Name: _____

Lesson 6.1 – Linear Equation Review

<u>Vocabulary</u>

Equation: a math sentence that contains

Linear: makes a straight line (no

Variables: _____ quantities represented by _____ (often *x* and *y*)

Function: equations can sometimes be written as functions as well (using _____

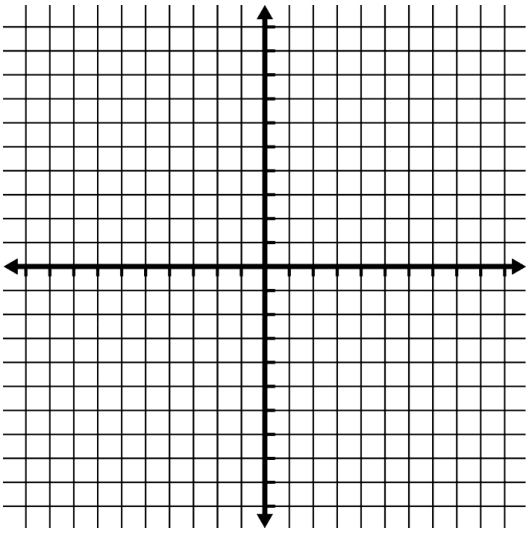
Cartesian Coordinates: to represent an equation with two variables with points (*x,y*) on a _____.

x-axis: is a _____ number line, with positive values to the right and negative to the left

y-axis: is a _____ number line, with positive values going up and negative going down

Origin: the _____ of the graph is called "the origin"

Quadrants: A graph has four quadrants, usually labeled with _____ _____, as follows



Assignment:

A. Matching

Equation	$2x + 3$
Expression	$f(x) = 2x + 3$
Function	$y = 2x + 3$
Equation	$4x - 2y = 0$
Expression	$f(x) = 2x$
Function	$4x - 2y$

B. Is it linear? Yes or No

$y = 2x + 3$

$y = 2x^2 + 3$

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

$y = 2x^{\frac{1}{2}} + 3$

$y = 0.5x + 0.3$

$y = x^{0.5} + 3$

$a = 2b + 3$

$y = 2x + \sqrt{3}$

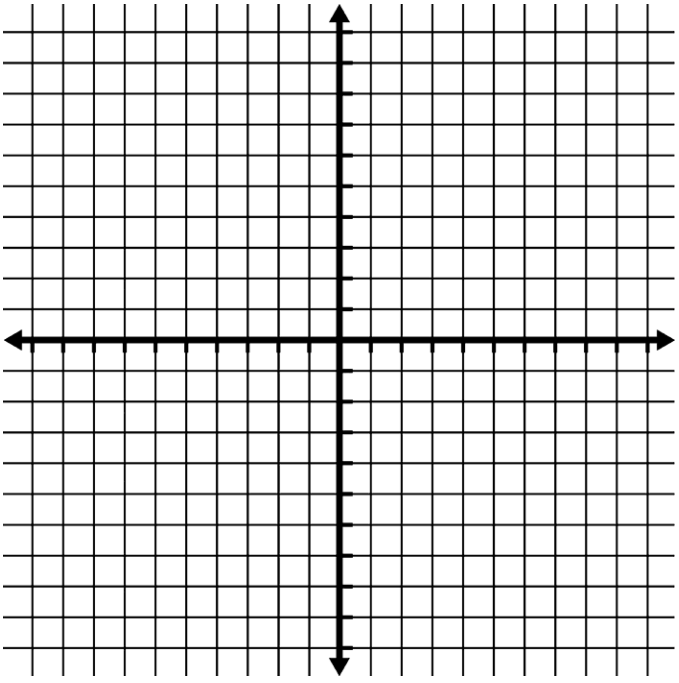
$y = \sqrt{2x} + 3$

$y = 2^x + 3$

$y = x^0 + 3$

C. Cartesian Coordinates - Label each coordinate on the graph:

(7,4), (-5,3), (-4,-8), (6,-2), (0,9), (-1,0)

