Metrics Lab

NAME			

PER_____DATE_____

<u>Purpose</u>: To use metric measurements with several metric measurement devices found in the typical science lab. ALWAYS INCLUDE UNITS WITH ALL VALUES!!!

Materials:

Graduated Cylinder	Paper Clip	Beaker (50ml / 250ml)	Small Jar
Triple Beam Balance	Penny	Small Test Tube	Small Rubber Stopper
Ruler	Filter Paper	100ml plastic beaker	Large Rubber Stopper
Meter Stick	Salt	Nut and Bolt	Cavity tray (white)

Procedure:

A. Length Measurement

- _____1. Length of the small test tube.
- _____2. The rim diameter of the small test tube.
- _____3. Largest diameter of the large rubber stopper.
- _____4. Length (entire) of the bolt.
- _____5. Thread length of the bolt.
- _____6. Diameter of the bolt head.
 - _____7. Inside depth of the beaker.
- _____8. Width of this paper.
- _____9. Length of this paper.
- _____10. Length of your nose.

B. Volume Measurement

- _____1. The holding volume of the jar (to the rim).
- _____2. The glass of the small test tube. (hint: use the displacement method)
 - _____3. The entire (rim) volume of the small (50ml) beaker.
 - 4. Fill the 250 ml beaker with 200ml of water.
 - 5. Next, pour the water into a graduated cylinder and compare this amount with the beaker. What is the difference between these amounts?_____

Do you think that using a beaker is a precise way to measure small volumes (why or why not?)

- _____6. The holding volume of the large beaker (to the rim)—use the 500ml grad.cylind
 - _____7. The volume of the bolt. (use displacement method).
- 8. The volume of the **small** rubber stopper.
- 9. **Displacement Volume:** Fill the graduated cylinder with 75ml. Now place the nut and bolt inside the graduated cylinder. Be careful not to drop the bolt in such a way that will break the glass. (hint: tip the grad. Cylinder so that the bolt drops much slower).

Beginning volume in graduated cylinder = _____ Ending volume in the graduated cylinder = _____

Final Volume of nut/bolt = _____

- 10. Linear Volume: Find the linear volume of the cavity tray by multiplying the width, length and depth of the tray together. Final volume should be expressed in cm³.
 Length = _____ Width = _____ Depth = _____ VOLUME = _____
- C. **Mass Measurement**: Determine the mass of the following items. Be sure to measure to the tenths place accuracy (ex. 4.5 grams).

Find the mass of...

- _____1. The paper clip.
- _____2. The penny.
- _____3. The small jar (dry).
- _____4. The nut and bolt combined.
- _____5. The large rubber stopper.
- _____6. The small rubber stopper.
- _____7. The filter paper.
- _____8. The plastic beaker (dry and empty).
 - _____9. The plastic cavity tray.
- 10. When using chemicals, we always use a piece of filter paper on the pan of the balance. This prevents any contamination of the equipment that might cause corrosion.

How would you weigh out exactly 2 grams of salt if you had to use filter paper, explain?

- D. **Safety:** Copy the 10 rules of safety and the procedures for clean up in appendix C (page A8) of the Biology Text book. Also, read and become familiar with the Safety Symbols on Appendix C (p. A7).
 - 1.
 - 2.
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 - 3.
 - 4.

 - 5.
 - 6.
 - 7.
 - 8.
 - 0.
 - 9.
 - 10.