CENGAGE | WEBASSIGN

tgillette@mail.fresnostate.edu
(sign out)

INSTRUCTOR
John Walkup
California State University
Fresno

Review Up To Ohm's Law (Homework)

Current Score

QUESTION	1	2	3	4	5	6	7	8	9	10	11	12
POINTS	0/3 ✗	4/4 ✓	2/2 ✓	0/3 ✗	–/2	4/4 ✓	4/4 ✓	–/4	1/1 ✓	–/4	2/2 ✓	2/2 ✓

TOTAL SCORE

19/35	54.3%

Due Date Past Due

SAT, FEB 29, 2020
11:59 PM PST

Request Extension

Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

The due date for this assignment has passed.

Your work can be viewed below, but no changes can be made.

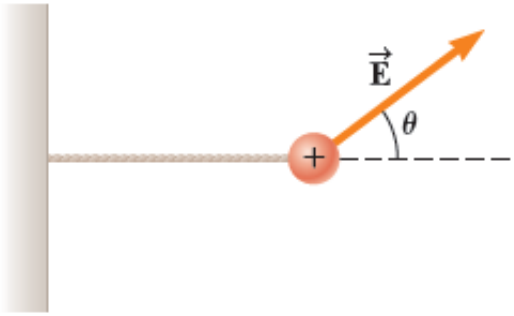
Important! Before you view the answer key, decide whether or not you plan to request an extension. Your Instructor may not grant you an extension if you have viewed the answer key. Automatic extensions are not granted if you have viewed the answer key.

Request Extension | View Key

1. 0/3 points | Previous Answers | SERCP11 15.3.P.022.

My Notes | Ask Your Teacher

A small sphere of charge q = +67 μC and mass m = 5.7 g is attached to a light string and placed in a uniform electric field $\vec{\mathbf{E}}$ that makes an angle θ = 30° with the horizontal. The opposite end of the string is attached to a wall and the sphere is in static equilibrium when the string is horizontal as in the figure shown below.



(a) Construct a free body diagram for the sphere. (Submit a file with a maximum size of 1 MB.)

This answer has not been graded yet.

(b) Find the magnitude of the electric field.

1350 ✗

Your response differs from the correct answer by more than 10%. Double check your calculations. N/C

(c) Find the tension in the string. (Enter the magnitude of the tension in the string.)

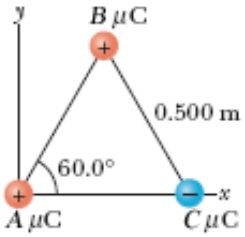
.0741 ✗

Your response differs from the correct answer by more than 10%. Double check your calculations. N

Need Help? Read It

2. 4/4 points Previous Answers **SERCP11 15.3.P.024.**

My Notes Ask Your Teacher



(a) Three point charges, A = 1.85 μC, B = 6.75 μC, and C = −4.05 μC, are located at the corners of an equilateral triangle as in the figure above. Find the magnitude and direction of the electric field at the position of the 1.85 μC charge.

magnitude 2.12e5 ✓ N/C

direction 83.4 ✓ ° below the +x-axis

(b) How would the electric field at that point be affected if the charge there were doubled?

- ○ The magnitude of the field would be halved.
- ◉ The field would be unchanged. ✓
- ○ The magnitude of the field would double.
- ○ The magnitude of the field would quadruple.

Would the magnitude of the electric force be affected?

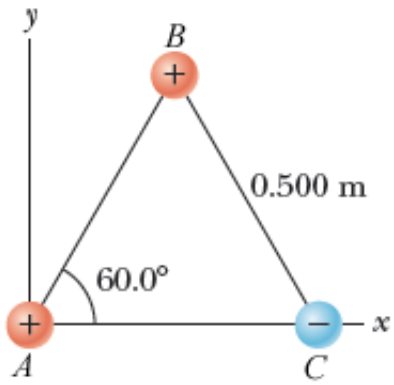
- ◉ Yes ✓
- ○ No

Need Help? Read It

3. 2/2 points Previous Answers **SERCP11 15.2.OP.013.**

My Notes Ask Your Teacher

The figure below shows three small, charged beads at the corners of an equilateral triangle. Bead *A* has a charge of 1.20 μC; *B* has a charge of 5.70 μC; and *C* has a charge of −5.02 μC. Each side of the triangle is 0.500 m long. What are the magnitude and direction of the net electric force on A? (Enter the magnitude in N and the direction in degrees below the +*x*-axis.)



magnitude 2.33e-1 ✓ N

direction 66.2 ✓ ° below the +*x*-axis

Need Help? Read It

4. 0/3 points | Previous Answers | SERCP11 16.3.P.025.

