**Solve the following Gas Law problems. The problems are a mixture of Boyle’s, Charles’, Guy-Lussac and combined gas law examples. Identify which law was used for solving each problem.**

1. **5.6 liters of gas are in a piston at a pressure of 1.5 atm. The piston is compressed until the volume of gas is 4.8 L. What is the new pressure inside of the piston?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **The pressure of neon changes from 786 mm Hg to 1811 mm Hg. If the initial temperature 87oC, what is the new temperature?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **When the temperature of a gas changes, its volume decreases from 12 cm3 to 7 cm3. If the final temperature is measured to be 18oC, what was the initial temperature?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **A bag of potato chips is packaged at sea level (1.00 atm) and has a volume of 315 mL. If this bag of chips is transported to Denver (0.775 atm), what will the new volume of the bag be?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **A child has a toy balloon with a volume of 1.80 liters. The temperature of the balloon when it was filled was 200.0o C and the pressure was 1.00 atm. If the child were to let go of the balloon and it rose 3 kilometers into the sky where the pressure is 0.667 atm and the temperature is -100.0o C, what would the new volume of the balloon be?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **A commercial airliner has an internal pressure of 1.00 atm and temperature of 250o C at takeoff. If the temperature of the airliner drops to 170o C during the flight, what is the new cabin pressure?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **The temperature inside a refrigerator is about 40 Celsius. If a balloon has a temperature of 220 C and a volume of 0.5 liters is placed inside of this refrigerator, what will be the volume of the balloon when it is fully cooled by the refrigerator?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. **Repeated experiments show that at standard temperature, one mole of gas occupies 22.4 L volume. For the reaction 2 H2(g) + O2(g) → 2 H2O(g) how many liters of water can be made from 55 grams of oxygen gas and an excess of hydrogen at STP?**

**Law: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**