

ELECTRIC FIELD REVIEW PROBLEMS

1. What is the magnitude and direction of the electric field surrounding a **+9.00C** charge at a distance of **65.0 cm** from the charge??
2. In the human body, nerve cells work by pumping sodium ions out of the cell in order to maintain a potential difference across the cell wall. If a sodium ion carries a charge of **1.60×10^{-19} C** as it is pumped with an electrical force of **2.00×10^{-12} N**, what is the electric field between the inside and outside of the nerve cell?
3. It takes **1.20** joules of work to move a particle from point A to point B in an electric field. If the charge on the particle is **1.45×10^{-14} C**, what is the potential difference between A and B?
4. A **9.0 V** battery does **1.0×10^3 J** of work transferring charge. How much charge is transferred?



5. If a rubber balloon is charged to a potential difference of **3.00×10^3 volts**, and the amount of charge on the balloon is **1.00×10^{-6} C**, then the potential energy of the charge is...?
6. A capacitor that is connected to a 45.0 volt source contains 90.0 μC of charge. What is the capacitor's capacitance?
7. How much charge is stored on a 0.22 μF parallel plate capacitor if the plates are 1.2 cm apart and the electric field between them is 2400 N/C? (*Hint: 2-part problem; find ΔV first, then find q .*)