Chemistry – Chapter 3 Book assignment #1: Dimensional analysis

1. How many minutes are there in exactly one week?

2. How many seconds are in an exactly 40-hour work week?

3. An experiment requires that each student use an 8.5 cm length of magnesium ribbon. How many students can do the experiment if there is a 570 cm length of magnesium ribbon available?

4. An atom of gold has a mass of 3.271×10^{-22} grams. How many atoms of gold are in 5.00 g of gold?

5. Convert the following:

   a. 0.044 km to meters

   b. 4.6 mg to grams

   c. 0.107 g to centigrams

6. Convert the following:
   a. 15 cm^3 to liters

   b. 7.38 g to kilograms

   c. 6.7 s to milliseconds

   d. 94.5 g to micrograms

7. Use dimensional analysis and the given densities to make the following conversions:

   a. 14.8 g of boron to cm^3 of boron. The density of boron is 2.34 g/cm^3.

   b. 4.62 g of mercury to cm^3 of mercury. The density of mercury is 13.5 g/cm^3.

8. What is the mass, in grams, of a sample of cough syrup that has a volume of 50.0 cm^3? The density of cough syrup is 0.950 g/cm^3?

9.   The radius of potassium atom is 0.227 nm. Express this radius in the unit centimeters.

10. The diameter of Earth is 1.3×10^4 km. What is the diameter expressed in decimeters?