

# WORKSHEET 15

Chemistry 110

Name \_\_\_\_\_

(last)

(first)

Due date: \_\_\_\_\_

Solve the following problems, giving complete set-ups, including all units, and using correct significant figures. Show all work.

1. 700 L of nitrogen has a pressure of 350.0 torr at 64.3°C. If the temperature remains at 64.3°C, at what pressure, in torr, will the volume of the nitrogen be 686 mL? 1. \_\_\_\_\_
2. A gas occupies a volume of 4.8 L at a pressure of 0.991 atm. If the temperature, in Kelvin, is doubled, while the pressure remains constant, what will be the new volume, in L, of the gas? 2. \_\_\_\_\_
3. 6.3 mL of carbon dioxide has a pressure of 585 torr at -11.0°C. What would be the volume, in mL, of the CO<sub>2</sub> if its pressure is changed to 2.73 atm while the temperature remains constant? 3. \_\_\_\_\_
4. A gas in a 57.2 L container has a pressure of 333 torr at 34.3°C. What will be its pressure, in torr, when its temperature is changed to 401 K and its volume to 60.0 L? 4. \_\_\_\_\_
5. The total pressure exerted by a mixture of argon, oxygen, and xenon is 772 mm Hg. The partial pressure of argon in the mixture is 0.212 atm and the partial pressure of xenon is 54.1 torr. What will be the pressure, in atm, of the mixture if all of the argon is removed? 5. \_\_\_\_\_
6. In a 30.0 L container there are 88.0 grams of nitrogen at 106.0°C. How many grams of nitrogen must be added, at constant temperature, to increase the pressure by 40.0 torr? (molar mass N<sub>2</sub> = 28.0 g/mole) 6. \_\_\_\_\_

7. What is the density, in g/L, of fluorine at 760 torr and 0°C? 7. \_\_\_\_\_
8. What is the molar mass of a gas if its density is  $6.95 \times 10^{-3}$  g/mL at 273 K and 1.00 atm? 8. \_\_\_\_\_
9. A sample of oxygen is collected over liquid water at 20°C and 0.500 atm. What is the partial pressure of oxygen, in torr, in the gaseous mixture above the liquid water? (The vapor pressure of water at 20°C is 17.5 torr) 9. \_\_\_\_\_
10. A gas occupies a volume of 15.5 L at STP, What would be its volume, in L, if the gas is reduced to one-third its original pressure, while the temperature remains constant? 10. \_\_\_\_\_
11. What is the density, in g/L, of ammonia at 1.26 atm and 153.05°C? (Molar mass of ammonia = 17.03) 11. \_\_\_\_\_
12. What is the mass, in kilograms, of 323 L of propane, C<sub>3</sub>H<sub>8</sub>, that has a pressure of 546 torr at 32.5°C? (Molar mass C<sub>3</sub>H<sub>8</sub> = 44.10) 12. \_\_\_\_\_
13. What is the pressure, in atm, of a 0.518 mole sample of gas that has a volume of 425 mL at -39.11°C? 13. \_\_\_\_\_
14. What volume, in liters, will a mixture of 12.58 moles of chlorine gas and 7.35 moles of nitrogen gas occupy at 25.8°C and 0.798 atm? 14. \_\_\_\_\_