

Name:
 Period:
 Date:

Metric Measurement Lab

Objectives:

- You will learn to make measurements using the metric system.
- These measurements will encompass mastering the metric ruler, gram scale, and the graduated cylinder, and thermometer.
- You will demonstrate your ability to convert the original measurements to lower and higher values by moving the decimal point the correct number of places in the proper direction.

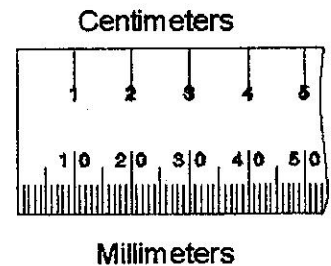
Materials:

- Lab paper
- metric stick
- Glassware: graduated cylinders, beaker
- Book, coin
- Gram Scale
- Thermometer

Procedures and Data:

1. Linear Measure

Use the metric stick to measure the items listed below. Place your measurements in the spaces below. Above each column write the name of the unit that is abbreviated below it. Circle the unit you used to directly measure with for each item. You will need to convert for the other units.



Diameter of Penny	_____ m.	_____ cm.	_____ mm.	_____ km.
Height of lab counter	_____ m.	_____ cm.	_____ mm.	_____ km.
Width of the Textbook	_____ m.	_____ cm.	_____ mm.	_____ km.
Length of the Room	_____ m.	_____ cm.	_____ mm.	_____ km.

1a. Did you use the same unit to measure each item? Explain why you selected the units



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 2. Mass/Weight



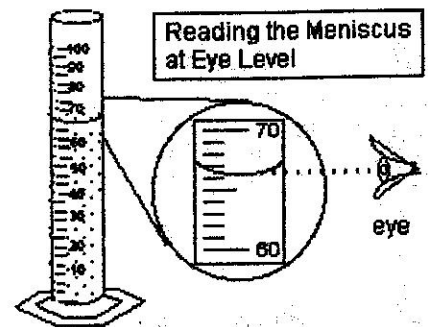
Use the scale to mass the following materials. Place your measurements in the spaces below. Be sure to check the unit on the scale to verify that you are measuring in grams (g) not oz or ct. Write the name of the unit above the columns below.

Mass of coin	g.	cg.	mg.	kg.
Mass of dollar	g.	cg.	mg.	kg.
Mass of empty 10 ml graduated cylinder	g.	cg.	mg.	kg.
Mass of graduated cylinder with 10 ml water				
Mass of 10 ml water				

- 2a. What is the difference between weight and mass?
 2b. Why are they used synonymously on Earth?

3. Volume (of liquids)

Use the glassware provided to measure the volume of the following containers. Place your measurements in the space below. In the last column of the chart write which glassware you used to measure the liquid with. (10 ml graduated cylinder, 100 ml graduated cylinder, 400 ml beaker, 100 ml beaker)



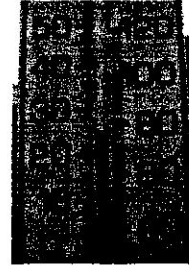
Volume of the purple liquid	L.	cm ³	ml.	
Volume of water	L.	cm ³	ml.	
Volume of the bottle	L.	cm ³	ml.	

- 3a. Do all of the glassware measure with the same degree of accuracy? Explain
 3b. What determines which glassware you measure with?
 3c. What is a meniscus? Why is it necessary to know about it when measuring liquids?

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4. Temperature

Use the thermometer to measure the temperature of the following items. Write the name of the unit measure above the column that contains its abbreviation. Circle the temperature/s which you were able to measure directly.



Ice water	F	C
Boiling water	F	C
Room temperature	F	C
Cold Isopropyl alcohol	F	C

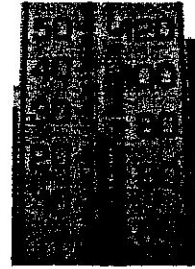
Summary:

1. What is the metric SI unit used for measuring length? _____.
2. The metric prefix denoting 1000X is _____.
3. If you are changing m to cm. what direction do you move the decimal point?
_____.
4. How many times larger is a centigram then a milligram? _____.
5. What is the basic metric unit for mass? _____.
6. What is the basic metric unit for length or distance? _____.
7. What is the prefix for 100X? _____.
8. What is the prefix for 1/100? _____.
9. If we are moving from a large unit to a smaller unit, we move the decimal point to the _____.
10. If we are moving the decimal point to the right we are moving from a _____ unit to a _____ unit.
11. What sources of error would account for differences in measurement of the same thing?

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