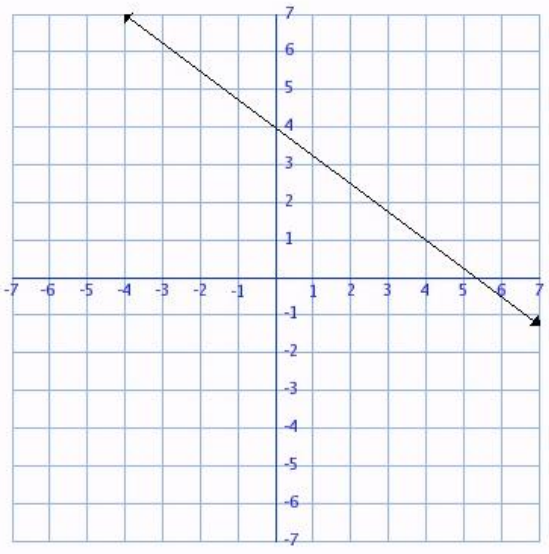


Vocabulary

x-intercept: where the line crosses the

y-intercept: where the line crosses the

Example of a linear equation graph:



Notice the arrows indicate that the lines continue forever (to infinity?)

y-intercept = _____

x-intercept = _____

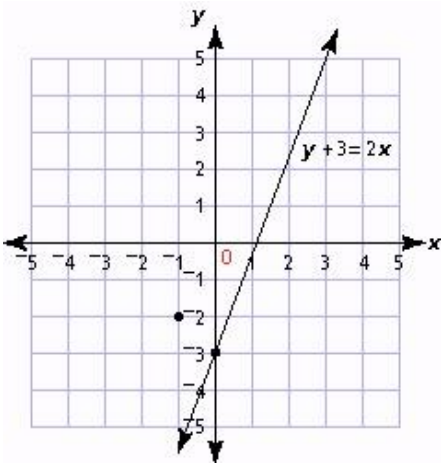
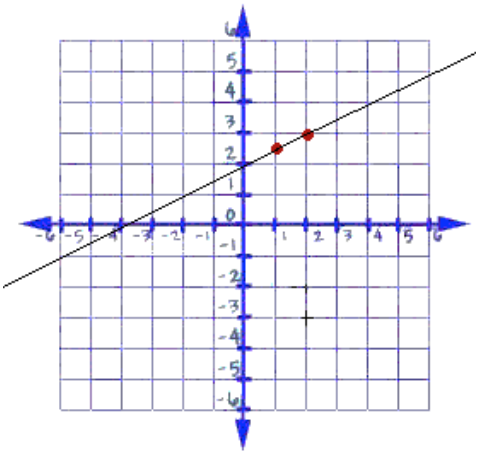
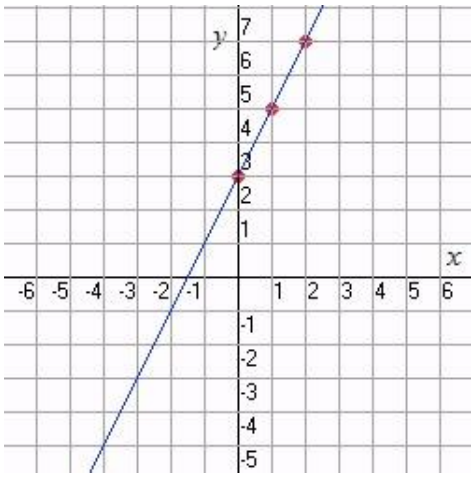
The graph goes through quadrants _____ but not quadrant _____

Does the graph go through the point (4,1)?

Does the graph go through the point (2,-3)?

Does the point (-4,7) satisfy the linear equation?

Assignment:

	*y*-intercept = _____ *x*-intercept = _____ Quadrants: _____ Do the points satisfy equation? (-3,0)? (2,2)? (-1,-4)?
	*y*-intercept = _____ *x*-intercept = _____ Quadrants: _____ Do the points satisfy equation? (-1,1)? (2,3)? (-4,0)?
	*y*-intercept = _____ *x*-intercept = _____ Quadrants: _____ Do the points satisfy equation? (5,1)? (-2,-1)? (2,7)?

Substitution:
An algebra technique

Example:
Equation: $y + 2x = 3$ If *x=1*, then what is *y*?

Equation: $y + 2x = 3$ If *y=0*, then what is *x*?

Assignment:

1) Equation: $2x + y = -4$ If *y=0*, then what is *x*?

2) Equation: $3x - \frac{1}{2}y = 9$ If *y=0*, then what is *x*?

3) Equation: $3x + 2y = 6$ If *x=0*, then what is *y*?

4) Equation: $3x + 2y = 5$ If *x=0*, then what is *y*?

5) Equation: $y = 2x + 3$ If *y=0*, then what is *x*?

Graphing Method #1 – Using intercepts

STEP #1: Find the _____ and plot these points.

