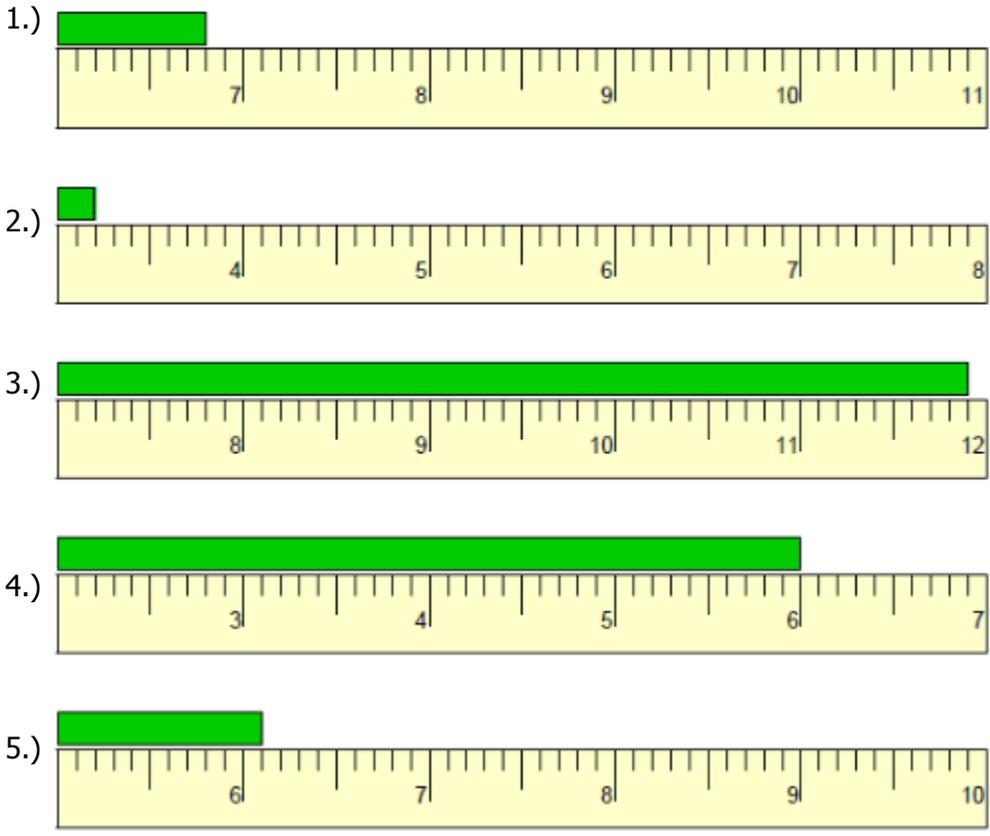## PRACTICE WITH READING MEASURING DEVICES WORKSHEET
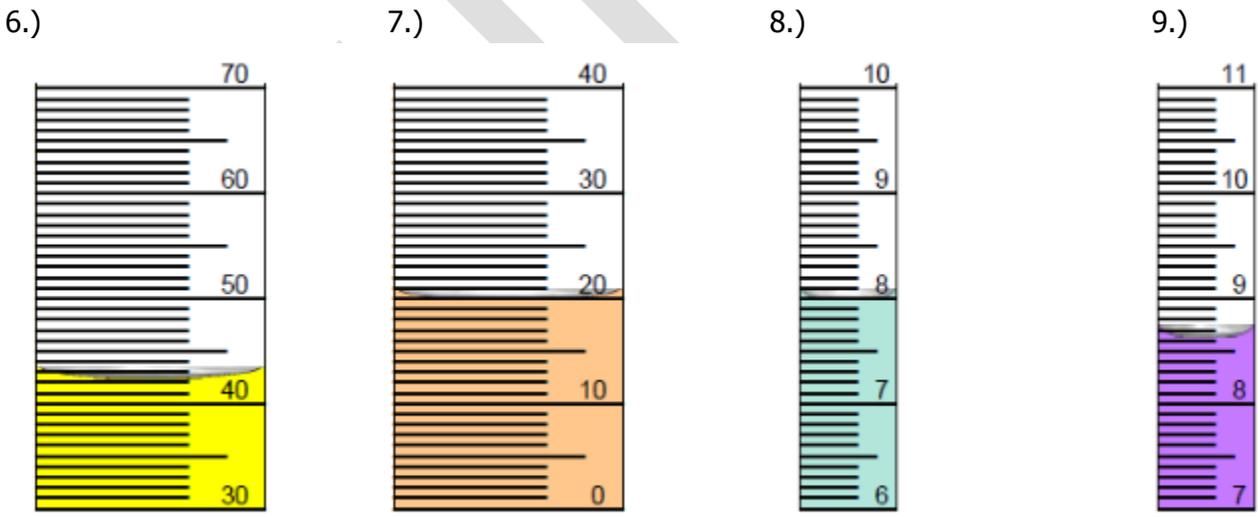
Part 1 - What are the readings on these metric rulers? Be sure to include units with your answers.

