

Electric Charge	
Terms	
Induction	process of heating electrically conductive materials
Conductors	materials that allow electrons to move separately from their atomic orbits
Coulomb	SI unit of electric charge
Dipole	2 equal and opposite charges
Electric Charge	electrically charged particles
Electrons	carries the smallest type of negative charge
Field Lines	
Benjamin Franklin	named the positive and negative charges
Fundamental Charge	1.6×10^{-19}
Conductor	allows electricity to flow through it
Insulator	electric current does not flow freely

Electric Charge (cont)	
Coulomb's Law	$F = k (q_1 q_2) / r^2$
(electric force increases as charge increases)	$k = \text{coulomb's constant } (8.99 \times 10^9)$
(electric force decreases as distance increases)	$q_1 = \text{charge of object 1}$
	$q_2 = \text{charge of object 2}$
	$r = \text{distance of object 1 and 2 from each other}$
Vector Analysis - used when 3 or more objects are involved	

Electric Charge 2	
Electrostatic Interaction	
1. Any charged objects can attract a neutral object	
2. Unlike charges attract	
3. Like charges repel	
charges of a particle depends on the sum of its electrical charges	$1 \text{ C} = 6.242 \times 10^{18}$
Ion	atom or group of atoms that bears one or more positive or negative charges
Cation	more proton, positive ion
Anion	more electron, negative ion

Particle	Proton	Electron	Neutron
Mass	$9.1093897 \times 10^{-31} \text{ kg}$	$1.6726231 \times 10^{-27} \text{ kg}$	$1.6749286 \times 10^{-27} \text{ kg}$
Charge	$+ 1.69217733 \times 10^{-19} \text{ C}$	$- 1.69217733 \times 10^{-19} \text{ C}$	none
Location in Nucleus	nucleus	outside nucleus	nucleus

Charging Objects

