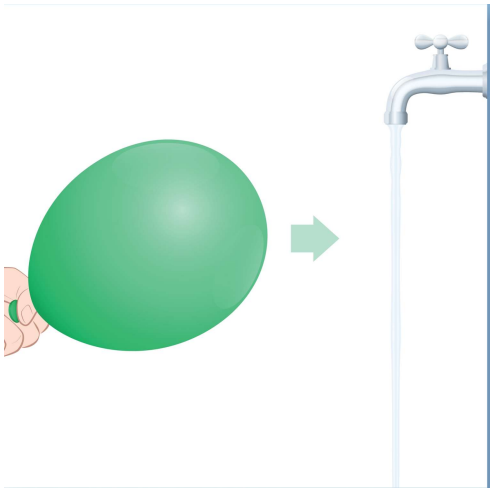
View hints View feedback Play All

QUESTION 1

Select the correct answer.

What happens to a stream of water when a charged balloon is placed near it?



- [x] The stream of water deflects.
- [ ] The water flow becomes weaker.
- [ ] The stream of water flows without deflection.
- [ ] The water stops flowing.

QUESTION 2

Drag and drop the correct equation in the blank below.

To find the electric field strength due to a point charge at a distance r from this charge use

$E = k\frac{q}{r^2}$ ✓.

$E = \frac{q}{r^2}$ $E = k\frac{q}{r}$ $E = k\frac{q_0 q}{r^2}$

QUESTION 3

Select the correct answer from the drop-down menu.

The electric field lines from a positive charge flow radially outward ✓, while the field lines flow radially inward ✓ for a negative charge.

QUESTION 4

Select the correct answer from the drop-down menus.

To test the electric field vector, use a test charge ✓ . The strength of the electric field does not depend on ✓ the test charge.

QUESTION 5

Select the correct answer.

Which equation gives the magnitude of the resultant electric field due to more than two charged particles?

- $E = \sum_{i=1}^{n} \frac{q_i}{|r_i|^2}$
- $E = k \sum_{n}^{i=1} \frac{q_i}{|r_i|^2}$
- $E = k \sum_{i=1}^{n} \frac{q_i}{|r_i|}$
- $E = k \sum_{i=1}^{n} \frac{q_i}{|r_i|^2}$ ✓

QUESTION 6

Select the correct choice.

Which of the following statements about charged objects are true?

- As a positively charged object gets closer to point P, the strength of the field at this point gets smaller.
- As a positively charged object gets closer to point P, the strength of the field at this point stays the same.
- As a positively charged object gets closer to point P, the strength of the field at this point disappears.
- ✓ As a positively charged object gets closer to point P, the strength of the field at this point gets larger.

QUESTION 7

Select the correct answer.

Suppose that a proton is moving in a uniform electric field of an unknown magnitude at a speed of

2.25×10^6 m / s

. The electric field lines are parallel to the proton's velocity. After a certain time, the proton comes to rest after covering a distance of 1.41 cm. What is the magnitude of the electric field?

The mass of a proton is

$m_p = 1.67 \times 10^{27}$ kg

.

- ○ 2.20×10^6 N / C
- ○ 5.10×10^6 N / C
- ○ 3.79×10^6 N / C
- ✓ 1.87×10^6 N / C

QUESTION 8

Select the correct answers.

Two point charges,

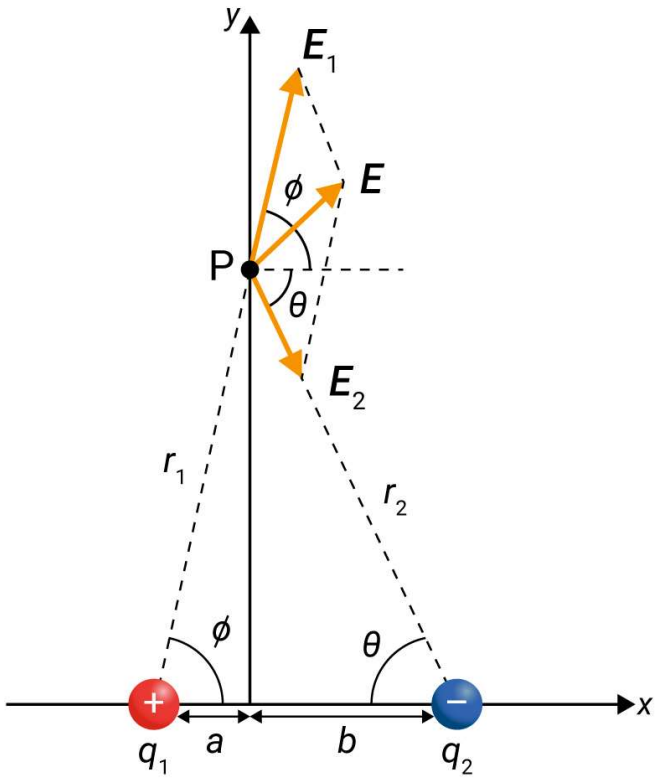
q_1

, and

q_2

, are located respectively at distances *a* and *b* from the origin as shown on the adjacent figure. Sultan drew the electric field vectors at point P, but he is not able to find the components of each vector. Which expressions can Sultan use to find the components of the resultant electric field?

