Mixed Gas Law Calculations (Boyle's, Charles', Gay-Lussac's, & Combined)

B = Boyle's C = Charles GL = Gay-Lussac COMB = combined

1) 2.00 L of a gas is at 740.0 mmHg pressure. What is its volume at standard pressure? ***(1.95 L)***
2) A gas is collected and found to fill 2.85 L at 25.0 C. What will be its volume at standard temp? ***(2.61 L)***
3) 10.0 ml of a gas at 75.6 kPa & 60.0 C is to be corrected to correspond to the volume it would occupy at STP. ***(6.12m L)***
4) A chemist collected 56.1 mL of gas in an open manometer. The next day, the chemist noted that the volume had changed to 57.9 mL and the barometer reading was 99.4 kPa. The temperature had not changed. What had been the barometer reading on the previous day when the gas was collected? ***(103 kPa)***
5) A glass sphere is filled to full volume with a gas. The pressure of the gas inside the sphere is 30.0 atm, and the temperature is 25.0 C. The sphere is taken outside on a cold day. The temperature of the gas decreases to 10.0 C. What is the new pressure of the gas? Assume that the volume is constant. ***(28.5 atm)***
6) The gas pressure in an aerosol can is 151.6 kPa at 25.0 C, what would the pressure be inside the can at 300.0 C? ***(292 kPa)***
7) The volume of a gas is 654 mL at 6.0 C and 65.3 kPa, what is the volume at 4.0 C and 108.7kPa. ***(690 mL)***
8) A tank for compressed gas has a maximum safe pressure limit of 825 kPa. The pressure gauge reads 388 kPa when the temperature is 24.0 C. What is the highest temperature the tank can withstand safely? ***(632 K)***
9) A gas has a volume of 3.04 X 10^3 m^3 at 12.0 C and a pressure of 99.7 kPa. What pressure will cause the gas to have a volume of 3.25 X 10^3 m^3 at 25.0 C? ***(97.5 kPa)***
10) At STP, the volume of a gas is 325 mL. What volume does it occupy at 20.0 C and 93.3 kPa? ***(379 mL)***
11) A gas occupies a volume of 458 mL at a pressure of 1.01 atm and temperature of 295 K. When the pressure is changed, the volume becomes 477 mL. If there has been no change in temperature, what is the new pressure? ***(.970 atm)***
12) A tube of mercury at a room temperature of 22.4 °C has a volume of 10.6 mL between the sealed end of the tube and the mercury. The sun rises and shines through a window on the tube and warms it to 27.8 °C. If the atmospheric pressure remains constant, what is the new volume between the sealed end of the tube and the mercury? ***(10.8 mL)***
13) A gas at 83 °C occupies a volume of 1400 m^3 and is under 1.50 atm of pressure. At what temperature will it occupy 1200 m^3 when the pressure increases to 3 atm. ***(610 K)***
14) If a helium-filled balloon has a volume of 3.40 L at 25 C and 120 kPa, what is its volume at STP? ***(3.7 L)***

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