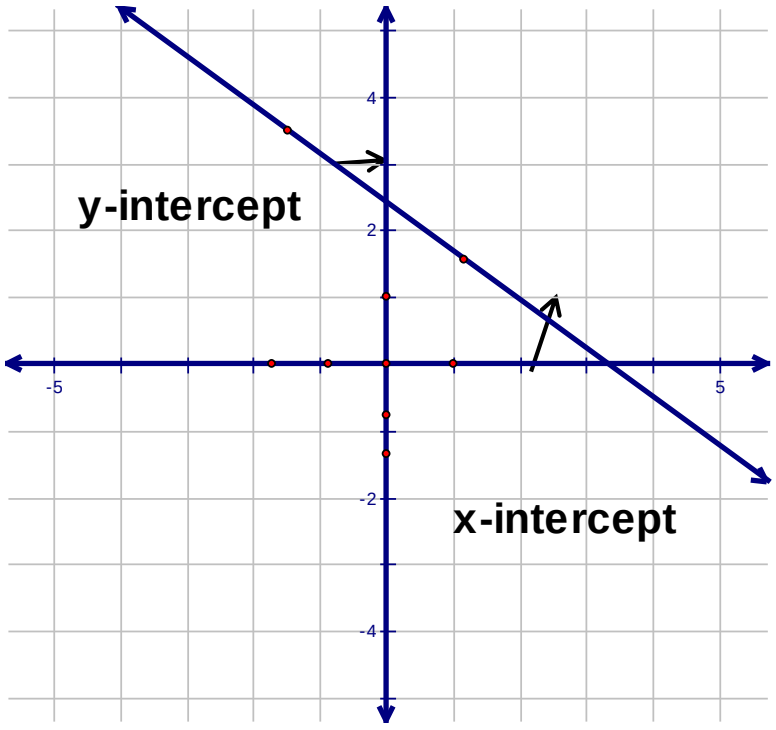
To find the ***y-intercept***, set

To find the ***x-intercept***, set

STEP #2: Find a third point by picking a random x-value and find the corresponding y-value by substitution

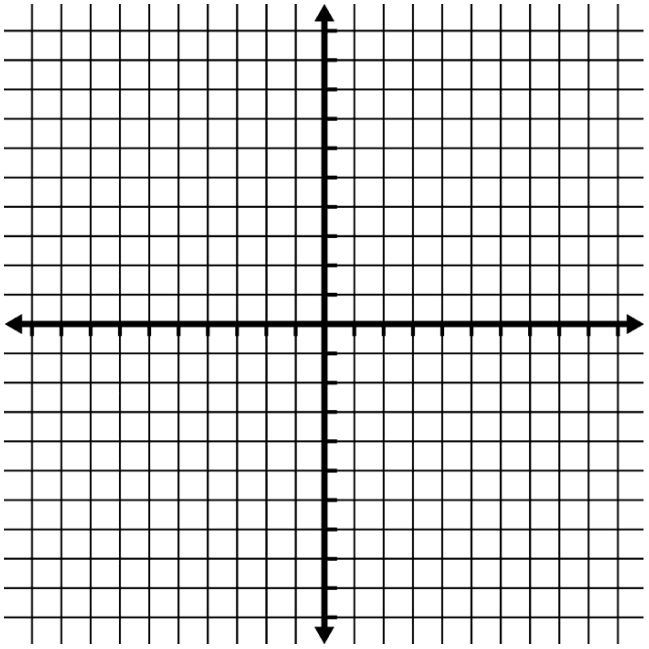
STEP #3: Plot these three points and sketch the straight line through these points.

Note: If the three points do not make a straight line then a mistake was made.

