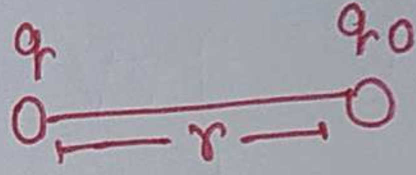
(3.) Electric field ($\vec{E}$) (direction of $E \Rightarrow$ '+' to '−')

$$\vec{E} = \frac{\vec{F}}{q_0}$$

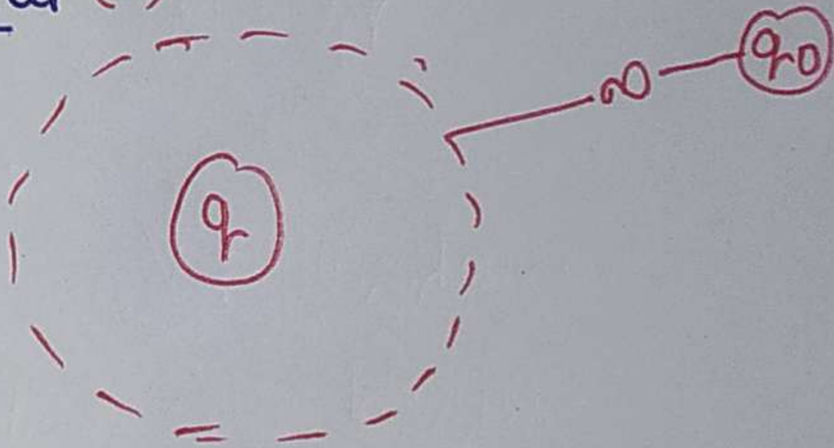


$$E = \frac{kq}{r^2}$$

unit of E = N/C

(4) Electric Potential (V)

$$V = \frac{W}{q_0}$$



$$\boxed{V = \frac{kq}{r}}$$

$$\boxed{W = \frac{kqq_0}{r} = Vq_0}$$

Relation b/w V and E $\quad V = E \cdot d$

so, $W = Vq_0$

$$\boxed{W = q_0 E d}$$

unit of W = Joule

unit of V = volt

Electrostatic

* Unit of Charge – Coulomb

$1\,\mu C = 1 \times 10^{-6} C$

$1\,nC = 1 \times 10^{-9} C$

(1.) Quantization of Charge

$$q = ne$$

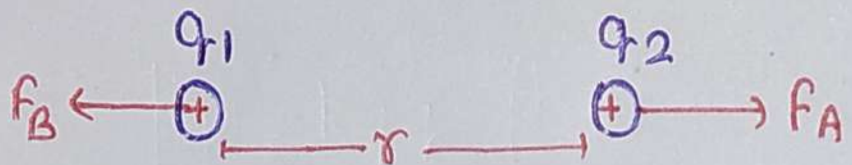
deficiency of e^- = '+' charge

excess of e^- = '−' charge

$e = 1.6 \times 10^{-19} C$

n = no. of electrons

(2.) Coulomb's force (Electrostatic force)



Force on charge particle 2 due to 1 is F_A

$$F_A = k\frac{q_1 q_2}{r^2} \qquad \left(k = 9 \times 10^{9}\ \frac{N\text{-}m^2}{C^2}\right)$$

Force on charge particle 1 due to 2 is F_B

$$F_B = k\frac{q_1 q_2}{r^2}$$

(unit of F = Newton $= \frac{kg\text{-}m}{sec^2}$)

So, $\boxed{F_A = F_B}$

That means the ratio of force due to both charges is always 1 : 1.