



Algebra 1 Workbook

Graphing

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MATH

CARTESIAN COORDINATE SYSTEM

- 1. What is the coordinate point of the origin?
- 2. Give a coordinate point that lies in Quadrant III.
- 3. Graph the point $(-2,3)$ in the Cartesian plane.
- 4. In which quadrant would you plot the point $(1,6)$?
- 5. What is the y -coordinate of the points that lie on the x -axis? Give an example of a coordinate point that lies on the x -axis.
- 6. Graph the point $(3, -1)$ in the Cartesian plane.
- 7. Give a coordinate point that lies in Quadrant II.
- 8. Graph the point $(-1, -5)$ in the Cartesian plane.



■ 9. In which quadrant would you plot $(3, -7)$?

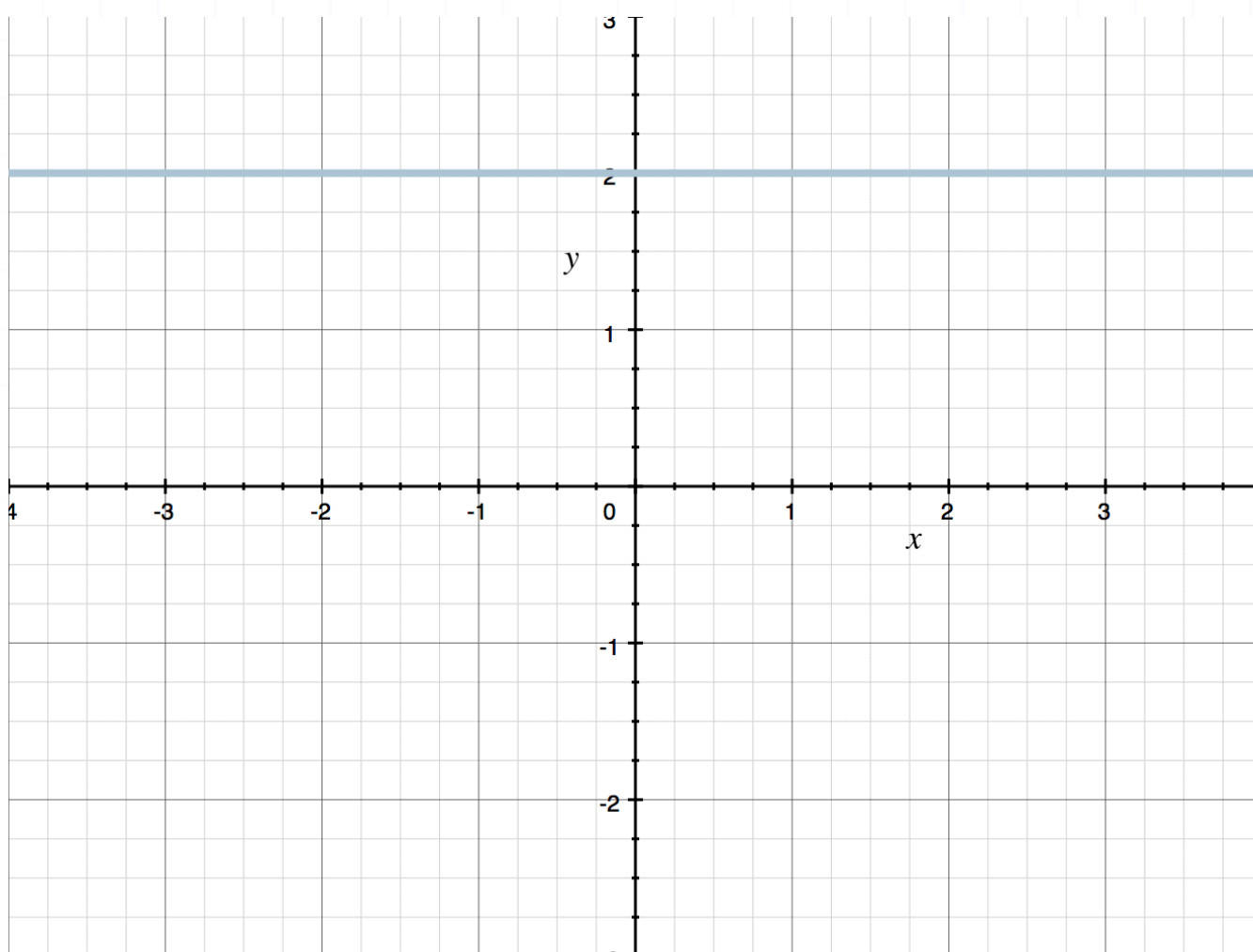
■ 10. What is the x -coordinate of the points that lie on the y -axis? Give an example of a coordinate point that lies on the y -axis.



