

Part 1

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1. Pressure volume relationship: Boyle's law
 the volume of a fixed mass is

$$V \propto \frac{1}{P} \quad \text{or} \quad V = \frac{\text{constant}}{P}$$

$$PV = nRT$$

2. the volume relationship: Charles law

$$V \propto T \quad (\text{constant mass}) \quad \text{or} \quad \frac{V}{T} = \text{constant}$$

$$V_{K1} \propto T_{K1} \quad T_{K1} = T_{C1} + 273.15$$

3. the quantity volume relationship: Avogadro's law
 the volume of a gas is directly proportional
 to the number of moles

$$V \propto n \quad (\text{constant } P, T) \quad \text{or} \quad \frac{V}{n} = \text{constant}$$

$$PV = nRT$$