

Name: _____

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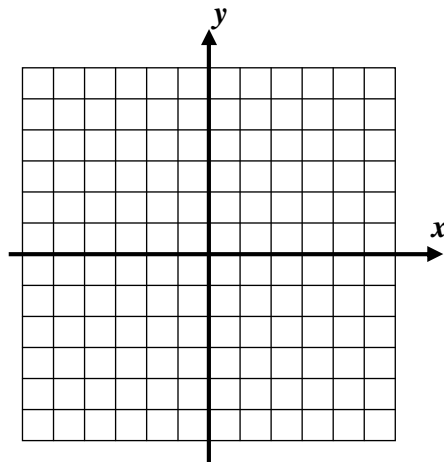
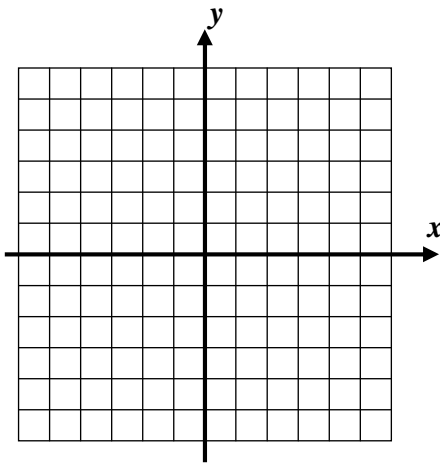
Graphing Lines Algebra 1

We now know the importance of the slope of a line. It gives us both how steep the line is and whether the line increases or decreases. Given the slope and a single point on a line, we can find all other points that lie on it as well. The next exercise will illustrate this concept.

Exercise #1: For each part of this problem, the slope of a line is given along with a point through which the line passes. Graph the line and write its equation in $y = mx + b$ form.

(a) $m = \frac{1}{2}$ and $(-4, 2)$

(b) $m = -\frac{3}{2}$ and $(-2, 1)$



EQUATION: _____

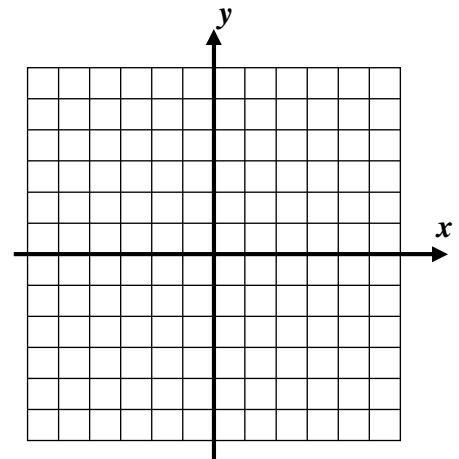
EQUATION: _____

We see from this example that if we know a single point on a line and the line's slope, we can quickly graph the line. One point that is easily determined from its equation comes from the y-intercept.

Exercise #2: Consider the linear equation $y = \frac{1}{3}x - 1$.

(a) State the slope and the y-intercept of this line.

(b) Use the slope and the y-intercept to graph the line to the right.



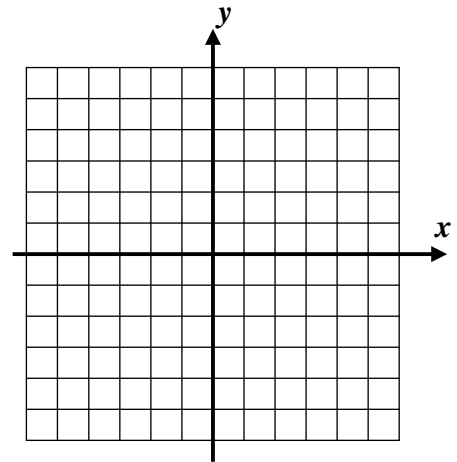
Keep in mind that, in general, we can **always** create a table of values, either by hand or in our calculator, to graph any line. Using the slope and the y -intercept is a quick way to graph many lines. Of course, the key in using these is to have the equation of the line in its $y = mx + b$ form.

Exercise #3: Consider the linear function $3y - 2x = -6$.

(a) Place this equation in $y = mx + b$ form.

