HW 3.3 **Electrostatics** Per _____ Name_____

1. How much energy will an electron gain as it moves through a potential difference of 21,000 V in a TV picture tube?

2. At what distance from a point charge of +6 **μC** would the potential equal 2.7 E 4 V?

3. Find the potential at a distance 1 **cm** from a proton.

4. In the Bohr model of the hydrogen atom an electron circles a proton in an orbit of radius 5.1 E –11 meters. Find the voltage at this position.

5. A point charge of 9 E –9 C is located at the origin. How much work is required to bring a proton from Pflugerville to a distance of 30 **cm** away from the point charge?

6. What is the magnitude of the E-field 10 nm from a Carbon nucleus?

7. Draw appropriate E-field lines for the point charges shown below.

8. What is the voltage 10 nm from a Carbon nucleus?

9. What is the magnitude and direction of an E-field that just balances a suspended electron?

10. How close can an electron moving 3.2 E 6 m/s get to a stationary –18 ρC charge?

11. Three point charges, q_1, q_2 , and q_3 lie along the x-axis as shown in the picture below. How far from q_1 would q_3 need to be placed in order for it to feel no resultant electric force?