Algebra I

Notes Section 3.6

Model Direct Variation

Big Ideas

1. How to write an equation in the form of y = ax.
2. How to solve for the constant of variation.
3. How to graph an equation in direct variation form.

VOCABULARY

Direct Variation: _____

Constant of Variation: _____

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

a) $2x - 3y = 0$

Yes / No

Constant: ___

b) $-x + y = 4$

Yes / No

Constant: ___

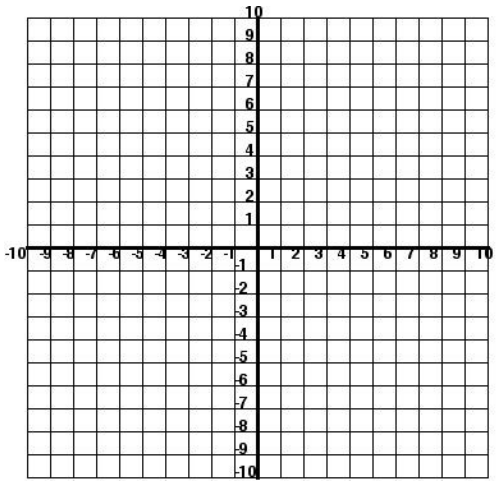
c) $4x - 5y = 0$

Yes / No

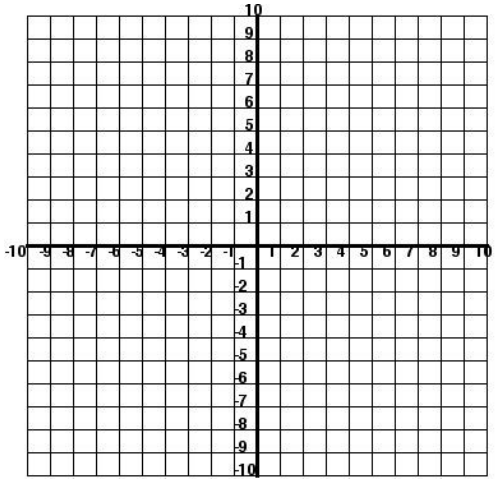
Constant: ___

EXAMPLE 2 Graph the direct variation equation.

a) $y = 2/3x$

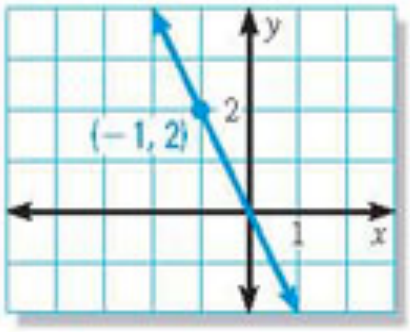


b) $y = -3x$



EXAMPLE 3 The graph of a direct variation equation is shown.

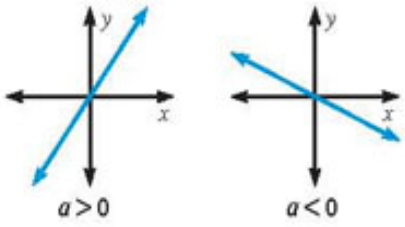
a) Write the direct variation equation.



b) Find the value of y when x = 30.

Properties of Graphs of Direct Variation Equations

- The graph of a direct variation equation is a line through the origin.
- The slope of the graph of $y = ax$ is a.



EXAMPLE 4 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.

b) How many tablespoons of salt should be added to a 30 gallon saltwater tank?

EXAMPLE 5 The table shows the cost C of downloading s songs at an Internet music site.

a) Explain why C varies directly with s.

Number of songs, s	Cost, C (dollars)
3	2.97
5	4.95
7	6.93

b) Write a direct variation equation.