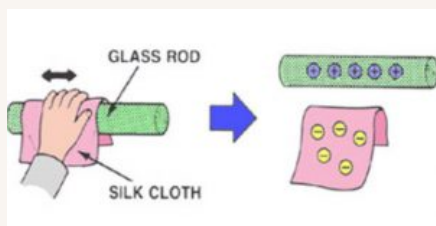


### Types of Charging

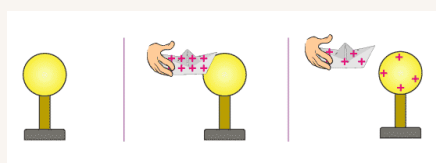
- Charging by Friction
- Charging by Conduction
- Charging by Induction
- Charging by Polarization

### Charging by Friction



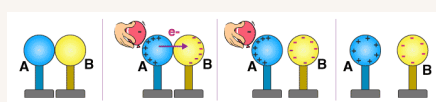
the transfer of electrons from one uncharged object to another by **rubbing** the two objects together. (Like hair and balloon)

### Charging by Conduction



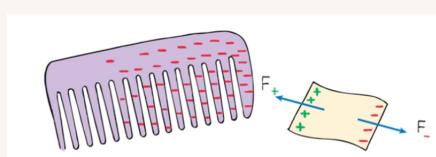
the transfer of electrons from one object to another by **direct** contact. (Like when you rub your feet on the carpet, but the charges move to your hands)

### Charging by Induction



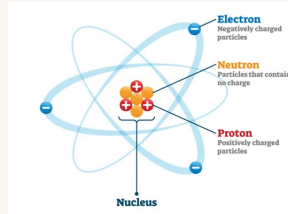
the transfer of electrons from charged object without touching the object itself (**indirect**). (Like When a computer monitor or television screen is turned on it begins to build up a charge)

### Charging by Polarization

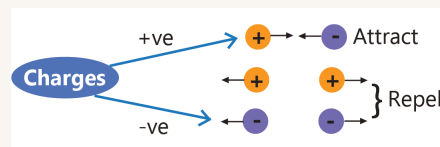


All the atoms or molecules near the neutral material become electrically polarized by **rearranging** when a charged object is

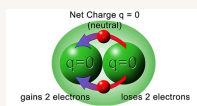
### Atom: smallest unit of matter



### 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 ( $1.6 \times 10^{-19}$ )

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

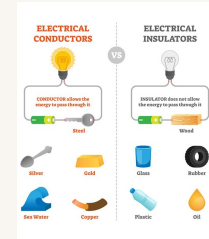
### Additivity of Charge

$$Q = q_1 + q_2 + q_3$$

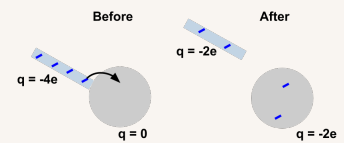
which means that if there are n number of charges present inside, The total charge present will be the algebraic sum of the individual charges

### Coulomb's Law

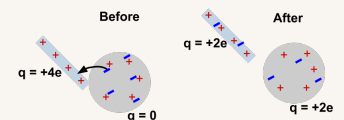
### Materials Connectivity



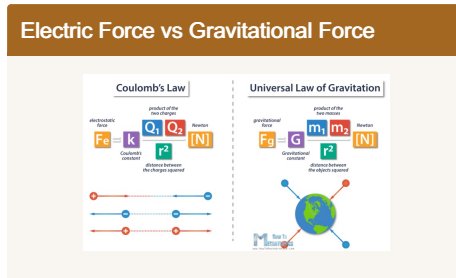
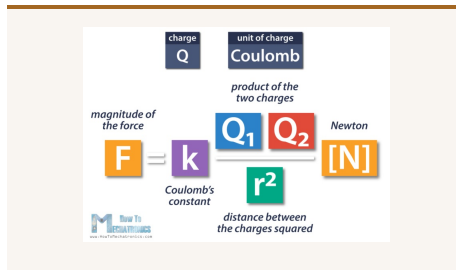
### How does an object get negatively charged?



### How does an object get positively charged?



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



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