Name:_____Date:_____Period:_____

Gas Laws Worksheet: Boyle and Charles

Boyle's Law Problems:

$$P_1V_1 = P_2V_2$$

atm = 760.0 mm Hg = 101.3 kPa= 760 .0 torr

1. If 22.5 L of nitrogen at 748 mm Hg are compressed to 725 mm Hg at constant temperature. What is the new volume?

2. A gas with a volume of 4.0L at a pressure of 205kPa is allowed to expand to a volume of 12.0L. What is the pressure in the container if the temperature remains constant?

3. What pressure is required to compress 196.0 liters of air at 1.00 atmosphere into a cylinder whose volume is 26.0 liters?

4. A 40.0 L tank of ammonia has a pressure of 12.7 kPa. Calculate the volume of the ammonia if its pressure is changed to 8.4 kPa while its temperature remains constant.

Charles' Law Problems:

Name:_____Date:_____Period:_____

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

1 atm = 760.0 mm Hg = 101.3 kPa= 760 .0 torr

5. Calculate the decrease in temperature when 6.00 L at 20.0 °C is compressed to 4.00 L.

6. A container containing 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 in order to maintain the same pressure (as required by Charles' Law)?

7. A gas occupies 900.0 mL at a temperature of 27.0 °C. What is the volume at 132.0 °C?

8. If 15.0 liters of neon at 25.0 °C is allowed to expand to 45.0 liters, what must the new temperature be to maintain constant pressure?