SLOPE

■ 1. In terms of vertical and horizontal movement, define the slope of a line.

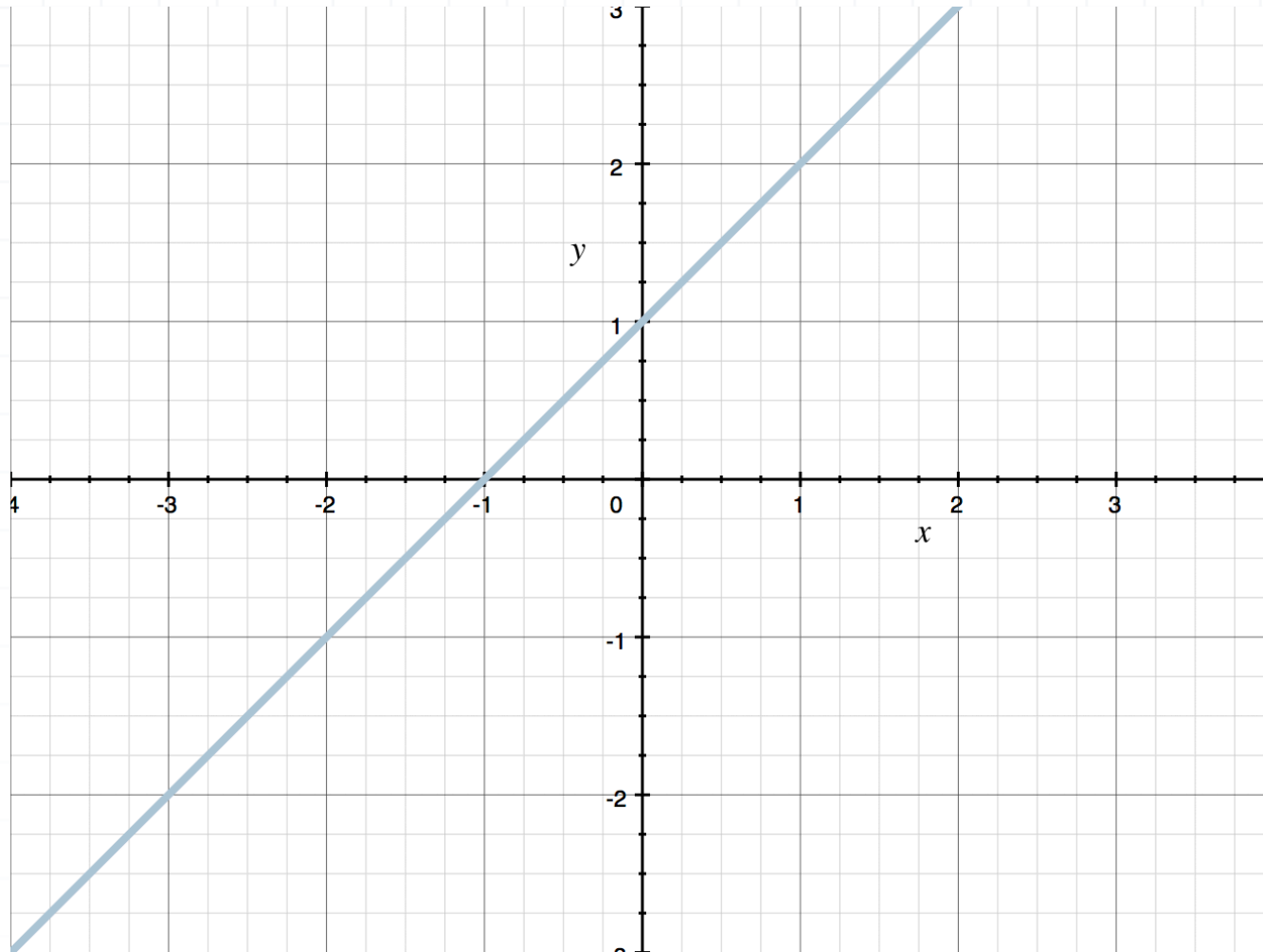
■ 2. What is the slope of the line?