My Notes | Ask Your Teacher

Calculate the speed (in m/s) of an electron and a proton with a kinetic energy of 1.75 electron volt (eV). (The electron and proton masses are $m_e = 9.11 \times 10^{-31}$ kg and $m_p = 1.67 \times 10^{-27}$ kg. Boltzmann's constant is $k_B = 1.38 \times 10^{-23}$ J/K.)

HINT

(a) an electron

7.84e-26 ✗ m/s

(b) a proton

(No Response) m/s

(c) Calculate the average translational kinetic energy in eV of a 3.25×10^2 K ideal gas particle. (Recall from Topic 10 that $\frac{1}{2}m\overline{v^2} = \frac{3}{2}k_B T$.)

(No Response) eV

Need Help? Read It Watch It

5. –/2 points SERCP11 16.3.P.028. My Notes Ask Your Teacher

In the classical model of a hydrogen atom, an electron orbits a proton with a kinetic energy of +13.6 eV and an electric potential energy of −27.2 eV.

HINT

(a) Use the kinetic energy to calculate the classical orbital speed (in m/s).

(No Response) m/s

(b) Use the electric potential energy to calculate the classical orbital radius (in m).

(No Response) m

Need Help? Read It Watch It

6. 4/4 points Previous Answers SERCP11 16.CQ.001.

My Notes Ask Your Teacher

A proton is released from rest in a uniform electric field. Determine whether the following quantities increase, decrease, or remain unchanged as the proton moves.

HINT

(a) the electric potential at the proton's location

- increases
- decreases ✓
- remains unchanged

(b) the proton's associated electric potential energy

- ○ increases
- ◉ decreases
- ○ remains unchanged

✔

Don't confuse the two terms *electric potential* and *electric potential energy*. They represent different physical quantities, related by $\Delta V = \frac{\Delta PE}{q}$: electric potential is a measure of the change in electric potential energy *per unit charge*. As ΔV increases, potential energy can either increase (for $q > 0$) or decrease (for $q < 0$).

(c) its kinetic energy

- ◉ increases
- ○ decreases
- ○ remains unchanged

✔

(d) its total energy

- ○ increases
- ○ decreases
- ◉ remains unchanged

✔

Need Help? Read It

---

7. 4/4 points Previous Answers **SERCP11 16.CQ.002.**

My Notes Ask Your Teacher

An electron is released from rest in a uniform electric field. Determine whether the following quantities

increase, decrease, or remain unchanged as the electron moves.

HINT

(a) the electric potential at the electron's location

- (•) increases
- ( ) decreases
- ( ) remains unchanged

(b) the electron's associated electric potential energy

- ( ) increases
- (•) decreases
- ( ) remains unchanged

Don't confuse the two terms *electric potential* and *electric potential energy*. They represent different physical quantities, related by $\Delta V = \frac{\Delta PE}{q}$: electric potential is a measure of the change in electric potential energy *per unit charge*. As ΔV increases, potential energy can either increase (for $q > 0$) or decrease (for $q < 0$).

(c) its kinetic energy

- (•) increases
- ( ) decreases
- ( ) remains unchanged

(d) its total energy

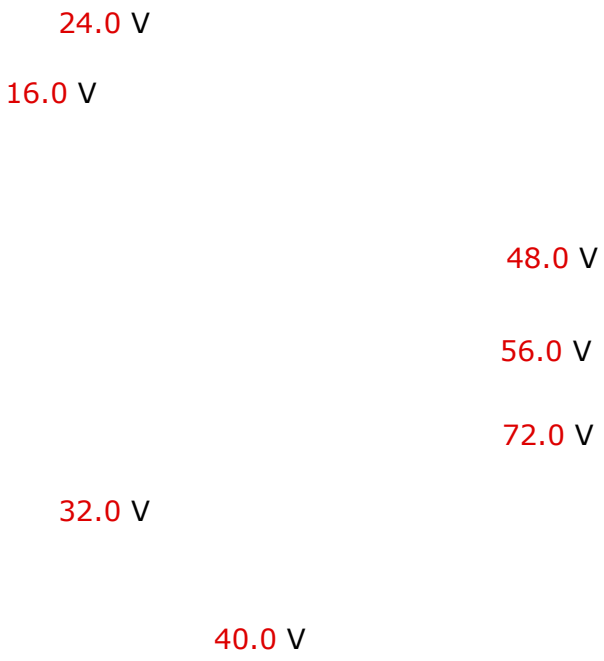
- ○ increases
- ○ decreases
- ◉ remains unchanged ✓

Need Help? Read It

---

8. –/4 points SERCP11 16.CQ.003. My Notes Ask Your Teacher

The figure below shows equipotential contours in the region of space surrounding two charged conductors.



