

## Chemistry 1105

### Mass Measurements and Density of Solids and Liquids

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

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

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

**OBJECTIVE:** (1) TO BECOME FAMILIAR WITH THE VARIOUS INSTRUMENTS USED TO WEIGH AND MEASURE OBJECTS, (2) DETERMINE THE DENSITIES OF SOLID OBJECTS AND AN UNKNOWN LIQUID.

**PROCEDURE:** As in the Chemistry 1105 lab manual, pp. \_\_\_\_\_

#### DATA & CALCULATIONS:

##### PART I:

##### Weighing by difference:

<b>Weighing In (Analytical Balance)</b>	Mass of beaker	
	Mass of beaker & sand	
	Mass of sand	

<b>Weighing Out (Analytical Balance)</b>	Mass of weigh boat & sand	
	Mass of empty weigh boat	
	Mass of sand	

**PART II:**

**Weighing out multiple samples (Analytical Balance):**

*Remember to write units with the data readings*

Mass of vial & sample		X	<b><u>Show calculations below for mass of sample</u></b>
Mass of vial & 2/3 sample		Mass of sample in flask #1	
Mass of vial & 1/3 sample		Mass of sample in flask #2	
Mass of empty vial		Mass of sample in flask #3	

**PART III:**

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

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

\* **TBB** = triple beam balance

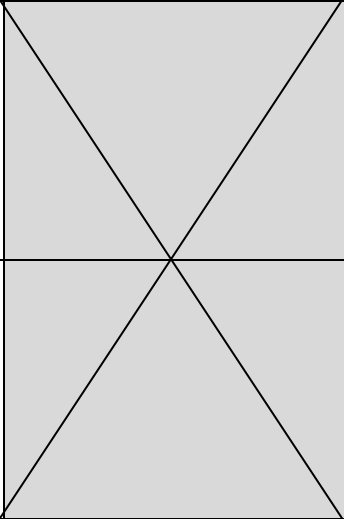
\*\* **AB** = analytical balance

**Data:**

**Volume of Rock:**

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

**Show Volume and Density calculations in the space below:**

	Rock	Cylinder	Sphere
Volume (Ruler) ( $\text{cm}^3$ )			
Volume (Vernier Calliper) ( $\text{cm}^3$ )			
Density (TBB & Ruler) ( $\text{g/cm}^3$ )			
Density (AB & Vernier Calliper) ( $\text{g/cm}^3$ )			

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**PART IV:**

**Density of Liquids**

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

