Name_____   Date _____
Mr. Tallman
Lesson #27 – Proportional Relationships using an Equation

Recall:

If there is a proportional relationship, the constant ratio is called the _____.

It is represented by the variable _____.

Example 1) A new self-serve frozen yogurt store opened this summer that sells its yogurt at a price based upon the total weight of the yogurt and its toppings in the dish. Each member of Taylor's family weighed their dish and this is what they found.

Weight (ounces)	12.5	10	5	8
Cost ($)	5	4	2	3.20

A) Based on the table, is the relationship between the cost of the yogurt and the weight a proportional relationship? Explain.

B) What is the constant of proportionality (k)?   _____

Writing an Equation for a Proportional Relationship:

If there is a proportional relationship between x and y, you can describe that relationship using the equation:

$$y = k\,x$$

C) Write an equation to represent the proportional relationship. _____

D) Using the equation, if Taylor has to pay $6.40 for her yogurt, how many ounces did she purchase?

E) Using the equation, if Taylor's mom orders 6 ounces of yogurt, how much will it cost?

Example 2) The table below shows the relationship between the costs of renting a movie to the number of days it is rented. The number of days a movie is rented is proportional to the cost.

x Number of Days	y Cost ($)
3	1
6	2
	3
24	

a) What is the constant of proportionality?

b) Write an equation to represent this relationship.

c) Use the equation from part b to complete the table.

Try It!

Randy is planning to drive from New Jersey to Florida. Randy recorded the distance traveled and the total number of gallons used every time he stopped for gas. Assume miles driven is proportional to gallons consumed.

Gallons Consumed	2	4		8
Miles Driven	54		189	216

a) Identify the constant of proportionality. Show all work. _____

b) Write an equation to represent the relationship. _____

c) Using the equation from part b, complete the table above. SHOW ALL WORK.

Think About It!

If Randy drives 0 miles, how many gallons of gas would he consume?

Now, You Try!

Example 5) Ryan's earnings per hour from a part time job are shown in the table below.

Time worked (hrs.) (x)	9	12	15	18
Total Pay ($)	$67.50	$90.00	$112.50	$135

A) Is the relationship between the number of hours Ryan works and his pay proportional? Show all work and explain.

B) What is the constant of proportionality? _____

C) Write the equation that represents Ryan's pay. _____

D) How many hours would Ryan have to work in order to get paid $97.50? Show all work. (Use the equation from part C to help you)

E) If Ryan earned $187.50, how many hours did he work? Show all work. (Use the equation from part C to help you)