Point P has the coordinates (0, *y*).



- [ ] $E_x = k\frac{2|q_1|}{a^2+y^2}\cos\phi + k\frac{2|q_2|}{2b^2+y^2}\cos\theta$

- [x] $E_x = k\frac{|q_1|}{a^2+y^2}\cos\phi + k\frac{|q_2|}{b^2+y^2}\cos\theta$

- [ ] $E_x = k\frac{|q_1|}{a^2+y^2}\cos\phi - k\frac{|q_2|}{b^2+y^2}\cos\theta$

- [ ] $E_y = k\frac{|q_1|}{2a^2+y^2}\sin\phi - 2k\frac{|q_2|}{b^2+y^2}\sin\theta$

- [ ] $E_y = k\frac{2|q_1|}{\quad}\sin\phi - k\frac{2|q_2|}{\quad}\sin\theta$

$E_y = \dots \frac{}{a^2+y^2} \dots \frac{}{b^2+y^2} \dots$

$E_y = k\frac{|q_1|}{a^2+y^2}\sin\phi - k\frac{|q_2|}{b^2+y^2}\sin\theta$ ✓

QUESTION 9

Select the correct answer.

On a stormy day, a water droplet has a mass of

3.25×10^{-12} kg

is suspended in the air above ground due to an atmospheric electric field. The water droplet has a charge of

4.00×10^{-16} C

. The atmospheric electric field points vertically downward and has an unknown magnitude. Find the magnitude of this electric field.

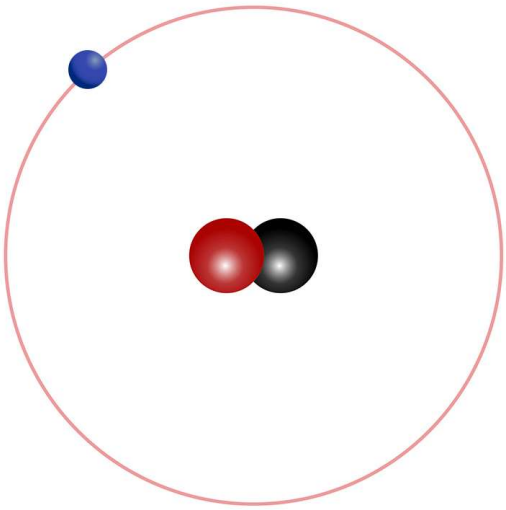
- ○ 6.11×10^{4} N/C
- ○ 4.15×10^{4} N/C
- ○ 2.93×10^{4} N/C
- ✓ 7.97×10^{4} N/C

QUESTION 10

Select the correct answer from the drop-down menu.

The distance between the proton and the electron in a deuterium atom is 51.0 pm. The strength of the electric field due to the proton at this position of the electron is

5.54×10^{11} N / C ✓ .



QUESTION 11

Select the correct answer.

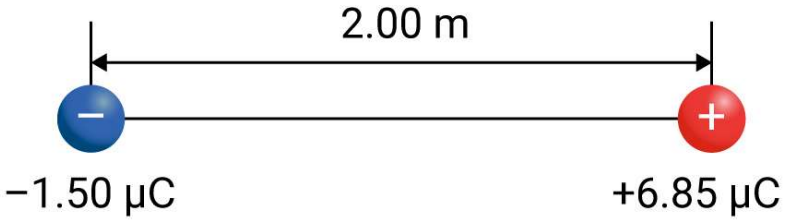
Two point charges are 2.00 m apart as shown on the right. The charge of the first object is

$-1.50\ \mu C$

, while the second object has a charge of

$+6.85\ \mu C$

. At which point will the electric field vector be zero?



