**MAT 150 College Algebra**

**Direct and Inverse Variation - Section 2.4**

**1.** What does it mean for two items to vary directly with each other?

**2.** Can you think of any day-to-day relationships that could be described as a direct variation?

**3.** What does it mean for two items to vary inversely with each other?

**4.** Can you think of any day-to-day relationships that could be described as an inverse variation?

**5.** Classify the following as a Direct Variation or an Inverse Variation,

**A)  B)  C)  D) **

**6.** For the Variations examples in part 5 above, identifythe constant of proportionality.

**7.** Find the value**:**

**A)** y varies directly with x. If y = - 4 when x = 2, find y when x = -6.

**B)** y varies inversely with x. If y = 7 when x = -4, find y when x = 5.

**8. Answer the following questions:**

**A)** In an experiment, Joseph finds that amount of a chemical needed is directly related to the time of its reaction with a certain catalyst. If he has 12 grams of the chemical and the reaction time was second, what amount of chemical is needed to have a reaction that lasts 3 seconds?

**B)** The time it takes to fly from Los Angeles to New York varies inversely as the speed of the plane. If the trip takes 6 hours at 900 km/h, how long would it take at 800 km/h?

**Tougher Direct/Inverse Variation Examples.**

**9.** **Write a general variation formula for the following:**

**A)** V varies directly with the square root of t.

**B)** F varies inversely with the sum of x and y.

**C)** The variable y varies directly with x and inversely with the square of z.

**10.** Find the constant of proportionality for each situation below:

**A)** F varies inversely with the cubed root of D. F = 5 and D = 27

**B)** M varies directly with the difference of squares of A and B. M = 10, A = 5, and B = 3

**11.** **Answer the following questions?**

**A)** The intensity of light I varies inversely with the square of the distance D from the bulb. If a distance of 2 meters creates an intensity of  foot-candles, what is the intensity created when the bulb has a distance of 5 meters?

**B)** The volume V of an ideal gas varies directly with the temperature T and inversely with the pressure P. If a cylinder of 50 liters contains oxygen at a temperature of 200 K and a pressure of 5 atmospheres, what would the gas pressure be if the volume was changed to 30 liters and the temperature raised to 250 K?