**Gas Laws Practice Problems**

Solve the following problems showing ALL units.

1. How many moles of gas occupy 98 L at a pressure of 2.8 atm and a temperature of 20°C?
2. A balloon is filled with 35.0 L of Helium in the morning when the temperature is 20.0°C. By noon the temperature has risen to 45.0°C. What is the new volume of the balloon?
3. A balloon that can hold 85 L of air is inflated with 3.5 moles of gas at a pressure of 111kPa. What is the temperature of the balloon? In °C?
4. A Helium balloon with an internal pressure of 1.00 atm and a volume of 4.50L at 20.0°C is released. What volume will the balloon occupy at an altitude where the pressure is 90.1 kPa and the temperature is -20.0°C?
5. Calculate the final pressure inside a scuba tank after it cools from 1000°C to 25.0°C if the initial pressure is 1.32 X 104 kPa.
6. There are 135 L of gas in a container at a temperature of 260°C. If the gas was cooled until the volume decreased to 75L, what would the temperature of the gas be?
7. A small research submarine with a volume of 1.2 X 105 L has an internal pressure of 1.0 atm and an internal temperature of 15°C. If the submarine descends to a depth where the pressure is 150 atm and the temperature is 3°C, what will the volume of the gas inside be if the hull of the submarine breaks?
8. I have added 15 L of air to a balloon at sea level. If I take the balloon with me to Denver, where the pressure is 0.85 atm, what will the new volume of the balloon be?
9. At 971 mm Hg, 145 g of Carbon Dioxide has a volume of 81 L, what is the temperature of the gas?
10. If a gas in a closed container is pressurized from 2.0 atm to 15 atm and it’s original temperature was 25°C, what would the final temperature of the gas be?
11. You are given two balloons, one filled with helium and the other with oxygen. Which balloon will deflate faster? How much faster?
12. Helium, argon and oxygen are mixed in a container to give a total pressure of 18.2 atm. What is the pressure of each of each gas if there is 10% helium, 30% argon and 60% nitrogen?