## Assignment 2

1. Estimate the number of electrons in 1 cm^3 of water? Express the electric charge of these electrons in esu and coulombs.

2. Compute the ratio of the gravitational force to the coulomb force for
    a) 2 protons
    b) 2 electrons.

3. Two charged balls with masses of 300 gm each hang as shown below. Assuming both balls have the same charge,
    a) What is the charge on each in esu?
    b) What is the electrical force between the balls in dynes?
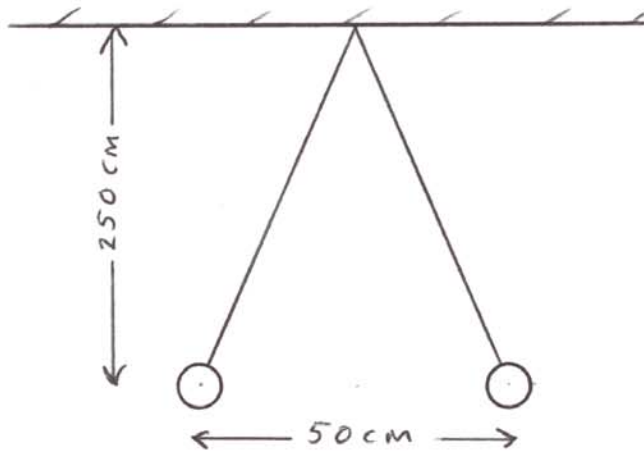
4. At each corner of a square is a particle with charge q. Fixed at the center of the square is a point charge of opposite sign, of magnitude Q. What value must Q have to make the total force on each of the four particles zero? With Q set at that value, the system, in the absence of other forces, is in equilibrium. Is the equilibrium stable?