Lines: Lesson 10

Direct Variation: Worksheet 1

answers

MATH ALL

Name: _____

Direct Variation lines *always* go through (0 , 0).

They are written in the form: $y =$ k $\cdot$ x .

Write the direct variation equations:

- The amount of gasoline we use directly varies with how many miles we drive:
  g = k · m
- The height of a tree is directly proportional to how much water it gets:
  h = k · w

Are these data sets examples of direct variation?

x	y	$k = \frac{y}{x}$
-3	-9	$-9/-3 = 3$
1	3	$3/1 = 3$
4	12	$12/4 = 3$

yes!

x	y	$k = \frac{y}{x}$
8	1	$1/8$
12	2	$2/12 = 1/6$
16	4	$4/16 = 1/4$

no!

$\frac{1}{8} \neq \frac{1}{6} \neq \frac{1}{4}$

y varies directly with x, and when $x = 5$, $y = 2$. What is y when x is 7?

$y = kx$ $\quad 2 = k \cdot 5$ $\quad k = \frac{2}{5}$ $\quad y = \frac{2}{5}x$ $\quad y = \frac{2}{5} \cdot \frac{7}{1} = \frac{14}{5}$

y varies directly with x, and when $x = 9$, $y = 3$. What is y when x is 6?

$y = kx$ $\quad 3 = k \cdot 9$ $\quad k = \frac{3}{9} = \frac{1}{3}$ $\quad y = \frac{1}{3}x$ $\quad y = \frac{1}{3} \cdot \frac{6}{1} = \frac{6}{3} = 2$

The amount of sprinkles varies directly with how many cookies are decorated. When 15 cookies are decorated, 2 grams of sprinkles are used. How many grams of sprinkles are used for 100 cookies?

$S = k \cdot c$ $\quad 2 = k \cdot 15$ $\quad k = \frac{2}{15}$ $\quad S = \frac{2}{15} \cdot c$ $\quad S = \frac{2}{\cancel{15}_{3}} \cdot \frac{\cancel{100}^{20}}{1} = \frac{40}{3}$ grams