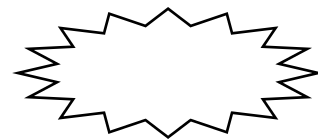


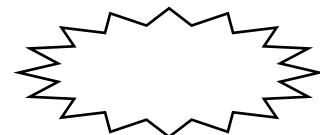
HW 3.3 **Electrostatics**

Per _____ Name _____

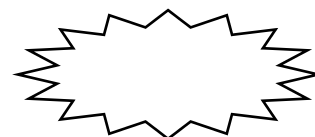
1. How much energy will an electron gain as it moves through a potential difference of 21,000 V in a TV picture tube?



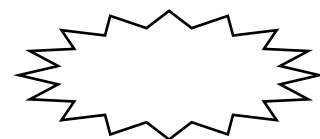
2. At what distance from a point charge of $+6 \mu\text{C}$ would the potential equal $2.7 \times 10^4 \text{ V}$?



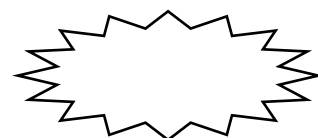
3. Find the potential at a distance 1 cm from a proton.



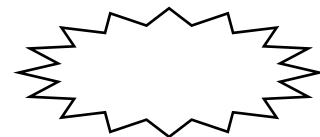
4. In the Bohr model of the hydrogen atom an electron circles a proton in an orbit of radius 5.1×10^{-11} meters. Find the voltage at this position.



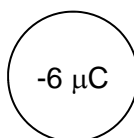
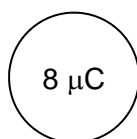
5. A point charge of $9 \times 10^{-9} \text{ C}$ is located at the origin. How much work is required to bring a proton from Pflugerville to a distance of 30 cm away from the point charge?



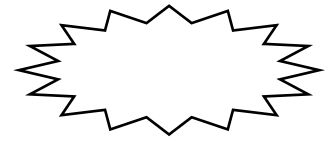
6. What is the magnitude of the E-field 10 nm from a Carbon nucleus?



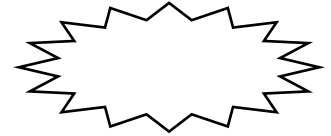
7. Draw appropriate E-field lines for the point charges shown below.



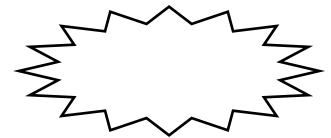
8. What is the voltage 10 nm from a Carbon nucleus?



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



10. How close can an electron moving 3.2×10^6 m/s get to a stationary $-18 \mu\text{C}$ 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?