0.560 m
to the left of the positive object

1.76 m
to the right of the positive object

1.76 m
to the left of the negative object ✓

0.560 m
to the right of the negative object

QUESTION 12

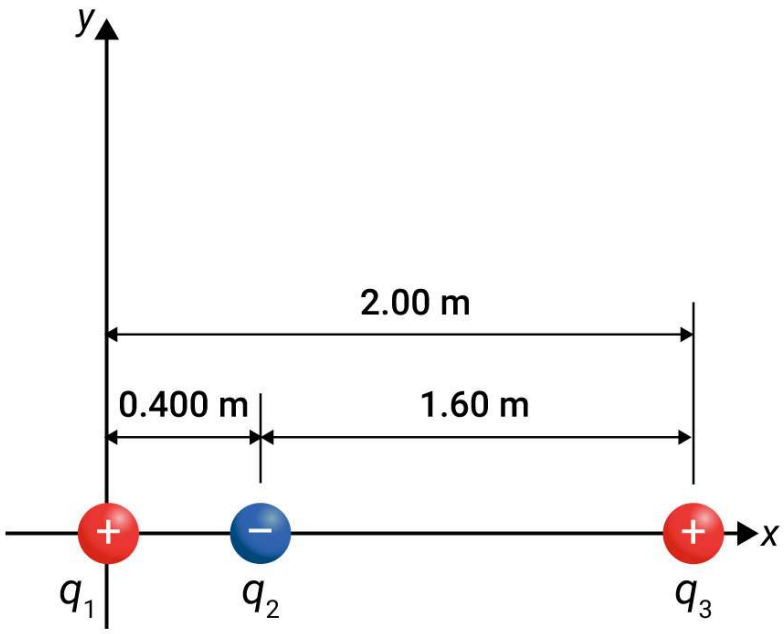
Select the correct answer.

Three point charges lie on the *x*-axis as shown. What is the magnitude and direction of the electric field created at the position $x = 4.00$ m by these charges?

$q_1 = +4.00$ C

$q_2 = -3.00$ C

$q_3 = +2.00$ C

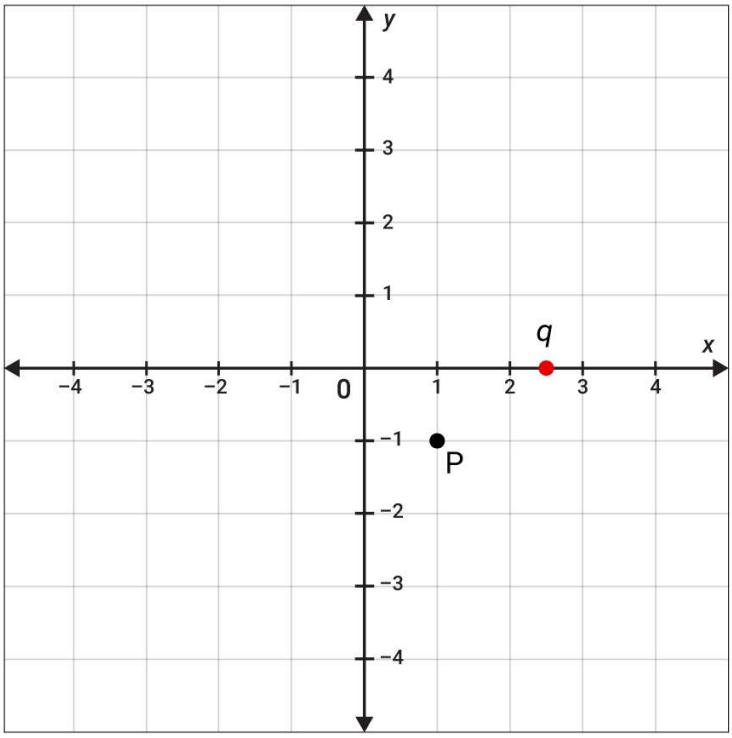


- 1.23×10^9 N/C to the right
- 4.67×10^9 N/C to the right ✓
- 1.23×10^9 N/C to the left
- 4.67×10^9 N/C to the left

QUESTION 13

Select the correct answers from the drop-down menus.

A small point charge has a magnitude of -2.15 nC is placed at (2.50, 0) m. At point P, which is located at (1.00, -1.00) m, the direction of the electric field is at an angle of [+33.7° ✓] measured from the positive *x*-axis. Also, the *x*-component of this electric field is [4.96 N/C ✓].



QUESTION 14

Select the correct answer from the drop-down menu.

The electric field strength at a given point from a source charge depends on the

distance ✓ and charge of the source charge ✓.

QUESTION 15

Select the correct answer.

Charges are distributed uniformly across a ring that has a radius *r*. What is the magnitude of the electric field at the center of the ring?



- $k\frac{q^2}{r^2}$
- zero ✓
- $k\frac{q}{r^2}$
- $k\frac{q^2}{r}$