Law of gaseous volume

This law was given by gay-lussac in 1808

According to this law gases react with each other in the simple ratio of their volumes. If products are also gases then they are also in simple ratio of volume provided that all volume are measured at same temperature and pressure.

→ Q1. For the gaseous reaction, $H_2 + Cl_2 \rightarrow 2HCl$
If 40 ml of hydrogen completely reacts with chlorine then find out the required volume of chlorine & volume of HCl produced ?

★ Q2. Calculate volume of air required to burn 8 litres of C_2H_2

★ Q3. A gaseous alkane is exploded with oxygen. The volume of O_2 for complete combustion to CO_2 formed is in the ratio of 7:4. Deduce molecular formula of alkane ?

★ Q4. 10ml of gaseous hydrocarbon on combustion give 40 mL of CO_2 (g) & 50 mL of H_2O(vap).
Deduce molecular formula of hydrocarbon.

→ Q5. 26CC of CO_2 is passed over red hot charcoal. Calculate the volume of evolved CO.

★ Q6. When 2L of CO & CO_2 is passed over red hot charcoal, its volume increases by 1.4 times. If all volumes are measured under similar conditions of P & T. Find out the composition of initial mixture.

★ Q7. When CO_2 (g) is passed over red hot charcoal partially gets reduced to CO(g). On passing 0.5L of CO_2 over red hot coke, the total volume of gases increased to 700ml. Calculate composition of gaseous mixture.

★ Q8. 60 mL of mixture of Nitrousoxide & Nitric oxide was exploded with excess of hydrogen. If 38 mL of N_2 was formed, Calculate the volume of each gas in the mixture? All measurements are made at constant P & T. Assume H_2O in liquid state.