

Show all work for credit! Use correct significant figures and units. Circle final math answers.

Please use your notes if needed. DO NOT take answers from or give answers to another student. DO NOT share the contents of the quiz with another student.

***I affirm that I will only use sources approved by my teacher and that all work on this assessment is entirely my own. I also affirm that I will not share the contents of this quiz with anyone.***

Your signature \_\_\_\_\_ Date \_\_\_\_\_

1. Carbon dioxide gas, generated by the reaction  $\text{Al}_2(\text{CO}_3)_3(\text{s}) \rightarrow \text{Al}_2\text{O}_3(\text{s}) + 3\text{CO}_2(\text{g})$ , is collected over water at  $25.0^\circ\text{C}$  in a 1.00 L container at a pressure of 762 mmHg. The vapor pressure of water at  $25.0^\circ\text{C}$  is 23.756 mmHg. How many moles of  $\text{Al}_2(\text{CO}_3)_3$  were consumed in the reaction?
2. The rate of effusion of oxygen gas is 2.42 times faster than that of an unknown gas. What is the molar mass of the unknown gas?
3. A gas has a density of 3.47 g/L at  $100^\circ\text{C}$  and 1.5 atm. What is the density of the gas at STP? What is the identity of this diatomic gas?
4. A 2.0L tank holds 48.00 g of  $\text{O}_2$  and 98.07 g of  $\text{N}_2$ . The temperature inside the tank is  $25.0^\circ\text{C}$  and the pressure is 654 mmHg. A.) What is the mole fraction of the nitrogen? B.) What is the partial pressure of the nitrogen?
5. The valve between a 4.0 L tank containing neon at a pressure of 5.0 atm and a 2.0 L tank containing argon at 8.0 atm is opened and left open. Calculate the final pressure in the tanks.

