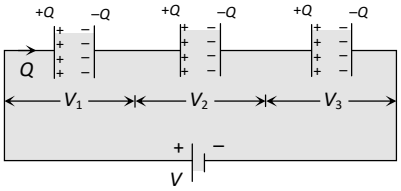
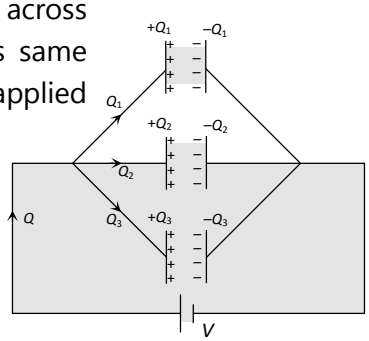
Grouping of Capacitors.

Series grouping	Parallel grouping
(1) Charge on each capacitor remains same and equals to the main charge supplied by the battery $V = V_1 + V_2 + V_3$  	(1) Potential difference across each capacitor remains same and equal to the applied potential difference $Q = Q_1 + Q_2 + Q_3$ 
(2) Equivalent capacitance $\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$ or $C_{eq} = (C_1^{-1} + C_2^{-1} + C_3^{-1})^{-1}$	(2) $C_{eq} = C_1 + C_2 + C_3$
(3) In series combination potential difference and energy distribution in the reverse ratio of capacitance i.e., $V \propto \frac{1}{C}$ and $U \propto \frac{1}{C}$.	(3) In parallel combination charge and energy distributes in the ratio of capacitance i.e. $Q \propto C$ and $U \propto C$
(4) If two capacitors having capacitances C_1 and C_2 are connected in series then $\boldsymbol{C_{eq} = \frac{C_1 C_2}{C_1 + C_2} = \frac{\text{Multiplication}}{\text{Addition}}}$ $V_1 = \left(\frac{C_1}{C_1 + C_2}\right).V$ and $V_2 = \left(\frac{C_2}{C_1 + C_2}\right).V$	(4) If two capacitors having capacitance C_1 and C_2 respectively are connected in parallel then $\boldsymbol{C_{eq} = C_1 + C_2}$ $Q_1 = \left(\frac{C_1}{C_1 + C_2}\right).Q$ and $Q_2 = \left(\frac{C_2}{C_1 + C_2}\right).Q$
(5) If n identical capacitors each having capacitances C are connected in series with supply voltage V then Equivalent capacitance $C_{eq} = \frac{C}{n}$ and Potential difference across each capacitor $V' = \frac{V}{n}$.	(5) If n identical capacitors are connected in parallel Equivalent capacitance $C_{eq} = nC$ and Charge on each capacitor $Q' = \frac{Q}{n}$