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QUESTION 1



Select the best choice from the drop-down menu.

A positive test charge of magnitude 2.50

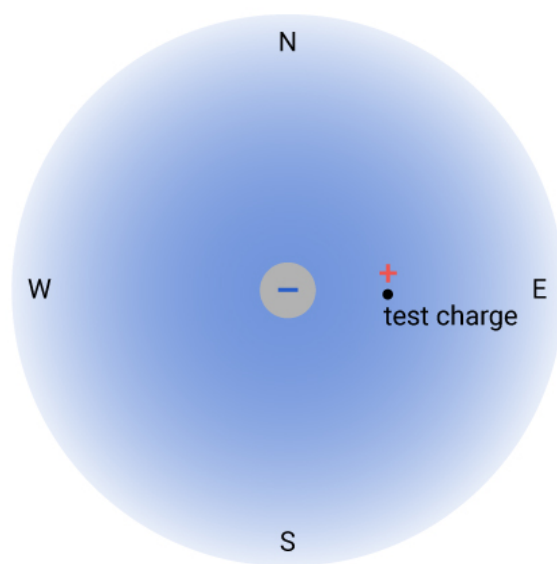
×

10^{-6} C is placed near a negative source charge as shown in the image. The test charge experiences an electric field strength of 1.70

×

10^6 N/C. Thus, the force acting on the test charge

is **4.25 N west** ✓ ▼.



QUESTION 2



Use the Word Bank to fill in the missing terms.

Word Bank		
work	force	positive
negative	zero	electric charge

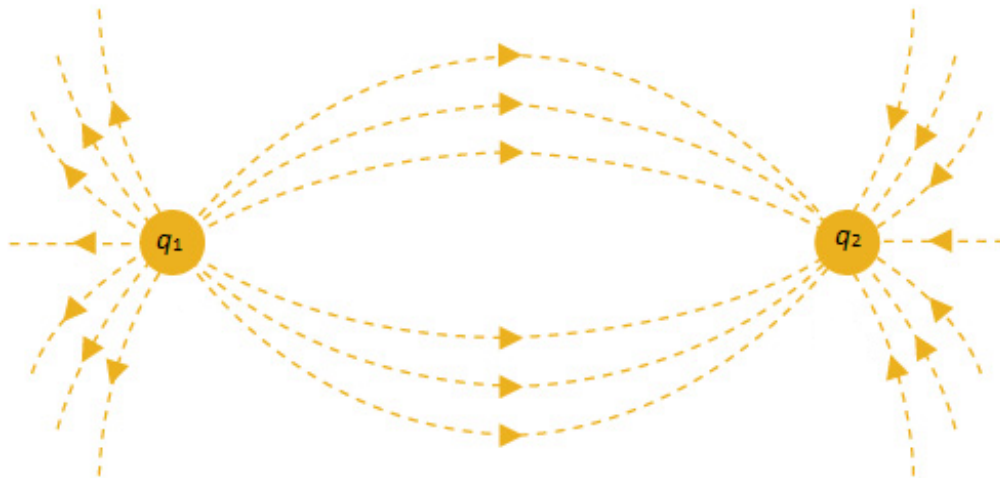
The electric potential difference is defined as the **work** ✓ needed to move a positive test charge from one point into another divided by the magnitude of the

electric charge



of this test charge.

QUESTION 3



Select the best choice.

Two charged particles are placed near each other as shown in the image. What is the correct statement about the sign of the electric charge of each of the charged particles?

☒ q_1 is positive and q_2 is negative



q_1 is negative and q_2 is positive

☐both q_1 and q_2 are negative☐both q_1 and q_2 are positive

QUESTION 4



Select the best choice from the drop-down menu.