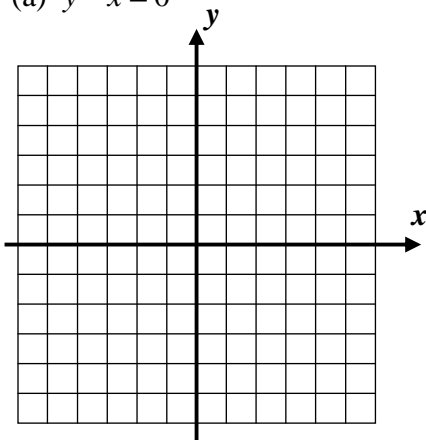
(b) Graph the equation on the grid to the right.

(c) Does the point $(-36, -22)$ lie on this line? Justify.

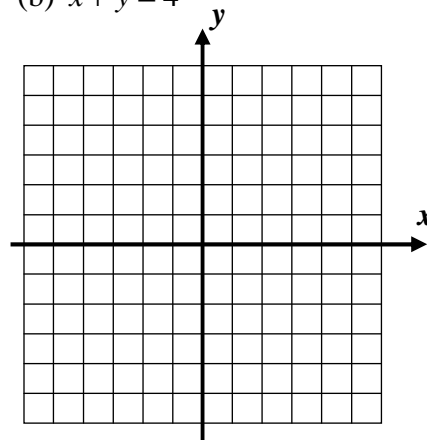


Exercise #4: For each of the following, rearrange into $y = mx + b$ form and then graph.

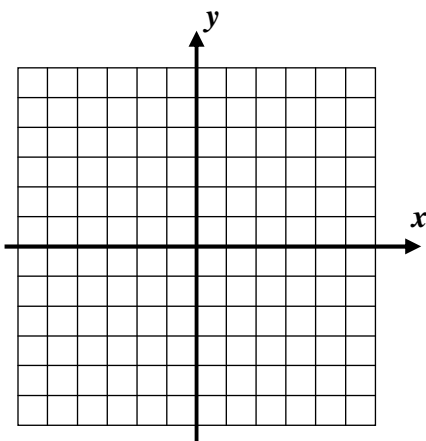
(a) $y - x = 0$



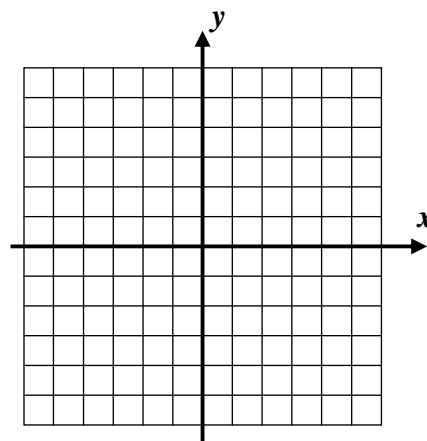
(b) $x + y = 4$



(c) $3x - 4y = -4$



(d) $x + 2y = 8$



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Graphing Lines Algebra 1 Homework

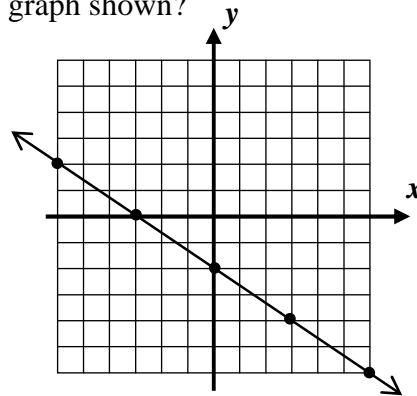
Skills

1. Which of the following is true of the line whose equation is $2y + 3x = 8$?

- (1) It has a slope of 3 and a y-intercept of 8.
- (2) It has a slope of $\frac{3}{2}$ and a y-intercept of 8.
- (3) It has a slope of $-\frac{3}{2}$ and a y-intercept of 4.
- (4) It has a slope of $\frac{3}{2}$ and a y-intercept of 4.

