

# Equations of Lines

1. Write each of the following “formulas” that are used for writing the equation of a line.

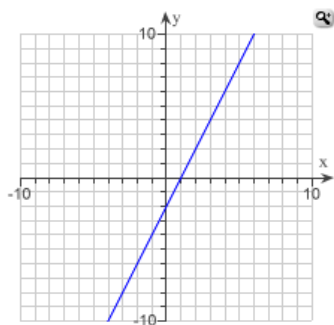
Slope-intercept Form:

Point-slope Form:

b) What does **m** represent? \_\_\_\_\_ What does **b** represent? \_\_\_\_\_

c) What does **(x<sub>1</sub>, y<sub>1</sub>)** represent? \_\_\_\_\_

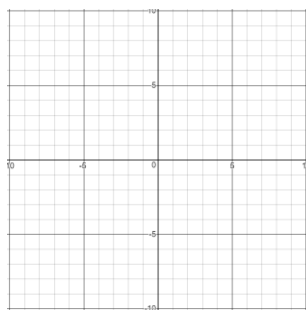
2. Determine the y-intercept and the slope, and then write the equation for each of the following lines.



y-intercept \_\_\_\_\_

slope \_\_\_\_\_

equation \_\_\_\_\_



Graph the equation:

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

3. A particular line has an x-intercept of 4 and passes through the point (2, 1). Using these two points, follow the instructions in a) and b).

a) Find the slope of this line.

b) Write the **point-slope form** of the equation of this line two different ways and then simplify the equation to slope-intercept form.

**Half of the group use the x-intercept as the point (4, 0). The other half of the group use the point (2, 1).**

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c) Explain what happened. Does it matter which point you use in the point-slope form of the equation?

4. A company charting its profits notices that the relationship between the number of units sold,  $x$ , and the profit,  $P$ , is linear. If 300 units sold results in \$4650 profit and 375 units sold results in \$9000 profit, write the equation that models its profit.

$$P(x) = \underline{\hspace{4cm}}$$

5. a) Sketch the graph of a horizontal line that passes through the point (5, 2).

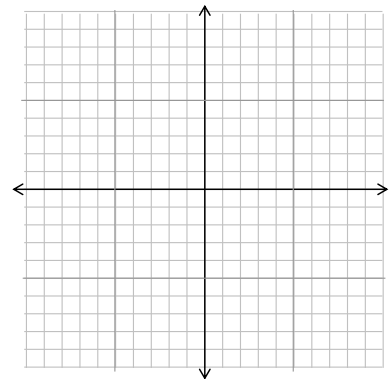
What is the slope of this line?                     

Write the equation of this line?                     

- b) Sketch the graph of a vertical line that passes through the point (3, 4).

What is the slope of this line?                     

Write the equation of this line?                     



6. Find the equation of the line that passes through the point (6, -2) and is perpendicular to the line  $y = -3x + 5$ .

- a) Write the point-slope form of the equation, and then simplify it to the slope-intercept form of the equation.  
(Show your work.)

- b) Sketch the graphs of both lines.