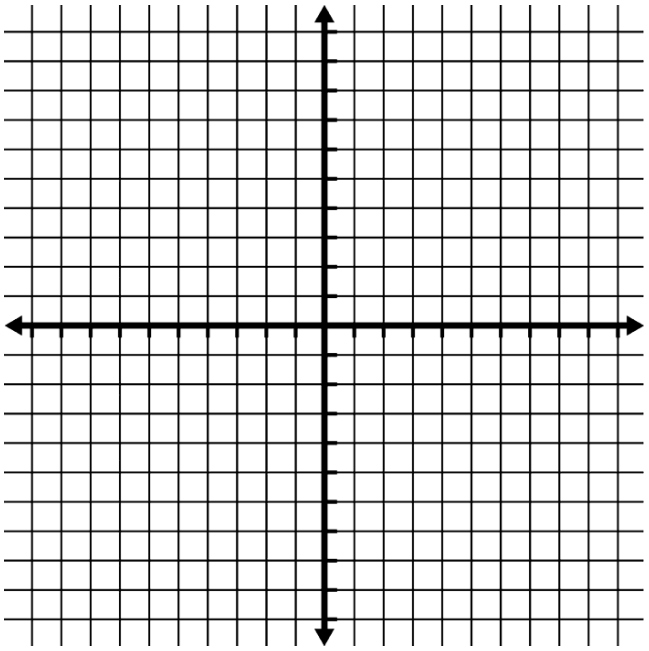


Example

a) $3x + 2y = 6$



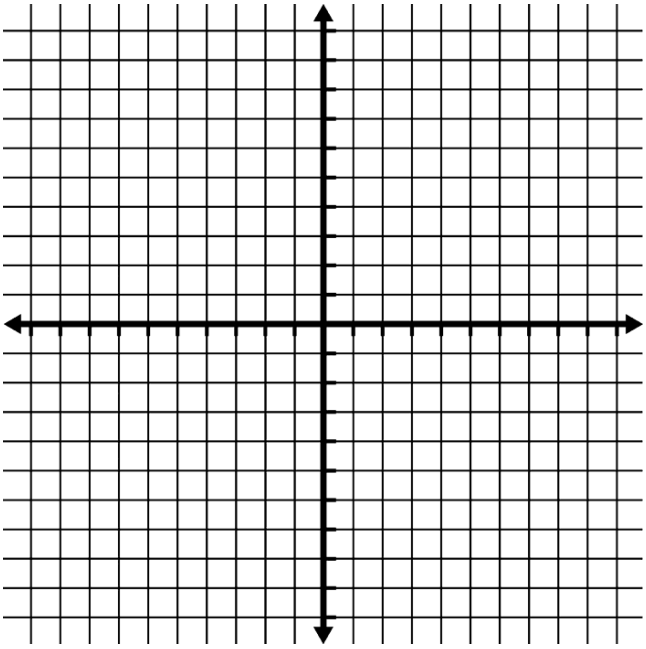
b) $5x + 2y - 15 = 0$



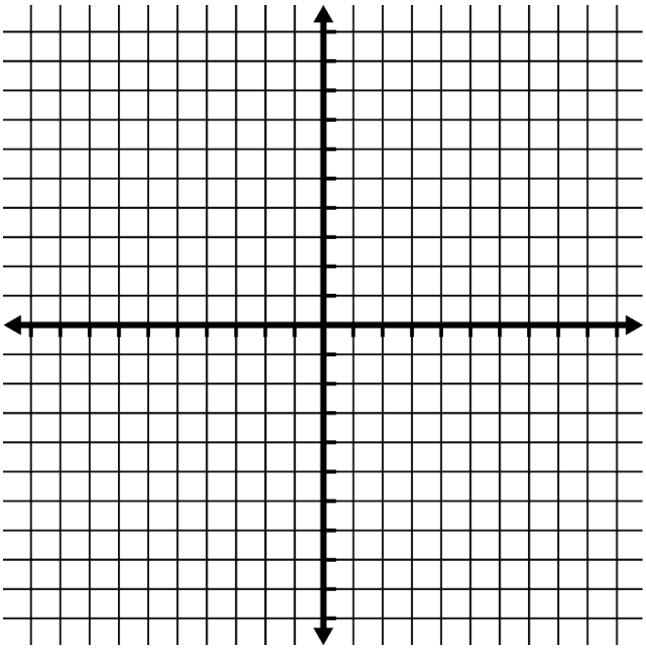
<u>Assignment</u>:

Graph each equation using the intercept method. Show your work.