1.)

2.)

3.)

4.)

5.)

Part 2 – What are the readings on these graduated cylinders? Be sure to include units with your answers.

6.)   7.)   8.)   9.)

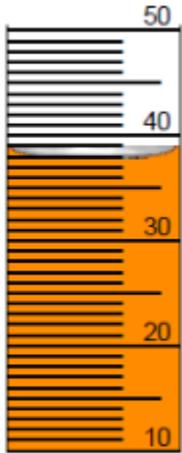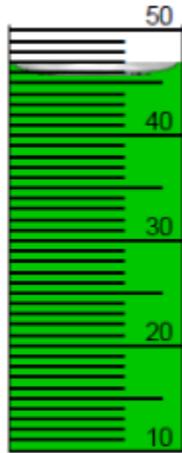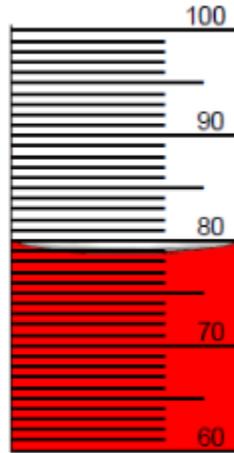Rulers, graduated cylinders, and thermometers on "Practice With Reading Measuring Devices Worksheet" are from math-aids.com
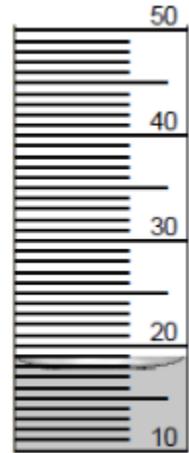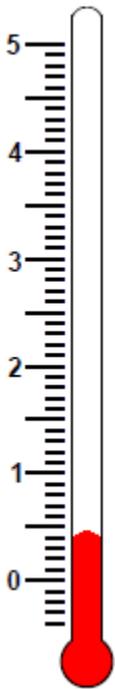
10.)

11.)

12.)

13.)

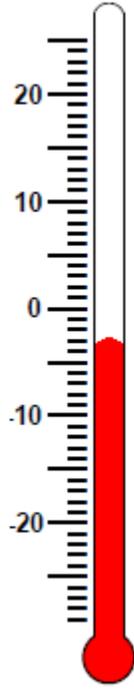Part 3 – What are the readings on these thermometers? Be sure to include units with your answers.

