

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## HUMAN BIOLOGY - MEASUREMENT LAB

Scientists working all over the world use the metric system of measurement. The following are examples of units of measurement used in the metric system:

Length - Meter (m)

Weight - gram (g)

Volume—liter (l)

Part I - Linear Measurements - you will need a ruler, meter stick, soft tape measure and graduated cylinder with water to answer the following questions.

1. Measure the diameter of a penny, nickel, a dime and a quarter in millimeters.

Penny: \_\_\_\_\_ mm Nickel: \_\_\_\_\_ Dime : \_\_\_\_\_ Quarter \_\_\_\_\_ mm

2. Measure their diameters in centimeters and record below:

Penny: \_\_\_\_\_ mm Nickel: \_\_\_\_\_ Dime : \_\_\_\_\_ Quarter \_\_\_\_\_ mm

3. Carefully compare the measurements of the coins in millimeters and centimeters.

How do you convert centimeters to millimeters? \_\_\_\_\_

How do you convert millimeters to centimeters? \_\_\_\_\_

4. Measure and record the height of the door in meters: \_\_\_\_\_ m

5. On a piece of paper sketch a 10cm by 10 cm square. Now imagine a three dimensional box that is this size on each of its 6 sides.

a. What would be the volume of this box in cubic centimeters? \_\_\_\_\_ cm<sup>3</sup>

b. What would be the volume of this box in cubic millimeters? \_\_\_\_\_ cm<sup>3</sup>

c. Sugar cubes are roughly one cubic centimeter in size. How many sugar cubes would fit inside of your imaginary box? \_\_\_\_\_

6. One of the advantages of the metric system of measurement is that the measure of length is directly related to the measure of volume. One cubic centimeter (cm<sup>3</sup>) equals one milliliter (ml).

a. What is the volume of your imaginary box in milliliters? \_\_\_\_\_ ml

b. What is the volume of your imaginary box in liters? \_\_\_\_\_ l

(hint: 1,000ml = 1 liter)

7. The units marked on your graduated cylinder are in milliliters.

a. What is the volume of the colored fluid in milliliters? \_\_\_\_\_ ml

b. What is the volume of the colored fluid in liters? \_\_\_\_\_ l

Part II—Use the soft measuring tape and scale to complete the table on the back. You will need to make the measurements in centimeters. Use a calculator to compute the averages for your group.

Task	A.	B.	C.	D.	E.	Team Average
1. Ear length at the longest part						
2. Middle finger, palm side, from last joint to fingertip						
3. Thumb fingernail length						
4. Thumb to little finger with fingers stretched out						
5. Armpit to right third fingertip						
6. Left third fingertip to right third fingertip with arms stretched out						
7. Armpit to left third fingertip						
8. Foot length with shoes on						
9. Height						
10. Weight						
11. Wrist circumference at narrowest part						
12. Upper arm circumference over biceps (Tighten muscles to make a biceps as large as possible)						
13. Shoulder width with arms down						
14. Waist circumference at narrowest part						
15. Choose another body dimension						
16. Choose another body dimension						