■ 3. What direction is an undefined slope: horizontal or vertical? Use the formula for the slope to explain why.



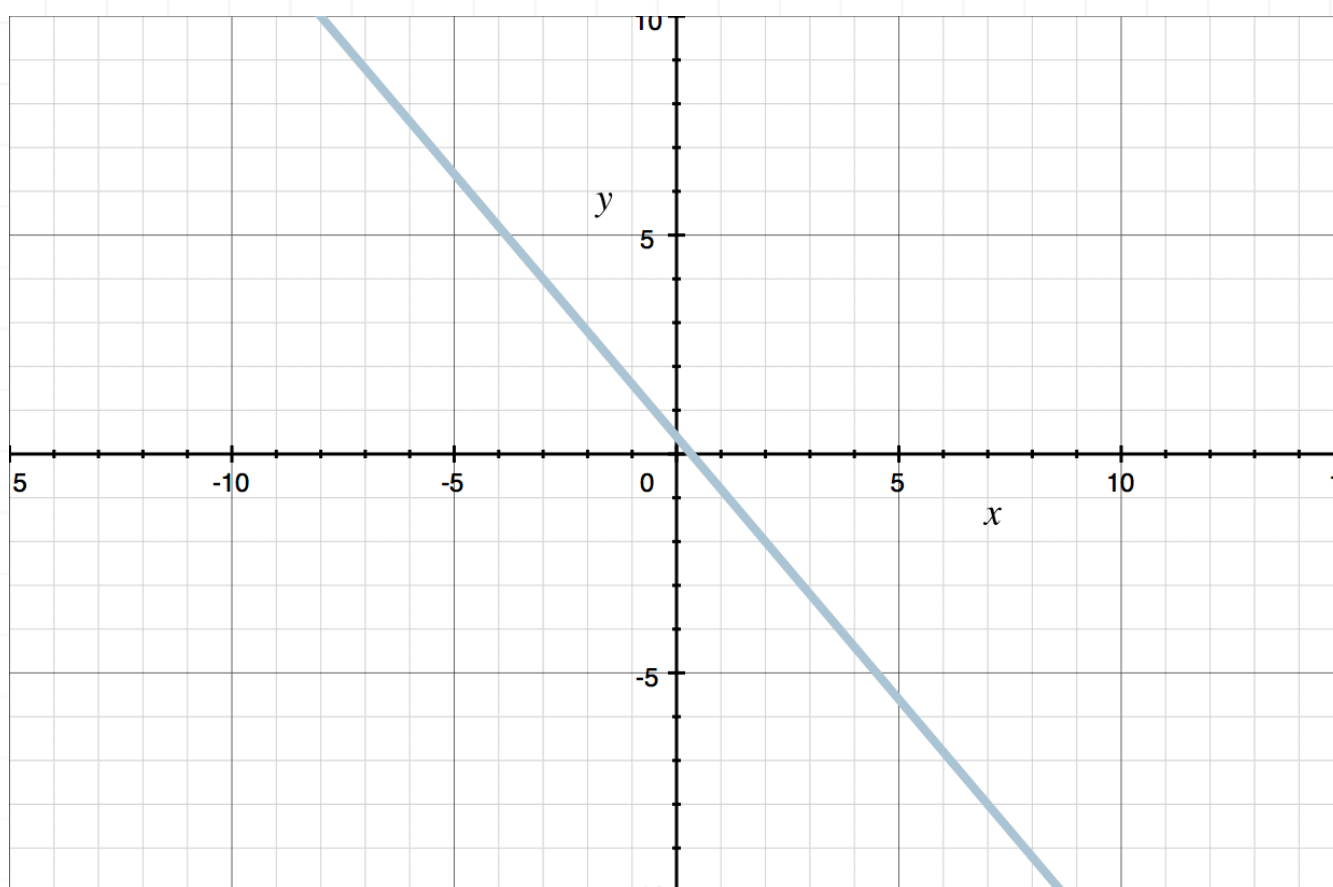
■ 4. What is the slope of the line?