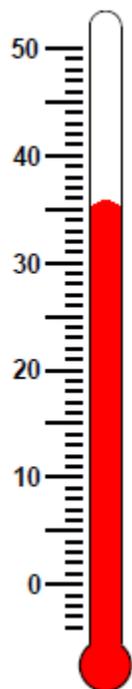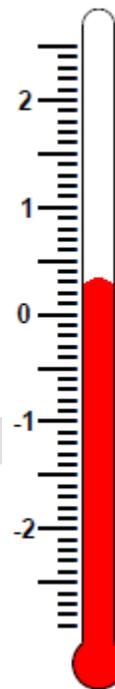14.)   15.)   16.)   17.)
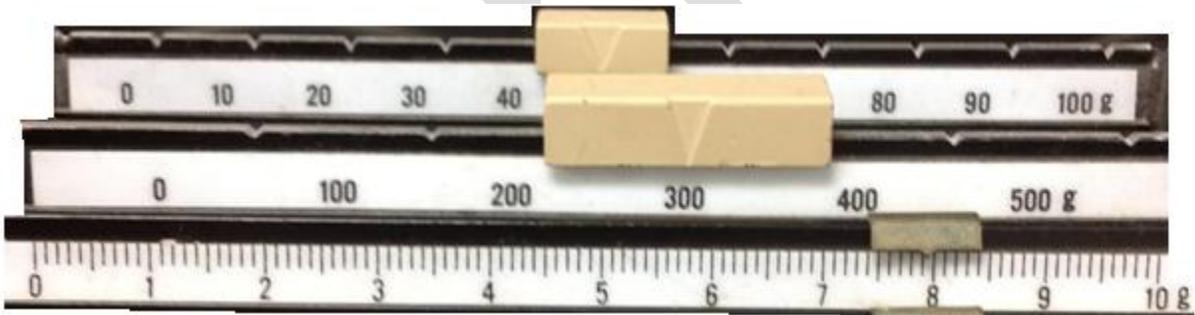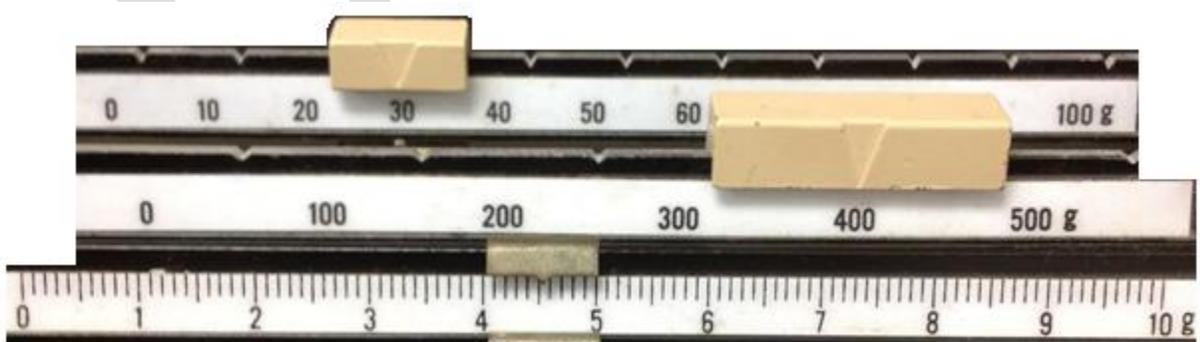

Part 4 – What are the readings on these triple beam balances? Be sure to include units with your answers.

18.)

19.)

SIGNIFICANT FIGURES WORKSHEET

PART 1 - Determine the number of significant figures in the following numbers.

1.) 0.02 _____   2.) 0.020 _____   3.) 501 _____   4.) 501.0 _____

5.) 5,000 _____   6.) 5,000. _____   7.) 6,051.00 _____

8.) 0.0005 _____   9.) 0.1020 _____   10.) 10,001 _____

PART 2 – Rewrite/round each of the following numbers so that it has 3 significant figures.

1.) 0.03006 _____   2.) 0.00041193 _____

3.) 10,800,000. _____   4.) 0.90149 _____

5.) 2.195×10^2 _____   6.) 2.998×10^{21} _____

7.) 0.007997 _____   8.) 8048 _____

9.) 90,185 _____   10.) 699.5 _____

ROUNDING & SIGNIFICANT FIGURES WORKSHEET

Perform the following operations expressing the answer with the correct number of significant figures.

1.) 1.35 m x 2.467 m =

2.) $\dfrac{1{,}035 \text{ m}^2}{42 \text{ m}} =$

3.) 0.021 cm x 3.2 cm x 100.1 cm =

4.) $\dfrac{150 \text{ km}^3}{4 \text{ km}^2} =$

5.) 1.252 mm x 0.115 mm x 0.012 mm =

6.) $\dfrac{1.278 \times 10^3 \text{ m}^2}{1.4267 \times 10^2 \text{ m}} =$

7.) 55.46 g - 28.9 g =

8.) 12.01 mL + 35.2 mL + 6 mL =

9.) 0.15 cm + 1.15 cm + 2.051 cm =

10.) 505 kg - 450.25 kg =

===

DENSITY PROBLEMS WORKSHEET (round your answers to the correct # of SFs)

1.) Determine the density of a rectangular piece of concrete that measures 3.7 cm by 2.1 cm by 5.8 cm and has a mass of 43.8 grams.

2.) Determine the density of a piece of granite that measures 5.02 cm by 1.35 cm by 2.78 cm and has a mass of 30.64 grams.

3.) Determine the density of a brick in which 49.92 grams occupies 4.01 cm^3.

4.) Gold has a density of 19.32 g/cm^3. Find the mass of 6.39 cm^3 of gold.

4

Worksheets

5.) Determine the volume of 6.37 grams of magnesium if its density is 1.29 g/cm^3.

6.) Determine the volume of 15.64 grams of iron if its density is 2.27 g/cm^3.

7.) A graduated cylinder contains 30.0 mL of water. An object is placed in the cylinder and the water level moves to 46.7 mL. Find the density if the mass of the object is 121.3 grams.

8.) A ball has a mass of 6.03 kilograms and a volume of 10.57 cm^3. Find the density of the ball.

