AP Physics 1
Electrostatics Practice Problems

1.) Two electrical charges, q_1 and q_2, are separated by a distance r and exert a force F on each other. What will be the new force if

a.) q_1 is doubled? b.) q_1 and q_2 are cut in half? c.) r is tripled? d.) r is cut in half?

2.) How many excess electrons are on a ball with a charge of -4.00×10^{-17} C?

3.) Two electrons in an atom are separated by 1.5×10^{-10} m. What is the force between them?

4.) A positive and a negative charge, each of magnitude 1.5×10^{-5} C, are separated by a distance of 15 cm. Find the force on each of the particles.

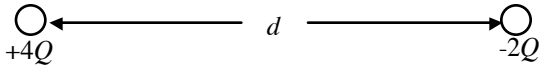
5.) Two negative charges of -3.0×10^{-6} C exert a repulsive force of 2.0 N on each other. By what distance are they separated?

6.) Two identical positive charges exert a repulsive force of 6.4×10^{-9} N when separated by a distance of 3.8×10^{-10} m. Calculate the charge of each.

7.) A positive charge of 3.0×10^{-6} C is pulled on by two negative charges. One, -2.0×10^{-6} C, is 0.050 m north and the other, -4.0×10^{-6} C, is 0.030 m to the south. What total force is exerted on the positive charge?

8.) Three particles are placed on a line. The left particle has a charge of -67×10^{-6} C, the middle. $+45 \times 10^{-6}$ C, and the right, -83×10^{-6} C. The middle particle is 72 cm from each of the others.

a.) Find the net force on the middle particle. b.) Find the net force on the right particle.



9.) Two identical conducting spheres are charged to $+4Q$ and $-2Q$, respectively, and are separated by a distance d (much greater than the radii of the spheres) as shown above. The magnitude of the force of attraction on the left sphere is F_1. After the spheres are made to touch and then are reseparated by distance d, what is the magnitude of the new force F_2 in terms of F_1?