

Electric Potential – practice problems

E_e = electric potential energy - Joules

V = electric potential - Joules / Coulomb (Volt) - energy it has compared to infinity

ΔV = electric potential difference - Joules /Coulomb (Volt)

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1. Calculate the electric potential a distance of 0.40 m from a spherical point charge of $+6.4 \times 10^{-6}$ C.

2. How much work must be done to increase the potential of a charge of 3.0×10^{-7} C by 120 V?

3. In a uniform electric field, the potential difference between 2 points 10 cm apart is 80 V.
Calculate the magnitude of the electric field intensity.

4. The electric field intensity in the region between 2 parallel plates is 400 N/C. If the plates are connected to a battery with a potential difference of 90 V, what is the separate of the plates?

Try these:.....

1. The potential at a distance of 25 cm from a point charge is -6.4×10^4 V. What is the sign and magnitude of the point charge? **[-1.8 x 10⁻⁶ C]**

2. It takes 4.2×10^{-3} J of work to move 1.2×10^{-6} C of charge from point X to point Y in an electric field. What is the potential difference between X and Y? **[3.5 x 10³ V]**

3. Calculate the magnitude of the electric field in a parallel plate apparatus whose plates are 5.00 mm apart and have a potential difference of 300 V between them. **[6.0 x 10⁴ N/C]**

4. What potential difference would have to be maintained across the plates of a parallel plate apparatus, if they are 1.2 cm apart, to create an electric field of intensity 1.5×10^4 N/C?
[1.8 x 10² V]