**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_**

![j0383972[1]]()**Partner\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Length Lab**

**Introduction:**

 Length or linear distance is measured in the metric system in meters. Some objects are too small to be measured in meters so scientists use centimeters (1/100 of a meter) or millimeters (1/1000) of a meter to express these measurements. Each unit is 10 times larger or smaller than the next unit. The laboratory equipment used for measuring linear distances is the meter stick or metric ruler. In this investigation, you will learn how to accurately measure linear distance and express the measurement in the proper metric units.

**Materials:**

 -Metric rulers, meter sticks, string, beakers, test tubes, various items to measure distance

**Part I Measuring in Centimeters**

**Procedure**

1. Measure the following objects in centimeters to the nearest tenth of a centimeter
2. Record your values in the table in the column for centimeters
3. Next convert the measurement from centimeters to millimeters by doing the following:

Take your measurement in centimeters and move the decimal point to the right one place

1. Record this value once you have moved the decimal place in the millimeter column.
2. Next convert the original measurement from centimeters to meters by doing the following:

Take your measurement in centimeters and move the decimal point to the left two places.

1. Record this value once you have moved the decimal place in the meter column.

**Millimeters (mm) Centimeters (cm) Meters (m)**

|  |  |  |  |
| --- | --- | --- | --- |
| Textbook length |  |  |  |
| Length of pencil |  |  |  |
| Height of lab table |  |  |  |
| Length of arm (from elbow to wrist) |  |  |  |
| Width of lab table |  |  |  |
| Length of shoe |  |  |  |

**Part II Measuring in Meters**

**Procedure**

1. Measure the following objects in meters to the nearest hundredth (Each centimeter represents one hundredth of a meter)
2. Record your values in the table in the column for meters
3. Next convert the measurement from meters to centimeters by doing the following:

-Take your measurement in meters and move the decimal point to the right two places

1. Record this value once you have moved the decimal place in the centimeter column.
2. Next convert the original measurement from meters to millimeters by doing the following:

-Take your measurement in meters and move the decimal point to the right three places.

1. Record this value once you have moved the decimal place in the millimeter column.

 **Meters (m) Centimeters (cm) Millimeters (mm)**

|  |  |  |  |
| --- | --- | --- | --- |
| Length of chalkboard |  |  |  |
| Height of door |  |  |  |
| Width of classroom |  |  |  |
| Length of bulletin board |  |  |  |
| Length of row of lab tables |  |  |  |

**Part III Measuring using a string**

**Procedure**

1. Cut a piece of string about 30 cm long
2. Wrap the string around the objects listed in the table and mark the string to represent the circumference of the object.
3. Take the string and place it on a metric ruler and measure the distance in centimeters to the nearest tenth of a centimeter.
4. Record this value in centimeters on the data table.
5. Next convert the measurement from centimeters to millimeters by doing the following:

-Take your measurement in centimeters and move the decimal point to the right one place

**centimeters (cm) millimeters (mm)**

|  |  |  |
| --- | --- | --- |
| Circumference of Beaker |  |  |
| Circumference of Test Tube |  |  |
| Circumference of Arm at widest point |  |  |
| Circumference of leg of chair |  |  |

**Questions:**

1. What would be the best units of measuring the length of a football field?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What would be the best unit of measuring distances like from Reading to Philadelphia?\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How many centimeters are there in a meter?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. How many millimeters are there in a centimeter?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. How many millimeter are there in a meter?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_