

Handout for Section 7.5 Class Discussion

#1 Abby Tanenbaum is paid an hourly wage. One week she worked 43 hr and was paid \$795.50. How much does she earn per hour?

#2 If 7 lb of steak cost \$45.50, how much will 1 lb of steak cost/

- Steps to solving a variation problem.

1. Write a variation equation.
2. Substitute the initial values and solve for k .
3. Rewrite the variation equation with the value of k from step 2.
4. Substitute the remaining values, solve for the unknown, and find the required answer.

#3 Hooke's law for an elastic spring states that the distance a spring stretches is directly proportional to the force applied. If a force of 150 newtons stretches a certain spring 8 cm, how much will a force of 400 newtons stretch the spring?

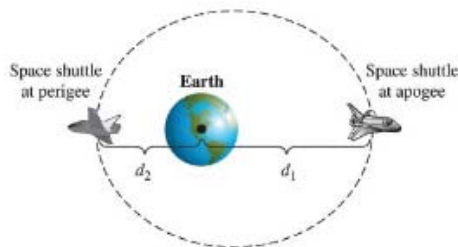
If d is the distance the spring stretches and f is the force applied, then $d = kf$ for some constant k .

#4 The distance a body falls from rest varies directly as the square of the time it falls (disregarding air resistance). If a skydiver falls 64 ft. in 2 sec, how far will she fall in 8 sec?

#5 In the manufacture of a certain medical syringe, the cost of producing the syringe varies inversely as the number produce. If 10,000 syringes are produced, the cost is \$2 per syringe. Find the cost per syringe of producing 25,000 syringes.

Let x = number of syringes produced & c = cost per syringe

#6 The weight of an object above Earth varies inversely as the square of its distance from the center of Earth. A space shuttle in an elliptical orbit has a maximum distance from the center of Earth (*apogee*) of 6700 mi. Its minimum distance from the center of Earth (*perigee*) is 4090 mi. See Figure below. If an astronaut in the shuttle weighs 57 lb at its apogee, what does the astronaut weigh at its perigee?



#7 The interest on an investment is given by the formula $I = prt$. Here, for a given principal p , the interest earned, I , varies jointly as the interest rate r and the time t the principal is left earning interest. If an investment earns \$100 interest at 5% for 2 yr, how much interest will the same principal earn at 4.5% for 3yr?