

# DENSITY OF SOLIDS AND LIQUIDS

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Station #: \_\_\_\_\_

**Objective:** (1) To become familiar with the various instruments used to weigh and measure objects  
(2) To determine the densities of solid objects and an unknown liquid.

**Procedure:** As in CHEM 1105 lab manual, pages \_\_\_\_\_.

**Observations:**

**DATA:**

**PART I:** Density of Solid Objects: *(Record the data in given units)*

	Rock	Cylinder	Sphere
Mass (TBB*) ( $\pm 0.05$ g)			
Mass (AB**) ( $\pm 0.0001$ g)			
Dimension 1 by ruler ( $\pm 0.05$ cm)	X		
Dimension 1 by vernier caliper ( $\pm 0.05$ mm)			
Dimension 2 by ruler ( $\pm 0.05$ cm)			X
Dimension 2 by vernier caliper ( $\pm 0.05$ mm)			

\* TBB = triple beam balance

\*\* AB = analytical balance

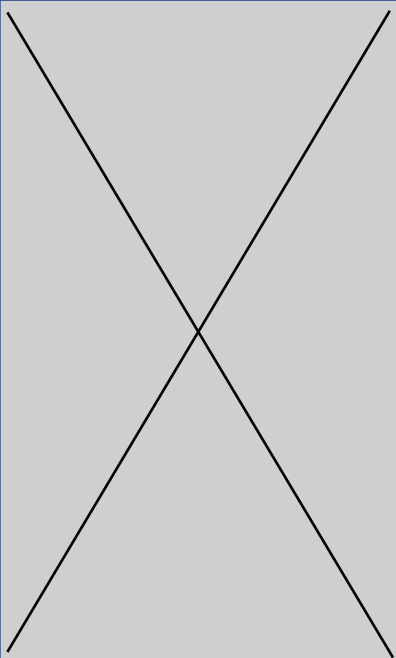
Volume of Rock:

Volume of water in cylinder <b>before</b> adding rock ( $\pm 0.5$ mL)	Volume of water in cylinder <b>after</b> adding rock ( $\pm 0.5$ mL)	So, Volume of water displaced (mL)	Therefore, Volume of rock ( $\text{cm}^3$ )

**PART II: Density of Liquids**

	Run 1	Run 2
Appearance of liquid		X
Mass of 50 mL stoppered Erlenmeyer flask (g)		
Mass of stoppered Erlenmeyer flask & liquid (g)		
Mass of <b>15.00 mL</b> liquid <b><u>ONLY</u></b> (g)		
Volume of liquid (mL)		

**Calculations: Show calculations in the space below:**

<b>Part I:</b>	Rock	Cylinder	Sphere
Volume (Ruler) ( <b>cm<sup>3</sup></b> )			
Volume (Vernier Caliper) ( <b>cm<sup>3</sup></b> )			
Density (TBB & Ruler) ( <b>g/cm<sup>3</sup></b> )			
Density (AB & Vernier Caliper) ( <b>g/cm<sup>3</sup></b> )			

**Part II:**

	Run 1	Run 2
Density of liquid (g/mL)		

**CONCLUSION:**

**QUESTIONS:**

1. Which instruments used to determine the density of regularly shaped objects are the most accurate and why?
2. Why was it necessary to put the stopper on the Erlenmeyer flask when it had solution in it?

3. A graduated cylinder, when filled to the 40.00 mL mark with water (density 1.00 g/mL) and capped with a stopper, had a mass of 352.05 grams. The same cylinder had a rock of mass 37.40 grams placed into it and was re-filled to the 40.00 mL mark with water. The same cylinder, when capped (with the same stopper) now had a mass of 383.95 grams. What is the density of the rock?