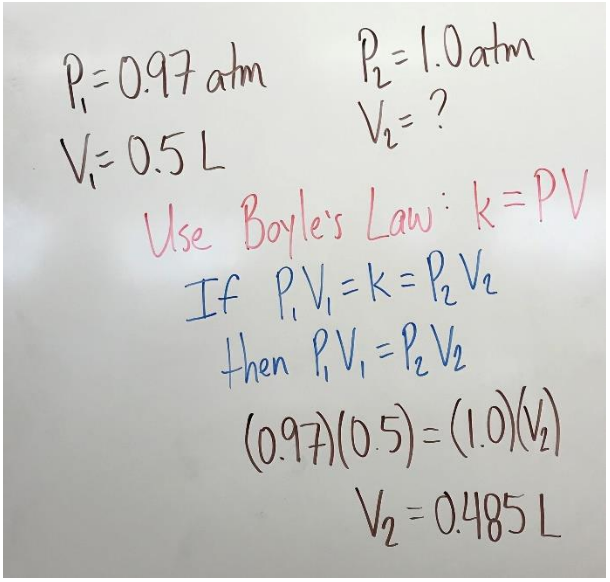
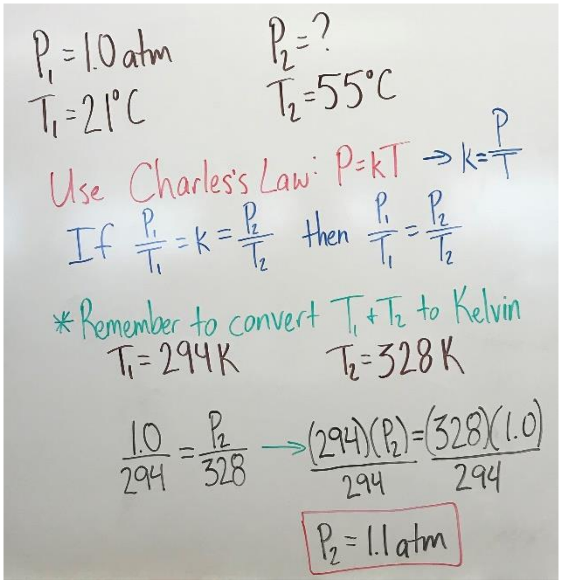
Lesson 61 Homework (page 320, #1-7)

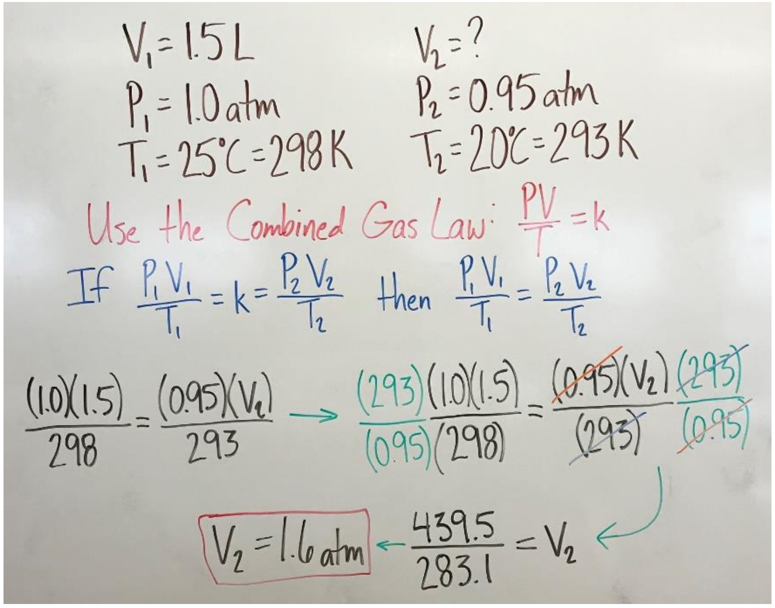
1. The combined gas law is a mathematical equation that relates gas pressure, temperature, and volume. This law applies when all three variables can change at the same time.
2. **Possible answer**: According to the combined gas law, temperature and volume are directly proportional. The temperature of the atmosphere does affect the volume of a weather balloon as it rises. Because the weather balloon is a flexible container, an increase in temperature will cause the volume to increase, and a decrease in temperature will cause the volume to decrease.
3. **A**. Because the pressure increases, the volume of the gas will decrease because pressure and volume are inversely proportional when the temperature and the amount of gas remain unchanged.
   B. PV = k
   C. 0.49 L



