

Types of Charging

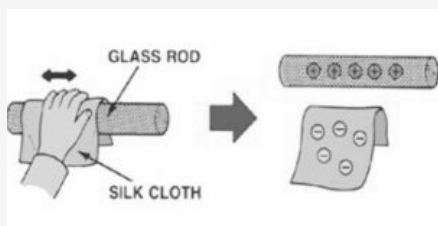
Charging by Friction

Charging by Conduction

Charging by Induction

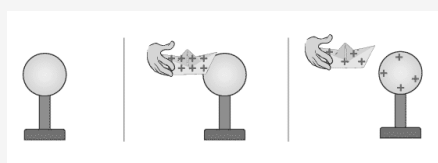
Charging by Polarization

Charging by Friction



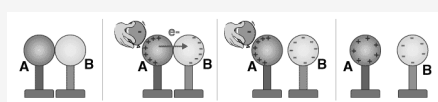
the transfer of electrons from one uncharged object to another by **rubbing** the two objects together. (Like hair and balloon)

Charging by Conduction



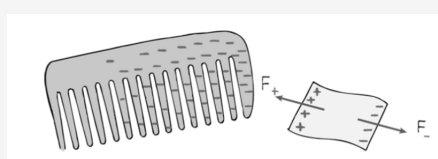
the transfer of electrons from one object to another by **direct** contact. (Like when you rub your feet on the carpet, but the charges move to your hands)

Charging by Induction



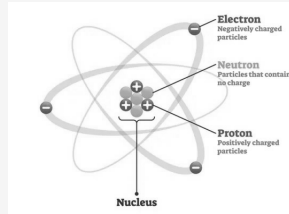
the transfer of electrons from charged object without touching the object itself (**indirect**). (Like When a computer monitor or television screen is turned on it begins to build up a charge)

Charging by Polarization

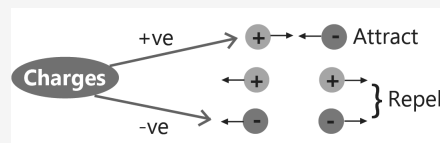


All the atoms or molecules near the neutral material become electrically polarized by **rearranging** when a charged object is

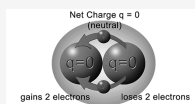
Atom: smallest unit of matter



Like charges repel, Unlike charges attract



Conservation of Charge



which means charge can neither be created nor be destroyed but can be transferred from one body to another

Quantization of Charge

$$Q = ne$$

Integers (...-2,-1,0,1,2,...)

Elementary Charge (1.6×10^{-19})

which means that charge is a quantized quantity and is expressed as integral multiples of the basic unit of charge

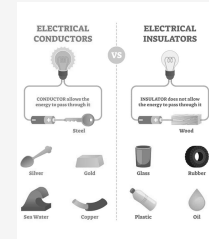
Additivity of Charge

$$Q = q_1 + q_2 + q_3$$

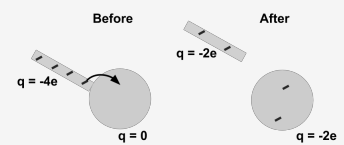
which means that if there are n number of charges present inside, The total charge present will be the algebraic sum of the individual charges

Coulomb's Law

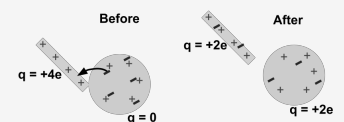
Materials Connectivity



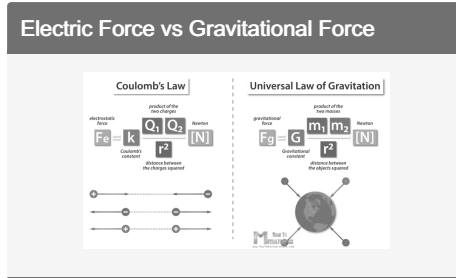
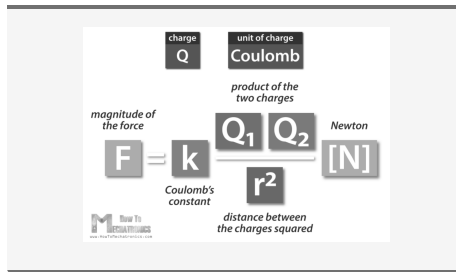
How does an object get negatively charged?



How does an object get positively charged?



brought close. (Like a charged balloon when it is stuck to the wall)



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