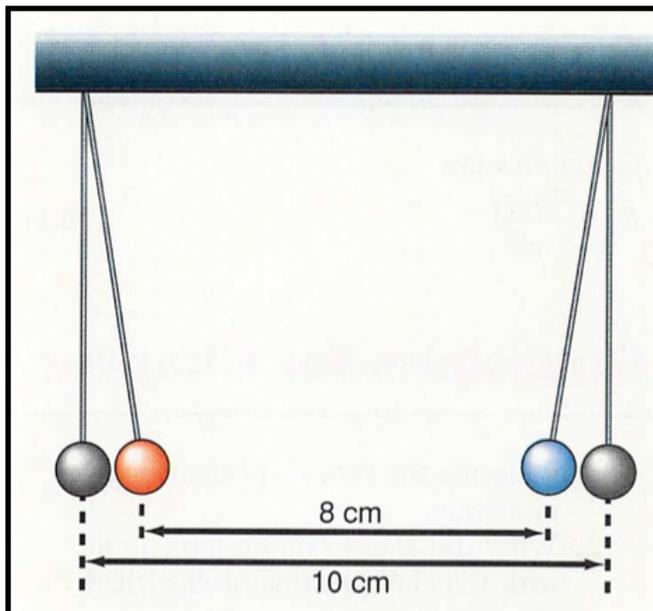
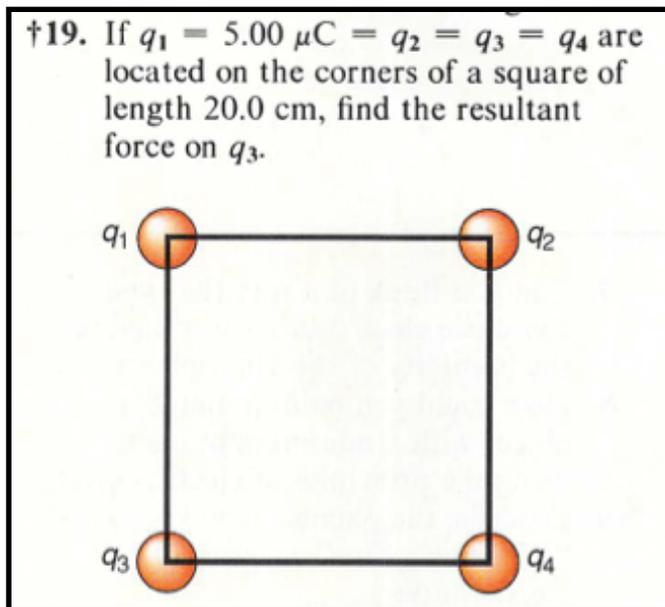
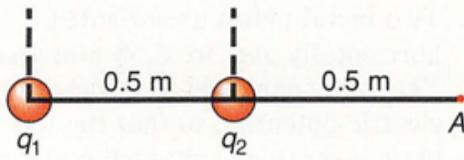


4. If the force of repulsion between two protons is equal to the weight of the proton, how far apart are the protons?
5. The force between two point charges is $3.5 \times 10^{-2} \text{ N}$. What is the force if the distance separating the charges is doubled?
11. Two point charges repel each other with a force of $3.00 \times 10^{-5} \text{ N}$ when they are 20.0 cm apart. Find the force if the distance is reduced to 5.00 cm.
15. Three charges of $2.00 \mu\text{C}$, $-4.00 \mu\text{C}$, and $6.00 \mu\text{C}$ are placed on the same line, each 15.0 cm apart. Find the resultant force on each charge.



27. Two 10.0-g pith balls are hung from the ends of two 25.0-cm long strings as shown. When an equal and opposite charge is placed on each ball, their separation is reduced from 10.0 cm to 8.00 cm. Find the tension in each string and the charge on each

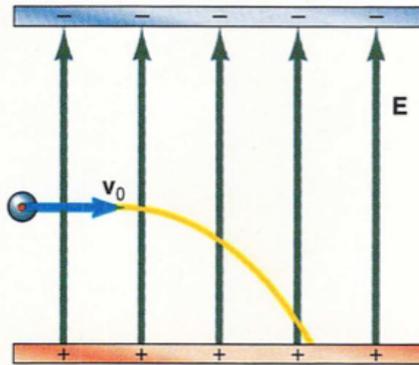
3. Find the electric field at point A in the diagram if (a) $q_1 = 2.00 \mu\text{C}$ and $q_2 = 3.00 \mu\text{C}$ and (b) $q_1 = 2.00 \mu\text{C}$ and $q_2 = -3.00 \mu\text{C}$.



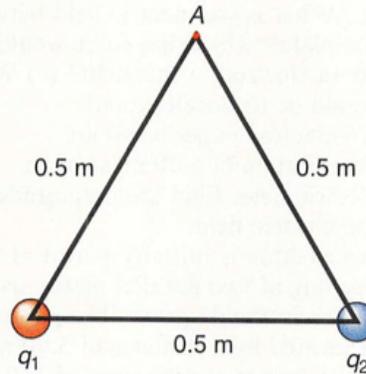
23. A point charge of $2.00 \mu\text{C}$ is 30.0 cm from a charge of $-3.00 \mu\text{C}$. Where is the potential between the two charges equal to zero? How much work would be required to bring a charge of $4.00 \mu\text{C}$ to this point from infinity?

24. If a charge q of $+2.00 \mu\text{C}$ is

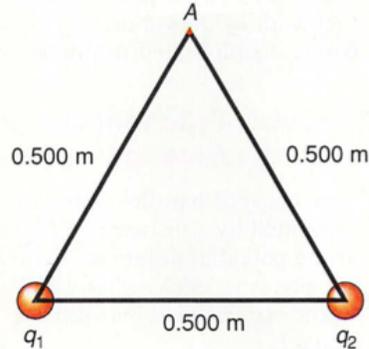
- †46. An electron enters midway through a uniform electric field of 200 N/C at an initial velocity of 400 m/s , as shown in the diagram. If the plates are separated by a distance of 2.00 cm , how far along the x -axis will the electron hit the bottom plate?



- †7. Find the electric field at point A in the diagram if $q_1 = 2.00 \mu\text{C}$ and $q_2 = -3.00 \mu\text{C}$.



21. Find the potential at the apex of the equilateral triangle shown in the diagram if (a) $q_1 = 2.00 \mu\text{C}$ and $q_2 = 3.00 \mu\text{C}$ and (b) if $q_1 = 2.00 \mu\text{C}$ and $q_2 = -3.00 \mu\text{C}$.



30. An electron experiences an acceleration of 5.00 m/s^2 in an electric field. Find the magnitude of the electric field.
31. An electron is initially at rest at the opening of two parallel plates, as shown in the diagram. The plates are separated by a distance of 5.00 mm , and a potential difference of 150 V is maintained between the plates. (a) What is the initial potential energy of the electron? (b) What is the kinetic energy of the electron when it reaches the opposite side?

