Questions

Chapter 21
Electric Charge

21-4 Coulomb's Law
M2-041

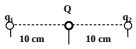
What is the electric force between two protons which are separated by 1.6×10^{-15} m.

A)zero.
B)2.2 N, attractive.
C)2.2 N, repulsive.
D)90 N, attractive.
E)90 N, repulsive.

Answer E

21-4 Coulomb's Law
M2-072

In the figure below, charge Q = - 3.7 nC. For what value of charge q1 will charge q2 be in static equilibrium?



A) 15 nC
B) 7.4 nC
C) 10.7 nC
D) 30 nC
E) 20 nC

Answer A

21-4 Coulomb's Law
M2-062

Two point charges $q_1 = +2.0 \times 10^{-6}$ C and $q_2 = -8.0 \times 10^{-6}$ C are located at (0.0, 0.0) cm and (10.0, 0.0) cm, respectively. Another positive point charge q_3 is to be located somewhere, on x-axis, such that the net electrostatic force on it due to q_1 and q_2 is zero. Its location will be:

A) (0.0, 0.0) cm
B) (-10.0, 0.0) cm
C) (-5.0, 0.0) cm
D) (5.0, 0.0) cm
E) (20.0, 0.0) cm

Answer B

21-4 Coulomb's Law
M2-061

Two identical positively charged ions are separated from each other by a distance of 6.8×10^{-9} m. If the electrostatic force between them is 4.5×10^{-9} N, how many electrons are missing from each ion?

A) 37
B) 45
C) 48
D) 30
E) 25

Answer D

21-4 Coulomb's Law
M2-061

A charge q is placed at the center of the line joining two equal charges Q. All charges will be in equilibrium if q is equal to:

A) Q/4
B) - Q/2
C) - Q/4
D) Q/2
E) Q/3

Answer C

21-4 Coulomb's Law
M2-042

Two positively charged particles q_1 and q_2 (with $q_2 > q_1$) are fixed in place on the x-axis at the positions shown in figure 1. A third charge q_3 is to be placed somewhere on the x-axis such that the net electrostatic force on q_3 is zero. Which one of the following statements is TRUE?

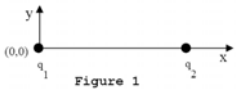


Figure 1

A) q_3 should be placed at a point between q_1 and q_2 but closer to q_1
B) q_3 should be placed at the mid point between q_1 and q_2.
C) q_3 should be placed at a point between q_1 and q_2 but closer to q_2.
D) q_3 should be placed to the left of q_1.
E) q_3 should be placed to the right of q_2.

Answer A

21-4 Coulomb's Law
M2-042

Two 1.0 g spheres are charged equally and placed 2.0 cm apart. When released, each one begins to accelerate at 225 m/s^2. What is the magnitude of the charge on each sphere?

A) 2.0×10^{-7} C.
B) 1.0×10^{-7} C.
C) 3.0×10^{-7} C.
D) 0.5×10^{-14} C.
E) 8.0×10^{-9} C.

Answer B

21-4 Coulomb's Law
M2-041

Two positive charges (+8.0 C and +2.0 C) are separated by 300 m. A third charge is placed a distance r from the +8.0 C charge so that the resultant electric force on the third charge due to the other two charges is zero. The distance r is

A) 200 m.
B) 100 m.
C) 300 m.
D) 400 m.
E) 500 m.

Answer A