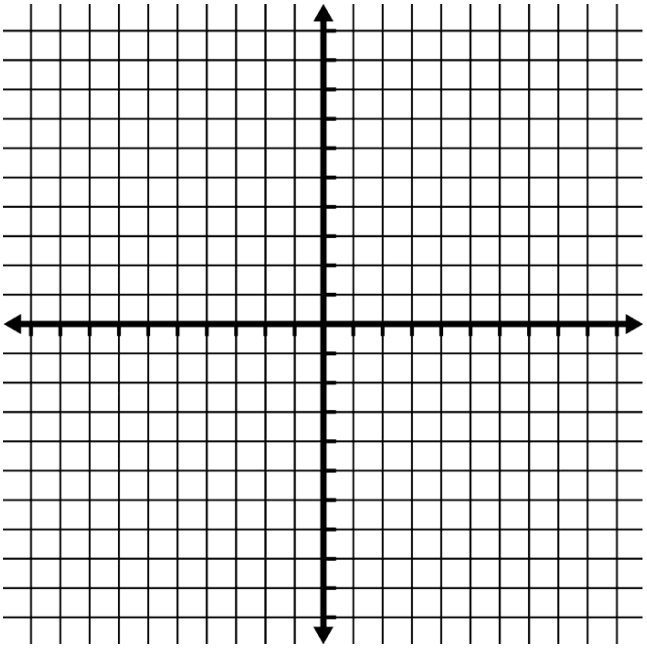
1) $2x - y = 6$



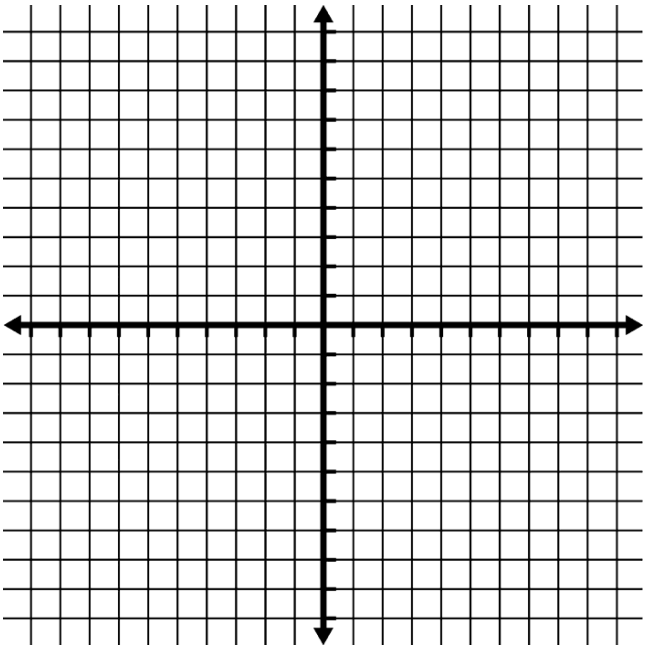
2) $2x + 3y = 6$



3) $2x + y = -4$



4) $y = -2x - 1$



Practice Quiz:

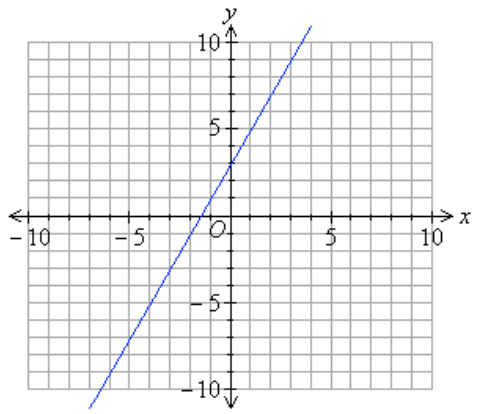
1) Is it a linear equation?

a) $x + 2y = 2$

b) $0.5x + 2.1y = \left(\sqrt{3}\right)^2$

c) $y = 2x^2+1$

2) Analyze the linear graph



y-intercept = _____

x-intercept = _____

Quadrants: _____

Do the points satisfy equation?
(-3,0)?

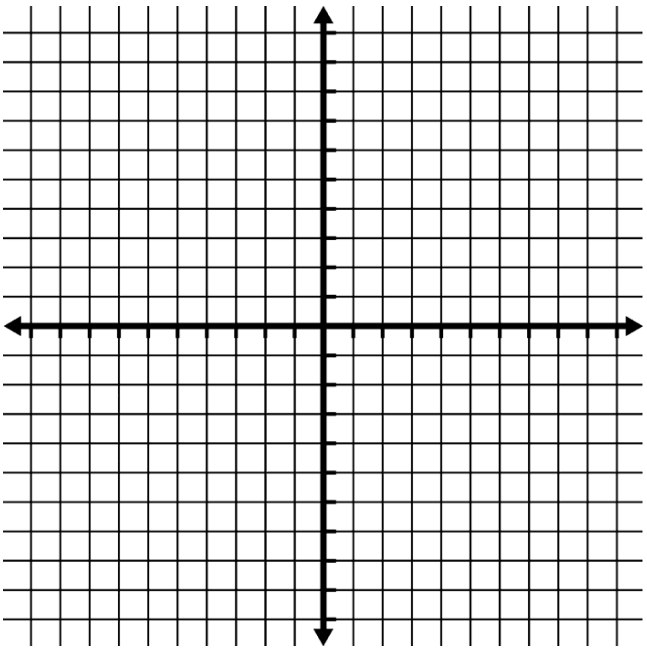
(2,2)?

