

Name: KEY

Ch. 3 Review

**Directions:** Solve each problem using the 5-step method. Be sure to round your answer to the nearest 10<sup>th</sup> and label appropriately.

1. A car weighs 12,500 N and the area of the four tires is 240 cm<sup>2</sup>. How much pressure is beneath the car?

$$P = \frac{F}{A} = \frac{12,500 \text{ N}}{240 \text{ cm}^2} = 52.1 \text{ N/cm}^2$$

2. If a pressure of 843 N/cm<sup>2</sup> is spread out over an area of 58 cm<sup>2</sup>, how much force is being exerted?

$$F = P \times A \quad 843 \times 58 = 48,894.0 \text{ N}$$

3. If a force of 980 N creates a pressure of 16.5 N/cm<sup>2</sup>, over what area is the force being applied?

$$A = \frac{F}{P} = \frac{980}{16.5} = 59.4 \text{ cm}^2$$

4. A piece of oak has a mass of 475 grams and a volume of 522.5 cm<sup>3</sup>. What is the density of this sample, and will this piece of wood float in water?

$$D = \frac{M}{V} = \frac{475 \text{ g}}{522.5 \text{ cm}^3} = 0.9 \text{ g/cm}^3$$
YES!

5. Steel has a density of 7.8 g/cm<sup>3</sup>. If a piece of steel has a mass of 975.4 grams, what is the sample's volume?

$$V = \frac{M}{D} = \frac{975.4}{7.8} = 125.1 \text{ cm}^3$$

6. Mercury has a density of 8.6 g/cm<sup>3</sup>. If you have 225 cm<sup>3</sup> of mercury, how much mass will it have?

$$M = D \times V \quad 8.6 \times 225 = 1935.0 \text{ g}$$