INSTRUCTOR _____ *PERIOD* ____ *NAME* _____

PARTNER _____

PROLOGUE

LAB P-1: DENSITY

INTRODUCTION: Density is the term used to describe the relationship between the mass of an object and its volume. Under given conditions of temperature and pressure, the density of a material is constant. The density of any earth material can be determined by measuring its mass and volume and using the equation:

$$\text{DENSITY} = \frac{\text{MASS}}{\text{VOLUME}}$$

OBJECTIVE: You will be able to calculate the densities of different materials and recognize that density is one of the most important properties of matter.

VOCABULARY:

mass:

weight:

volume:

displacement:

PROCEDURE:

1. Measure the *mass* of each object using a balance. Your answer will be in grams (g).
2. Find the *volume* of each object using the metric ruler and the equations in the Earth Science Reference Tables or by using the water displacement method. Your answer will be in cm^3.
3. Calculate the *density* of each object by dividing the volume into the mass. (Use the equation shown above.)
4. Record these data on Report Sheet 1.
5. After completing Report Sheet 1 obtain the accepted densities for each item from your instructor.
6. Using your density values and the accepted values, calculate percent deviation from the accepted value for each of the items. Use the equation found in the Earth Science Reference Tables.
7. Record your calculations and answers on Report Sheet 2.

REPORT SHEET 1

Show all work.
Label with correct units.
Round final answers to nearest tenth.

1. _____ **Mass =** **Volume =** **Density=**	**2. _____** **Mass =** **Volume =** **Density=**
3. _____ **Mass =** **Volume =** **Density=**	**4. _____** **Mass =** **Volume =** **Density=**
5. _____ **Mass =** **Volume =** **Density=**	**6. _____** **Mass =** **Volume =** **Density=**

REPORT SHEET 2

Show all work.
Label with correct units.
Round final answers to nearest tenth.

1. _____

Your Value _____

Accepted Value_____

% Deviation_____

2. _____

Your Value _____

Accepted Value_____

% Deviation_____

3. _____

Your Value _____

Accepted Value_____

% Deviation_____

4. _____

Your Value _____

Accepted Value_____

% Deviation_____

5. _____

Your Value _____

Accepted Value_____

% Deviation_____

6. _____

Your Value _____

Accepted Value_____

% Deviation_____

Discussion Questions

1. What is the effect of shape on the density of samples of the same material?

2. The Aluminum Bar is cut in half. How does the density of each half compare with the density of the original bar?

3. Of the three phases of matter- SOLID, LIQUID, GAS, which phase has the greatest density for most substances?

4. Water is unusual because it's greatest density occurs in which phase?

5. Students forgot to wipe the excess water off of the pan on the scale. How will there calculations be affected?

6. CONCLUSION: Describe the procedure for determining the density of Earth Materials. Be complete.