


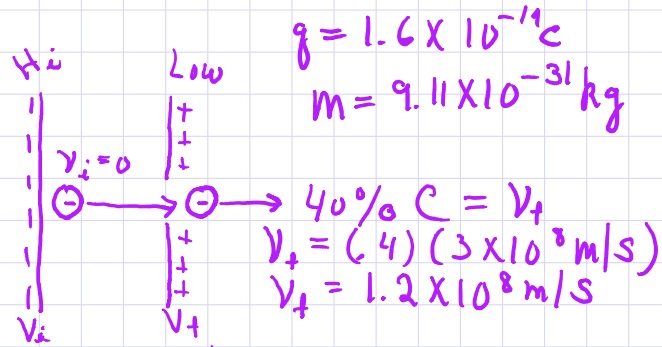
Example 1

Monday, February 16, 2015 7:36 AM

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1) Through what potential difference would an electron need to be accelerated for it to achieve a speed of 40% of the speed of light, starting from rest?



$$W = \Delta KE$$

$$W = \Delta PE = \Delta Vq$$

$$\Delta Vq = \Delta KE$$

$$\Delta Vq = KE_f - KE_i \rightarrow 0$$

$$\Delta Vq = \frac{1}{2} m v_f^2$$

$$\Delta V = \frac{m v_f^2}{2q} = \frac{(9.11 \times 10^{-31} \text{ kg})(1.2 \times 10^8 \text{ m/s})^2}{2(1.6 \times 10^{-19} \text{ C})}$$

$$\Delta V = -40,995 \text{ V}$$

$$V_f - V_i$$