■ 5. What is the slope of the line that passes through the points $(-1, 3)$ and $(4, -7)$?

■ 6. What is the slope of the line?





- 7. Find the slope of the line that passes through $(10,1)$ and $(5,2)$.
- 8. Give two points that make a line with a slope of $-2/3$.
- 9. Find the slope of the line that passes through $(3,5)$ and $(-1,5)$.
- 10. What is the slope of the line through the points (x_1, y_1) and (x_2, y_2) ?



EQUATION OF A LINE IN POINT-SLOPE FORM

- 1. Find the equation of the line that passes through $(3,0)$ with slope -2 .
 - 2. Name two (of four possible) pieces of information about a line that are required to write an equation of the line in point-slope form.
 - 3. Find the equation of the line that passes through the points $(-2,3)$ and $(2, -4)$.
 - 4. Find the equation of the line that passes through $(-2, -5)$ with a slope 6.
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- 5. Identify the point (x_1, y_1) and slope m in the equation of the line.

$$y + 3 = \frac{1}{4} (x - 6)$$

- 6. Write the following equation in point-slope form.

$$y = -\frac{1}{2} x + 4$$



■ 7. Find the equation of the line that passes through the points $(5, -4)$ and $(6,0)$.



EQUATION OF A LINE IN SLOPE-INTERCEPT FORM

■ 1. Find the equation of a line through the point (0,5) with slope -2 . Write the solution in slope-intercept form.

■ 2. Identify the y -intercept and slope m defining the line.

$$y = -\frac{1}{4}(x + 12)$$

■ 3. Convert the following point-slope equation into a slope-intercept equation.

$$y - 3 = \frac{1}{3}(x - 6)$$

■ 4. Find the equation of a line that passes through the points (1, -1) and (0,3). Write the solution in slope-intercept form.

■ 5. Determine the y -intercept of a line with slope -3 that passes through the point (1,1). Write your solution as a coordinate point.



- 6. Name two (of four possible) pieces of information about a line that are required to write an equation of the line in point-slope form.
- 7. Find the equation of a line that passes through the points $(-3, -2)$ and $(2, -4)$. Write the solution in slope-intercept form.



GRAPHING LINEAR EQUATIONS

- 1. Graph the line.

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

- 2. Describe how you would use the slope to find another point on the graph if the slope is $m = 2/3$ and the line passes through $(x_1, y_1) = (-1, 2)$.

- 3. What is the best way to write the equation of a line when graphing?

- 4. Graph the line.

$$y + 2 = -3x + 1$$

- 5. Give two points that lie on the line.

$$y = -x - 6$$



■ 6. Use the slope $m = 1/3$ to find two more points on the line passing through $(1,2)$. Go forward to determine one point and backwards to determine another.

■ 7. Graph the line.

$$y = -2(3x + 1)$$

■ 8. Give two points that lie on the following line.

$$y + 3 = -\frac{1}{2}(4x + 10)$$



GRAPHING LINEAR INEQUALITIES

- 1. Graph the inequality in the cartesian coordinate plane.

$$y < -2$$

- 2. Graph the inequality in the cartesian coordinate plane.

$$x \leq 5$$

- 3. Graph the inequality in the cartesian coordinate plane.

$$y < -2x + 4$$

- 4. Graph the inequality in the cartesian coordinate plane.

$$y \geq -\frac{1}{3}x + 5$$

- 5. Graph the inequality in the cartesian coordinate plane.

$$y \leq x - 1$$



- 6. Graph the inequality in the cartesian coordinate plane.

$$y > \frac{1}{2}x - 3$$

- 7. Graph the inequality in the cartesian coordinate plane.

$$y \geq 3x - 2$$



