

Interactive Problem Set 1, SP212 Spring 2013

Topic: Chapter 21 Electric Charge, Coulomb's Law

IPS 1.1 (in-class) Four identical charges each of charge $+100$ nC are fixed on the four corners of a square of edge length 0.05 m. What is magnitude of the force exerted on any one of them due to the other three?

IPS 1.2 (homework) You probably worked the previous problem in one of two coordinate systems: either our “standard” coordinate system with x horizontal and y vertical, or via an x -axis along a diagonal of the square. Whichever one you chose, now show that you get the same answer using the other choice.

IPS 1.3 (homework) A variation: Now suppose two of the charges are positive (on opposite corners connected along a diagonal), and two of the charges are negative. By symmetry you should be able to convince yourself that each charge will experience the same magnitude force. Calculate this force (using any coordinate system of your choosing).

Reading for next class: We will be continuing with Coulomb's Law next class, so at least read carefully all of Chapter 21 from the WileyPlus Companion (WPC). Spend some time with the text too if you struggled with any of the above problems.