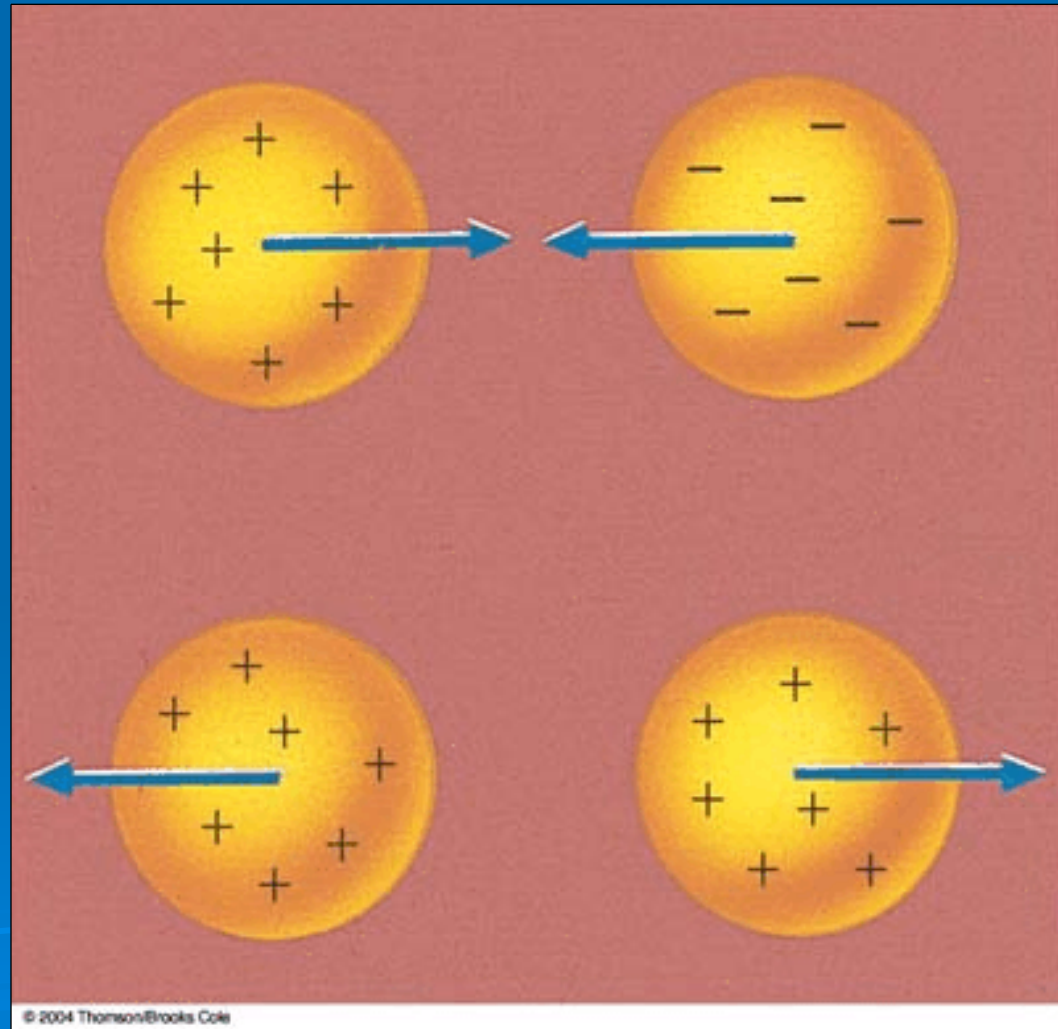


Electricity

➤ 15-1

Electric Charges

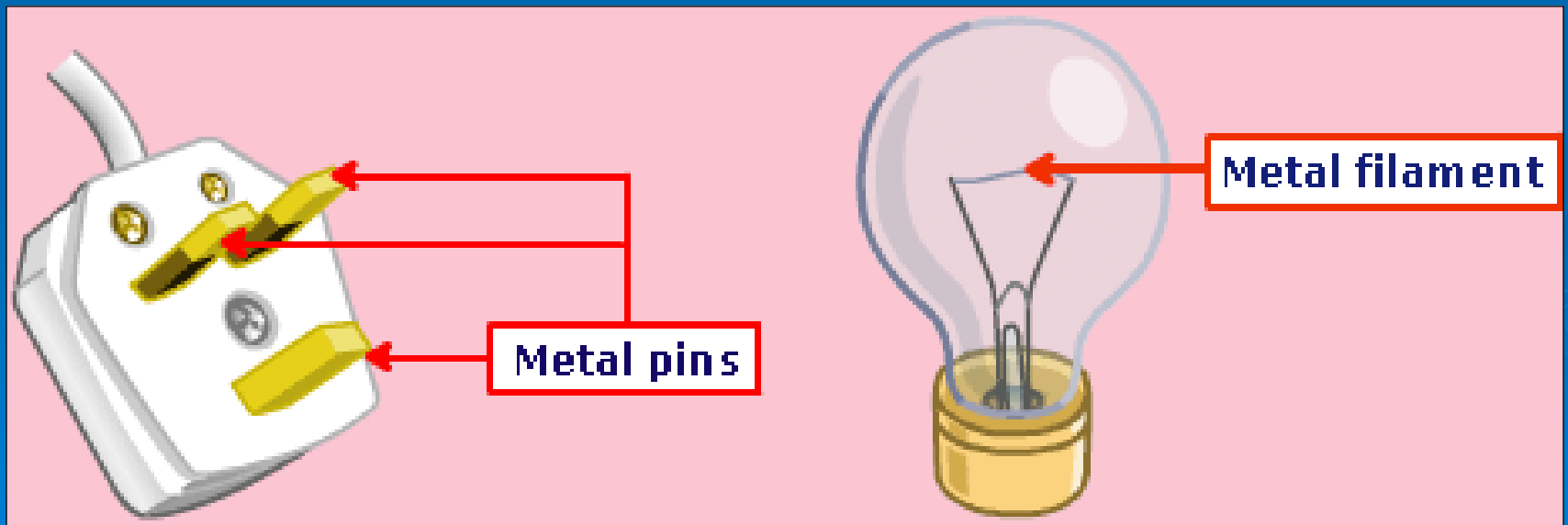
- Like charges repel
- Opposite charges attract



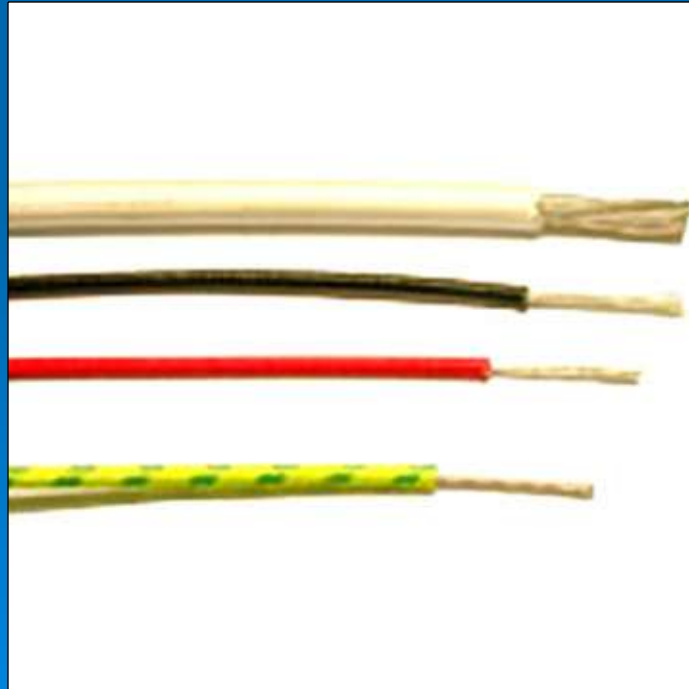
Van De Graff Demo



- Conductors allow electric charges to move freely
- Examples include copper, aluminum, and gold.



- Insulators do not allow electric charges to move freely
- Examples include rubber, plastic, and glass.