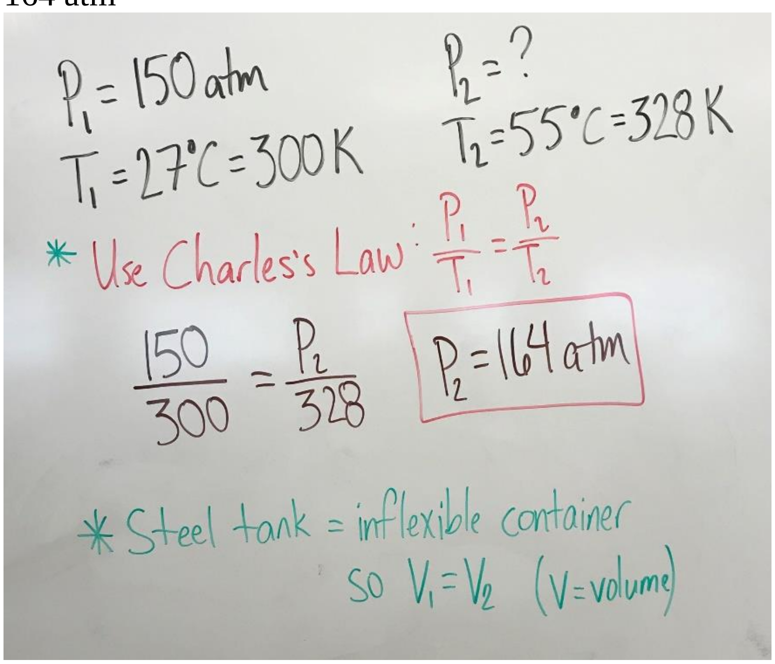
4. **A**. Because the temperature increases, the pressure of the air in the tire will increase because pressure and temperature are directly proportional when the volume and the amount of gas are constant.
   B. P = kT
   C. 1.1 atm



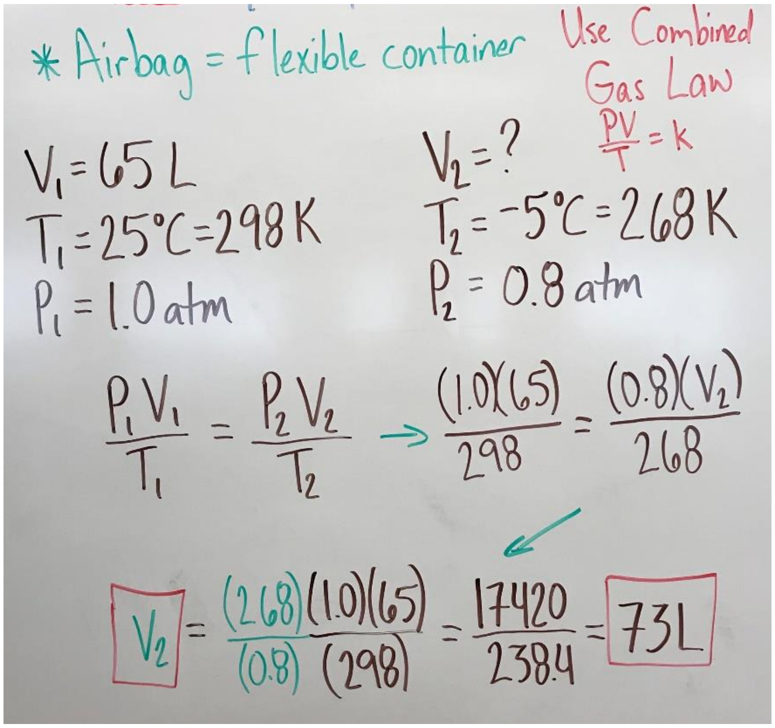
5. **A**. The volume of the balloon will increase because, based on the values given, the change in pressure has a greater effect on the final volume than the change in temperature.
B. PV/T = k
C. 1.6 L



6. 164 atm



7. **A**. 73 L



B. The pressure divided by the temperature must be 0.0036 atm/K. Because the volume of the airbag is slightly smaller, this could mean that the temperature is slightly colder or the air pressure is slightly higher.