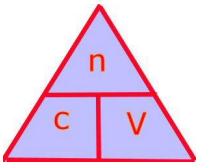
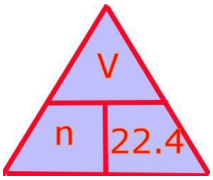
Homework Questions Week 8

1. 75mL of 0.25M hydrochloric acid is added to 5.00g of calcium carbonate.



   a. Write a balanced equation for this reaction
   b. Find the number of moles of each reactant
   c. Find the limiting reactant
   d. Calculate the theoretical mass of calcium chloride solid which will be produced if you completely evaporate the remaining solution.

2. Magnesium 2.5g is burnt in 2.5g of carbon dioxide gas. What mass of carbon should be displaced during this reaction



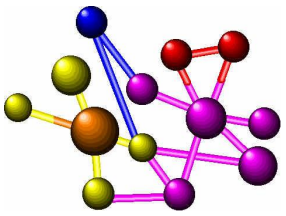
   a. Write a balanced chemical equation for this change
   b. Calculate the number of moles of both reactant
   c. Find the volume of the carbon dioxide at STP
   d. Calculate the mass of carbon produced

3 Use the following equation to solve the question below

$c_1V_1 = c_2V_2$

c_1 = concentration of concentrated acid, V_1 = volume of concentrated acid, c_2 = concentration of diluted solution, V_2 = volume of diluted solution

What volume of concentrated hydrochloric acid (12M) is required to produce 500mL of 0.25M hydrochloric acid (diluted acid)?



3. Research the ideal gas equation.

   a. What is the equation
   b. List the variables
   c. State the correct SI units for these variables
   d. Rearrange the equation so that V (volume) is the subject

Application for the experts……?

   e. What is the volume of 0.45mol of an ideal gas at 35 degrees C and at 98kPa pressure (express V in L)