

Ideal Gas Law Practice Worksheet

Solve the following problems using the ideal gas law:

- 1) How many moles of gas does it take to occupy 120 liters at a pressure of 2.3 atmospheres and a temperature of 340 K?
- 2) If I have a 50 liter container that holds 45 moles of gas at a temperature of 200^o C, what is the pressure inside the container?
- 3) It is not safe to put aerosol canisters in a campfire, because the pressure inside the canisters gets very high and they can explode. If I have a 1.0 liter canister that holds 2 moles of gas, and the campfire temperature is 1400^o C, what is the pressure inside the canister?
- 4) How many moles of gas are in a 30 liter scuba canister if the temperature of the canister is 300 K and the pressure is 200 atmospheres?
- 5) I have a balloon that can hold 100 liters of air. If I blow up this balloon with 3 moles of oxygen gas at a pressure of 1 atmosphere, what is the temperature of the balloon?

IDEAL GAS LAW WORKSHEET

- 1) How many moles of a gas at 100°C does it take to fill a 1.00 L flask to a pressure of 1.50 atm?
- 2) A camping stove uses a 5.0 L propane tank that holds 3.0 kg of liquid C_3H_8 . How large a container would be needed to hold the same amount of propane as a gas at 25°C and a pressure of 3.0 atm?
- 3) What volume would be occupied by 100 g of oxygen gas at a pressure of 1.50 atm and a temperature of 25°C ?
- 4) On a warm day, an amusement park balloon is filled with 47.8 g of helium. The temperature is 33°C and the pressure in the balloon is 2.25 atm. Calculate the volume of the balloon.
- 5) A ten-liter gas cylinder contains 3.8×10^2 g of nitrogen. What pressure, in kPa, is exerted by the nitrogen at 25°C ?
- 6) A drum used to transport crude oil has a volume of 162 L. How many water molecules, as steam, are required to fill the drum at 1.00 atm and 100°C ? (1 mole = 6.022×10^{23} molecules)
- 7) How many moles of air are there in a 125 mL erlenmeyer flask if the pressure is 755 mm Hg and the temperature is 20°C ?
- 8) Use the Ideal Gas Law to complete the following table for ammonia gas.

PRESSURE	VOLUME	TEMPERATURE	MOLES	GRAMS
2.50 atm		0°C		32.0 g
kPa	75.0 mL	30°C		0.385
768 mmHg	6.0 L	100°C		
195 kPa	2.75 L			45.0 g