

## Lesson 4.2 Understanding Slope-Intercept Form

**Write an equation of a line in the form  $y = mx$  or  $y = mx + b$ .**

*Example*

Write an equation of a line in the form  $y = mx$  or  $y = mx + b$ .

- a) The line passes through the points (-2, -2)  
and (2, 2).

$$\begin{aligned} \text{Slope } m &= \frac{2 - (-2)}{2 - (-2)} \\ &= \frac{4}{4} \\ &= 1 \end{aligned}$$

The line passes through the y-axis at the point

(0, 0).

So, the y-intercept,  $b$ , is 0.

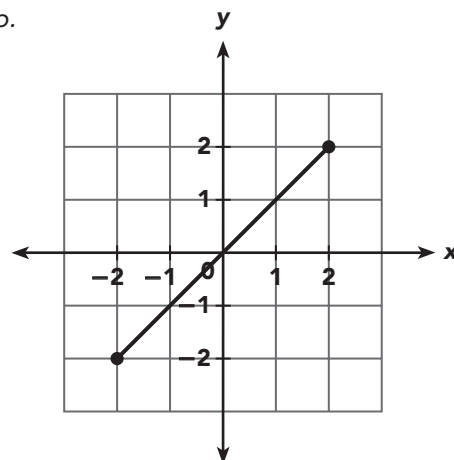
Slope intercept form:  $y = 1x + 0$

$$y = x$$

So, an equation of the line is  $y = x$ .

Substitute the values of  $m$  and  $b$ .

Simplify.



- b) The line passes through the points (-2, 0)  
and (4, 6).

$$\begin{aligned} \text{Slope } m &= \frac{6 - 0}{4 - (-2)} \\ &= \frac{6}{6} \\ &= 1 \end{aligned}$$

The line passes through the y-axis at the point

(0, 2).

So, the y-intercept is 2.

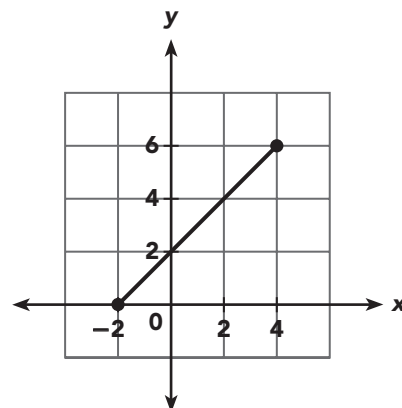
Slope intercept form:  $y = 1x + 2$

$$y = x + 2$$

So, an equation of the line is  $y = x + 2$ .

Substitute the values of  $m$  and  $b$ .

Simplify.



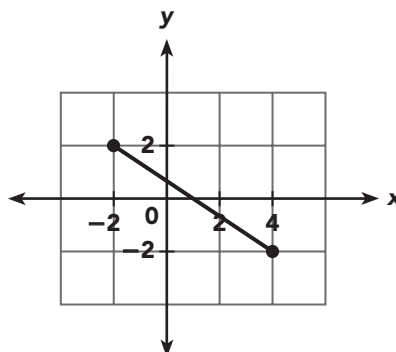
Name: \_\_\_\_\_

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**Complete.**

1. The line passes through the points (\_\_\_\_\_, \_\_\_\_\_) and (\_\_\_\_\_, \_\_\_\_\_).

$$\begin{aligned} \text{Slope } m &= \frac{\boxed{\phantom{0}} - \boxed{\phantom{0}}}{\boxed{\phantom{0}} - \boxed{\phantom{0}}} \\ &= \frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}} \\ &= \frac{\boxed{\phantom{0}}}{\boxed{\phantom{0}}} \end{aligned}$$



The line passes through the y-axis at the point (\_\_\_\_\_, \_\_\_\_\_).

So, the y-intercept is \_\_\_\_\_.

Slope intercept form:  $y = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$       Substitute the values of  $m$  and  $b$ .

$y = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$       Simplify.

So, an equation of the line is \_\_\_\_\_.

**Write an equation of the line in the form  $y = mx$  or  $y = mx + b$ .**

- 2.

