**Molar Volume of a Gas – Notes and Practice**

**\*\*\*\*\*\*\*\*\*\* One mole of any gas occupies 22.4 liters at STP. \*\*\*\*\*\*\*\*\*\*\*\***

**MOLE MAP:**

**Example 1: What is the volume of 5.0 moles of carbon dioxide at STP?**

**Example 2: Calculate the number of moles of ammonia gas, NH3, in 2.3 liters measured at STP.**

**Example 3: What volume of hydrogen will react with 22.4 liters of oxygen to form water? (All volumes are measured at STP.)**

**Example 4: When sulfur burns in air it forms sulfur dioxide. What volume of sulfur dioxide (at STP) is produced when 1 gram of sulfur burns?**

**Example 5: What is the density of Br2 at STP?**

**Example 6: Nitrogen reacts with hydrogen to produce ammonia (NH3). If 2.0 grams of**

 **nitrogen reacts with an excess of hydrogen, how many liters of ammonia will be**

 **produced at STP?**

**Practice Problems**

**1. Calculate the number of moles contained in 6.500 L of sulfur dioxide at STP?**

**2. What volume would a 200.0 g sample of hydrogen sulfide gas occupy at STP?**

**3. If a balloon filled with carbon dioxide gas occupies a volume of 31 L at STP, what is the mass of the gas?**

**4. A sample of ammonia contains 0.500 mol. What volume at STP would the gas occupy?**

**5. What is the density of helium at STP?**

**6. If 35.0 grams of methane burns in air, what volume of carbon dioxide is produced at STP?**

**7. When 2.0 Liters of hydrogen reacts with excess oxygen, what mass of water vapor is produced? Assume all gases are at STP?**