Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Q1Q3B Dimensional Analysis

\*\* Directions:

* Show the proper dimensional analysis setup (10 pts/problem). Complete metric DRUL conversions when necessary to complete the problem.
* Solve and round final answer to the correct number of sig figs (5 pts/prob)
* Final answer includes the correct final unit. (5 pts/prob)

1. The complete combustion of half of a mole of methane produces 445.2 kJ of heat. Convert to Joules and then calories given 1 calorie = 4.184 J

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1. Radiological imaging such as PET or CT scans and dosages of medicine are based on body mass. If a patient weighs 111.2 lbs what is her body mass in kg? 1 kg = 2.2 lbs.

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1. The atmospheric air pressure at 6000 feet is 81.2 kPa. If we know

1 atm = 101.3 kPa (kilopascals) then what is the air pressure at that elevation in atm units?

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1. The density of gold is known to be 19.3 g/mL. What is the mass of a sample of gold shot was found to have a volume of .105 L?

Base unit L = 100 and milli = 10-3

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5. Calculate the number of grams of peroxide in .500 moles of peroxide if we know that 1 mole H2O2 = 34 g of H2O2 ?

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**\*\*Hopt\*\*** Calculate the total number of oxygen (O) atoms in a 7.50 gram sample of CO2 using the following conversions:

* 1 mole of CO2 = 6.02 x 1023 molecules of CO2
* 44 g of CO2  = 1 mole of CO2
* 1 molecule of CO2 = 2 atom of O

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For every problem above that you followed all three bullets under the directions you receive +1 bonus point (or 5 total for regents, 6 total for Hopt)