

CP Chemistry
Gas Laws Worksheet II Answer Key

1. Under what pressure will 7.54 moles of chlorine gas be stored in a 250-L tank at 245°C?

Ideal gas law $PV = nRT$ $P = 0.797 \text{ atm}$ or 80.7 kPa depending on
which R you used

2. At a certain temperature, a balloon can withstand 3450 kPa of pressure before bursting. The balloon already holds 738 kPa of helium and 1525 kPa of nitrogen. How many kPa of additional gas pressure can the balloon hold?

Dalton's Law of Partial Pressures $P_T = P_1 + P_2 + P_3$ $P_3 = 1187 \text{ kPa}$

Read carefully... P_T is given!

3. A gas is contained in a 2,500 L tank under 7.7 atm of pressure. What will its volume be if it is released into a container at 281 kPa?

Boyle's Law $P_1V_1 = P_2V_2$ $V_2 = 6939.6 \text{ L}$

Don't forget to convert to the same unit of P

4. What volume will 2.98×10^{24} molecules of fluorine gas occupy if 13.0 moles occupied 270. L?

Avogadro's Principle $V_1 / n_1 = V_2 / n_2$ $V_1 = 102.8 \text{ L}$

5. What pressure will 28,740 mL of gas have at standard temperature if the same gas occupied 34.9 dm³ at 194°C and 1.40 atm?

Combined Gas Law $P_1V_1 / T_1 = P_2V_2 / T_2$ $P_1 = 0.994 \text{ atm}$