Find the work W_{AB} in electron volts done by the electric force on an electron that moves from point A to point B. Similarly, find W_{AC}, W_{AD}, and W_{AE}. (Assume the electron starts and stops at rest. Enter your answers in eV.)

HINT

(a) W_{AB}

(No Response) eV

(b) W_{AC}

(No Response) eV

(c) W_{AD}

(No Response) eV

(d) W_{AE}

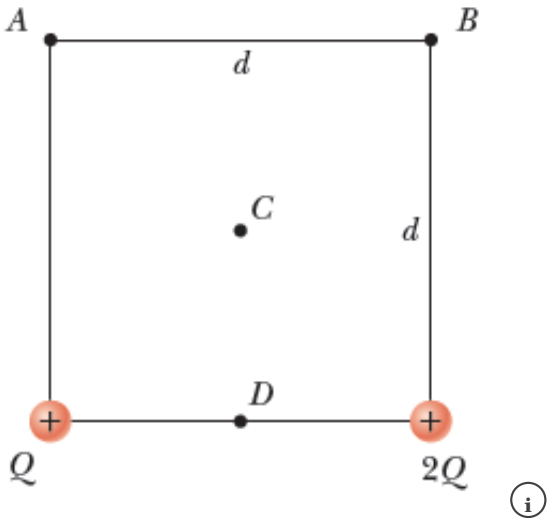
(No Response) eV

Need Help? Read It

9. 1/1 points Previous Answers **SERCP11 16.CQ.013.**

My Notes Ask Your Teacher

Rank the electric potentials at the four points shown in the figure below from largest to smallest. (Use only ">" or "=" symbols. Do not include any parentheses around the letters or symbols.)



D>C>B>A

Need Help? Read It

10. –/4 points SERCP11 16.1.P.001. My Notes Ask Your Teacher

A uniform electric field of magnitude 371 N/C pointing in the positive *x*-direction acts on an electron, which is initially at rest. The electron has moved 3.50 cm.

(a) What is the work done by the field on the electron?
(No Response) J

(b) What is the change in potential energy associated with the electron?
(No Response) J

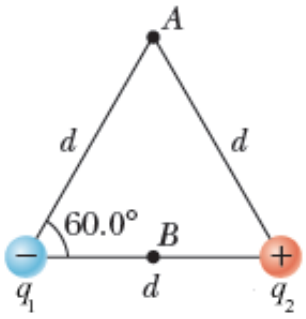
(c) What is the velocity of the electron?
magnitude *(No Response)* m/s
direction *(No Response)*

Need Help? Read It

11. 2/2 points Previous Answers **SERCP11 16.2.OP.012.**

My Notes Ask Your Teacher

The figure below shows two charged particles separated by a distance of d = 3.00 cm. The charges are q_1 = −20.0 nC and q_2 = 25.5 nC. Point B is at the midpoint between the two charges, and point A is at the peak of an equilateral triangle, with each side of length d, as shown. (Assume the zero of electric potential is at infinity.)



(a) What is the electric potential (in kV) at point A?

1.65 ✓ kV

(b) What is the electric potential (in kV) at point B?

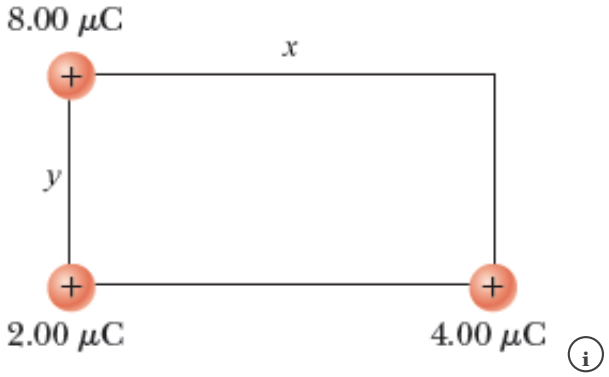
3.30 ✓ kV

Need Help? Read It

12. 2/2 points Previous Answers **SERCP11 16.2.P.013.**

My Notes Ask Your Teacher

Consider the following figure.



(a) Find the electric potential, taking zero at infinity, at the upper right corner (the corner without a charge) of the rectangle in the figure. (Let x = 5.40 cm and y = 2.90 cm.)

2.87e6 V

(b) Repeat if the 2.00-μC charge is replaced with a charge of −2.00 μC.

2.28e6 V

Need Help? Read It

Home My Assignments Request Extension