**Thickness of Aluminum Foil and Dimensional Analysis Practice**

**Introduction:**

During this activity you will be calculating the height of a piece of aluminum foil. As you know the height is impossible to measure, therefore making it necessary to calculate. Using the calculations that you have learned in this chapter you will be able to not only get close to the actual height, but you will be calculating the exact height. You will need to use dimensional analysis and both the density and volume equations.

**Materials:**

* Perfectly square piece of aluminum foil.
* Ruler
* Scale

**Procedure:**

* 1. Obtain or manufacture a smooth, perfectly rectangular pieces of household aluminum foil. Here are the data you need to collect to calculate the thickness of aluminum foil.
  2. Use the ruler to measure the length and the width
  3. Weigh the foil using a scale (make sure the scale is in grams.
  4. Fill in the data table with the correct measurements.
  5. Using dimensional analysis convert the measurements into the different units to practice.
  6. SHOW ALL WORK IN CALCULATION SECTION ----NEATLY!
  7. In the last column write the units you will need in the equations below.

|  |  |  |
| --- | --- | --- |
| Measure length in inches: | Convert (work) | Answer |
| Convert inches to cm |  |  |
| Convert cm to m |  |  |
| Convert inches to ft |  |  |

|  |  |  |
| --- | --- | --- |
| Measure length in inches: | Convert (work) | Answer |
| Convert inches to cm |  |  |
| Convert cm to pm |  |  |
| Convert inches to km |  |  |

|  |  |  |
| --- | --- | --- |
| Measure mass in grams: | Convert (work) | Answer |
| Convert grams to kg |  |  |
| Convert grams to Hg |  |  |
| Convert grams to ng |  |  |

* 1. Calculate the height (cm) of the aluminum foil using problem solving skills and the density, volume, and area equations. (Do all calculations neatly in the calculations section)

**m**

**D = --- the density of aluminum of 2.70 g/cm3**

**V**

**V = L × W × H**

Results:

Make a data table for the **volume** in cm3, the area in cm3, the height in cm, and the height in μm. Show all work in calculation section.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Volume in cm3 | Height in cm | Height in μm | Height in pm | Height in nm |
|  |  |  |  |  |