CHEM104 Quiz 1   **Name on back only please**

Solve these problems showing all work, using the processes covered in class. No credit will be awarded if all the work and all the steps are not clearly shown. Answers must be in scientific notation with the correct number of significant figures.

1. Perform the following metric system conversions using dimensional analysis and two conversion factors.

    a. 0.123 pg to Gg

    b. 0.005485 dL to nL

    c. 4.2 cm^3 to km^3

    d. 2.4 ft^2 to cm^2

2. Calculate the volume, in m^3, of each of the following objects, each of which has a regular geometrical shape:

    a. A cube of steel whose edge is 3.5175 mm

    b. A spherical piece of Styrofoam with a radius of 1.212cm

    c. A bar of iron 6.0 m long, 0.10 m wide, and 0.20 m high

    d. A cylindrical rod of copper whose length is 62 mm and whose radius is 3.2 mm

3. The current world record for the 50 meter freestyle is 20.91 seconds. Calculate, in units of miles per hour, the average speed for this record swim.

4. Diatomic oxygen freezes at -218.4 ^{o}C. Determine this temperature in Kelvin and in degrees Fahrenheit.