(-1,-4)?

3) Equation: $\frac{1}{2}x + y = -4$ If *y=0*, then what is *x*?

4) Graph the following equation using the intercept method. Show your work.

$x + 2y = 2$



Name: _____

Lesson 6.1 – Linear Equation Review (teacher)

Vocabulary

Equation: a math sentence that contains an equals sign

Linear: makes a straight line (no exponents on variables)

Variables: unknown quantities represented by letters (often *x* and *y*)

Function: equations can sometimes be written as functions as well (using *f(x)* instead of *y*) all linear equations can be functions except for a vertical line.

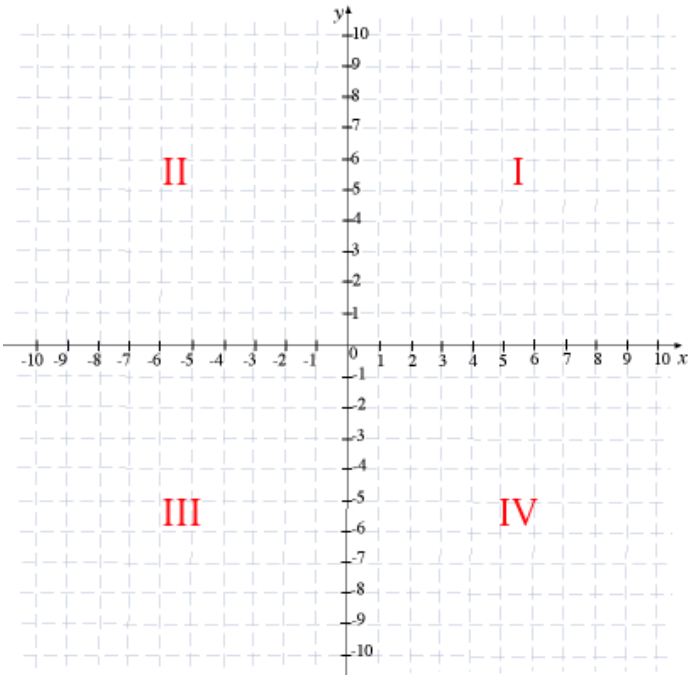
Cartesian Coordinates: to represent an equation with two variables with points (*x,y*) on a graph.

x-axis: is a horizontal number line, with positive values to the right and negative to the left

y-axis: is a vertical number line, with positive values going up and negative going down

Origin: the centre of the graph is called "the origin" (0,0)

Quadrants: A graph has four quadrants, usually labeled with Roman numerals, as follows

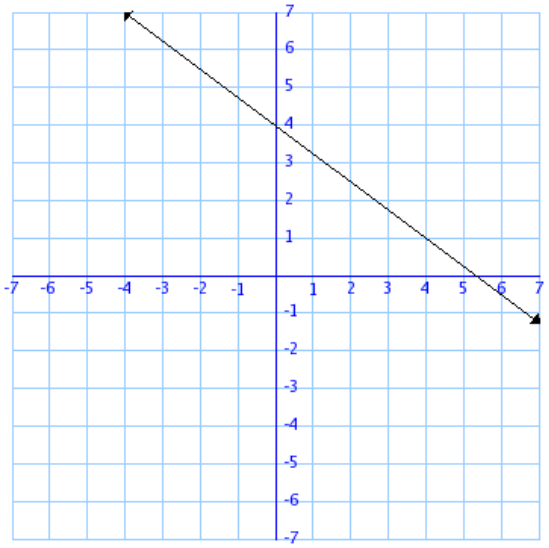


Vocabulary

x-intercept: where the line crosses the x-axis (or where $y=0$)

y-intercept: where the line crosses the y-axis (or where $x=0$)

Example of a linear equation graph:



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Does the graph go through the point (4,1)?

Does the graph go through the point (2,-3)?

Does the point (-4,7) satisfy the linear equation?

Graphing Method #1 – Using intercepts

STEP #1: Find the x and y-intercepts and plot these points.

To find the ***y-intercept***, set x = 0 then solve for y.
To find the ***x-intercept***, set y = 0 then solve for x.

STEP #2: Find a third point by picking a random x-value and find the corresponding y-value by subbing into the function.

STEP #3: Plot these three points and sketch the straight line through these points.

Note: If the three points do not make a straight line then a mistake was made.