



McRoberts Secondary

Electricity Retest 2025-01-20



Personal Data

Family Name:
Given Name:
Signature:
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Registration Number

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In this section **no** changes or modifications must be made!

Scrambling

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Type

015

Exam ID(Physics 12)

25012000002

Please mark the boxes carefully: ☒ Not marked: ☐ or ☐

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Only clearly marked and positionally accurate crosses will be processed!

Answers 1 - 15

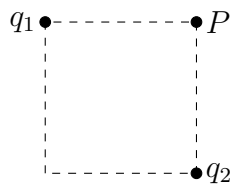
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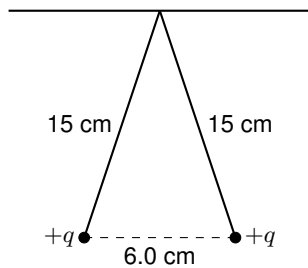


1. Which of the following are vector quantities? **Select all that apply.**
 - a. Electric potential difference (voltage).
 - b. Electric field.
 - c. Electric force.
 - d. Electric potential.
2. What is always true of an electrically charged object?
 - a. It has an unequal number of protons and electrons.
 - b. It has more electrons than protons.
 - c. It has no neutrons.
 - d. It has more protons than electrons.
3. Electric field lines
 - a. Radiate outward from positive charges.
 - b. Circle clockwise around negative charges.
 - c. Radiate outward from negative charges.
 - d. Circle clockwise around positive charges.
4. The electron-volt (eV) is a unit of
 - a. Energy.
 - b. Voltage.
 - c. Current.
 - d. Power.
5. What is the magnitude of the coulomb force a $+4.5\ \mu\text{C}$ charge exerts on a $+6.9\ \mu\text{C}$ charge 48 cm away?
 - a. 1.2 N
 - b. 0.7 N
 - c. 0.96 N
 - d. 0.19 N
6. The magnitude of the electric field at a distance of 5 m from a point charge is 1 N/C. What is the magnitude of the electric field at a distance of 2 m from the point charge?
 - a. $(5/2)\ \text{N/C}$
 - b. $(2/5)^2\ \text{N/C}$
 - c. $(2/5)\ \text{N/C}$
 - d. $(5/2)^2\ \text{N/C}$
7. Two point charges are separated by a distance of 2 cm. Their electric potential energy is 1 J, relative to infinity. What would their electric potential energy be if the separation is changed to 1 cm?
 - a. $(2/1)^2\ \text{J}$
 - b. $(2/1)\ \text{J}$
 - c. $(1/2)^2\ \text{J}$
 - d. $(1/2)\ \text{J}$

8. The electric potential at a distance of 4 m from a point charge is 1 V. What is the electric potential at a distance of 3 m from the point charge?
- $(4/3)^2$ V
 - $(4/3)$ V
 - $(3/4)^2$ V
 - $(3/4)$ V
9. Two charged objects repel each other with a force F . What is the force between them if one of the charges is multiplied by 8, the other charge is multiplied by 5, and the distance between them is reduced to $1/9$ its original value?
- $(40/81) F$
 - $360 F$
 - $(40/9) F$
 - $3240 F$
10. What is the force on a $+6.4$ mC charge when placed in a uniform electric field of strength 926 N/C?
- 5.9 N
 - 3 N
 - 5.2 N
 - 7.4 N
11. It takes 19 J of energy to move 1.4 C of charge from point A to point B. What is the potential difference between points A and B?
- 14 V
 - 0.07 V
 - 12 V
 - 2.7 V
12. Consider a uniform electric field of 14.0 N/C pointing toward the east. If the voltage measured relative to ground at a given point in the field is 490 V, what is the voltage 5.00 m directly south of the point?
- 490 V
 - 788 V
 - 609 V
 - 693 V
13. What is the electric field strength 26 cm away from a $+6.1$ nC point charge?
- 480 N/C
 - 600 N/C
 - 810 N/C
 - 360 N/C
14. Two point charges, $q_1 = -5.0$ μ C and $q_2 = 8.0$ μ C, are fixed at opposing corners of a square of side length 4.0 m as shown in the figure. What is the electric field strength at one of the unoccupied corners of the square (point P in the figure)?



- a. 7500 N/C
b. 5300 N/C
c. 4100 N/C
d. 2900 N/C
15. Two balls, each of mass 0.38 kg, acquire the same electric charge. Each charge is suspended from the same point by a massless, electrically insulating string. They repel each other and hang with a separation of 6.0 cm. The length of the string from the point of support to the centre of a ball is 15 cm. What is the charge on each ball? (The figure is not drawn to scale.)



- a. $0.96 \mu\text{C}$
b. $0.3 \mu\text{C}$
c. $0.1 \mu\text{C}$
d. $0.55 \mu\text{C}$