HW 4

Electric Potential

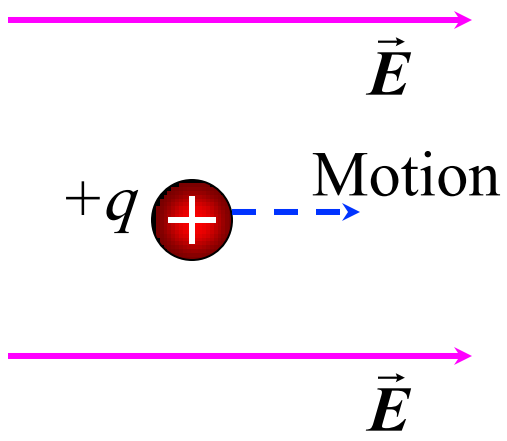
1. M Oppositely charged parallel plates are separated by 5.33 mm. A potential difference of 600 V exists between the plates. (a) What is the magnitude of the electric field between the plates? (b) What is the magnitude of the force on an electron between the plates? (c) How much work must be done on the electron to move it to the negative plate if it is initially positioned 2.90 mm from the positive plate?

Q2. What is the potential energy of a 5 μC charge placed at an electric potential of 1000 V?

Q3. Calculate the electric potential 15 cm from a metal sphere whose radius is 5 cm and has a

net charge of -2.5 mC.

Q4. When a positive charge moves in the direction of the electric field,



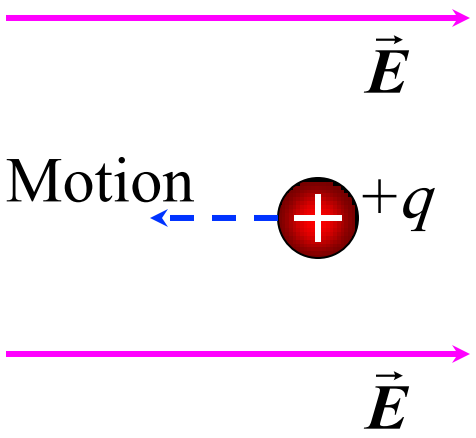
A. the field does positive work on it and the potential energy increases.

B. the field does positive work on it and the potential energy decreases.

C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.

Q5. When a positive charge moves opposite to the direction of the electric field,



A. the field does positive work on it and the potential energy increases.

B. the field does positive work on it and the potential energy decreases.

C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.

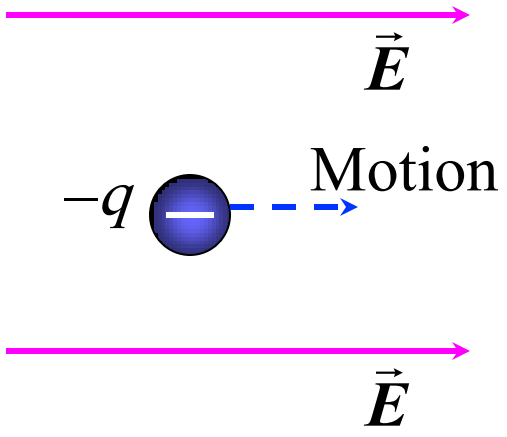
Q6. When a negative charge moves in the direction of the electric field,

A. the field does positive work on it and the potential energy increases.

B. the field does positive work on it and the potential energy decreases.

C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.



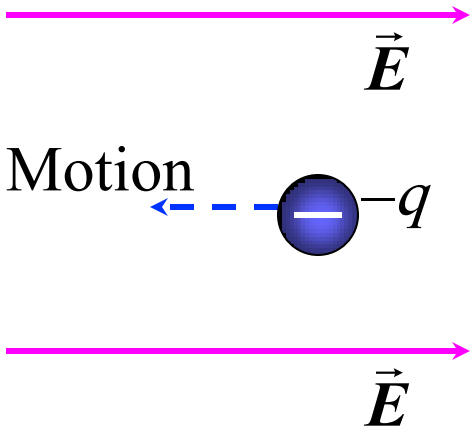
Q7.When a negative charge moves opposite to the direction of the electric field,

