

Answer on Question #55902, Physics / Electromagnetism

Points A and B each have an electric potential of +12V. How much work would be required to take 3 C of positive charge from A to B?

- 0 J
- 3 J
- 9 J
- 36 J

Solution:

Work W to the electric potential difference ΔV between the initial and final locations of the particle is

$$W = q\Delta V$$

Thus,

$$W = (3 \text{ C}) \cdot (12 \text{ V} - 12 \text{ V}) = 0$$

Answer: 0 J

2. The electric potential difference between two points A and B is 42 V. What is the work done by an external agent in carrying of 5.0×10^{-5} C from A to B at constant speed?

- 2.1×10^{-3} J
- 8.4×10^{-4} J
- 21×10^{-4} J
- 8.4×10^{-3} J

Solution:

Work W to the electric potential difference ΔV between the initial and final locations of the particle is

$$W = q\Delta V$$

Thus,

$$W = (5.0 \cdot 10^{-5} \text{ C}) \cdot (42 \text{ V}) = 210 \cdot 10^{-5} = 21 \cdot 10^{-4} \text{ J} = 2.1 \cdot 10^{-3} \text{ J}$$

Answer: 2.1×10^{-3} J; 21×10^{-4} J