MAT 171 Section 3.7 Homework   **Name:**_____

Use the four-step procedure for solving the variation problems.

1. y varies inversely with x. Suppose $y = 12$ when $x = 5$. Find y when $x = 2$.

2. y varies directly with x and inversely with the square of z. Suppose $y = 20$ when $x = 50$ and $z = 5$. Find y when $x = 3$ and $z = 6$.

3. y varies jointly with a and b and inversely with the square roots of c. Suppose $y = 12$ and $a = 3, b = 2$, and $c = 25$. Find y when $a = 5, b = 3$, and $c = 9$.

     Write an equation that expresses each relationship. Then solve the equation for y.

4. x varies directly with the cube of z and inversely with y.

5. x varies jointly with y and z and inversely with the square root of w.

Use the four-step procedure for solving the following variation problems.

6. The height that a ball bounces varies directly with the height from which it was dropped. A tennis ball dropped from 12 inches bounces 8.4 inches. From what height was a tennis ball dropped if we know it bounced 56 inches.

7. The illumination provided by a car's headlight varies inversely with the square of the distance from the headlight. A car's headlight produces an illumination of 3.75 foot-candles at a distance of 40 feet. What is the illumination when the distance is 50 feet?

8. An individual's intelligence quotient (IQ) varies directly with that person's mental age and inversely with that person's chronological age. A person with a mental age of 25 and chronological age of 20 has an IQ or 125. What is the chronological age of a person with a mental age of 40 and an IQ of 80?