A. the field does positive work on it and the potential energy increases.

B. the field does positive work on it and the potential energy decreases.

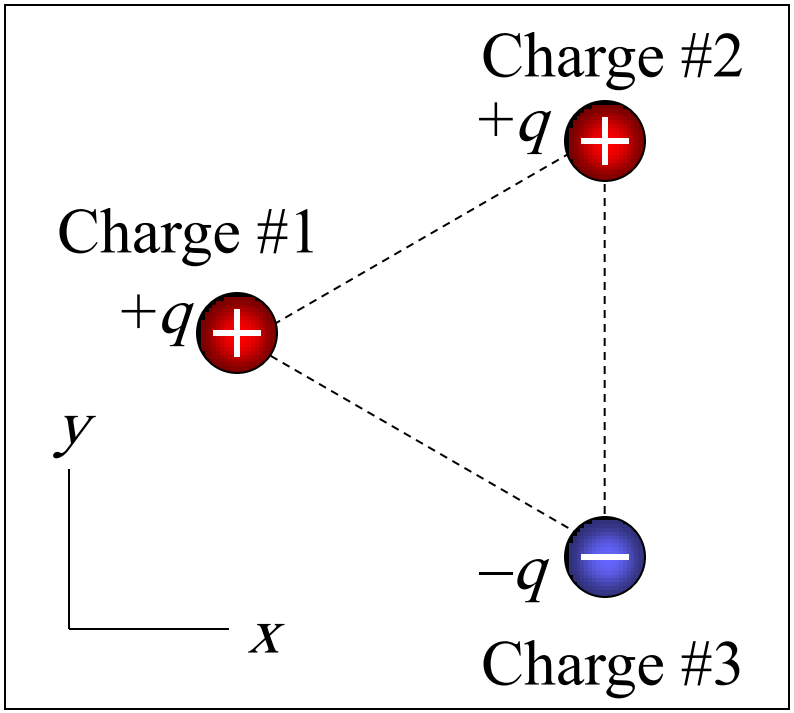
C. the field does negative work on it and the potential energy increases.

D. the field does negative work on it and the potential energy decreases.



Q8. The electric potential energy of two point charges approaches zero as the two point charges move farther away from each other.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential energy of the system of three charges is



A. positive.

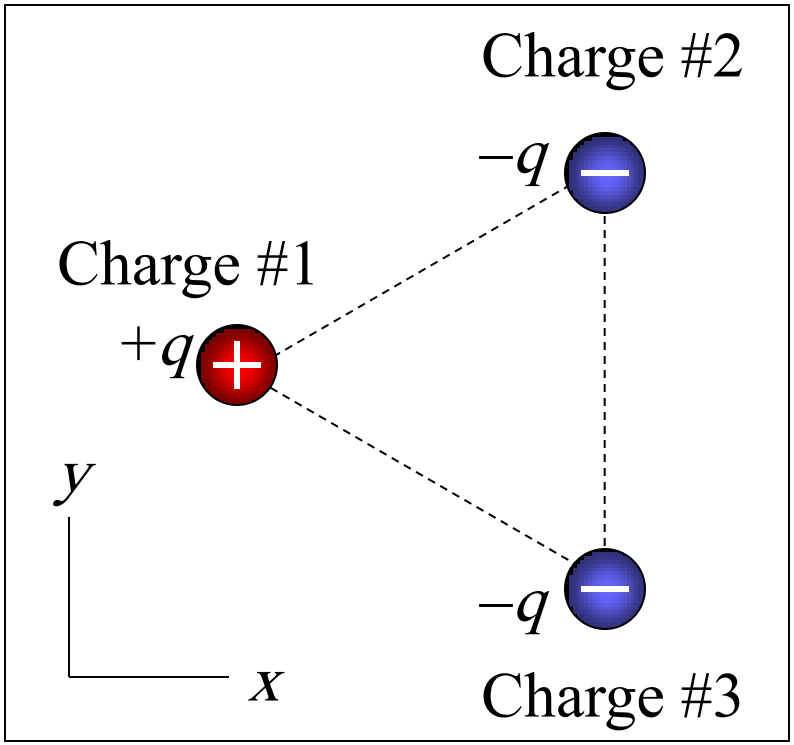
B. negative.

