4.6: Model Direct Variation

Goals: *Identify a direct variation equation given an x/y relationship
*Graph a direct variation equation
*Write a direct variation equation given data

Direct Variation:

***a* =**

Similar to:

but:

Since:

Graph will always:

1. Decide whether the equation represents direct variation. If so, identify the constant of variation.

Ex: $2x - 3y = 0$ Can the equation be rewritten so it is in the form $y = ax$?

Ex: $-x + y = 4$

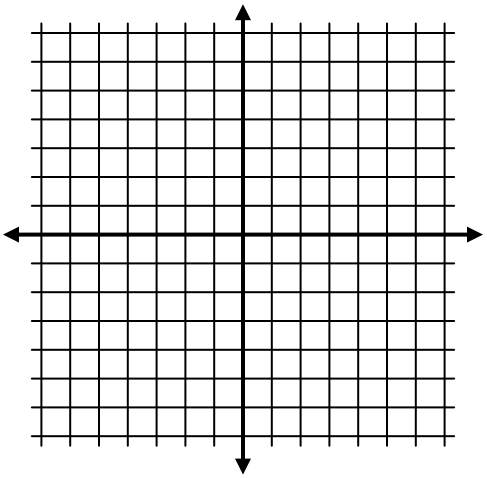
Ex: $-x + y = 1$

Ex: $2x + y = 0$

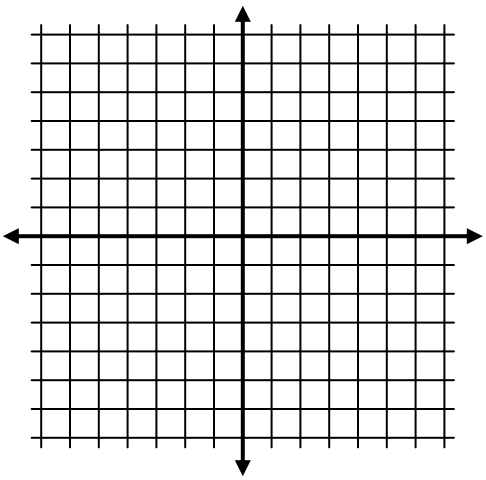
Ex: $4x - 5y = 0$

2. Graph a direct variation equation. (Graph the same way as:)

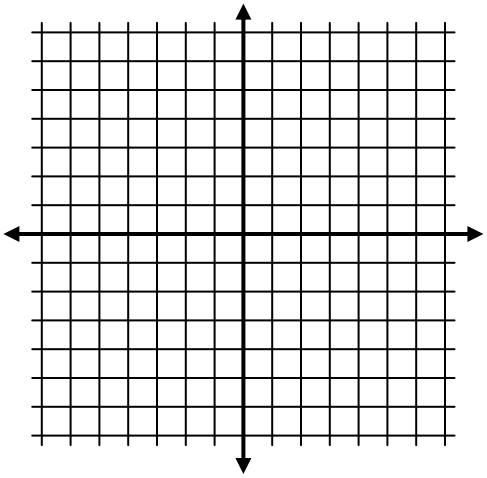
Ex: $y = \frac{2}{3}x$



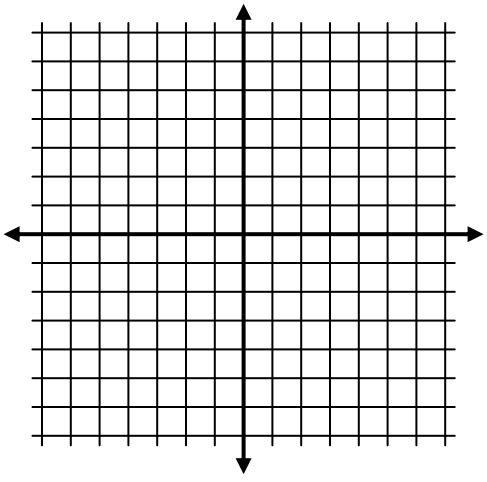
Ex: $y = -3x$



Ex: $y = 2x$

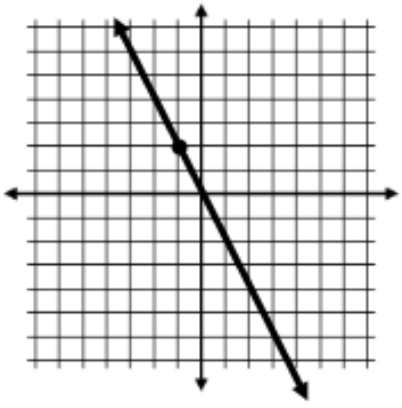


Ex: $y = -\frac{1}{2}x$



3. Write a direct variation equation.

Ex:



Find y when $x = 60$.

1.

2.

3.

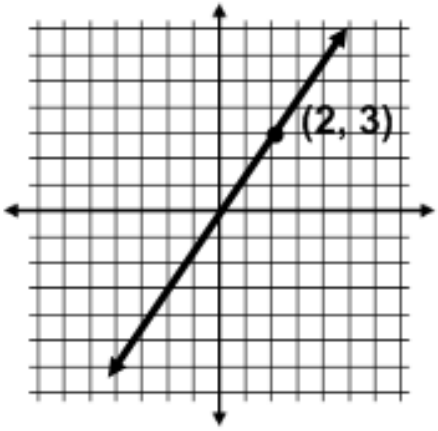
4.

Ex: The graph of a direct variation equation passes through the point (4, 6).

a) Write a direct variation equation relating x and y.

b) Find y when $x = 24$.

