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**Worksheet 4**

1. Draw the noble gas electron configurations for the following elements:
   1. Tungsten
   2. Silver
   3. Chlorine
   4. Lanthanum
2. Calculate the theoretical yield for magnesium carbonate in a reaction between 15 grams of magnesium chloride and 23 grams of sodium carbonate. **(13 g)**
3. Write the formulas for the following compounds:
   1. Butane
   2. Hydrofluoric acid
   3. Cesium oxide
   4. Magnesium acetate
   5. Sulfur trioxide
4. Determine the energy change which occurs when 15 grams of water changes from -32 ⁰C to 125⁰C. Is this energy released or absorbed? Briefly explain. **(46,972 J)**
5. Calculate the energy in a photon with a wavelength of 125 nm. **(1.6E-18 J)**
6. For each of the following molecules, draw the Lewis dot structure and then indicate electron arrangement, shape, and polarity: NH3, SiH2Cl2, TeCl6, Cl3 1-
7. Determine the energy change which takes place when an electron moves from n = 6 to n = 2. Is this energy absorbed or released? **(4.8E-19 J)**
8. A gas occupies a volume of 132 ml at a temperature of 25⁰C and a pressure of 740 torr. Calculate the new volume at STP. **(117.74 ml)**
9. 33 grams of tungsten is dropped into 250 ml of water which is at 22⁰C. If the final temperature of the system is at 35⁰C, what was the initial temperature of the tungsten? The specific heat of tungsten is 0.132 J/gC. **(3087⁰C)**
10. Determine the mass of pentane (C5H12) burned if 10L of oxygen is consumed at STP. **(4 g)**