Algebra I
Lesson 5-2

- I can write and graph direct variation equations.
- I can solve problems involving direct variation.

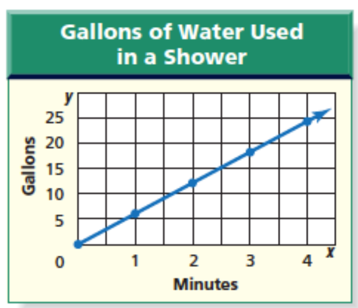
A standard showerhead uses about 6 gallons of water per minute.

x (minutes)	y (gallons)
0	0
1	6
2	12
3	18
4	24

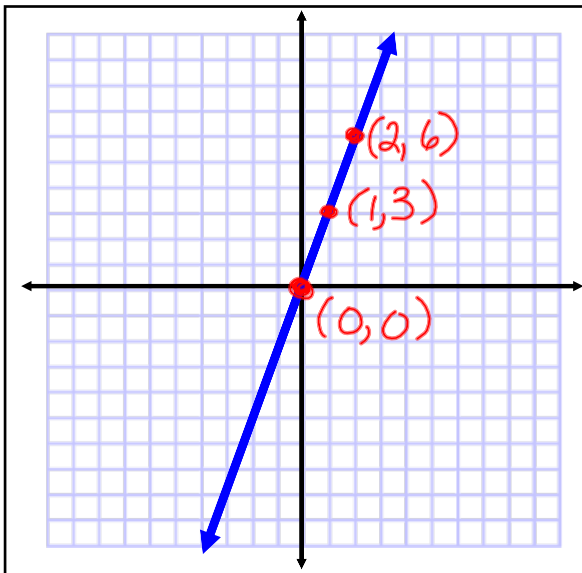
+1

+6

$y = 6x$

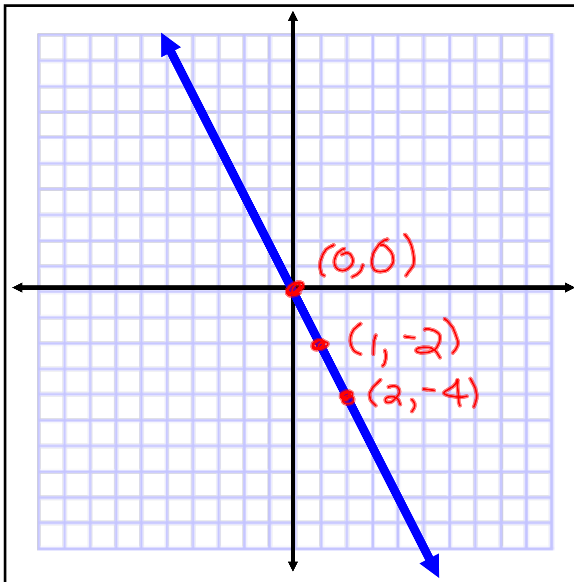


A direct variation is described by an equation of the form $y = kx$, where $k \neq 0$. We say that y varies directly with x or y varies directly as x. In the equation $y = kx$, k is the constant of variation.



