

WKS – Honors
Ideal Gas Law

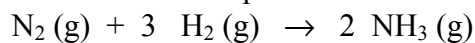
NAME _____
Period _____ **Date** _____

- 1) A student collects 425 mL of oxygen at a temperature of 24°C and a pressure of 0.899 atm. How many moles of O₂ did she collect?
- 2) What is the volume of 1.5 moles of an ideal gas at 25°C and a pressure of 0.915 kPa?
- 3) What pressure, in atm, will 1,360 g of N₂O gas exert on its cylinder with volume of 25.0 L if stored in a shed whose temperature reaches 59°C in the summer?
- 4) A tank with a volume of 658 mL contains 1.50 g of Ne gas at a pressure of 450 kPa. What is the temperature of the gas, in °C?
- 5) What mass of boron trifluoride gas will occupy a volume of 18.5 L at a temperature of 78.0°C and a pressure of 925 mmHg?
- 6) What is the molar mass of 12.18 grams of a gas that has a volume of 2.75 L at 714 torr and 125°C?

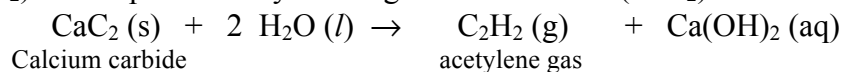
- 7) What is the molar mass of a sample of gas that has a density of 1.09 g/L at 1.02 atm pressure and 25.0°C? [Hint: set V = 1.00 L]
- 8) A sample of propane (C₃H₈) has a density of 0.925 g/L at 1.55 atm. What is its temperature? [You can assume either 1 mol or 1 L, then calculate the other first.]

STOICHIOMETRY + PV = nRT:

- 9) Ammonia (NH₃) is made by the Haber process. This process involves reacting N₂ gas with H₂ gas at high temperatures and pressures to produce ammonia. If 10.0 kg of N₂ gas is reacted with excess H₂ gas at 550. °C and 250. atm, what volume of ammonia is produced?



- 10) Acetylene gas (C₂H₂) can be produced by reacting calcium carbide (CaC₂) with water as shown here:



If 3.25 g of CaC₂ is reacted with excess water, what volume of acetylene gas will be produced if it is collected over water at 17°C and the pressure is 0.974 atm. (This pressure is the total pressure of the acetylene gas mixed with water vapor.) **HINT:** First, determine the partial pressure of just the acetylene gas. Second, determine the moles of acetylene gas produced. Third, plug values into PV = nRT