

## Measurement Lab

Now that you have perfected measuring and converting units using dimensional analysis, it's time to try this on your own.

**You will be writing a formal lab report for this lab**, using the format explained on a prior content page in this module.

**Directions:** Use everyday household items to complete the following measurements. Use as many decimal places as the device allows based on the measuring lines. You can substitute items if necessary, but you must note what substitutions you make. For example, if you don't have a telephone book to mass but you do have another large book, describe the type of book you did actually mass. Refer back to the previous content page on metric conversions if you need help with that part. When finished, save this document as either a word document or rich text file and submit it to the dropbox.

### Materials:

ruler, measuring tape, meter stick or yard stick  
2 different sized cups  
bathroom scale that can weigh items at least between 1 and 20 pounds  
measuring cup  
large book  
full two liter bottle or gallon of milk  
large pot or pan

### Procedure:

1. Measure the length of a table, the length of the room that table is in, and also the width of the room that the table is in. Make all of the initial measurements in centimeters (cm). Record all of these measurements on your data table. Convert each cm measurement to both meters (m) and kilometers (km). Be sure to show an example of your calculations under the data table. In other words, you must show how you completed one set of calculations (the length of the table, the length of the room, or the width of the room). You do not need to show the calculations for all nine conversions, only one set, or three conversions.
2. Pour water into two different sized cups. The exact amount is not important, but about 3/4 full is best. Pour the water from one cup into a measuring cup and measure the volume in milliliters (mL). Pour that water down the sink. Now pour the water from the second cup into the measuring cup and measure its volume in mL. Record each of these measurements in the data table. Convert each volume to liters (L) and cubic centimeters (cm<sup>3</sup>) and record these in the data table as well. Remember to show your work for one set of calculations under the data table.
3. Mass the following items on a bathroom scale: telephone book, two liter bottle or gallon of milk, and a large pot or pan. Record each mass in pounds, then convert each to kilograms and grams. Remember to show your work for one set of calculations under the data table.

(see tables on the next page)

**Distance data table**

Item	Length (cm)	Length (m)	Length (km)
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length of table

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width of room

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length of room

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Show your work for one set of calculations here. Remember to use the dimensional analysis method.:

**Volume data table**

Item	Volume (mL)	Volume (L)	Volume (cm <sup>3</sup> )
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1st cup

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2nd cup

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Show your work for one set of calculations here. Remember to use the dimensional analysis method.:

**Mass data table**

Item	Mass (lbs)	Mass (kg)	Mass (g)
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telephone book

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two liter bottle

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large pot or pan

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Show your work for one set of calculations here. Remember to use the dimensional analysis

method.:

**Analysis:**

1. Describe how you converted the length measurements from centimeters to meters and kilometers.
2. Describe how you converted the volume measurements from milliliters to liters and cubic centimeters.
3. Describe how you converted the mass measurements in pounds to kilograms and grams.

**YOU WILL BE WRITING A FORMAL LAB REPORT FOR THIS USING THE FORMAT EXPLAINED ON A PRIOR CONTENT PAGE IN THIS MODULE.**

When you have completed this lab, submit this to the **Measurement Lab** dropbox.