9.) A piece of wood has a mass of 5.75 grams and a volume of 0.95 cm^3. Find its density.

===

UNIT CONVERSIONS WORKSHEET

1.) 360 g to µg

2.) 0.00238 cg to g

3.) 13.52 cm^3 to mL

4.) 0.014 g to cg

5.) 2.85 x 10^4 L to dm^3

6.) 41.5 mL to L

7.) 281 cm^3 to L

8.) 4.305 L to dL

9.) 61.2 mL to dm^3

10.) 1.832 L to mL

11.) 18.05 m to Mm

12.) 3.80 dL to L

13.) 1.428 x 10^7 m to km

14.) 30.2 µL to L

15.) 4.06 x 10^{12} nm to m

16.) 1.05 dm^3 to cm^3

17.) 35.85 Mm to m

18.) 4.32 L to cm^3

19.) 6.643 x 10^{-5} km to m

20.) 6.58 m to nm

===

UNIT 1 REVIEW WORKSHEET

Part 1 - Unit Conversions

1.) 0.9785 kg to g

2.) 2830 mm to m

3.) 19.3 L to cL

4.) 3.4 g to Mg

5.) 6.75 x 10^5 cm^3 to dm^3

Part 2 - Tell the number of significant figures in each of the following measurements.

6.) 48 cm

7.) 306.2 g

8.) 0.329 m

9.) 83.952 K

10.) 3700 mm

11.) 400. cm^3

12.) 71.60 g

13.) 82.000 g

Part 3 - Perform each of the following calculations, expressing the answer to the correct number of significant figures.

14.) 3.482 cm + 8.51 cm + 16.324 cm =

15.) 8.3 m x 4.0 m x 0.9823 m =

16.) 4.93 mm^2 =

Worksheets

18.71 mm

17.) 106.5 mL - 32 mL =

Part 4 - Percent Error

18.) Experimental value = 1.24 g, Accepted value = 1.30 g

19.) Experimental value = 22.2 L, Accepted value = 22.4 L

20.) A person attempting to lose weight on a diet weighed 175 lb on a bathroom scale at home. An hour later at the doctor's office, on a more accurate scale, this person's weight is recorded as 178 lb. Assuming that there was no real weight change in that hour, what is the percent error between these readings?

Part 5 – Density
21.) What is the mass of a sample of material that has a volume of 55.1 cm^3 and a density of 6.72 g/cm^3?
22.) A sample of a substance that has a density of 0.824 g/mL has a mass of 0.451 g. Calculate the volume of the sample.

Worksheets

Thickness of Aluminum Foil

INTRODUCTION

The density of a material is given by the formula D = m/V (Density = mass divided by Volume). From Geometry, it is known that the volume of a rectangular solid is length times width times height (V = l·w·h). It can be assumed that the thickness of the aluminum foil is the height. The density of aluminum can be looked up in a table. Therefore, using substitution and then rearranging the equation, one can solve for the height.

PROCEDURE

1. Select four (4) rectangular pieces of aluminum foil. Each piece should be a different size.

2. Determine the mass of each piece of foil (in grams). Record these measurements in the data table below.

3. Carefully measure the length and the width of each piece of aluminum foil. (Make sure you use the metric side of the ruler!) Record these measurements in the data table also.

4. The accepted thickness of aluminum foil is **0.00254 cm** for heavy duty aluminum foil. The density of aluminum is **2.702 g/cm^3**.

DATA TABLE

Trial	Mass (g)	Length (cm)	Width (cm)	Thickness (cm)	Error (cm)	Percent Error
1						
2						
3						
4						
Average						

CALCULATIONS

You must show sample calculations (in detail - for only one of your trials) for (A) thickness, (B) error, and (C) percent error.

NOTE: error = | accepted value – experimental value |

ANALYSIS

Under your sample calculations, write out one potential source of error* in the lab. * Errors in the measuring device or the reading of the measuring device are not acceptable. For example, "we read the ruler incorrectly." would NOT be an acceptable source of error. Your source of error should come from the lab procedure that you followed or assumptions that were made about the materials used.

THIS LAB IS DUE ON:

**CRITERIA IN ORDER TO RECEIVE CREDIT FOR THIS ASSIGNMENT:

    * All numbers are clear & legible.   * All numbers are labeled with their correct units.

    * Calculations are shown in detail.   * Calculations are shown in a neat and logical order.

    * No messy cross-outs or eraser marks.

* Failure to follow these criteria will result in your having to re-submit your lab. It will be considered a late grade when you re-submit.

Worksheets