Math 2 – Variation WS Name: _____

**I. Complete each problem involving direct variation and inverse variation.**

1.) Suppose y varies directly with x where y = 32 when x = 8.

a.) Write an equation for this variation.

b.) Find y when x = 21.

c.) Find x when y = 140.

2.) Suppose y varies inversely with x where y = 12 when x = 4.

a.) Write an equation for this variation.

b.) Find y when x = 16.

c.) Find x when $y = \frac{16}{5}$.

3.) Suppose z varies directly with x and inversely with y where x = 16, y = 4, when z = 32.

a.) Write an equation for this variation.

b.) Find z when x = 21 and y = 6.

c.) Find x when y = 48 and z = 4.

4.) The period of a pendulum, p (the time elapsed one complete swing of the pendulum), varies directly with the square root of the length, l, of the pendulum. If period of the pendulum is 4.5 seconds and the length of the pendulum is 36 inches, then find the length of a pendulum where its period of its swing is 6 seconds.

5.) The volume, V, of a certain gas varies inversely with the amount of pressure, P, placed on it. The volume of this gas is 160 $cm^3$ when 4.8 $kg/cm^2$ of pressure is placed on it. What amount of pressure must be placed on 295 $cm^3$ of this gas?

6.) The number of bags of grass seed *n* needed to reseed a yard varies directly with the area *a* to be seeded and inversely with the weight *w* of a bag of seed. If it takes two 3-lb bags to seed an area of 3600 $ft^2$, how many 3-lb bags will seed 9000 $ft^2$?

7.) Its has been found that the average number of daily phone calls C between two cities varies directly with the product of the populations $P_1$ and $P_2$ of two cities and varies inversely with the square of the distance d between the cities. The distance between Nashville (pop. 1,231,000) and Charlotte is 425 miles where the average daily phone calls between the two cities are 204,000 calls. Find the distance between Indianapolis (pop. is 1,607,000) and Charlotte (pop. 1,499,000) if the average daily phone calls between them is 133,380 calls.