

***Chapter 10: Mole Conversions:** Solve each problem. Be sure to show all work involved.

Include appropriate units and significant figures.

1. How many moles of magnesium are represented by 3.01×10^{22} atoms of Mg?

2. Find the mass in 7.55 moles of LiBr.

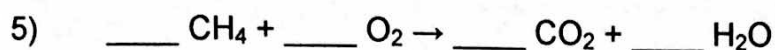
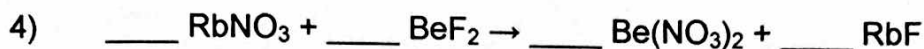
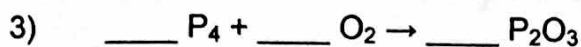
3. Convert 5.73×10^{23} molecules of F_2 to moles.

4. How many moles of argon are present in 11.2 g of Ar?

5. How many moles of lead is 4.35×10^{24} atoms of Pb?

***Chapter 11: Chemical Reactions:** Balance each of the following reactions.





***Chapter 13&14: Gas Laws:** Solve the following problems using the ideal gas law.

$$P \times V = n \times R \times T$$

$$R = 0.0821 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}} \text{ or } 8.314 \frac{\text{L} \cdot \text{kPa}}{\text{mol} \cdot \text{K}}$$

1. Neon gas is at a pressure of 9.3 atm and a volume of 6.45 liters. If 4.0 moles of the gas are present, what is the temperature?

2. An unknown quantity of gas is at a pressure of 153 kPa, a volume of 43.3 liters, and a temperature of 87°C. How many moles of gas are present?

3. If 8.2 moles of oxygen gas in a container have a volume of 35 liters and a temperature of 40.3 °C, what is the pressure inside the container in atmospheres?

4. A container holds 17.7 g of CO_2 gas at a pressure of 0.090 atm and at a temperature of 56°C . What is the volume of the container?

***Chapter 15&16: Solutions:** Solve the following molarity problems.

$$\text{Molarity} = \frac{\text{moles of solute}}{\text{liters of solution}}$$

1. What is the molarity of a solution that contains 8.7 moles of lithium nitrate in 13.6 liters of solution?

2. A flask contains 19.7g $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ (sucrose) in 190.0 mL of solution. What is the molarity?

3. What mass of Li_3PO_4 would you need to make 2.5 liter of a 3.5 M Li_3PO_4 solution?

4. If you dissolved 299 g of NaCl in water to make a 3.5 M solution, what volume of solution is present?