

Monday 10/21

Identify the x and y - intercepts for each of the following.

1. $y = 3x + 2$

y-int: $(0, 2)$
x-int: $(-\frac{2}{3}, 0)$

$$\begin{array}{r|l} 0 & 3x + 2 \\ -2 & -2 \\ \hline -2 & 3x \\ 3 & 3 \\ \hline -\frac{2}{3} & = x \end{array}$$

2. $y = -\frac{1}{4}x - 6$

y-int: $(0, -6)$
x-int: $(-24, 0)$

$$\begin{array}{r|l} 0 & -\frac{1}{4}x - 6 \\ -4 & -24 \\ \hline 0 & x + 24 \\ -24 & -24 \\ \hline -24 & = x \end{array}$$

3. $y = -12x + 18$

y-int: $(0, 18)$
x-int: $(\frac{3}{2}, 0)$

$$\begin{array}{r|l} 0 & -12x + 18 \\ -18 & -18 \\ \hline -18 & -12x \\ -12 & -12 \\ \hline \frac{3}{2} & = x \end{array}$$

Tuesday 10/22

Find the slope for the following:

1. $(-3, 7)$ and $(5, 4)$

$$m = \frac{4 - 7}{5 - (-3)}$$

$$m = \frac{-3}{8}$$

2. $(6, 3)$ and $(-4, -17)$

$$m = \frac{-17 - 3}{-4 - 6}$$

$$m = \frac{-20}{-10}$$

$$m = 2$$

3. $(-1, -2)$ and $(-9, -27)$

$$m = \frac{-27 - (-2)}{-9 - (-1)}$$

$$m = \frac{-25}{-8}$$

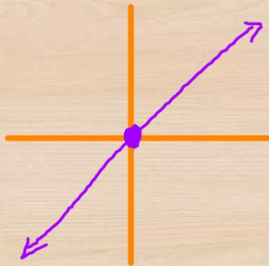
$$m = \frac{25}{8}$$

Direct Variation

The ratio of two variables, the ratio is constant

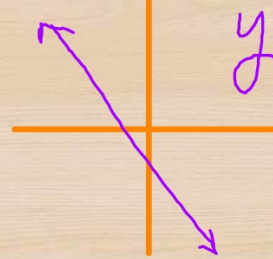
$$y = kx$$

Characteristics



$$y = 3x$$

Non-examples



$$y = 3x + 1$$

Your distance from lightning varies directly with the time it takes you to hear thunder. If you hear thunder 10 seconds after you see the lightning, you are about 2 miles from the lightning. Estimate how many seconds it would take for the thunder to travel a distance of 4 miles.

Seconds	10	x
miles	2	4

$$\frac{2x}{2} = \frac{40}{2}$$

$$x = 20$$

20 seconds

A recipe for 2 dozen corn muffins calls for 3 cups of flour. The number of muffins varies directly with the amount of flour you use. Estimate how many cups of flour are needed to make 6 dozen muffins.

dozens	2	6
cups	3	x

$$\frac{18}{2} = \frac{2x}{2}$$

$$9 = x$$

9 cups

Which equation is not an example of a direct variation?

A. $y = \frac{-7x}{3} + 1$

C. $y = 4x$

B. $y = \frac{5}{16}x$

D. $y = -9x$

What is the constant of variation (k) for each equation?

1. $y = 5x$

$$k = 5$$

$$y = kx$$

2. $y = \frac{1}{2}x$

$$k = \frac{1}{2}$$

3. $y = \frac{-2}{3}x$

$$k = \frac{-2}{3}$$

If y varies directly with x , and $y = 2$ when $x = 16$. Determine which equation represents this situation.

A. $y = 8x$

B. $y = \frac{1}{36}x$

C. $y = \frac{1}{8}x$

D. $y = 36x$

$$\frac{y}{x} = \frac{2}{16} = \frac{1}{8}$$

Suppose y varies directly as x , and $y = 16$ when $x = 8$.
Find y when $x = 16$

y	16	y
x	8	16

Handwritten annotations: A red arrow labeled x^2 points from the $x=8$ column to the $x=16$ column. Another red arrow labeled x^2 points from the $x=8$ column to the $y=16$ row.

$$y = 32$$

Suppose y varies directly as x , and $y = 21$ when $x = 3$.
Find y when $x = 42$

y	21	y
x	3	42

$\times 14$

$\times 14$

$$y = 294$$

Suppose v varies directly as g , and $v = 36$ when $g = 4$.
Find v when $g = 11$.

v	36	v
g	4	11

$$\frac{4v}{4} = \frac{396}{4}$$

$$v = 99$$

Suppose b varies directly as a , and $a = 4$ when $b = 1/2$.
Find a when $b = 5$.

b	$\frac{1}{2}$	5
a	4	a

$$2 \left(20 = \frac{1}{2} a \right)$$

$$40 = a$$