

### Gas Density & Molar Mass Relationship

1. Rank the following gases from least dense to most dense at 1.00 atm and 298K:  $\text{N}_2$ ,  $\text{CO}$ ,  $\text{Cl}_2$ . Explain.

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*Instructions: Using variations of the ideal-gas law, complete the following problems. SHOW ALL WORK in the empty space below the questions. Write the final answer on the blanks provided. Remember the units. Round to the correct number of significant figures.*

### Finding Gas Density

1. Calculate the density in g/L if ammonia gas ( $\text{NH}_3$ ) is at a pressure of 837 torr and  $45.0^\circ\text{C}$  .

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2. Calculate the density in g/L of carbon dioxide gas at 1140.0 torr and  $60.0^\circ\text{C}$ .

2. \_\_\_\_\_

3. Calculate the density in g/L of Argon gas at a pressure of 1.310 atm and a temperature of 303.0 Kelvin.

3. \_\_\_\_\_

## Finding Molar Mass

5. Calculate the molar mass of a gas in g/mol if 3.5 grams of the gas occupies 2.1 L at STP.

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6. Calculate the molar mass of a gas in g/mol that has a density of 7.10 g/L at 25.0°C and 1.00 atm pressure.

6. \_\_\_\_\_

7. The density of a gas is measured at 3.39 g / L at 1.21 atm and 34.9 °C. What is its molar mass?

7. \_\_\_\_\_

8. What is the molar mass of a gas which has a density of 0.005750 g/mL at STP? (Note: Make sure density is in proper units!)

8. \_\_\_\_\_