Name: _____ Date: _____

Purpose: You will be tasked with determining the exact thickness of aluminum foil in terms of atoms of aluminum. This can be accomplished by using the density of aluminum and the diameter of an individual aluminum atom. Finally, you will determine exactly how many atoms are in your sample of aluminum foil and calculate the length of a chain of aluminum atoms contained within your sample by using Avogadro's number.

Instructions:

1) Cut a square of aluminum foil that is between 10-20 cm on each side.
2) Determine the exact thickness of your piece of aluminum foil in centimeters (cm).
3) Calculate the thickness of your piece of aluminum foil in terms of number of aluminum atoms.
4) Determine the number of miles that the total number of atoms in your sheet of aluminum foil would stretch if the atoms were connected in a chain end-to-end.
5) Show all of your work in two columns. In the first column, clearly show any and all math used to arrive at your conclusions. Then, in the second column, explain your reasoning for each mathematical step by explaining your thought process.

Helpful Information:

Density of aluminum = 2.70 g/cm^3	1 mile = 1.61 km
Volume = length • width • height	1 km = 1,000 m
Diameter of one atom of Al = 2.5×10^{-8} cm	1 m = 100 cm