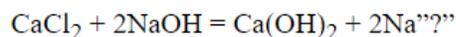
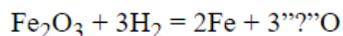
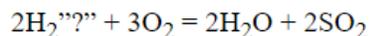
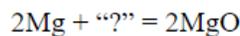
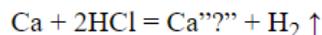


January 29

1. Replace the question marks below to obtain correct chemical equations:



The mole, molar gas volume, Clapeyron-Mendeleev equation

- To calculate masses of products and reactants using balanced chemical equations we use a unit called **mole**. One mole of a substance is the amount whose mass equals the molecular or atomic weight (in atomic mass units, amu) of the substance **expressed in grams**. This means that molecular weight of any substance in amu (from periodic table) is equal to molar weight in grams.
 - *A mole of anything has 6.022×10^{23} particles.* This is called Avogadro's number, after Amedeo Avogadro, who first suggested that equal volumes of gas have equal numbers of molecules.
 - 1 mole of any gas takes a volume of 22.4 liters at "normal conditions ". This is a molar gas volume under the normal conditions. Normal conditions are temperature of 0°C (273 K) and pressure of 1 atm (101 325 Pa)
 - For conditions that differ from normal we use Clapeyron-Mendeleev equation:
 $pV = nRT$
n – gas mole number
p – gas pressure (atm)
V – gas volume (liters)
T – temperature (K)
R – gas constant (0.0821 l x atm/mole x K)
2. What volume will 56 g of nitrogen gas (N₂) occupy under normal conditions?
 3. What volume will 80 g of gas argon will occupy under normal conditions?
 4. There are 6.72 L of oxygen in an oxygen bag under normal conditions. How many grams of oxygen is there? How many moles of oxygen?
 5. What is the density of H₂S gas in g/L under normal conditions?
 6. There is hydrogen gas in a 40-L gas tank under 60 atm at 25°C. How many moles of hydrogen are in the tank? How many grams? What volume will this hydrogen take under normal conditions?