**Boyle's Law Worksheet**

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| **1.** | **State the pressure-volume law both in words and in the form of an equation.** |
| **2.** | **To compress nitrogen at 1 atm from 750 mL to 500 mL, what must the new pressure be  if the temperature is kept constant?** |
| **3.** | **If oxygen at 128 kPa is allowed to expand at constant temperature until its pressure is 101.3 kPa, how much larger will the volume become?** |
| **4.** | **A sample of nitrogen at 101.3 kPa with a volume of 100 mL is carefully compressed at constant temperature in successive changes in pressure, equalling 5 kPa at a time, until the final pressure is 133.3 kPa. Calculate     each new volume and prepare a plot of P versus V, showing P on the horizontal axis.** |
| **5.** | **A sample of nitrogen at 20oC was compressed from 300 mL to 0.360 mL and its new pressure was found to be 400.0 Pa. What was the original pressure in kPa?** |
| **6.** | **The pressure on 6.0 L of a gas is 200 kPa. What will be the volume if the pressure is doubled, keeping the temperature constant?** |
| **7.** | **What would be the new volume if the pressure on 600 mL is increased from 90 kPa to 150 kPa?** |
| **8.** | **A student collects 25 mL of gas at 96 kPa. What volume would this gas occupy at 101.325 kPa. There is no change in temperature or mass.** |
| **9.** | **A gas measuring 525 mL is collected at 104.66 kPa. What volume does this gas occupy at 99.33 kPa?** |
| **10.** | **A mass of gas occupies 1 L at 1 atm. At what pressure does this gas occupy** |
|  | **a) 2 litres,** |
|  | **b) 0.5 litres?** |
| **11.** | **From the data in the following table calculate the missing quantity (assuming constant temperature).** |
|  | **a)    V1 = 22.4 L;   P1= 1 atm;    P2 = ? atm;   V2 =  2.8 L** |
|  | **b)    V1 = 60 mL;   P1 = ? kPa;   P2 = 101.3 kPa;  V2 = 16 mL** |
|  | **c)     V1 = ? m3 ;    P1 = 40 Pa;   P2 = 100 kPa;  V2 = 1.0 L** |
|  | **d)    V1 = 2.50 L;   P1 = 7.5 atm;   P2 = ? atm;  V2 = 100 mL** |