

Name \_\_\_\_\_ Date \_\_\_\_\_ Per \_\_\_\_\_

### Volume, Lab Equipment and the Metric System

#### **Materials:**

Graduated cylinder      Forceps      Erlenmeyer flask      Triple beam scale      Beakers  
Funnel      Lab tray      metric rulers      Scientific solution      NaOH Sugar      Four Containers

**Directions:** Using your metric conversions paper in your *DARWIN* pg. 5 or pg. 13 to answer the following questions. Write in complete sentences!

1. How do you convert from meters to centimeters?
2. How do you convert from centimeters to millimeters?
3. Give the standard metric unit for each of the following.

- a. Length \_\_\_\_\_
- b. Volume \_\_\_\_\_
- c. Mass/Weight \_\_\_\_\_
- d. Temperature \_\_\_\_\_

**Use your notes in your Darwin pg. 13 for the following questions.**

4. How do you convert centimeters to feet and inches.
5. How do you convert your weight in pounds to kilograms?

#### PART 1

**Directions:** Measure a sugar cube with a metric ruler. (Do Not use your fingers to hold the sugar cube. Use your forceps) Cubes have been coated with Sodium Hydroxide (NaOH)

1. What is the measurement in:  
a. cm \_\_\_\_\_  
b. Convert cm to mm \_\_\_\_\_  
c. Convert mm to m \_\_\_\_\_  
d. Weight of sugar cube on triple beam scale \_\_\_\_\_ grams

#### PART 2

**Directions:** You have been provided four containers (cube, cylinder, pyramid and cone) make a hypothesis of the following: (Everyone must come to a consensus on your predictions) *next page*

- a. Do you think that the cube and cylinder have the same volume? Yes/No
- b. Do you think that the pyramid and cone have the same volume? Yes/No
- c. Test your predictions by measuring water into the graduated cylinder 50 ml at a time. Pour the solution into each container until full.
- d. Record how much water each container holds below:

Cube _____ ml	Convert _____ ml to _____ liters
Cylinder _____ ml	Convert _____ ml to _____ liters
Pyramid _____ ml	Convert _____ ml to _____ liters
Cone _____ ml	Convert _____ ml to _____ liters

#### PART 3

**Directions:** For this part of the lab you will need the sugar cube, 100ml of your solution and a flask.

- a. Weight of the graduated cylinder. \_\_\_\_\_ grams
- b. Weight of the graduated cylinder with 100ml of your solution in it \_\_\_\_\_ grams.
- c. Subtract the two figures to obtain the weight of the solution. \_\_\_\_\_ grams.
- d. Weigh the flask. \_\_\_\_\_ grams.
- e. What is the total weight of the solution, sugar cube and flask? \_\_\_\_\_ grams.

**Show your math here.**

- f. Pour the 100ml of water into the flask.
- g. Add the sugar cube and completely dissolve it by swirling the solution in the flask.

Now it is time to make a scientific prediction. (A hypothesis) If you weigh the flask with the water and dissolved sugar cube, will it weigh the same as the total that you obtained in step (e) of this lab? After you make a scientific prediction, weigh the flask with the solution and dissolved sugar cube.

Was your prediction correct? Why or why not? (Remember to write in complete sentences)