

Name \_\_\_\_\_ Period: \_\_\_\_\_ Date \_\_\_\_\_

### Gas Laws Problems

#### Charles's Law (temperature, volume)

- 1) At 27.0 °C a gas has a volume of 6.00 L. What will the volume be at 150.0 °C?
- 2) If 600.0 mL of air at 20.0 °C is heated to 60.0 °C, what will be its volume?
- 3) Calculate the decrease in temperature when 2.0 L of a gas at 20.0 °C is compressed to 1.0 L.
- 4) A 550.0 mL sample of nitrogen gas is warmed from 77.0 °C to 86.0 °C. Find its new volume if the pressure remains constant.
- 5) A gas occupies 1.00 L at standard temperature. What is the volume at 333.0 °C?

#### Boyle's Law (pressure, volume)

- 6) A gas occupies 12.3 liters at a pressure of 40.0 mm Hg. What is the volume when the pressure is increased to 60.0 mm Hg?
- 7) If a gas at 25.0 °C occupies 3.60 liters at a pressure of 1.00 atm, what will be its volume at a pressure of 2.50 atm?
- 8) Convert 338 L at 63.0 atm to its new volume at standard pressure.
- 9) A tank of nitrogen has a volume of 14.0 L and a pressure of 760.0 mm Hg. Find the volume of the nitrogen when its pressure is changed to 400.0 torr while the temperature is held constant.
- 10) What pressure (mm Hg) is required to compress 196.0 liters of air at 1.00 atmosphere into a cylinder whose volume is 26.0 liters?

#### Gay-Lussac's Law (temperature, pressure)

- 11) Convert 25.0 °C at 63.0 atm to its new temperature at standard pressure.
- 12) A gas has a pressure of 0.370 atm at 50.0 °C. What is the pressure at standard temperature?
- 13) A gas has a pressure of 699.0 mm Hg at 40.0 °C. What is the temperature at standard pressure?
- 14) If a gas is cooled from 323.0 K to 273.15 K and the volume is kept constant, what final pressure would result if the original pressure was 750.0 mm Hg?
- 15) If a gas in a closed container, with an original temperature of 25.0 °C, is pressurized from 15.0 atmospheres to 16.0 atmospheres, what would the final temperature of the gas be?