

How To Find the Coulomb Force for Simple Point Charge

1. Identify the charge you want to find the force on; call it Q .
2. For another charge q_i , draw the force vector $F_{Q,i}$ on Q due to q_i , taking into account whether it is attraction or repulsion. When considering Q and q_i , ignore the presence of any other charges.
3. Find the magnitude of this force: $F_{Q,i} = kQq_i/r_i^2$, where r_i is the distance between them.
4. Decompose the force into components in your chosen coordinate system.
5. Repeat for every other charge in the problem.
6. Now add the forces $\vec{F}_{Q,i}$ vectorially, i.e. add up the \hat{i} , \hat{j} and \hat{k} components. The resultant vector is the total force.

An example where this step-by-step approach will work is your pset #1 problem 1.