

## Activity 1

Perform the following calculations, giving the result with the proper number of significant figures. This is a group activity. Turn in one sheet for the group.

1. In examining sugar cubes of seemingly uniform size and mass a student found the average mass of the cubes to be 3.627 grams and the average length of an edge to be 1.50 cm. Calculate the density of the sugar thus examined.

2. The United States has produced more than 380,000 metric tons of aluminum per month. If the density of aluminum is  $2.7 \text{ g/cm}^3$ , how many cubic meters would this represent? (1 metric ton = 1000 kg)

3. It is estimated that in the aurora borealis (northern lights), excited hydrogen atoms in the atmosphere may travel  $2 \times 10^3 \text{ km/s}$ . Calculate this speed in mph (miles per hour).

4. A student measures a spherical balloon with a string and finds its circumference to be 64.0 cm. The balloon is filled with carbon dioxide gas, having a density of 1.80 g/L. Using a spherical approximation, calculate:

a) the volume of the balloon (circumference =  $\pi d$  and  $V = \frac{4}{3}\pi r^3$ )

b) the mass of CO<sub>2</sub> in the balloon. Use the unrounded value of the volume for this calculation.