

Name: _____

Date: _____

- [3 pt] 1. Calculate the partial pressure (in atm) of Ar in a flask contains a mixture of 2.0 mols 1. _____ of Ar and 5.0 mols of Ne in the flask with total pressure of 2.6 atm.
- [4 pt] 2. A 750.0 mL flask contains 5.00 g of SO₂ and 5.00 g of CO₂ at 50.0°C. What is the 2. _____ partial pressure of CO₂ in the flask?
- [4 pt] 3. Fluorine gas was collected over water at a temperature of 30.0°C. 128 mL was collected 3. _____ at a pressure of 740.0 mmHg. What mass (in grams) of fluorine gas was collected? Hint: You may need to use a certain table in your book...
- [5 pt] 4. You plan a dive to 300 feet breathing a trimix consisting of 15.0% O₂, 55.0% He and 30.0% N₂. Assume every 33 feet = 1 atmosphere.
- (a) At what depth (feet) would you experience oxygen toxicity ($P_{O_2} \geq 1.6$ atm)? 4(a) _____
- (b) At what depth would Nitrogen Narcosis be a concern ($P_{N_2} \geq 3.0$ atm)? 4(b) _____

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[4 pt] 5. Magnesium metal reactions with hydrochloric acid to yield hydrogen gas. The gas that forms is found to have a volume of 3.557 L at 25 °C and a pressure of 747 mm Hg. Assuming that the gas is saturated with water vapor at a partial pressure of 23.8 mm Hg, what is the partial pressure (in mm Hg) of the hydrogen gas. How many grams of magnesium metal were used in the reaction to generate the hydrogen gas?

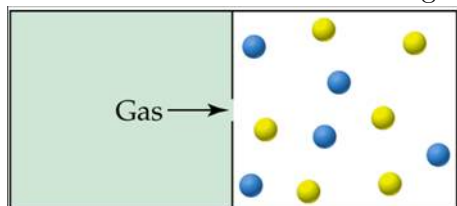
[4 pt] 6. The rate of effusion of a gas is (A) directly proportional (B) inversely proportional or (C) Not related to the square root of its mass? Write a mathematical equation describing this relationship.

6. _____

[3 pt] 7. Which will diffuse through a membrane faster, CO gas or CO₂ gas? Explain.

7. _____

[4 pt] 8. Effusion of a 1:1 mixture of two gases through a small pinhole produces the results shown below.



(a) Which gas molecules blue (dark) or yellow (light) have the higher average speed? Explain. 8(a) _____

(b) If the yellow molecules have a molecular mass of 25 amu, what is the molecular mass of the blue molecules? Show work. 8(b) _____

[4 pt] 9. Hydrogen gas effuses 8.97 times faster than an unknown gas. What is the molecular weight of the unknown gas? 9. _____