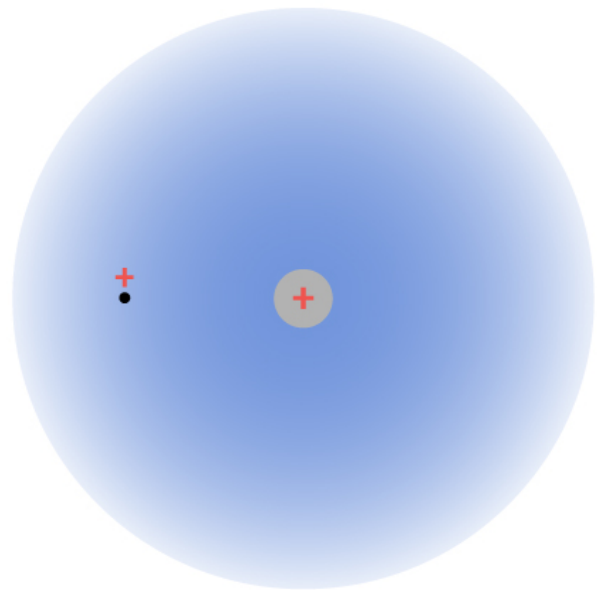
When an electric field is **curved** ✓ ▼, at any point on that path field line the force vector on a charged particle is tangential to the field line.

QUESTION 5



Select the best choice.

A positive test charge is placed in an electric field. Describe the effect of the electric field created by the test charge.



- ☐ Its effect is similar to the electric field created by the source charge.
- ☐ Its effect is half the effect of the electric field created by the source charge.
- ☒ It has no considerable effect. ✓
- ☐ Its effect is greater than that of the electric field created by the source charge.

QUESTION 6



Select the best choice.

The electric field can be calculated at any point from a source charge using the following formula:

- ☐ $E = K q r^2$



$$E = K \frac{q}{r}$$



$$E = G \frac{q}{r^2}$$



$$E = K \frac{q}{r^2}$$

QUESTION 7



Use the Word Bank to fill in the missing term.

Word bank		
negative	positive	
neutral	zero	

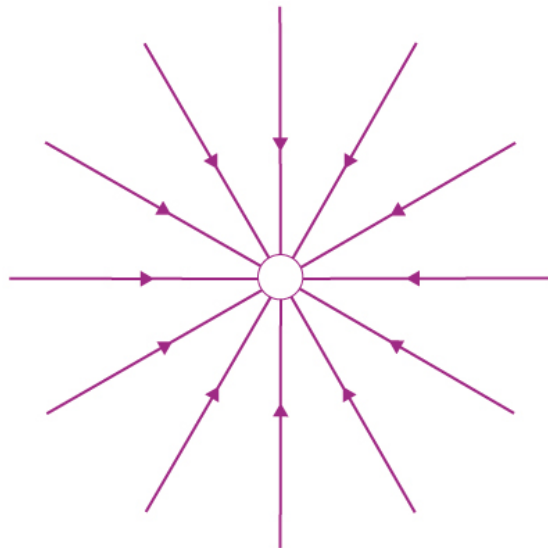
The source charge is

negative



because the electric field lines are

directing towards it.



QUESTION 8



Select the best choice.

Which of the following equations can be used to calculate the electric potential difference?



$$V = \frac{W_{\text{on } q'}}{q}$$

☒

$$\Delta V = \frac{W_{\text{on } q'}}{q'}$$



$$\Delta V = \frac{W_{\text{on } q'}}{q}$$



$$\Delta V = \frac{W_{\text{on } q'}}{EPE}$$

QUESTION 9



Select the best choice.

Which of the following quantities is a vector quantity?



charge of a source charge



electric field



charge of test charge



electric potential difference

QUESTION 10



Select the best choice from the drop-down menu.

Khalifa is lifting an object above the surface of the ground, so the

gravitational potential energy  

of the object increases.

QUESTION 11



Select the best choice from the drop-down menu.

The voltmeter shown in the image measures the

potential difference ✓ ▼

between two points.



QUESTION 12



Select the best choice.

Two test charges A and B are placed at the same distance from a negative source charge. If the charge of B is double the charge of A, what is true about the electric field of B and A?

- ☐ The electric field of B is double that of A.
- ☐ The electric field of B is quadruple that of A.
- ☒ They both have the same electric field. ✓
- ☐ The electric field of A is double that of B.

QUESTION 13



Select the best choice.

Two positive test charges A and B are located at the same distance from a negative source charge. The electric charge of B is double that charge of A. What is true about electric potential energy?

☒ The test charge B has double the electric potential energy of A.



☐ The test charge B has half the electric potential energy of A.

☐ The test charge A has double the electric potential energy of B.

☐ The test charges A and B have the same electric potential energy.

