Electrostatics Homework Problems:
p. 372: #13, 14

Problems taken from the school's old textbook:
Giancoli, D. (1980). *Physics*, 2nd Ed. Englewood Cliffs, NJ: Prentice Hall.

Helpful constants:

- rest mass of an electron = 9.11×10^{-31} kg
- charge of an electron: -1.6×10^{-19} C
- charge of a proton: 1.6×10^{-19} C

13. In one model of the hydrogen atom the electron revolves in a circular orbit around the proton with a speed of 1.1×10^{6} m/s. What is the radius of the electron's orbit? (Hint: think back to material from the last unit!)

14. A large electroscope is made with "leaves" that are 60 cm long wires with 28-g balls at the ends. There are two of these leaves, despite the fact the figure to the right shows one of them as being dashed. When charged, nearly all the charge resides on the balls. The two balls, now charged, repel one another and the leaves spread apart as shown. If the wires each make a 30^{o} angle with the vertical, what total charge must have been applied to the electroscope? (Hint: you've seen problems very similar to this one in past units. Think back . . . .)

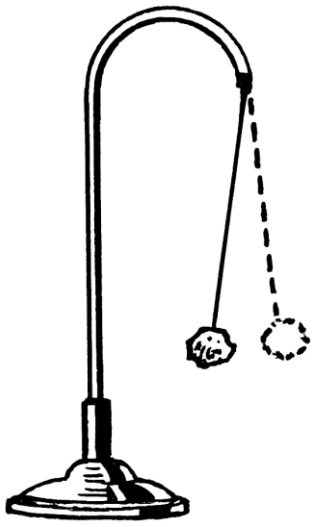

Image retrieved from
http://commons.wikimedia.org/wiki/File:Electroscope_(PSF).png

ANSWERS:

13. 2.09×10^{-10} m
14. 5.03 μC