South Pasadena • Chemistry

Name _____
Period __ Date ___/___/___

Unit 2 • What Can We Measure About Chemicals?

D E N S I T Y L A B

Purpose: The purpose of this lab is to take measurements, present data and calculations clearly, explore the ideas of accuracy and precision of measurements, and explore the idea of density.

Apparatus:
aluminum slab electronic balance centimeter ruler aluminum foil

Procedure:
1. Carefully measure the length, width, and height of an aluminum slab.
   Note: because height of slab is very small, a different method must be used to measure it.
2. Measure the mass of the aluminum slab.
3. Record measurements on the Data Table.
4. Calculate the density of the slab.
5. Calculate the accuracy of your density value knowing that the accepted value is 2.699 g/cm^3.
6. Determine the precision of the class data using ± notation.

Data:

length of Al slab (cm)	
width of Al slab (cm)	
height of __ Al slabs (cm)	
mass of Al slab (g)	

Calculations:

calculated height (cm)	
volume of slab (cm^3)	
density of Al (g/cm^3)	
% error (%)	

Sample Calculations: *(Show the formula you are using and show your calculation. If you are doing a repetitive calculation, show only one example.)*

density of Al **% error**

Class Data:

Density (g/cm^3)

Density (g/cm^3)

average density (g/cm^3)	
$\frac{\text{largest value - smallest value}}{2}$	
reported value	±

Using Density:
What Is The Thickness of a Piece of Aluminum Foil?

1. Consider a slab of Al and a piece of Al foil.
   The foil has a density that is _____ (greater than, less than, equal to) the density of the slab.
2. The density formula: $d = \frac{m}{v}$ (where d=density, m=mass, v=volume) can be re-written as:

   $d = \frac{m}{L \times W \times H}$ Using your algebra skills, solve this formula for H. H =

3. Fill in the Data:

length of Al foil (cm)	
width of Al foil (cm)	
mass of Al foil (g)	
density of Al foil (g/cm^3)	2.699 g/cm^3

4. Calculate the thickness (Height) of the aluminum foil. _____cm