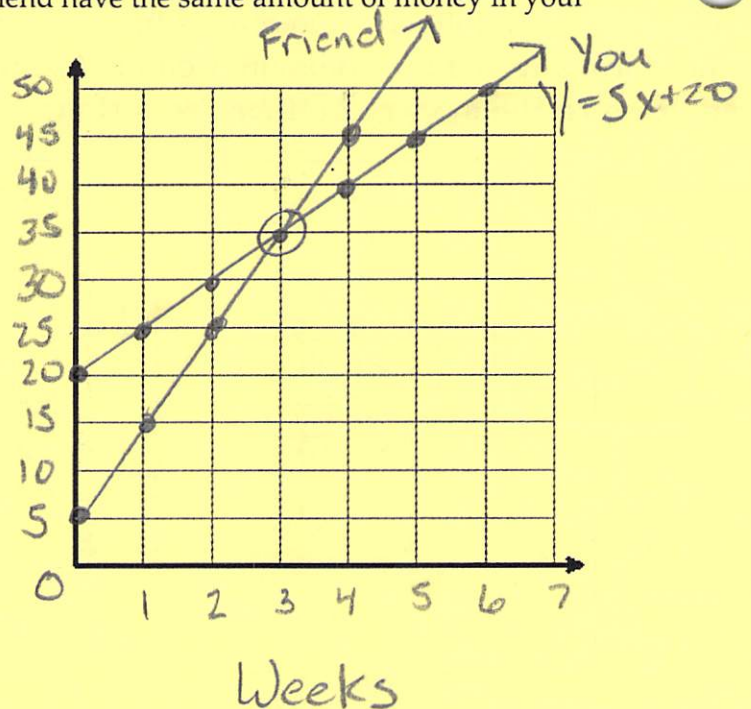
Linear Equations

You: $y = 5x + 20$

Friend: $y = 10x + 5$

3 weeks

We can also check our answers on the calculator.

Find the intersection point for each of the following systems of linear equations by using the calculator.

Remember: After you have both lines in Y= ... `2ND` `TRACE` CHOOSE 5: Intersect

Get your cursor close to the intersection point and press `ENTER` **3 TIMES**

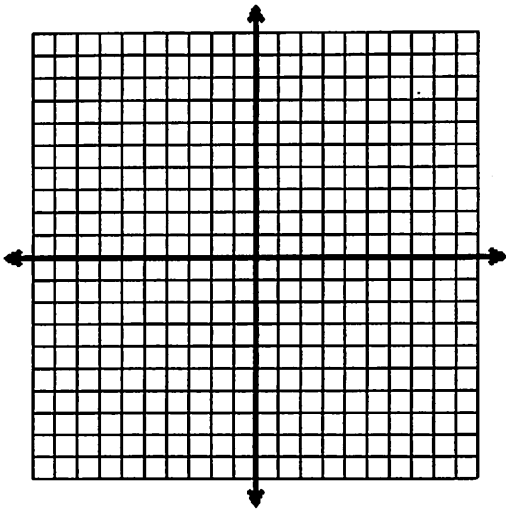|				
1.	$y = x + 2$ $y = -2x + 2$ $(0, 2)$		2.	$y = x + 4$ $y = 4x + 1$ $(1, 5)$
3.	$y = \dfrac{1}{2}x + 1$ $y = -3x + 8$ $(2, 2)$		4.	$y = -\dfrac{1}{3}x + 1$ $3y = x - 9$ $(6, -1)$

Practice 7-1

1. A: $y = 2x + 5$

   B: $y = 6x + 1$

Solution:

_____

Check:

A: B:

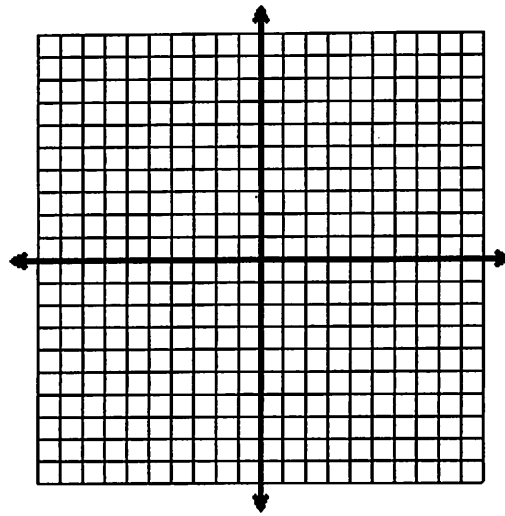2. A: $y = \frac{4}{3}x - 2$

   B: $y = \frac{2}{3}x$

Solution:

_____

Check:

A: B:

1. A: $y = -3x - 4$

   B: $y = -3x + 2$

Solution:

_____

Check:
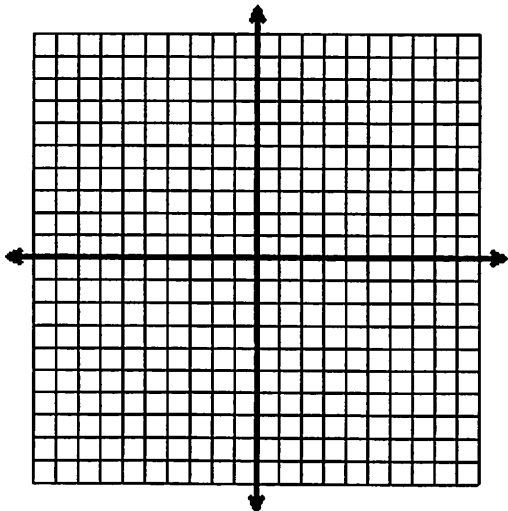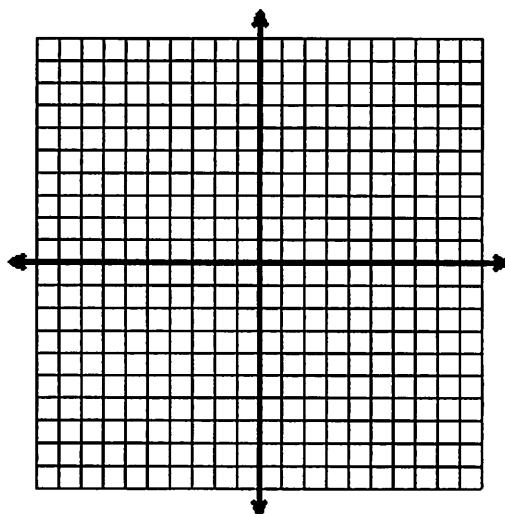
:   B:

4. A: $y = -\frac{3}{2}x - 4$

   B: $2y = x + 8$

Solution:

_____

Check:

A: B: