

### Gas Density & Molar Mass Relationship

1. Rank the following gases from least dense to most dense at 1.00 atm and 298K: SO<sub>2</sub>, HBr, CO<sub>2</sub>. 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 of NO<sub>2</sub> gas at 0.9700 atm and 35.00°C.

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2. Calculate the density of sulfur hexafluoride gas at 707.0 torr and 21.0°C.

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

3. Anhydrous aluminum chloride (AlCl<sub>3</sub>) sublimes at high temperatures. What density will the vapor have at 225.5 degrees Celsius and 0.9390 atm of pressure?

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

## Finding Molar Mass

5. Calculate the molar mass of a gas if 2.500 g occupies 0.8750 L at 685.0 torr and 35.00°C.

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6. Calculate the molar mass of a vapor that has a density of 7.135 g/L at 12.50°C and 743.0 torr.

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

7. The density of a gas is measured at 1.853 g / L at 745.5 mmHg and 23.85 °C. What is its molar mass?

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

8. What is the molar mass of a gas which has a density of 0.002490 g/mL at 20.05 °C and 744.0 mm Hg? (Note: Make sure density is in proper units!)

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