

Name: _____

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1. **M** (a) Calculate the speed of a proton that is accelerated from rest through an electric potential difference of 120 V.
(b) Calculate the speed of an electron that is accelerated through the same electric potential difference.

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3. A uniform electric field of magnitude 325 V/m is directed in the negative y direction in Figure P25.3. The coordinates of point A are $(-0.200, -0.300) \text{ m}$, and those of point B are $(0.400, 0.500) \text{ m}$. Calculate the electric potential difference $V_{\text{B}} - V_{\text{A}}$ using the dashed-line path.

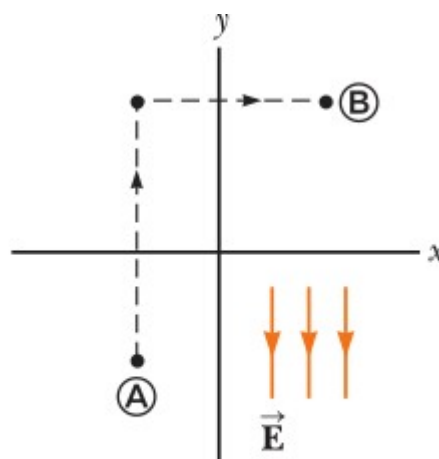


Figure P25.3

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5. **M** An electron moving parallel to the x axis has an initial speed of 3.70×10^6 m/s at the origin. Its speed is reduced to 1.40×10^5 m/s at the point $x = 2.00$ cm. (a) Calculate the electric potential difference between the origin and that point. (b) Which point is at the higher potential?

13. **S** Three positive charges are located at the corners of an equilateral triangle as in Figure P25.13. Find an expression for the electric potential at the center of the triangle.

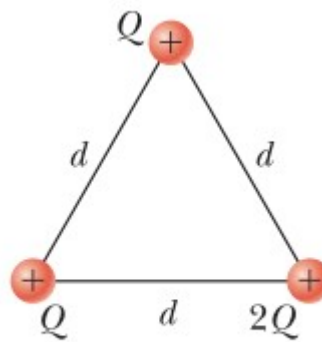


Figure P25.13

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15. Given two particles with $2.00\text{-}\mu\text{C}$ charges as shown in Figure P25.15 and a particle with charge $q = 1.28 \times 10^{-18}\text{ C}$ at the origin, (a) what is the net force exerted by the two $2.00\text{-}\mu\text{C}$ charges on the test charge q ? (b) What is the electric field at the origin due to the two $2.00\text{-}\mu\text{C}$ particles? (c) What is the electric potential at the origin due to the two $2.00\text{-}\mu\text{C}$ particles?

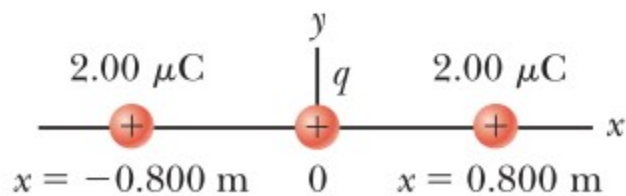


Figure P25.15

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17. **S** Four point charges each having charge Q are located at the corners of a square having sides of length a . Find expressions for (a) the total electric potential at the center of the square due to the four charges and (b) the work required to bring a fifth charge q from infinity to the center of the square.