

Electric Potential Problems

1. It takes 6 J of work to move a charge of 2 C from point A to point B. What is the electric potential between these points?
2. A charge of $45 \mu\text{C}$ has 9×10^{-4} J of potential energy. What is the electric potential where the charge is?
3. A 3 C charge is at a spot with a potential difference of 120 V. How much potential energy does it have?
4. A 6 C charge is at a spot with a potential difference of 120 V. How much potential energy does it have?
5. You pick up and move a charge of $3 \mu\text{C}$ from point A to point B. The voltage at point A is 50 V and at point B is 200 V. How much work did it take to move the charge?
6. A certain charge has 30 J of potential energy and a voltage of 3 V.
 - a. What is the charge?
 - b. If the charge were doubled, what would be the potential energy?
 - c. If the charge were doubled, what would be the voltage?
7. How much work would it take to push a charge of $15 \mu\text{C}$ to a potential of 120 V?
8. What is the charge of an object if it has an electric potential of 45 V and an electric potential energy of 90×10^{-6} J?
9. An electron is in a 12 V electric potential.
 - a. How much potential energy does it have?
 - b. If a second electron joined the first one, what would be the new electric potential?
 - c. If a second electron joined the first one, what would be the new electric potential energy?

Answers: 1) 3 V 2) 20 V 3) 360 J 4) 720 J 5) 4.5×10^{-4} J 6. a) 10 C b) 60 J c) 3 V
7) 0.0018 J 8) $2 \mu\text{C}$ 9. a) 1.92×10^{-18} J b) 12 V c) 3.84×10^{-18} J