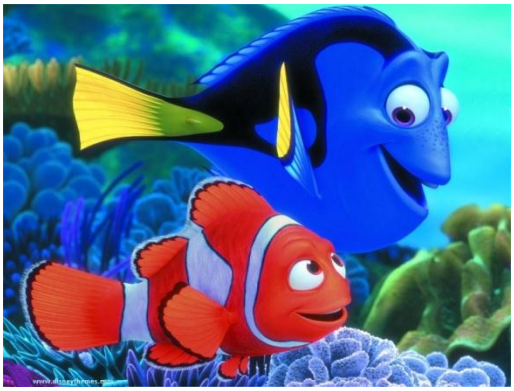
Ex: Write a direct variation equation and find y when $x = 14$.



Ex: The number s, of tablespoons of sea salt needed in a saltwater fish tank varies directly with the number w, of gallons of water in the tank. A pet shop owner recommends adding 100 tablespoons of sea salt to a 20 gallon tank.

a) Write a direct variation equation relating w and s.

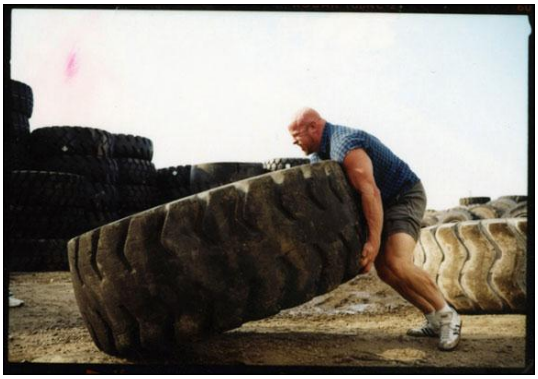
b) Find the number of tablespoons needed in a 30 gallon tank.



Ex: An object that weighs 100 pounds on Earth would weigh just 6 pounds on Pluto. Assume that weight p, on Pluto varies directly with weight e, on Earth.

a) Write a direct variation equation relating e and p.

b) What would a 750 pound rock weigh on Pluto?



Ex: The table shows the total cost *c*, of downloading *s* songs at an internet music site. Explain why *c* varies directly with *s*. Then write the direct variation equation.

s	***c* ($)**
3	2.97
5	4.95
7	6.93

Ex: The table shows the total cost *c*, of buying *d* used DVD's at a music store.

d	***c* ($)**
3	25.77
6	51.54
9	77.31

a) Explain why *c* varies directly with *d*.

b) Write the direct variation equation.