

McRoberts Secondary

Electricity Test 2025-12-01



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
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Exam ID(Physics 12)
25120100004

Please mark the boxes carefully: Not marked: or

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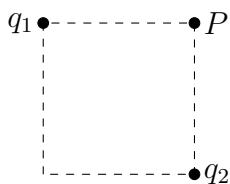
Only clearly marked and positionally accurate crosses will be processed!

Answers 1 - 15

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	a	b	c	d

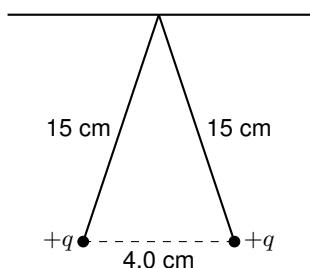
1. Which of the following is a vector? **Select all that apply.**
 - a. Electric charge.
 - b. Electric force.
 - c. Electric field.
 - d. Electric potential.
2. What is always true of an electrically neutral object?
 - a. It has more neutrons than protons or electrons.
 - b. It is made up of neutrons only.
 - c. It is repelled by charged objects.
 - d. It is attracted to charged objects.
3. Electric field lines
 - a. Circle clockwise around negative charges.
 - b. Circle clockwise around positive charges.
 - c. Radiate outward from negative charges.
 - d. Radiate outward from positive charges.
4. The electron-volt (eV) is a unit of
 - a. Voltage.
 - b. Energy.
 - c. Current.
 - d. Power.
5. What is the magnitude of the coulomb force a $+5.6 \mu\text{C}$ charge exerts on a $+4.4 \mu\text{C}$ charge 49 cm away?
 - a. 0.92 N
 - b. 1.7 N
 - c. 5.3 N
 - d. 0.53 N
6. Two point charges are separated by a distance of 19 cm. On each charge, there is a coulomb force of 1 N due to the other charge. What would the coulomb force be if the separation is changed to 10 cm?
 - a. $(10/19) \text{ N}$
 - b. $(10/19)^2 \text{ N}$
 - c. $(19/10) \text{ N}$
 - d. $(19/10)^2 \text{ N}$
7. Two point charges are separated by a distance of 3 cm. Their electric potential energy is 1 J, relative to infinity. What would their electric potential energy be if the separation is changed to 14 cm?
 - a. $(14/3)^2 \text{ J}$
 - b. $(14/3) \text{ J}$
 - c. $(3/14) \text{ J}$
 - d. $(3/14)^2 \text{ J}$

8. The electric potential at a distance of 3 m from a point charge is 1 V. What is the electric potential at a distance of 1 m from the point charge?
- $(1/3)^2$ V
 - $(3/1)^2$ V
 - $(1/3)$ V
 - $(3/1)$ V
9. Two charged objects repel each other with a force F . What is the force between them if one charge multiplied by 5, the other charge is multiplied by 4, and the distance between them is reduced to $1/6$ its original value?
- $120 F$
 - $(20/36) F$
 - $(20/6) F$
 - $720 F$
10. What is the force on a $+2.9\text{ mC}$ charge when placed in a uniform electric field of strength 219 N/C ?
- 0.64 N
 - 0.52 N
 - 0.44 N
 - 0.36 N
11. It takes 87 J of energy to move 7.8 C of charge from point A to point B. What is the potential difference between points A and B?
- 0.09 V
 - 680 V
 - 11 V
 - 420 V
12. Consider a uniform electric field of 51.0 N/C pointing toward the east. If the voltage measured relative to ground at a given point in the field is 326 V , what is the voltage at a point 2.00 m directly west of the point?
- -413 V
 - 530 V
 - 273 V
 - 428 V
13. What is the magnitude of the electric field 32 cm away from a $+9.7\text{ nC}$ point charge?
- 530 N/C
 - 390 N/C
 - 160 N/C
 - 850 N/C
14. Two point charges, $q_1 = 8.0\text{ }\mu\text{C}$ and $q_2 = 6.0\text{ }\mu\text{C}$, are fixed at opposing corners of a square of side length 6.0 m . What is the electric field strength at one of unoccupied corners of the square (point P in the figure)?



- a. 3500 N/C
- b. 3700 N/C
- c. 2500 N/C
- d. 3200 N/C

15. Two balls, each of mass 0.9 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 4.0 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. $0.45 \mu\text{C}$
- b. $0.19 \mu\text{C}$
- c. $0.61 \mu\text{C}$
- d. $0.34 \mu\text{C}$