Note: These are all measures of pressure

Atm - atmospheres
Torr
Bars
KPa

Name _____
Date _____ Hour _____

Boyle's Law Problem Set

$$P_1V_1 = P_2V_2$$

* Solve the following problems using Boyle's Law, as seen above *

1. P1 = 23 bars P2 = 25 bars
   V1 = 500 ml V2 = ??? ml

2. P1 = 150 bars P2 = ??? bars
   V1 = 250 ml V2 = 95 ml

3. P1 = ??? bars P2= 2225 bars
   V1 = 75ml V2 = 100 ml

4. P1 = 557 bars P2 = ??? bars
   V1 = 115 ml V2 = 300 ml

5. If a balloon with a pressure of 5 bars and a volume of 250 ml is squeezed with a pressure of 15 bars, what is the final volume? (in ml)

6. If a sealed pop bottle has a volume of 220 ml, and a pressure of 10 bars, what pressure must be applied to the bottle to change the volume to 180 ml? (In bars)

7. If a car tire has a pressure of 650 bars, and a volume of 5000 ml, what is the volume (in Liters) of the tire after the pressure on the tire increases to 725 bars when the car begins to move?

BOYLE'S LAW

Name _____

Boyle's Law states that the volume of a gas varies inversely with its pressure if temperature is held constant. (If one goes up, the other goes down.) We use the formula:

$$P_1 \times V_1 = P_2 \times V_2$$

Solve the following problems (assuming constant temperature).

1. A sample of oxygen gas occupies a volume of 250. mL at 740. torr pressure. What volume will it occupy at 800. torr pressure?

2. A sample of carbon dioxide occupies a volume of 3.50 liters at 125 kPa pressure. What pressure would the gas exert if the volume was decreased to 2.00 liters? (kPa)

3. A 2.0 liter container of nitrogen had a pressure of 3.2 atm. What volume would be necessary to decrease the pressure to 1.0 atm?

4. Ammonia gas occupies a volume of 450. mL at a pressure of 720. mm Hg. What volume will it occupy at 780 mm Hg?

5. A 175 mL sample of neon had its pressure changed from 75 kPa to 150 kPa. What is its new volume?

6. A sample of hydrogen at 1.5 atm had its pressure decreased to 0.50 atm producing a new volume of 750 mL. What was its original volume?

7. Chlorine gas occupies a volume of 1.2 liters at 720 torr pressure. What volume will it occupy at 500 torr of pressure?