

Gas Laws - Part I Practice

Name: _____ Date: _____

BOYLE'S LAW: Write the correct formula used, substitute numbers into the formula, and show units and correct significant figures. Be sure to circle your final answer.

1. The volume of a gas at 99.0 kPa is 300.0 mL. If the pressure is increased to 188 kPa, what will be the new volume?
2. The pressure of a helium sample in a 1.00 L container is 0.988 atm. What is the new pressure if the sample is placed in a 2.00 L container?
3. Air that is trapped inside a cylinder fitted with a piston occupies 145.7 mL at 1.08 atm pressure. What is the new volume of air when pressure is increased to 1.43 atm by applying force to the piston?
4. If it takes 0.0500 L of oxygen gas kept in a cylinder under pressure to fill an evacuated 4.00 L reaction vessel in which the pressure is 0.980 atm, what was the initial pressure of the gas in the cylinder?

CHARLES'S 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 man heats a balloon in his oven (not sure why, but he did). If the balloon initially has a volume of 0.400 liters and a temperature of 20.0°C, what is the volume of the balloon after he heats it to 250.0°C?
2. The temperature inside my refrigerator is about 4.00°C. If I place a balloon in my fridge that is initially 22.0°C and 0.500 liters, what is the volume of the balloon when it is fully cooled by my refrigerator?

3. A gas at 89.0°C occupies a volume of 0.670 L . At what temperature will the volume increase to 1.12 L ?
4. The temperature of a 3.00 L sample of gas is lowered from 80.0°C to 30.0°C . What is the resulting volume of this gas?

GAY-LUSSAC'S 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 gas in a container has a pressure of 134 kPa at 42.0°C . If pressure in the container increases to 223 kPa , what is the new temperature?
2. The pressure in an automobile tire is 1.88 atm at 25.0°C . What is the pressure if the temperature warms up to 37.0°C ?
3. Helium gas in a 2.00 L cylinder is under 1.12 atm pressure. At 36.5°C , that same gas has a pressure of 2.56 atm . What was the initial temperature of the gas in the cylinder?
4. A rigid plastic container holds 1.00 L of methane gas at $660.\text{ Torr}$ when the temperature is 22.0°C . How much **MORE** pressure will the gas exert if the temperature is raised to 44.6°C ?