Group Practice

Coulomb's Law – part 1

1. A balloon rubbed against denim gains a charge of -8.0 μC. What is the electric force between the balloon and the denim when the two are separated by a distance of 5.0 cm?
   [230 N; attractive] [25.8 N; attractive] [135 N; repulsive]

2. Two identical conducting spheres are placed with their centers 0.30 m apart. One is given a charge of +12 x 10^{-9} C and the other is given a charge of -18 x 10^{-9} C.
   a. Find the electric force exerted on one sphere by the other.
   [2.2 x 10^{-5} N; attractive] [3.8 x 10^{-3} N; repulsive] [4.1 x 10^{-4} N; repulsive]

   b. The spheres are connected by a conducting wire. After equilibrium has occurred, find the electric force between the two spheres.
   [9.0 x 10^{-7} N; repulsive] [4.1 x 10^{-4} N; repulsive] [6.6 x 10^{-6} N; attractive]

3. Two electrostatic point charges of +60.0 μC and +50.0 μC exert a repulsive force on each other of 175 N. What is the distance between the two charges?
   [12.1 m] [0.40 m] [1.8 m]