• Objects can be charged by rubbing dissimilar materials.

• There are two kinds of charge leading to both attractive and repulsive forces unlike the gravitational force.

• The quantitative form of the force between charged objects was found by Coulomb using a torsion balance.

• The quantitative form is called Coulomb's law:

$$\vec{F}_{12} = k \frac{q_1 q_2}{r_{12}^2} \hat{r}_{12}$$
 (vector form)

where q_1 and q_2 are point charges.

• Inverse square law just like gravity but usually much large in magnitude in situations encountered in our daily lives (except earth).

 \bullet The force on charge q_1 due to a collection of point charges is given by:

$$\vec{F}_1 = \vec{F}_{12} + \vec{F}_{13} + \vec{F}_{14} \dots$$

• The force on charge q_1 due to a continuous volume of charge:

 $\vec{F}_1 = \int d\vec{F}$









