Worksheet - Mixed Gas Law Worksheet Name: _____

**SHOW ALL WORK FOR ALL PROBLEMS**

**I. 1.0 atm = 101.3 kPa = 760 mmHg And 0°C = 273 K**

Change the following units: 359 kPa = _____ atm 10°C = _____ K

6.2 atm = _____ kPa 10K = _____ °C

For the rest of the problems: **First** identify each number with **P, V, or T**. **Second** state **whose** law you are using, **Third** – show the equation, **Fourth** solve the problem, and **Fifth** - circle your final answer - and make sure you don't forget your units!!!

1. The gas in a sealed can is at a pressure of 3.00 atm at 25°C. A warning on the can tells the user not to store the can in a place where the temperature will exceed 52°C. What would the gas pressure in the can be at 52°C?

2. A sample of hydrogen exerts a pressure of 0.329 atm at 47°C. The gas is heated 77°C at constant volume. What will its new pressure be?

3. A sample of neon gas occupies a volume of 752 mL at 25°C. What volume will the gas occupy at standard temperature if the pressure remains constant?

4. A sample of oxygen gas has a volume of 150 mL when its pressure is 440 mmHg. If the pressure is increased to standard pressure and the temperature remains constant, what will the new gas volume be?

5. Ral3ph had a helium balloon with a volume of 4.88 liters at 150 kPa of pressure. If the volume is changed to 3.15 liters, what would be the new pressure in atm?

6. 5.36 liters of nitrogen gas are at -25°C and 733 mm Hg. What would be the volume at 128°C and 1.5atm?

7. At constant temperature, 2 L of a gas at 4 atm of pressure is expanded to 6 L. What is the new pressure?

1. A gas occupies 3.5L at 2.5 mm Hg pressure. What is the volume at 10 mm Hg at the same temperature?

2. A constant volume of oxygen is heated from 100°C to 185°C. The initial pressure is 4.1 atm. What is the final pressure?

3. A sample of 25L of $NH_3$ gas at 10°C is heated at constant pressure until it fills a volume of 50L. What is the new temperature in °C?

4. An unknown gas weighs 34g and occupies 6.7L at 2 atm and 245K. What is its molecular weight?

5. An ideal gas occupies 400ml at 270 mm Hg and 65°C. If the pressure is changed to 1.4 atm and the temperature is increased to 100°C, what is the new volume?

6. What is the volume of 23g of neon gas at 1°C and a pressure of 2 atm?

7. The pressure is 6.5 atm, 2.3 mole of $Br_2$ gas occupies 9.3 L . What is the temperature in °C?

8. A 600mL balloon is filled with helium at 700mm Hg barometric pressure. The balloon is released and climbs to an altitude where the barometric pressure is 400mm Hg. What will the volume of the balloon be if, during the ascent, the temperature drops from 24 to 5°C?

9. An unknown gas has a volume of 200L at 5 atm and -140°C. What is its volume at STP (standard temp = 273K, standard pressure = 1 atm) ?

10. In an autoclave, a constant amount of steam is generated at a constant volume. Under 1.00 atm pressure the steam temperature is 100°C. What pressure setting should be used to obtain a 165°C steam temperature for the sterilization of surgical instruments?

11. Explain what each of the following changes would do to the pressure in a closed container (increase or decrease pressure). A) Part of the gas is removed, B) The container size (volume) is decreased, and C)Temperature is increased.