

Gas Law Review

For Each problem below do the following: 1) Name the Gas Law name used to solve 2) Solve the problem

* Remember – Convert ml→L, and °C→K, and $R=0.0821$

- 1) 1.00 L of a gas at standard temperature and pressure is compressed to 473 mL. What is the new pressure of the gas?

- 2.) Determine the pressure change when a constant volume of gas at 1.00 atm is heated from 20.0 °C to 30.0 °C.

- 3) A man heats a balloon in the oven. If the balloon initially has a volume of 0.4 liters and a temperature of 20 °C, what will the volume of the balloon be after he heats it to a temperature of 250 °C?

- 4) How many moles of a gas does it take to occupy 120 L at a pressure of 2.3 atm and a temp. of 340K?

- 5) Submarines need to be extremely strong to withstand the extremely high pressure of water pushing down on them. An experimental research submarine with a volume of 15,000 liters has an internal pressure of 1.2 atm. If the pressure of the ocean breaks the submarine forming a bubble with a pressure of 250 atm pushing on it, how big will that bubble be?

- 6) The temperature inside my refrigerator is about 4° Celsius. If I place a balloon in my fridge that initially has a temperature of 22° C and a volume of 0.5 liters, what will be the volume of the balloon when it is fully cooled by my refrigerator?

- 7) If I have a 50 L container that holds 45 moles of a gas at a temp. of 473.12 K, what is the pressure inside the container?
- 8) Synthetic diamonds can be manufactured at pressures of 6.00×10^4 atm. If we took 2.00 liters of gas at 1.00 atm and compressed it to a pressure of 6.00×10^4 atm, what would the volume of that gas be?
- 9) A 30.0 L sample of nitrogen inside a rigid, metal container at 20.0 °C is placed inside an oven whose temperature is 50.0 °C. The pressure inside the container at 20.0 °C was at 3.00 atm. What is the pressure of the nitrogen after its temperature is increased?
- 10) How hot will a 2.3 L balloon have to get to expand to a volume of 400 L? Assume that the initial temperature of the balloon is 298 K.
- 11) If a gas in a closed container is pressurized from 15.0 atmospheres to 16.0 atmospheres and its original temperature was 25.0 °C, what would the final temperature of the gas be?
- 12) I have a balloon that can hold 100 L of air. If I inflate the balloon with 0.25 moles of oxygen gas a pressure of 1 atm, what is the temp. of the balloon?