5.4 Equations of Linear Relations

Name:_____ Block_____

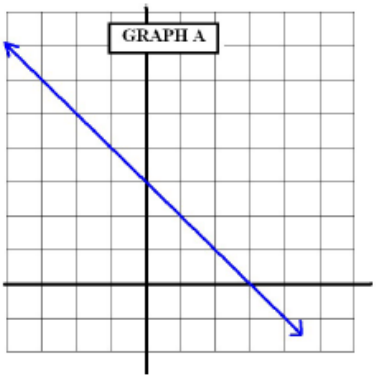
A) Determine a linear equation from a graph.

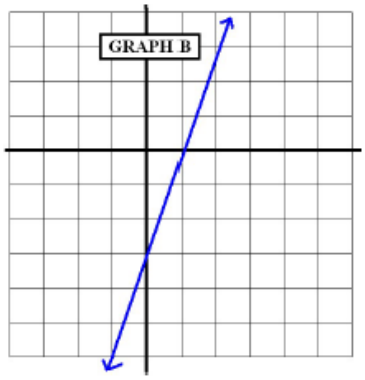
Slope-intercept form:

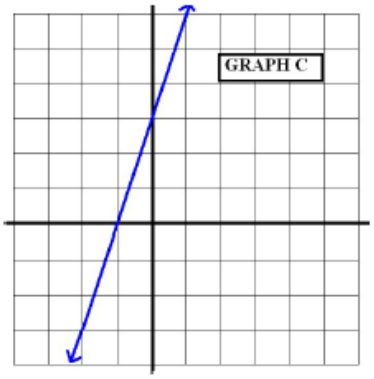
$$y = mx + b$$

Investigation: Match the three equations with the graphs below using a table of values.

$y = 3x + 3$ $\quad x + y = 3$ $\quad y = 3x - 3$

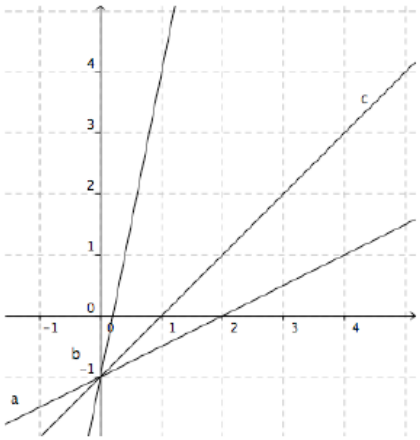






Match the letter from each linear relation to the appropriate equation.

159.

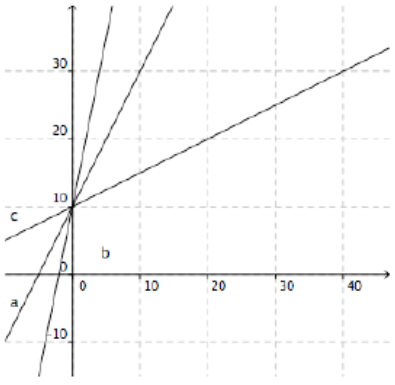


i. _____ $y = \frac{1}{2}x - 1$

ii. _____ $y = 5x - 1$

iii. _____ $y = x - 1$

160.

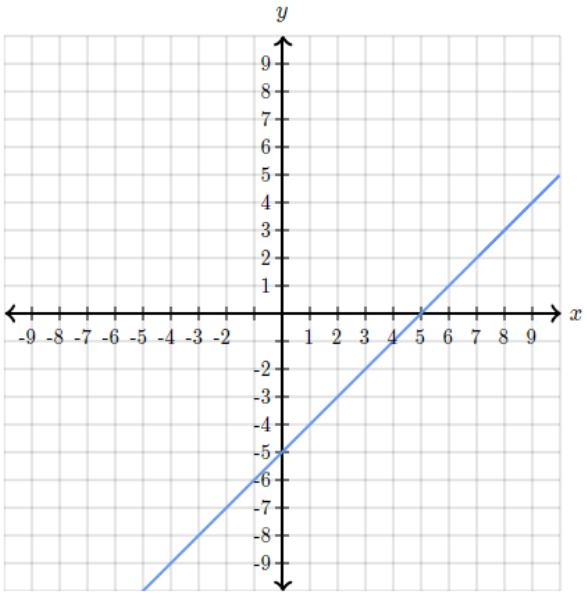


i. _____ $y = \frac{1}{2}x + 10$

ii. _____ $y = 5x + 10$

iii. _____ $y = 2x + 10$

Example #1:
Using the graph on the right, answer the following questions:



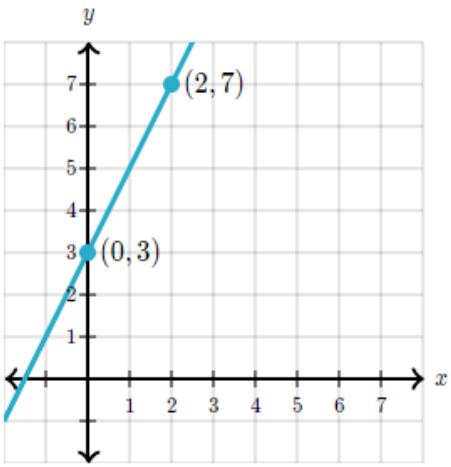
1. What is the value of the **y intercept**?

