Solving Systems by Graphing

Two 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.**

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?

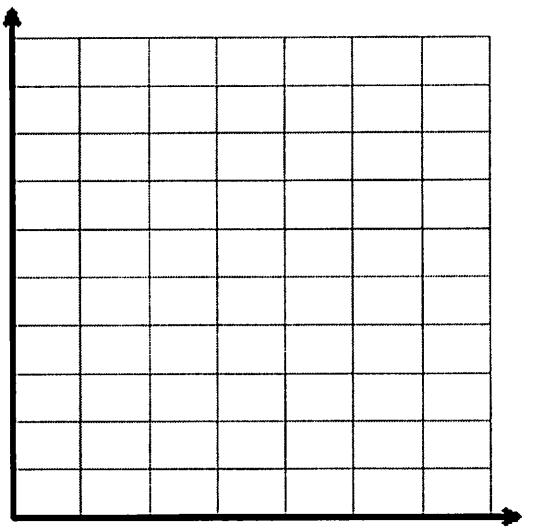
Linear Equations

You: _____

Friend: _____

Coordinate Where the Lines Cross: _____

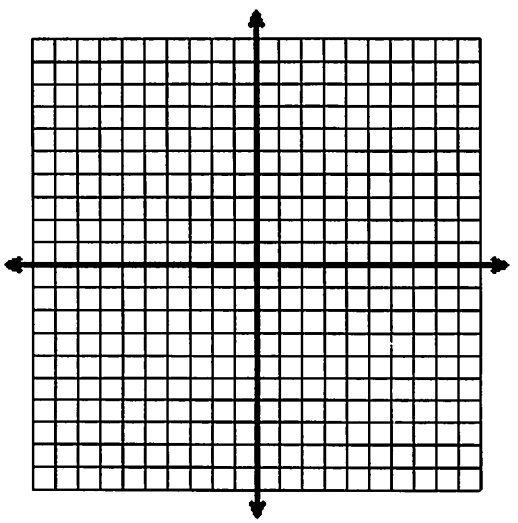
What does this mean?



Examples: Solve by Graphing

1. A: $y = 2x - 3$

   B: $y = x - 1$



Solution: _____

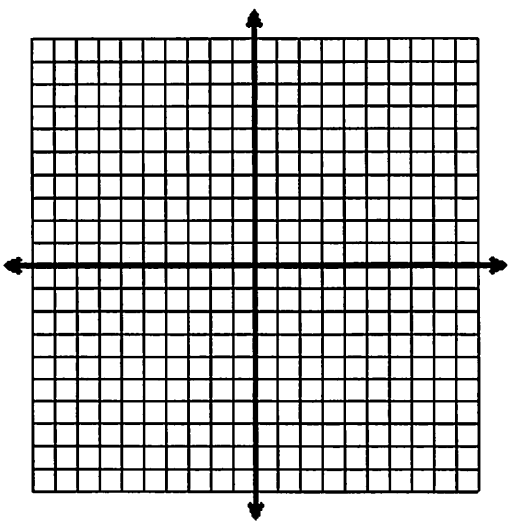
Check:

A:

B:

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

   B: $3y = -9x - 9$

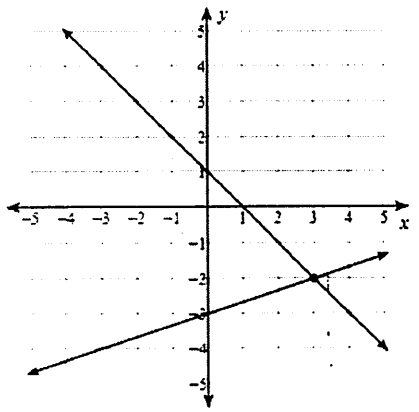


Solution: _____

A:

B:

Determine Each Equation and Solution to the System of Equations Graphed Below

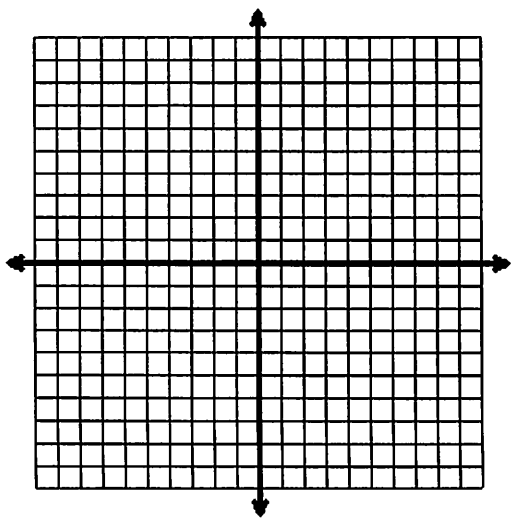


Check to Make Sure The Solution Works in BOTH Equations	Check a Point that Lies on One of the Lines but Not the Other	Check a Point That Doesn't Lie on Either Line
Check:	Check:	Check:
Check	Check	Check

On Your Own:

