

# 1 | Coulomb's Law

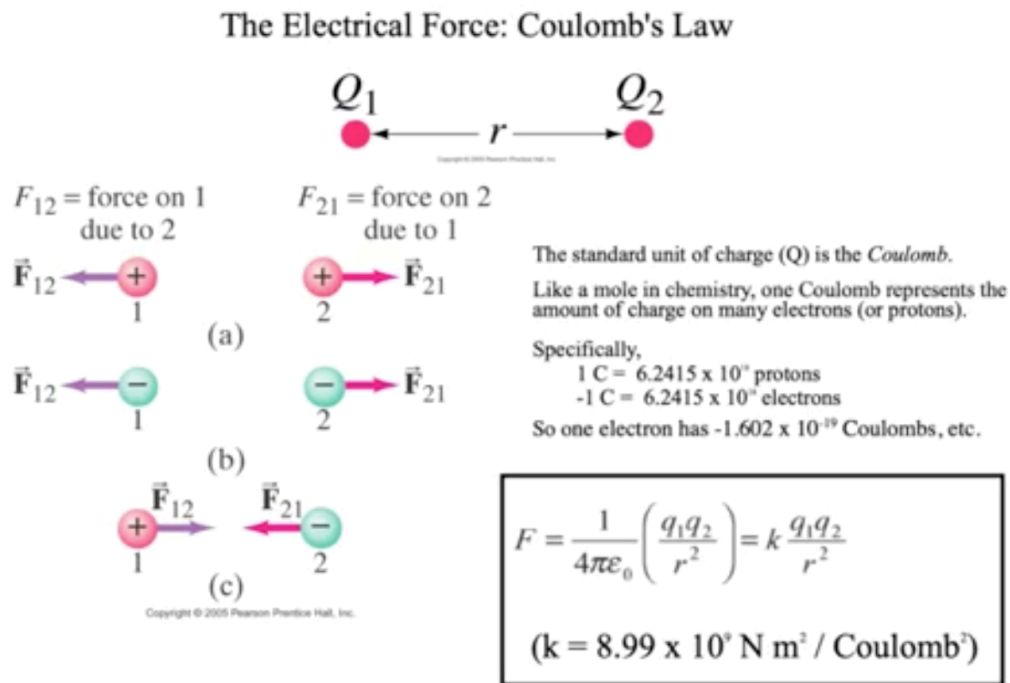


Figure 1: Screen Shot 2020-08-24 at 7.40.48 PM.png

- Electrical forces gets stronger as charge increases
- Electrical forces gets weaker as charge decreases

The magnitude of force that a particle,  $q_1$ , has upon another  $q_2$ , is given by the Coulomb's law

[where  $k$ , a constant for charge,  $q_1$ , charge of first particle,  $q_2$ , charge of second particle,  $r^2$ , distance squared] Coulomb's Law  $\{k \frac{q_1 q_2}{r^2}\}$  Note! The Standard Unit of Charge (Q) is the Coulomb — a representation for charge for many electrons or many protons

## Remember this!

Charge of an Electron  $\{-1.602 \times 10^{-19} \text{ C}\}$   $k\{8.99 \times 10^9 \frac{\text{N m}^2}{\text{C}^2}\}$

E.M. forces, really, are two forces interacting with each other

## Notice! Be careful with the signs when applying coulombs law

- If resulting Coulomb force  $> 0$ , force is REPULSIVE (became you multiplied positive to positive or negative negative)
- If resulting Coulomb force  $< 0$ , force is ATTRACTIVE (became you multiplied positive to negative)

Coulomb's law could be applied when modeling K&BPHYS201ElectricFields Electric fields to see how particles interact and how they influence each other.

### 1.1 | Guided Problem Solve

Special care must be taken for solving these problems w.r.t. to both vector direction and multiple-atom-interactions KBhPHYS201GuidedProblemCoulomb

### 1.2 | Here's something! DNA Replication

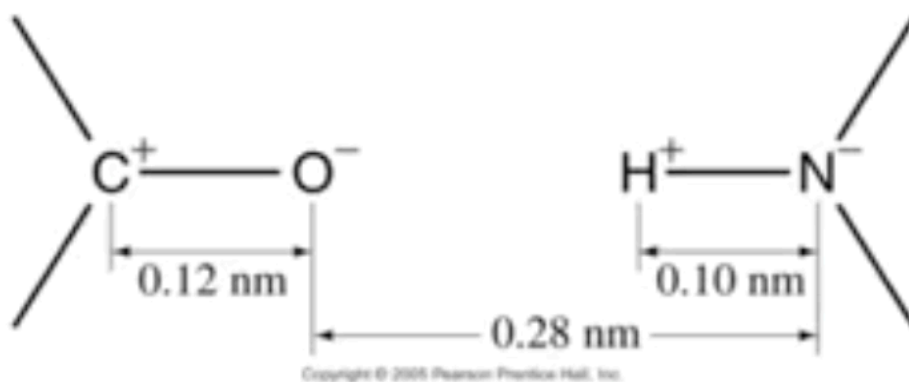


Figure 2: Screen Shot 2020-08-24 at 8.20.15 PM.png

The question is... Between these four atoms, *how many do we need to calculate to find if these two repel or attract?*

This is fairly simple. Because of the fact every force between each pair of atoms between these two elements needs to be calculated. So... 2 (on the left) times 2 (on the right) = 4.

If these repel, they don't combine. If they attract, of course they do.