MATH 125 College Algebra Name_____________________________

<u>Direct Variation – Directly Proportional</u> (**k** is the constant of proportionality or constant of variation)

y varies directly as x. $\Leftrightarrow$ $y = k\,x$

y is directly proportional to x. $\Leftrightarrow$ $y = k\,x$

y varies jointly as w and x. $\Leftrightarrow$ $y = k\,w\,x$

<u>Indirect Variation – Inversely Proportional</u> (**a** is the constant of proportionality or constant of variation)

y varies indirectly as x. $\Leftrightarrow$ $y = \frac{k}{x}$

y is inversely proportional to x. $\Leftrightarrow$ $y = \frac{k}{x}$

The distance **d** an object falls varies directly as the time **t** it has been traveling squared or the distance an object falls is directly proportional to the square of the time **t** it has been traveling.

The force of gravity **F** on an object is indirectly proportional to the square of its distance **d** from the center of the earth or the force or gravity **F** varies indirectly as the square of the distance **d** from the center of the earth.

The distance an object has fallen varies directly as the square of the time it has been falling. The object falls 45 meters during the first 3 seconds it has been falling.

(a). How far had the object fallen after 2 seconds?

(b). How long will it take for the object to fall 125 meters?

The length of time it takes to fill a particular swimming pool is inversely proportional to the square of the radius of the hose used to fill it. It takes 12 hours to fill the pool with a .75 inch radius hose.

(a). How long would it take to fill the pool with a .6 inch radius hose?

(b). What size hose would be required to fill the pool in 10 hours?

f varies indirectly as **w**. **f** is 150 when **w** is 6. What is **f** when **w** is 8? What is **w** when **f** is 120?

n varies directly as the cube of **a**. **a** is 96 when **n** is 4. What is **a** when **n** is 9? What is **n** when **a** is 50?

The volume of a certain gas varies directly as the Temperature T and inversely as the pressure P. If $V = 300\ cm^3$ when $T = 375\,^oK\ (Kelvin)$ and $P = 25\ lb/cm^2$, what is the volume when $T = 325\,^oK$ and $P = 20\ lb/cm^2$?

The intensity I of light from a bulb varies directly as the wattage of the bulb and inversely as the square of the distance D from the bulb. How does the intensity change if the wattage of the bulb and the distance are both tripled?