

Constant of Proportionality

Notes	Video Links & Practice Space
Vocabulary 1. Constant of Proportionality: The _____ value of the ratio of two proportional quantities.	Vocab (0:25)
Constant of Proportionality The _____ you created and used to determine if a relationship is _____ is known as the constant of proportionality. The _____ representing it is $p = \frac{y}{x}$ P represents _____ Y represents _____ X represents _____	Constant of Proportionality (0:51)

Calculating Constant of Proportionality

Step 1: Determine the _____ and _____ variables

Step 2: Substitute _____ pair of independent and dependent variable _____ into the formula

Step 3: _____ the ratio

Example: The table shows the proportional relationship between the number of trees and number of apples picked from the tree.

Determine the constant of proportionality.

Independent: _____

Dependent: _____

Choose one pair: _____

$$p = \frac{y}{x} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

Constant of proportionality is: _____

Calculating (1:40)

# of trees	# of apples
2	26
3	39
6	78
10	130
12	156

Proportional Relationships and Equations

$$\text{constant} \cdot \text{independent} = \text{dependent}$$

$$y = px$$

P represents _____

Y represents _____

X represents _____

How do you write an equation?

Step 1: Find the _____

$$\text{using } p = \frac{y}{x}$$

Step 2: _____ the constant of proportionality into the equation $y = px$

***Remember:** If a real-world scenario is not given, the _____ variable is always listed first.

[Equations \(1:30\)](#)

Write an Equation from a Table

Example: The table to the right shows a proportional relationship. Write an equation that represents the relationship.

Independent: _____

Dependent: _____

Choose one pair: _____

$$p = \frac{y}{x} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$y = px$$

Write from Table (2:17)

Time (min.)	Distance (ft.)
0	0
2	6
4	12
6	18

Write an Equation from a Graph

The steps to write an equation are the _____ whether it is a graph or a table.

Example: The graph to the right shows a proportional relationship. Write an equation that represents the relationship.

Independent: _____

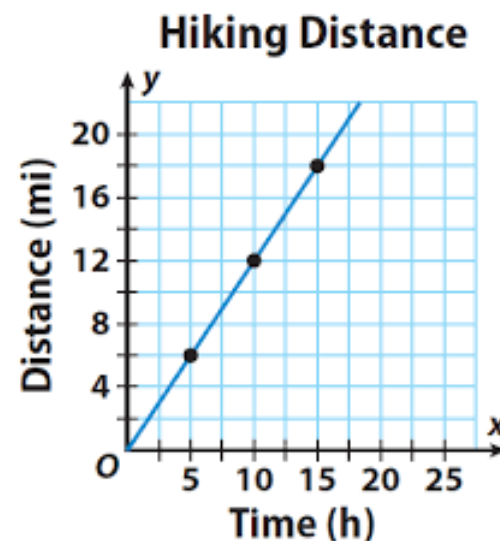
Dependent: _____

Choose one pair: _____

$$p = \frac{y}{x} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$y = px$$

Write from Graph (2:15)



Practice

Will the constant of proportionality always be written as a fraction? _____. It can be a fraction, whole number, or decimal.

Example: The graph to the right shows a proportional relationship. Write an equation that represents the relationship.

Independent: _____

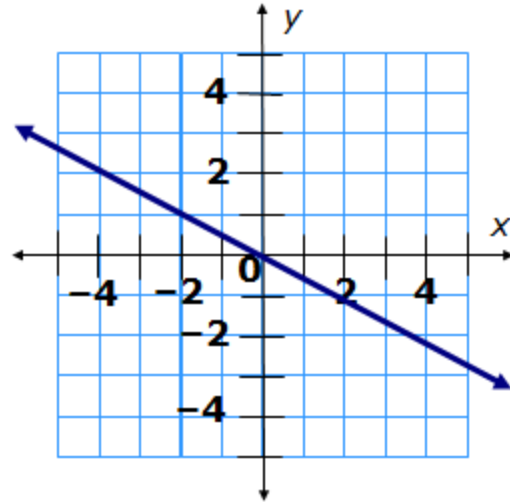
Dependent: _____

Choose one pair: _____

$$p = \frac{y}{x} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$y = px$$

Practice 1 (1:54)



Writing Equations from a Written Description

Example: Alyson plans to rent a canoe. The cost to rent a canoe is \$10 per hour. Write an equation that represents the proportional relationship between the total cost and the number of hours.

Independent: _____

Dependent: _____

Choose one pair: _____

$$p = \frac{y}{x} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$y = px$$

Write from Description (1:58)

Practice

The relationship between b and c is proportional.
If b is 3, then c is 9 and if b is 5, then c is 15.
Write an equation that represents the
proportional relationship between b and c.

Independent: _____

Dependent: _____

Choose one pair: _____

$$p = \frac{y}{x} = \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$y = px$$

[Practice 2 \(2:11\)](#)

Write a Description from an Equation

Step 1: Determine the _____ of
proportionality.

Step 2: Use the constant of proportionality to
_____ the value of the _____ and
_____ variables.

Step 3: Use the values and _____ of the
problem to create a description in _____.

Save this Template!

The relationship between _____
variable and _____ variable is
proportional. For every independent variable
_____ of _____ variable, there are
dependent variable _____ of _____
variable.

[Write Description \(1:47\)](#)

Practice

You are selling bracelets. The equation $y = 5x$ represents the proportional relationship between bracelets and profit, with x representing number of bracelets and y representing dollar amount of profit. Represent the proportional relationship using a written description.

Constant of proportionality: _____

When it is not a fraction, write the number over one to have a value for each variable.

$$p = \frac{\quad}{\quad} = \frac{y}{x} = \frac{\quad}{\quad}$$

Independent: _____

Dependent: _____

[Practice 3 \(3:01\)](#)

Template:

The relationship between independent variable and dependent variable is proportional. For every independent variable value of independent variable, there are dependent variable value of dependent variable.

The relationship between _____ and _____ is proportional. For every _____, there is _____ of _____.

Create a Table from an Equation

Step 1: _____ the constant of proportionality and use it to find the values of the independent and dependent variables.

Step 2: Create a table by listing the independent variable _____ and the dependent variable _____. Use the constant of proportionality as the first set of values in the table.

Step 3: Choose two to three _____ values for the independent variable and _____ them on the table.

Step 4: Substitute each value into the _____. Simplify to determine the _____ of the dependent variable.

[Create Table \(1:14\)](#)

Practice

The equation $y = 40.5x$ represents the average number of pages read by Emily, where y represents the total number of pages and x represents time measured in hours.

Constant of proportionality: _____

$$p = \frac{y}{x} = \frac{\quad}{\quad}$$

Independent: _____

Dependent: _____

	1	2	3

[Practice 4 \(3:15\)](#)