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

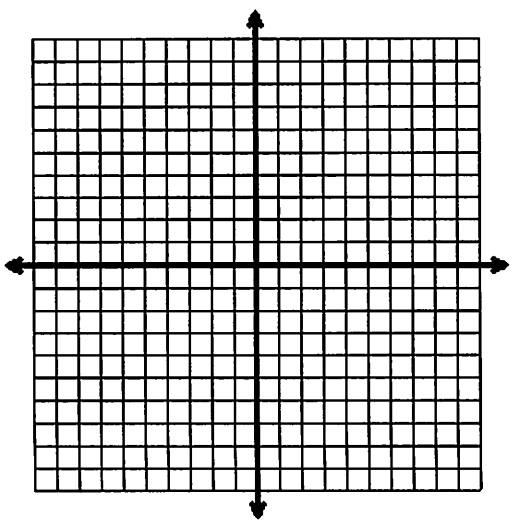
   B: $y = -\frac{1}{2}x + 3$



Solution: _____

2. A: $y = 4x + 3$

   B: $y = -x - 2$



Solution: _____

Solving Systems by Graphing

Two 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.**

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

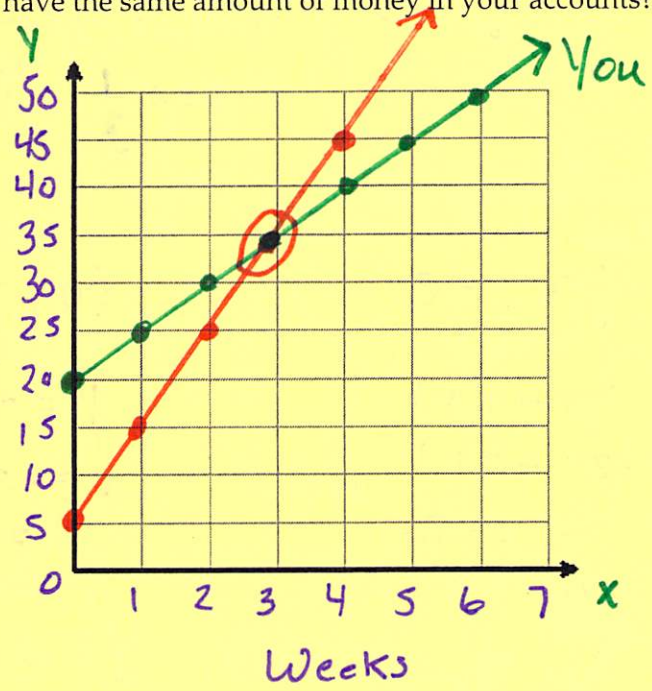
You: $y = 5x + 20$

Friend: $y = 10x + 5$

Coordinate Where the Lines Cross: $(3, 35)$ $

What does this mean?

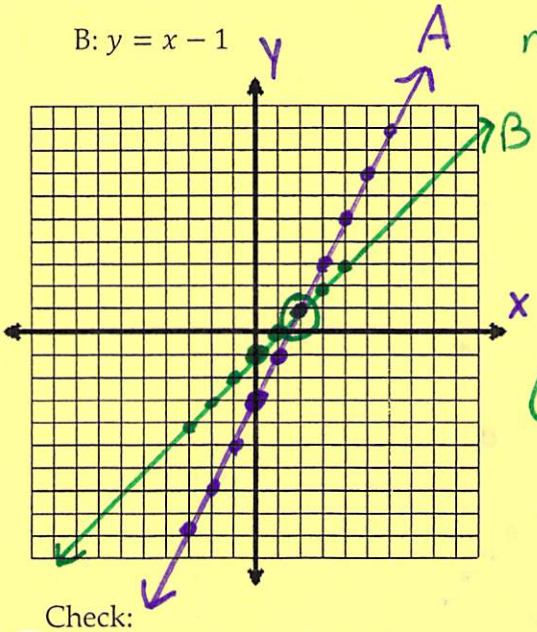
At 3 weeks we both have $35.



Examples: Solve by Graphing

1. A: $y = 2x - 3$

B: $y = x - 1$



$m = \frac{1}{1}$

Solution: $(2, 1)$

Check:

