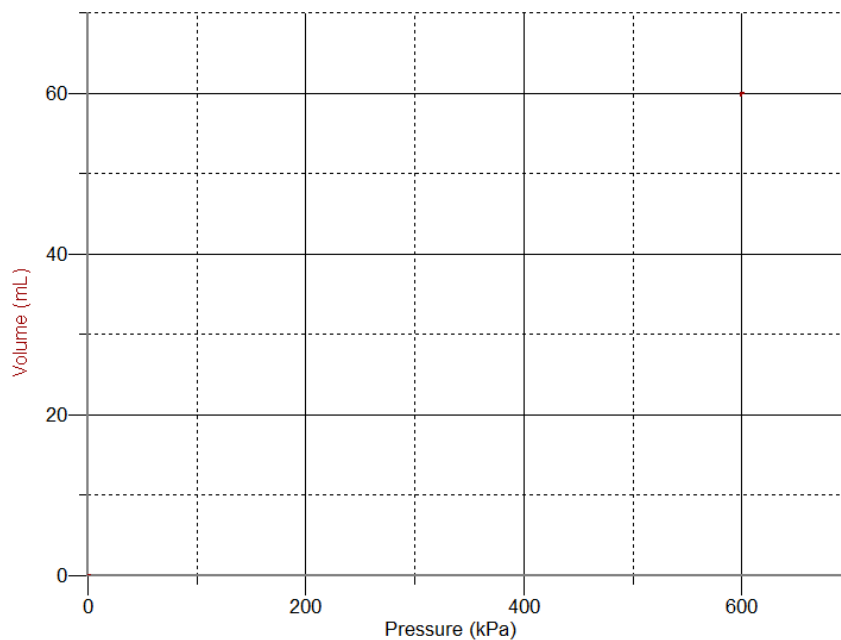


Discovering Boyle's Law

The following table contains pressure and volume readings for a constant mass of a gas kept at constant temperature.

Pressure (kPa)	Volume (mL)	k
20.0	60.0	
30.0	40.0	
40.0	30.0	
60.0	20.0	
100.0	12.0	
200.0	6.00	
300.0	4.00	
400.0	3.00	

1. For each pair of readings, multiply $P \times V$ to find the value of k .
2. Plot the values of pressure and volume on the graph below, and connect the points



3. What is the shape of the graph you have drawn? _____
4. What is the relationship between volume and pressure when temperature and the number of moles are held constant?

Boyles Law Problems

Make the following conversions:

$$95 \text{ kPa} = \underline{\hspace{2cm}} \text{ atm} = \underline{\hspace{2cm}} \text{ mmHg} = \underline{\hspace{2cm}} \text{ torr}$$

$$\underline{\hspace{2cm}} \text{ kPa} = 3 \text{ atm} = \underline{\hspace{2cm}} \text{ mmHg} = \underline{\hspace{2cm}} \text{ torr}$$

$$\underline{\hspace{2cm}} \text{ kPa} = \underline{\hspace{2cm}} \text{ atm} = 1000 \text{ mmHg} = \underline{\hspace{2cm}} \text{ torr}$$

$$\underline{\hspace{2cm}} \text{ kPa} = \underline{\hspace{2cm}} \text{ atm} = \underline{\hspace{2cm}} \text{ mmHg} = 500 \text{ torr}$$

$$150 \text{ kPa} = \underline{\hspace{2cm}} \text{ atm} = \underline{\hspace{2cm}} \text{ mmHg} = \underline{\hspace{2cm}} \text{ torr}$$

Solve these problems...

1. If 10.0 L of CO_2 at 300kPa is injected into an empty 20 L tank, and the temperature is held constant, what is the new pressure of the CO_2 ? (150kPa)
2. A 25 L sample of Ar gas at STP is depressurized to 50 kPa. Assuming that the temperature does not change, what is the new volume of the gas? (50.65 L)
3. If the volume of a 7 L tank at STP is doubled, what is the new pressure? {T = constant} (50.65 kPa)
4. If 20 L of gas at 200 kPa is forced into a 4 L tank, and the temperature is held constant, what is the new pressure? (1000 kPa)
5. A 100 L sample of Ne gas is pressurized at 300 kPa. If the temperature doesn't change, and the pressure is increased to 400 kPa, what would the new volume be?(75 L)