Coulomb's Law

The electrostatic force of interaction between two point charges is proportional to the product of the charges and inversely proportional to the square of the distance between them

Coulomb's Law

- $F = k(q_1)(q_2)/r^2$
- Where $k = 8.99 \times 10^9$ Nm^2/C^2
- Notice that if q_1 and q_2 have the same sign, the product is positive and the repulsive force is positive; if q_1 and q_2 have opposite signs, the product is negative and the attractive force is negative.

Example

- Calculate the magnitude of the force between two positive charges: q1 = 3.0 x 10^(-6) C and q2 = 6.0 x 10^(-5) C; they are separated by a distance of 9.0 meters.

- F = kq1q2/r^2

-     = (8.99 x 10^9)(3 x 10^(-6))(6 x 10^(-5))/9^2

-     =   2.0 x 10^(-2) N

Electric Force and Field Lines

- Use a test charge of a small positive charge
- How would this small, positive test charge react near the charges.
- Force/Field lines go toward negative charges and away from positive charges.