A: $y = 2x - 3$

$1 = 2(2) - 3$

$1 = 1$ ✓

B: $y = x - 1$

$1 = 2 - 1$

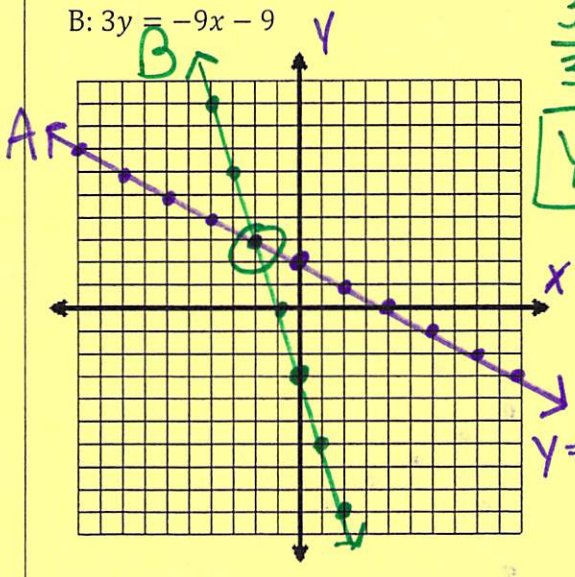
$1 = 1$ ✓

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

B: $3y = -9x - 9$

$\frac{3y}{3} = \frac{-9x}{3} - \frac{9}{3}$

$y = -3x - 3$



Solution: $(-2, 3)$

$y = -\frac{1}{2}x + 2$

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

$3 = -\frac{1}{2}(-2) + 2$

$3 = 1 + 2$

$3 = 3$ ✓

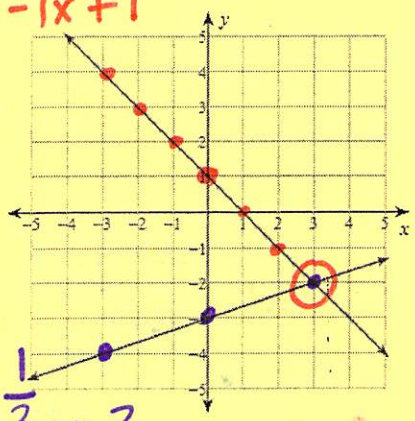
B: $3y = -9x - 9$

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

$9 = 9$ ✓

Determine Each Equation and Solution to the System of Equations Graphed Below

$y = -1x + 1$



y-int: (0, 1)

slope: -1

y-int: (0, −3) Solution: (3, −2)

slope: $\frac{1}{3}$

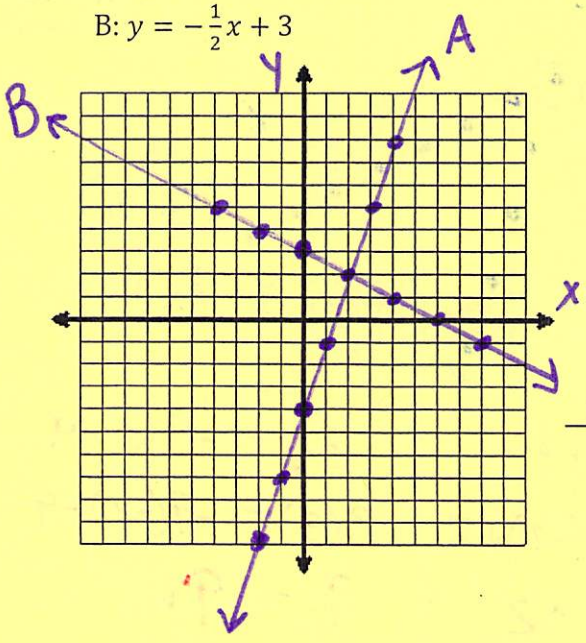
$y = \frac{1}{3}x - 3$

Check to Make Sure The Solution Works in BOTH Equations	Check a Point that Lies on One of the Lines but Not the Other	Check a Point That Doesn't Lie on Either Line
(3, −2)	(0, 1)	(0, 0)
Check: $y = -x + 1$ $-2 = -3 + 1$ $-2 = -2$ ✓	Check: $y = -x + 1$ $1 = -0 + 1$ $1 = 1$ ✓	Check: $y = -x + 1$ $0 = -0 + 1$ $0 \neq 1$
Check $y = \frac{1}{3}x - 3$ $-2 = \frac{1}{3}(3) - 3$ $-2 \quad 1 - 3$ $-2 = -2$ ✓	Check $y = \frac{1}{3}x - 3$ $1 = \frac{1}{3}(0) - 3$ $1 \neq -3$	Check $y = \frac{1}{3}x - 3$ $0 = \frac{1}{3}(0) - 3$ $0 \neq -3$

On Your Own:

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

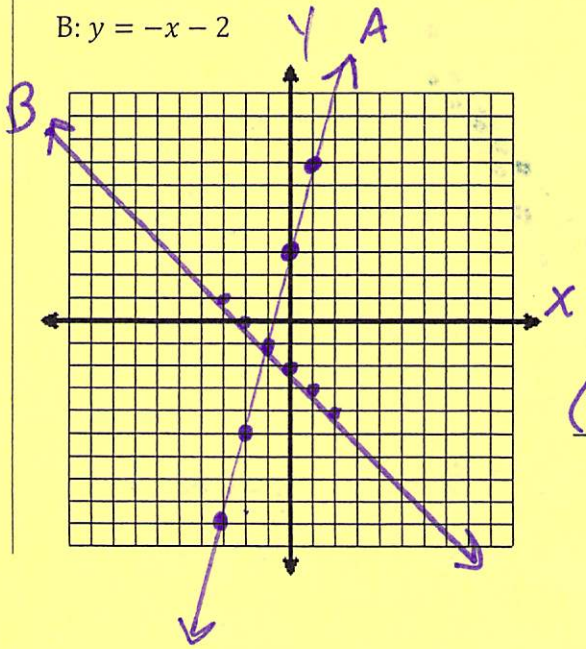
   B: $y = -\frac{1}{2}x + 3$



Solution: (2, −2)

2. A: $y = 4x + 3$

   B: $y = -x - 2$



Solution: (−1, −1)