

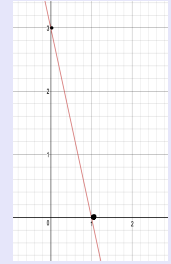
## 8.3 Using Intercepts

Students will be able to use x- and y-intercepts to graph linear equations.

A graph of  
 $3x + y = 3$

A **x-intercept** is the x-coordinate of a point where a graph crosses the x-axis.

A **y-intercept** is the y-coordinate of a point where a graph crosses the y-axis.



### Finding Intercepts

To find the x-intercept of a line, substitute 0 for y in the line's equation and solve for x.

To find the y-intercept of a line, substitute 0 for x in the line's equation and solve for y.

### Find the intercepts of the graph of $3x - 2y = 6$

To find the **x-intercept**, let  $y=0$  and solve for x.

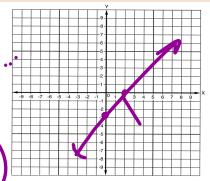
$$3x - 2(0) = 6$$

$$\frac{3x}{3} = \frac{6}{3} \quad x = 2 \quad (2, 0)$$

To find the **y-intercept**, let  $x=0$  and solve for y.

$$3(0) - 2y = 6 \quad (0, -3)$$

$$-2y = \frac{6}{-2}$$



### Find the intercepts of the graph of $2y = x + 2$

To find the **x-intercept**, let  $y=0$  and solve for x.

$$2(0) = x + 2$$

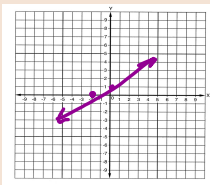
$$0 = x + 2$$

$$x = -2 \quad (-2, 0)$$

To find the **y-intercept**, let  $x=0$  and solve for y.

$$\frac{2y}{2} = \frac{2}{2}$$

$$y = 1 \quad (0, 1)$$



### Find the intercepts of the graph of $4x + 3y = 12$

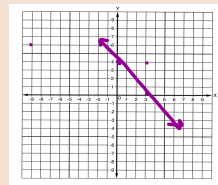
To find the **x-intercept**, let  $y=0$  and solve for x.

$$x = 3$$

To find the **y-intercept**, let  $x=0$  and solve for y.

$$(3, 0) \quad (0, 4) \quad y = 4$$

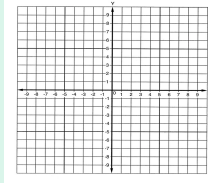
$$x\text{-int} = 3 \quad y\text{-int} = 4$$



Graph the equation  $x - 2y = -2$

Find the ***x-intercept***.

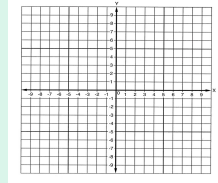
Find the ***y-intercept***.



Graph the equation  $y = -2x - 8$

Find the ***x-intercept***.

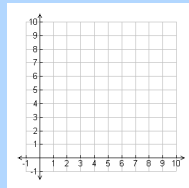
Find the ***y-intercept***.



You are canoeing along a 12 mile stretch of river. You travel 4 miles per hour when paddling and 2 miles per hour when drifting. Write and graph an equation describing your possible paddling and drifting times for the trip. Give three possible combinations of paddling and drifting times.

1. Write an equation, let  $x$  be the paddling time and  $y$  be the drifting time (both in hours). First write a verbal model.

2. Graph the equation, find and use the intercepts.

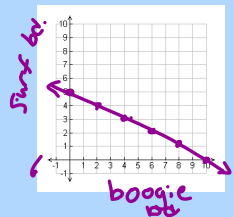


While at the beach, you can rent a boogie board for \$1 per hour or a surfboard for \$2 per hour. You have \$10 to spend. Write and graph an equation describing the possible combinations of hours  $x$  renting a boogie board and hours  $y$  renting a surfboard that you can afford.

1. Write an equation.

$$1x + 2y = 10$$

2. Graph the equation, find and use the intercepts.



## 8.3 Homework

Pg. 410-412

#10-18 (4th), 19, 20,  
22, 26, 28, 29, 30