

Dear Parents,

Below is information regarding Unit 6, Values That Vary. Look for future newsletters.

Values That Vary:

Students will be able to:

- Understand relationships between two variables and plot points on a coordinate plane.
- Represent, describe, and analyze relations from tables, graphs, and formulas.
- Describe how change in 1 variable affects the other variable
- Describe patterns in the graphs of proportional relationships, both direct ($y=kx$) and inverse ($y=\frac{k}{x}$)



Textbook Connection

Holt Mathematics Course 2 Textbook

Ch.5 Extension p. 314-315

Web Resources

<http://www.regentsprep.org/Regents/math/ALGEBRA/AO4/indexAO4.htm>

<http://www.keymath.com/x2481.xml>

http://www.learner.org/channel/courses/learningmath/algebra/session8/part_b/index.html

http://www.indiana.edu/~atmat/units/ratio/ratio_s7.htm

Vocabulary

Direct Variation/Proportion: A proportion that describes the proportional relationship between 2 different values. Typically, as 1 variable increases or decreases, the other variable does the same, unless the constant is negative. The equation for direct proportion is $y = kx$ where k is the constant and $\neq 0$. The phrase "is directly proportional to" or "varies directly as" is often used. The graph of a direct variation is always a straight line that crosses the origin (0,0). An example of a direct variation problem is: The more hours you work, the more money you make, the constant is the hourly wage.

Inverse Variation/Proportion: A proportion that describes the proportional relationship between 2 different values.

Typically, as 1 variable increases, the other variable decreases, unless the constant is negative. The equation for inverse

proportion is $y = \frac{k}{x}$ or $xy=k$ where k is the constant and $\neq 0$. The phrase "is inversely proportional to" or "varies inversely as" is

often used. The graph of an inverse proportion is never a straight line, it is a smooth curve that never touches the axis (hyperbola.) An example of an inverse proportion problem is: The faster you drive (increase), the less time it takes (decrease) to travel the same distance (constant.)

Constant of Proportionality: The constant value, k , that does not change and represents the relationship between the variables x and y . In a direct variation, $k =$ the ratio of the variables. In an inverse variation, $k =$ the product of the variables.

Try <http://intermath.coe.uga.edu/>

Practice Problems

- 1.) Describe how the graph of a direct proportion varies from that of an inverse proportion.
- 2.) Write an equation that represents a direct proportion and an equation that represents an inverse proportion.
- 3.) Would the following scenario represent a direct or inverse proportion: The faster you drive, the less time it will take to get your destination?
- 4.) The less hours Billy worked, the less money that he earned. What type of proportion is this representative of?
- 5.) Tony baked 24 cookies that he plans on sharing with his friends. Create a table of values to show how many cookies each person will get depending upon how many friends that he shares with. Graph the table and write an equation to represent the relationship.

Answers:

- 1.) The graph of a direct proportion is a straight line that runs through the origin. The graph of an inverse proportion is always curved and never touches the axis.
- 2.) Answers will vary: Direct Proportion: $y=kx$ or $y=2x$
Inverse Proportion: $y=\frac{k}{x}$ or $y=\frac{2}{x}$
- 3.) Inverse proportion.
- 4.) Direct proportion
- 5.) $xy=k$ where $k=24$ cookies, x =friends

$$y = \frac{24}{x}$$

Friends	1	2	3	4	6	8
Cookies	24	12	8	6	4	3

