Skill Practice 47

Gas Laws Practice

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hour: \_\_\_\_\_

**IMPORTANT**: whenever you use temperature, it must be in degree Kelvin (K), so remember the equation: K = oC + 273

1. a) convert 39 oC to K. b) convert 127 K to oC.
2. A gas has an initial volume of 2.75 L at a temperature of 285 K. If the temperature changes to 380 K, what is the new volume of the gas if the pressure is unchanged?
3. Gas can often be cooled by compressing it while keeping the pressure constant. If I have 45.0 L of gas at room temperature (22oC) and I compress it so that the final volume is 0.50 L, what is the final temperature of the gas if the pressure is constant?
4. The volume of a gas is 2.5 L when the pressure is at standard pressure (101.325 kPa). What is the volume of the gas if the pressure decreases to 85 kPa and the temperature remains unchanged?
5. A 5.0 L container of gas experiences a temperature change so that the final temperature is 4 times the initial temperature. What is the size of the container after the temperature change? (Assume constant pressure.)
6. At 45oC the volume of a certain gas is 27.5 L and the pressure is 210 kPa. What is the volume of the gas at standard temperature (273 K) and 310 kPa of pressure?
7. The pressure of a sample of gas was 97.8 kPa and the volume of the gas was 3.75 L. If the gas occupied a container with a volume of 8.00 L, what would the pressure in the container be?
8. Isothermal expansion refers to allowing a gas to expand while keeping the temperature constant. This is one means to simulate a vacuum. If a gas originally at 97 kPa is allowed to expand from 0.25 L to 182 L, what is the pressure of the gas?
9. A gas is initially at a pressure of 225 kPa and a temperature of 245 K in a container that is 4.5 L. If the gas is compressed to a volume of 2.1 L and the temperature changes to 275 K, what is the new pressure?