Temperature & Charles' Law Problems

Convert the following temperatures as directed:

1. 1111 K = _____ °C
2. 25°C = _____ K
3. 373 K = _____ °C
4. 100°C = _____ K
5. 0°C = _____ K

Use Charles' Law equation ($V_1/T_1 = V_2/T_2$) to answer the following problems:

6. At 225.0°C a gas has a volume of 400.0 mL. What is the volume of this gas at 127.0°C?

7. You had a birthday party with helium balloons (2.5L) during the day, when the temperature was 27.0 °C. You left your balloons outside overnight and the temperature dropped to 20.0 °C. What is the new volume of these balloons?

8. Calculate the decrease in temperature when 2.0L at 20 °C is compressed to 1 L.

9. What is the new volume that results if 60.0 mL of gas is cooled from 33.0 °C to 5.00 °C?

10. A gas occupies 1.00 L at 0°C. What is the volume at 333.0 °C?

11. At 210.0 °C a gas has a volume of 8.00 L. What is the volume of this gas at -23.0 °C?

12. The temperature of a 4.00 L sample of gas is changed from 10.0 °C to 20.0 °C. What will the volume of this gas be at the new temperature?