**Lab for Section 6.5** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Use good notation and show appropriate work. Write solutions to application problems in* ***complete sentences***.

1. (a) 0.9% of 8000 (b) What percent of 83 is 32? (c) 75% of what number is 210.9?

2. (a) Solve  . (b) Solve  for *P*.

3. A number is tripled, increased by 6 and then this new number is doubled. The result is the same as if the same number is quadrupled and then decreased by 7. What is this number?

4. Write the variation equation and determine the quantity indicated.

(a) *x* varies directly as *z*. Determine the constant (b) *D* varies inversely as *E*. Determine the constant
of proportionality when *x* =  and *z* = . of proportionality when *D* = 1.69 and *E* = 0.65.

(c) *F* varies jointly as *m*1 and *m*2 and inversely as the square of *s*. If *F* = 80 when *m*1 = 4, *m*2 = 16, and
*s* = 0.4, determine *F* when *m*1 = 12, *m*2 = 20, and *s* = 0.2.

5. Solve each problem.

(a) Find the resistance of 700 feet of wire having 0.00042 ohm resistance per foot (constant of proportionality) if resistance varies directly as the length.

(b) The weight of a body at or above the earth’s surface varies inversely as the square of the body’s distance from the earth’s center. What does a projectile that weighs 445.5 pounds on the earth’s surface weigh 500 miles out from the earth’s surface? (Use 4000 miles for an approximation of the earth’s radius.)

(c) The wind pressure on a plane varies jointly as the surface area and the square of the wind’s velocity. With a velocity of 12 miles per hour, the pressure on a four foot by one and one-half foot rectangle is 20 pounds. What is the wind’s velocity when the pressure on a surface of four square feet is 30 pounds?