Couloumb's Law

- The closer two charges are, the greater the force on them.
- Electric Force = Coulomb constant x ((charge 1 x charge 2) / distance²)
- $F_{\text{electric}} = k_C \times ((c_1 \times c_2)/d^2)$
- $k_C = 8.99 \times 10^9 \text{ N m}^2/\text{C}^2$
- Charge = Couloumb (C) – Units
- F = Newtons
- d = Meters

A balloon rubbed against denim has a charge of 8×10^{-9} C while the denim has a charge of 6×10^{-9} C when the two are separated by a distance of 5 cm. What is the Electrical Force between them?



Electric Field

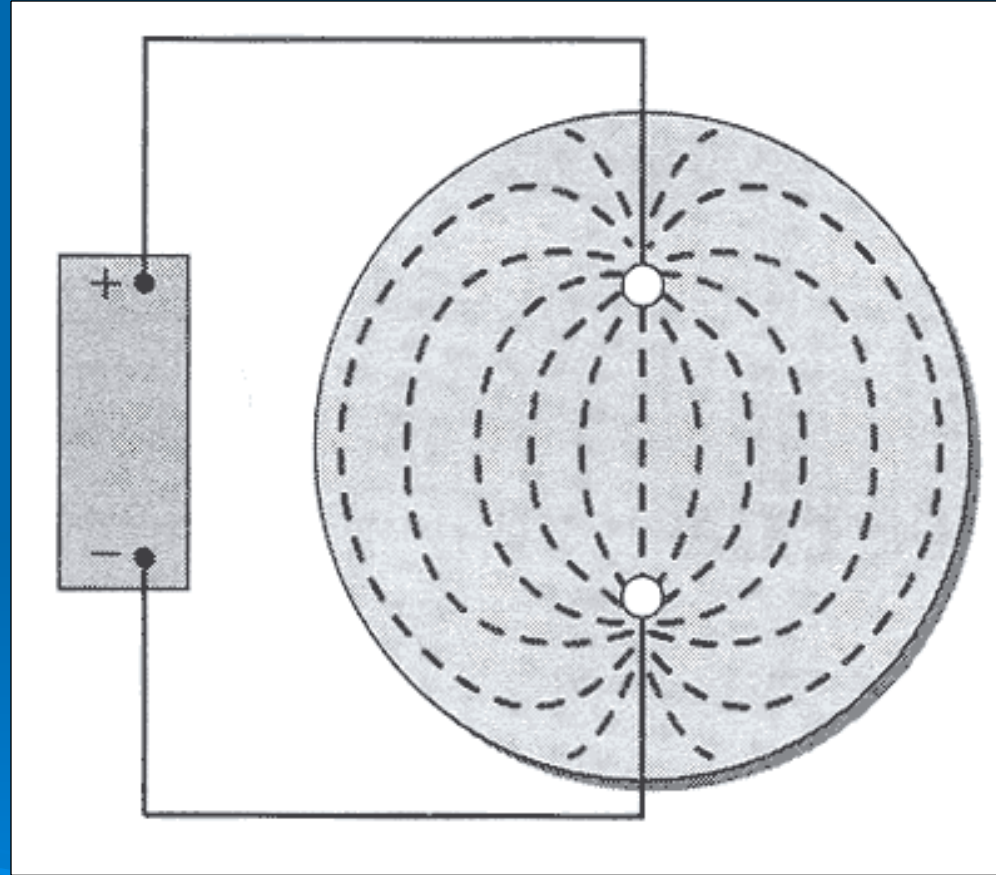
- A charged object has a charged field around it called the Electric Field.
- Electric Field Strength Equation
- Electric Field = Coulomb constant x (charge / distance²)
- $E = k_c \times (c / d^2)$
- Electric Field Strength (Units) = N/C

A particle with a charge of $7 \times 10^{-6} \text{ C}$ is separated from another particle at a distance of .5 m. How strong is the Electric Field?



Electric Field Lines

- The amount of electric field lines is proportional to the electric field strength.
- The electric field is stronger when there are more lines.



Electric Field Line Patterns for Objects with Unequal Amounts of Charge