2. What is the **slope** *(rate of change)?*

3. What is the general equation of a line?

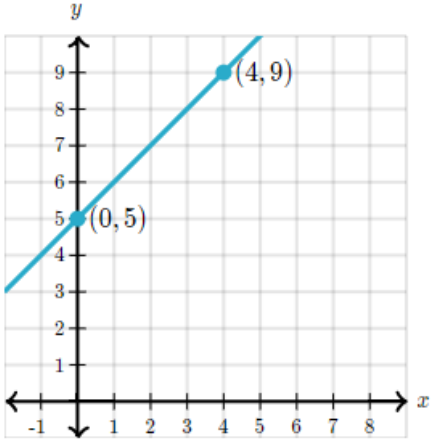
4. What is the equation of this line?

1.



What is the value of the **y intercept**?
What is the **slope** *(rate of change)?*
What is the general equation of a line?
What is the equation of this line?

2.



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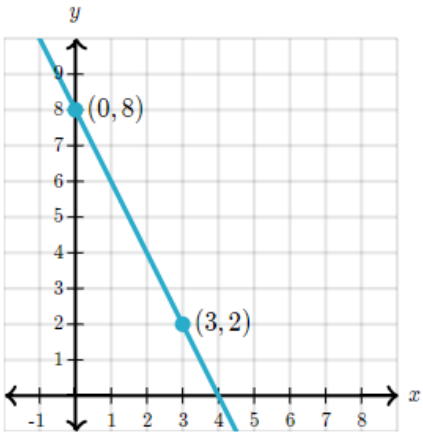
3.



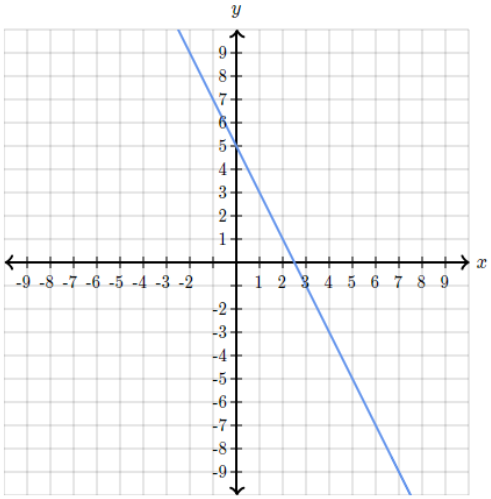
What

What is the **slope** *(rate of change)?*

What is the general equation of a line?

What is the equation of this line?

4.



What is the value of the **y intercept**?

What is the **slope** *(rate of change)?*

What is the general equation of a line?

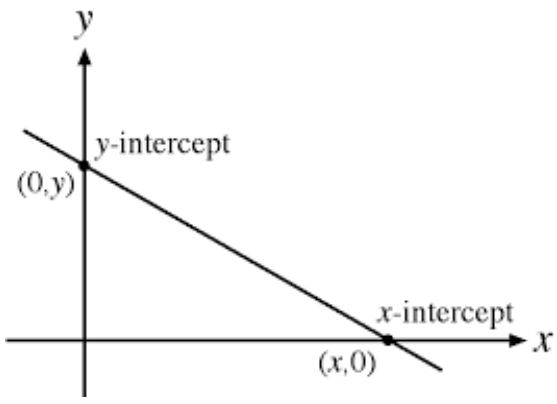
What is the equation of this line?

B) FINDING THE X AND Y INTERCEPTS

We have looked at the terms ***x-intercept and y-intercept*** before. Now we will look at ways TO FIND the x and y intercepts using the equation for a linear relation.

Every y-intercept has an x-coordinate of _____.

Every x-intercept has a y-coordinate of _____.

