

Gas Laws – Part II & Partial Pressure Practice

Name: _____

COMBINED GAS LAW: Write the correct formula used, substitute numbers into the formula, and show units and correct significant figures. Be sure to circle/box your final answer. *Remember all temperatures must be expressed in Kelvin (K).*

1. A helium-filled balloon at sea level has a volume of 2.10 L at 0.998 atm and 36.0°C. If it is released and rises to an elevation whose pressure is 0.900 atm and temperature is 28.0°C, what is the new volume (*L*) of the balloon?

2. At 0.00°C and 1.00 atm pressure, a sample of gas occupies 0.0300 L. If the temperature is increased to 30.0°C and the entire gas sample is transferred to a 0.0200 L container, what will the gas pressure be inside the container?

3. An unopened, cold 2.00 L bottle of soda contains 46.0 mL of gas confined at a pressure of 1.30 atm and a temperature of 5.00°C. If the bottle is dropped into a lake and sinks to a depth at which the pressure is 1.52 atm and the temperature is 2.09°C, what will be the volume (*mL*) of gas in the bottle?

IDEAL GAS LAW: Write the correct formula used, substitute numbers into the formula, and show units and correct significant figures. Be sure to circle/box your final answer. *Remember all temperatures must be expressed in Kelvin (K).*

1. Determine the temperature of 2.49 moles of gas contained in a 1.00 L vessel at a pressure of 143 kPa.

2. What is the pressure, in *atm*, of a 0.108 mol sample of helium gas at 20.0°C if its volume is 0.505 L?

3. How many moles of gas will occupy 125 L of a container at a pressure of 2.30 atm and a temperature of 67.0°C?

PARTIAL PRESSURE: Write the correct formula used, substitute numbers into the formula, and show units and correct significant figures. Be sure to circle/box your final answer.

1. The total pressure in a closed container of three mixed gases is 96.4 kPa. The partial pressure of hydrogen in the mixture is 13.5 kPa and the partial pressure of oxygen is 29.3 kPa. What is the partial pressure of the third gas, methane (CH₄)?

2. Determine the total pressure, in *atm*, for a mixture that contains six gases with partial pressure of 3.25 kPa, 4.45 kPa, 1.34 kPa, 6.42 kPa, 4.58 kPa, and 3.54 kPa.

3. The total pressure in a closed container of three mixed gases is 103.5 Torr. The partial pressure of helium in the mixture is 22.2 Torr and the partial pressure of oxygen is 34.3 Torr. What is the partial pressure of the third gas, carbon dioxide?