Solve the following problems using Boyle's and Charles's Laws. If a property is not mentioned in a problem, assume that it is held constant. Show all calculations including temperature conversions.

1) A sample of neon gas occupies a volume of 2.8 L at 1.8 atm. What will its volume be at 1.2 atm?

2) To what pressure would you have to compress 48.0 L of oxygen gas at 99.3 kPa in order to reduce its volume to 16.0 L?

3) A chemist collected 29.0 mL of sulfur dioxide gas at an atmospheric pressure of 0.989 atm. What was the volume when the pressure was reduced to 0.967 atm?

4) A balloon full of air has a volume of 2.75 L at a temperature of 18°C. What is the balloon's volume at 45°C?

5) A sample of argon has a volume of 0.43 mL at 24°C. At what temperature *in °C* will it have a volume of 0.57 mL?

6) 4.40 L of a gas is collected at 50.0°C. What will be its volume upon cooling to 25.0°C?

7) 5.00 L of a gas is collected at 100. K and then allowed to expand to 20.0 L. What must the new temperature be?

Answers: 1) 4.2 L; 2) 298 kPa; 3) 29.7 mL; 4) 3.01 L; 5) 120°C; 6) 4.06 L; 7) 400. K