$K = 3$

$$m = \frac{3-0}{1-0} = 3$$



$K = -2$

$m = \frac{-2-0}{1-0} = -2$

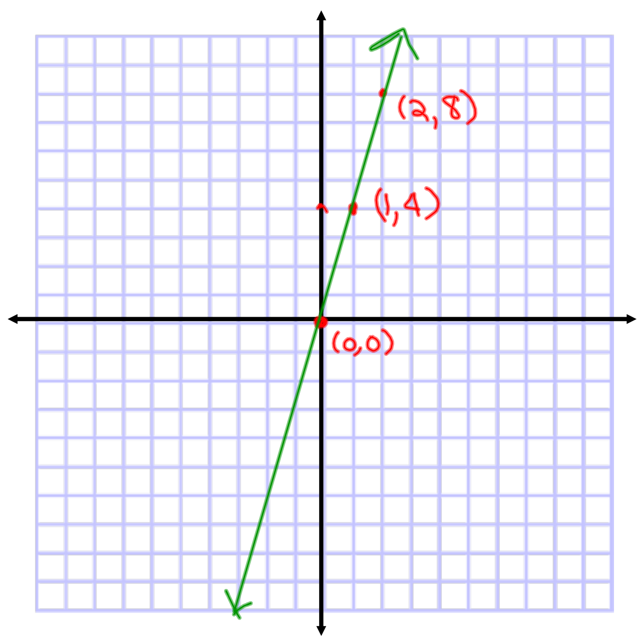
K is slope

$y = kx$
$0 = k \cdot 0$
$0 = 0$

(0,0) is a sol'n of $y = kx$

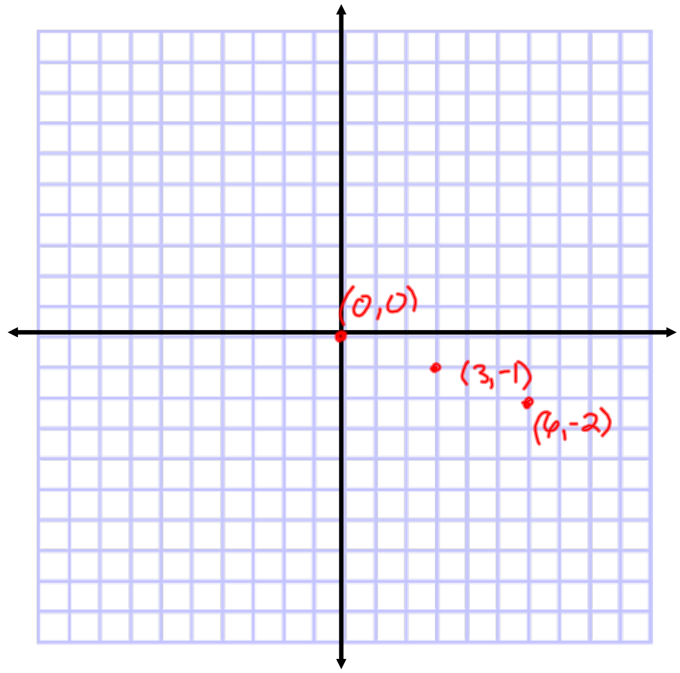
Graph $y = 4x$

$m = \frac{4}{1}$

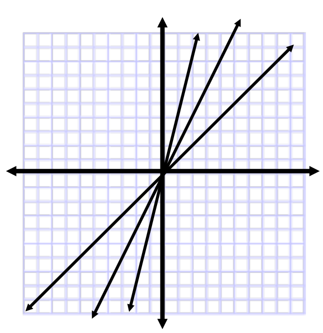


Graph $y = -\frac{1}{3}x$

$m = \frac{-1}{3}$



A family of graphs includes graphs and equations of graphs that have at least one characteristic in common. The parent graph is the simplest graph in a family.



all go thru (0,0)

do not have the same slope

Direct Variation Graphs

equation is $y = kx$, $k \neq 0$

graph always goes thru origin $(0,0)$

positive slope $k > 0$

negative slope $k < 0$

Suppose y varies directly as x, and $y = 28$ when $x = 7$.

Write a direct variation equation that relates x and y.

$$y = kx$$
$$\frac{28}{7} = \frac{k \cdot 7}{7}$$
$$4 = k$$
$$\boxed{y = 4x}$$

Use the direct variation equation to find x when $y = 52$.

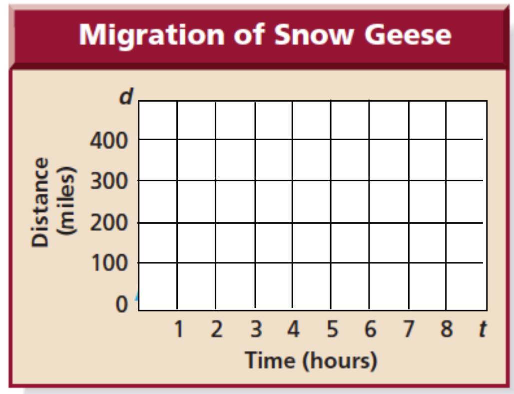
$$\frac{52}{4} = \frac{4x}{4}$$
$$13 = x$$

$x = 13$

$(13, 52)$

One of the most common uses of direct variation is the formula for distance, $d = rt$. In the formula, distance d varies directly as time t, and the rate r is the constant of variation.

A flock of snow geese migrated 375 miles in 7.5 hours.



Assignment:

Pgs. 268-269 #16-42 even; ~~43-51 all~~

last pg. of packet