

Journal and Laboratory Exercise 2 instructions:

Journal Entry number 1:

Title: Human feet as a measuring unit.

Purpose: How many human feet is our science classroom from west to east? (Why we use standards in measurement.)

Procedures: Directions will be given orally to the class.

Questions: Why do we need to use standards in science? Use the journal entry activity to answer.

Journal entry #2:

Title = Proof for need of converting units.

Instructions = Participate or Observe what happens in “who is the fastest” problem solving activity. Write down what was proved by this activity and why?

* You may want to come back to this journal to show a conversion of one of the speeds from this activity.

Laboratory Exercise #2A: Density simulation:

Go to the Phet simulations website and run the density simulation.

<http://phet.colorado.edu/en/simulation/density>

Fill in the laboratory exercise #2A sheet

Laboratory Exercise #2B: Density and % error (record information, calculations, and answers to questions on laboratory exercise 2B sheet.)

1. Volume and Density:

a. Part 1

- Objective: use displacement method and standard measurement method to determine the volume of an object
- Procedure:
 1. Take the mass of the unknown object to the nearest tenth of a gram.
 2. Fill a 10 ml graduated cylinder between 5 – 7 ml of water. Record the exact level of the water to the nearest tenth of a ml.
 3. Place the object into the filled graduated cylinder and record the new level of water.
 4. Subtract the old level from the new level to determine the amount of water displaced. (= to the volume of the object)

b. Part 2

- Objective: calculate density and percent error
- Procedure:
 1. Use the information from part 1 to calculate the density of the unknown object.
 2. Obtain the identity of your unknown object from the teacher and look up the

density of that object in the MERK index or on the computer.

3. Record the information from the MERK index or computer and calculate your % error.

$$\% \text{ error} = \frac{(\text{accepted(known) value} - \text{experimental value})}{\text{accepted value}}$$

4. Describe some possible reasons for your % error other than just stating human error.