

HOMEWORK - Proportions

1. Chad's weekly pay depends on the number of hours he works. He gets paid \$6 for each hour worked.
 - A) What is the dependent quantity?
 - B) What is the independent quantity?
 - C) Is the number of hours that Chad works directly proportional to his weekly pay?
 - D) Is Chad's weekly pay directly proportional to the number of hours worked?
 - E) Write two different equations to represent the relationship between Chad's weekly pay and the number of hours he works.

2. Monica's weekly pay depends on the number of hours she works. She makes \$50 a week plus \$5 for each hour worked.
 - A) What is the dependent quantity?
 - B) What is the independent quantity?
 - C) Is the number of hours that Monica works directly proportional to her weekly pay?
 - D) Is Monica's weekly pay directly proportional to the number of hours worked?
 - E) Write an equation to represent the relationship between Monica's weekly pay and the number of hours she works.

3. A cookie recipe calls for 3 eggs and 4 cups of flour.

A) Complete the table below.

Number of eggs	1	2	3	4	5	6	9	10	<i>g</i>
Cups of flour									
$\frac{\text{Cups of flour}}{\text{Number of eggs}}$									

- B) Is the number of cups of flour directly proportional to the number of eggs in the recipe? If so, what is the constant of proportionality? If not, why not?
- C) "The number of cups of flour depends on the number of eggs used." describes a relationship between two quantities.
 - 1) What is the input (independent) quantity for this relationship?
 - 2) What is the output (dependent) quantity for this relationship?
- D) For each additional egg after the first, _____ more cups of flour should be used.
- E) Write two different equations to represent the relationship between number of cups of flour and number of eggs.

4. Determine if each table represents a direct variation relationship. If it does, name the constant of proportionality exactly, complete the table, and write an equation to represent the relationship. If the relationship is not a proportion, complete the table by any method you can.

People	6	12	15	36	42	78	105	132	<i>p</i>
Cost	8	16	20	48	56				

# items	2	7	9	10	11	20	35	60	<i>n</i>
Cost	20	35	41	44	47				

Cups of Water	0	1	2	3	4	5	20	30	<i>w</i>
Cups of Juice	0	.25	.5	.75	1				

5. Write an equation to represent the situation.
 The amount of water in a baby pool is directly proportional to the length of time water is flowing through a hose. There are 120 gallons of water in the pool when water has been flowing through the hose for 30 minutes.

6. The cost of an automobile tune-up varies directly with the number of labor hours. See table below.

# labor hours	4	7	13
Cost (\$)		168	

- A) Find the constant of proportionality.
- B) Complete the table.
- C) Write the representative equation two different ways.
7. The electrical resistance of a wire varies directly with its length. If a 255 foot wire has a resistance of 1.2 ohms, find the resistance of 135 feet of the same type of wire. Interpret the constant of proportionality in this situation.
8. A farmer calculates that the number of ears, E , of corn that he wants to harvest is directly proportional to the number of seeds, s , that he plants. If 100 seeds yields a harvest of 84 ears of corn,
- A) Write an equation which gives the number of ears of corn, E , as a function of the number of seeds, s .
- B) The farmer wants to harvest 5600 ears of corn. How many seeds does he need to plant?
- C) The independent variable is _____. Is the independent data discrete or continuous? _____
9. The weight of an object on earth varies directly with the weight of that same object on the moon.
- A) Write an equation relating the earth weight, E , and the moon weight, M .
- B) A 200 pound astronaut weighs 32 pounds on the moon. Find k , the constant of proportionality.
- C) How much would a 60 pound dog weigh on the moon?
10. The maximum load that a horizontal beam can carry is directly proportional to its width. If a beam 2.5 inches wide can support a load of 300 pounds, find the load that a beam of the same type can support if its width is 1.8 inches.
11. Two neighbors were trying to decide whether their property taxes were fair. The assessed value of one house was \$175,800 and its tax bill was \$2777.64. The other house had a tax bill of \$3502.85 and was assessed at \$189,300. Were the two houses taxed at the same rate?
12. A crew clears brush from $\frac{1}{2}$ acre of land in 3 days. How long will it take the same crew to clear the entire plot of $2\frac{3}{4}$ acres?