C. zero.

D. not enough information given to decide

Q9. The electric potential energy of two point charges approaches zero as the two point charges move farther away from each other.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential energy of the system of three charges is



A. positive.

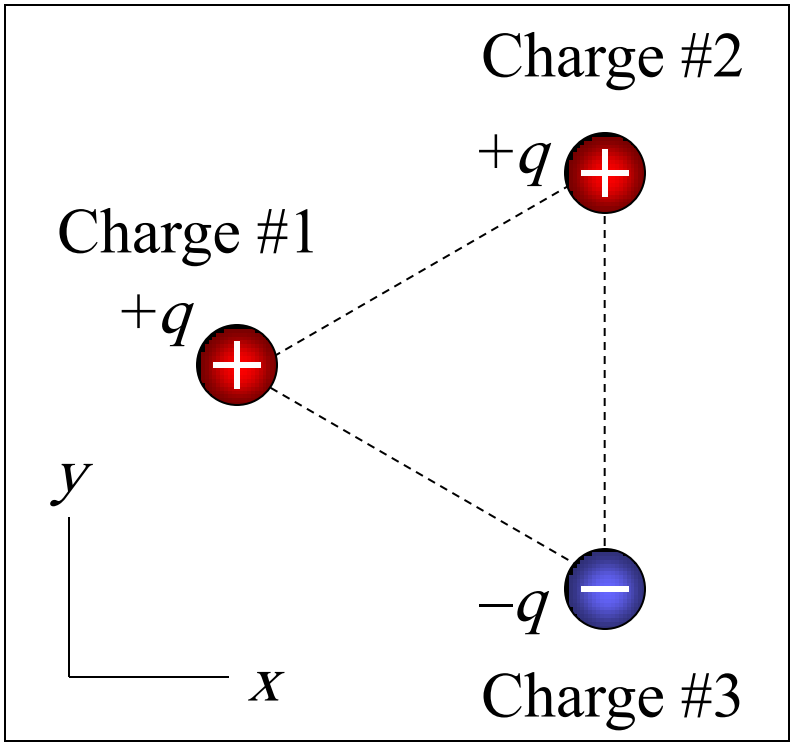
B. negative.

C. zero.

D. not enough information given to decide

Q10. The electric potential due to a point charge approaches zero as you move farther away from the charge.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential at the center of the triangle is



A. positive.

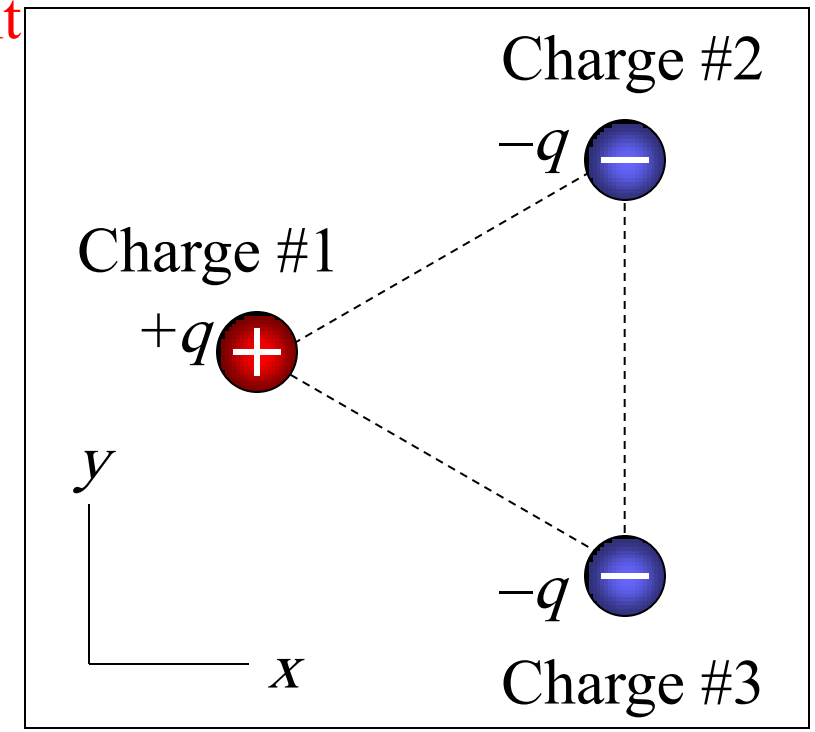
B. negative.

C. zero.

D. not enough information given to decide

Q8. The electric potential due to a point charge approaches zero as you move farther away from the charge.

If the three point charges shown here lie at the vertices of an equilateral triangle, the electric potential at the center of the triangle is



A. positive.

B. negative.

C. zero.

D. not enough information given to decide