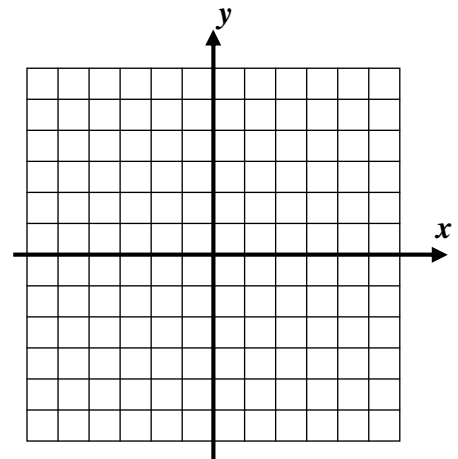
2. Which of the following equations represents the graph shown?

- (1) $y = \frac{3}{2}x - 3$
- (2) $y = -\frac{3}{2}x - 2$
- (3) $y = \frac{2}{3}x - 3$
- (4) $y = -\frac{2}{3}x - 2$



3. Consider the linear function $y = \frac{1}{2}x - 1$.

(a) Graph this line on the grid using its slope and y-intercept.



(b) None of the following points, when plotted, would fit on this particular grid, but that doesn't mean they don't lie on the line (it extends forever in both directions). Determine which points lie on the line and which do not.

(30, 14)

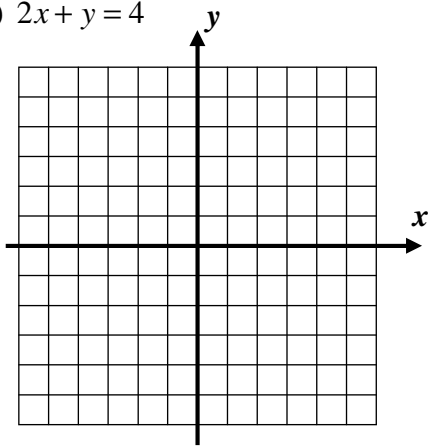
(70, 28)

(-30, -15)

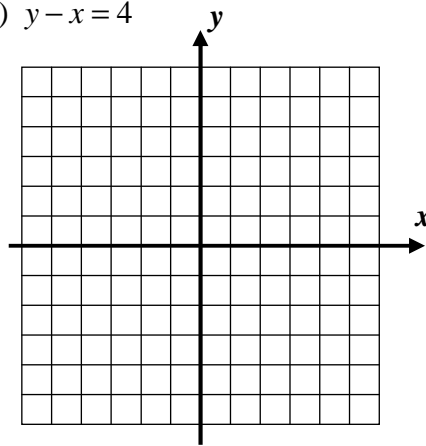
(-50, -26)

4. For each of the following linear equations, rearrange into $y = mx + b$ form and then graph on the grid.

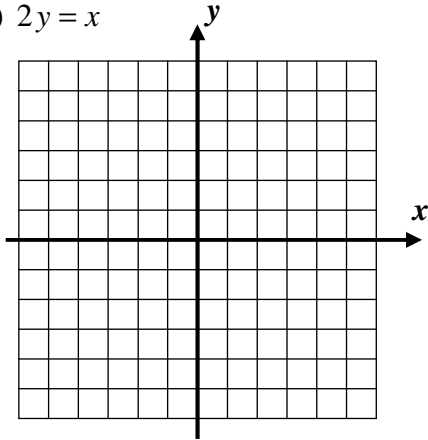
(a) $2x + y = 4$



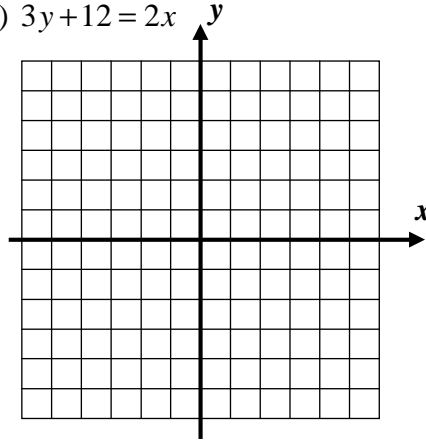
(b) $y - x = 4$



(c) $2y = x$



(d) $3y + 12 = 2x$



Reasoning

5. Consider the three linear graphs shown below as you answer the following:

- State the **coordinates** of the point for each graph's intersection with the y-axis.
- State the y-intercept for each graph.
- To determine the y-intercept algebraically, what number must be substituted for x ?