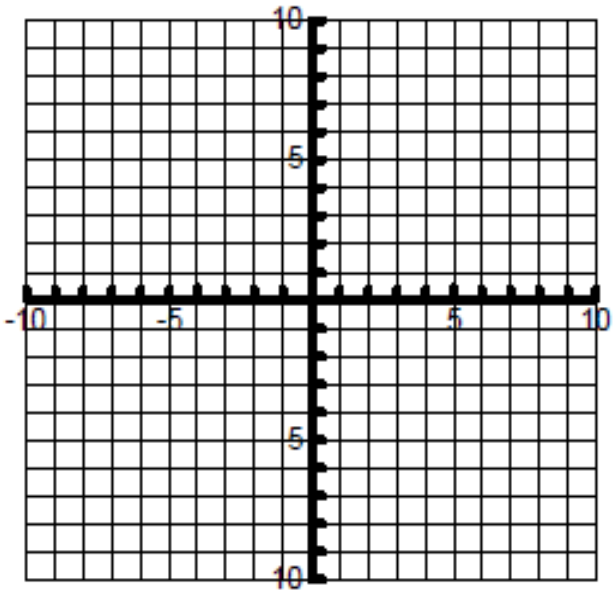


Example #1:

Graph the line 2x + y = 8 Plot the x-intercept and the y-intercept and connect the points

To find the *y*-intercept:

① when a line crosses the y-axis, $x = 0$ *always*
② substitute x = 0 into the equation for the line
③ solve for 'y' as the unknown variable.



To find the *x*-intercept:

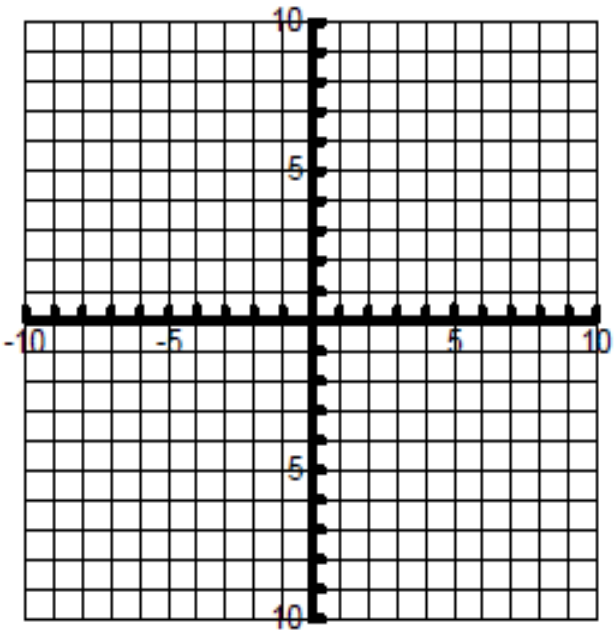
① when a line crosses the x-axis, $y = 0$ *always*
② substitute y = 0 into the equation for the line
③ rearrange and solve for 'x' as the unknown variable.

1.Using the method above, graph the line

2x = 18 – 6y

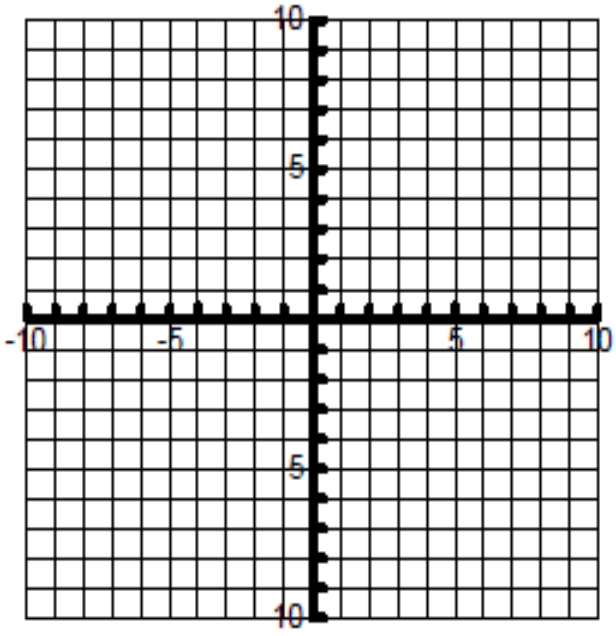
x-intercept:

y-intercept:



2. Using the method above, graph the line:

2x - 3y = 6



x-intercept:

y-intercept:

3. Consider the line defined by:

4x + 2y = 6

a) Determine the x-intercept and ***write the coordinates*** of this point.

b) Determine the y-intercept and ***write the coordinates*** of this point.

Homework	Required	Extra Practice	Extension
Assignment #5.4 pg 194-199	2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 15	1, 10, 12, 14, 16	17, 18, 19, 20
Chapter Review (practice test) Pg 201 - 203	2, 3, 4, 6, 7, 8, 10a, 11,12	1, 5, 9, 10b, 13	