1.) When you pull two socks out of a clothes dryer they stick to each other due to an accumulation of static charge. How many electrons are responsible for this net attraction? Let’s make an estimate following these steps: A sock has a mass of about 15g. How large (in newtons) is the gravitational force on one sock? Assuming that the sock’s mass is equally distributed between protons and neutrons (mp ≃ mn = 1.67 × 10−27 kg) how many protons are in the sock? As matter is mostly composed by neutral atoms, this is also a good estimate of the total number of electrons in the sock. Assume that some number n of electrons is transferred from one sock to the other leaving the first sock with a charge q = +ne and the second sock with charge q2 = −ne. Further assume that when the socks cling to each other these charges are separated by about 1 mm. In terms of n, how large is the electrical attraction of one sock to the other? Equate this to the weight of the sock to solve for n. What is the total charge transferred in units of coulombs? What fraction of the total number of electrons in the sock does n represent?