QUESTION 14



Select the best choice.

Which of the following equations is used to calculate the work when an applied force is exerted on an object?

☐ $W = q' \times d$

☒ $W = F \times d$



☐ $W = m \times d$

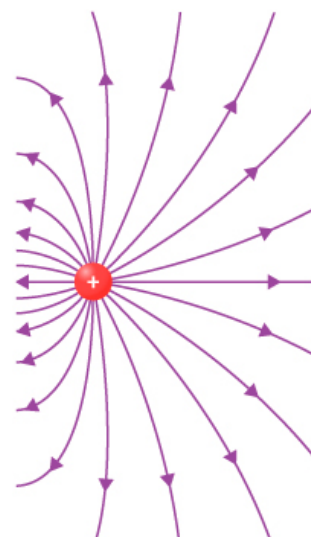
☐ $W = F \times g$

QUESTION 15



Select the best choice.

The field lines are directing toward another charge placed to the left. What is the charge of the second charged object if the field lines are directed toward it?

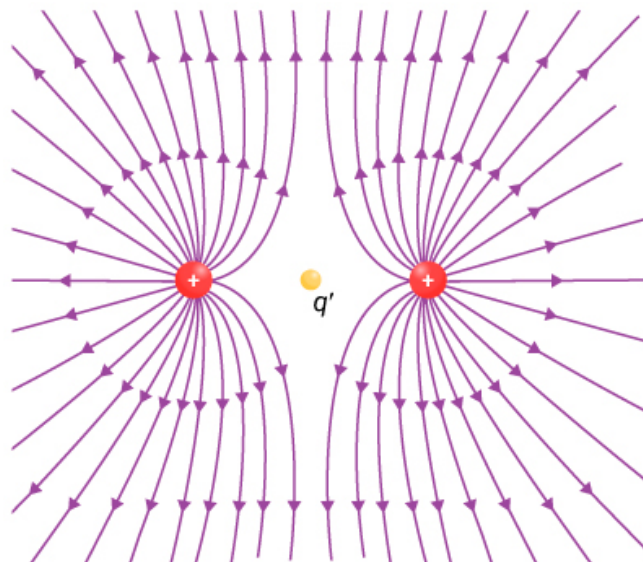
☐ neutral☒ negative☐ positive☐ can't be determined

QUESTION 16



Select the best choice.

What is true about the motion of the test charge q' when it is placed between two identical positively charged objects?



☒ The test charge will not move.



☐ The test charge will move vertically upward.

☐ The test charge will move to the left.

☐ The test charge will move to the right.

QUESTION 17



Select the best choice.

What is true about electric field strength?

☐

The electric field is zero at a position close to the source charge.

☐

The electric field is the same at any position from the source charge.

☒

The closer to the source charge, the stronger the electric field.

☐

The closer to the source charge, the weaker the electric field.

QUESTION 18



Select the best choice from the drop-down menu.

The electric field strength is **weaker** ✓ ▼, when the field lines are spaced further apart from each other.

QUESTION 19



Use the Word Bank to fill in the missing terms.

Word Bank		
electric potential difference	electric potential energy	gravitational potential energy

force	charge	electric field
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The **electric potential difference** ✓ is equal to the **electric potential energy** ✓ of an electric charge divided by the magnitude of the charge.

QUESTION 20



Select the best choice from the drop-down menu.

In order to calculate the **gravitational potential energy** ✓ ▼ of an object, you must specify the height of this object from the reference point.

QUESTION 21



Select the best choice from the drop-down menu.

Equipotential is a line where the strength of the electric potential of its points is

equal ✓ ▼ .

QUESTION 22



Use the Word Bank to fill in the missing term.

Word Bank		
radially	circumferentially	
linearly	tangentially	

The electric field strength varies **radially** ✓ around the charge.

QUESTION 23



Use the Word Bank to fill in the missing term.

Word Bank		
voltmeter	ammeter	
speedometer	ohmmeter	

You can use a **voltmeter** ✓ to measure the electric potential difference in your house.



QUESTION 24



Use the Word Bank to fill in the missing term.

Word Bank		
joule per coulomb	joule	
coulomb	coulomb per joule	

The electric potential difference is measured in volts. One volt is equivalent to one

joule per coulomb ✓

QUESTION 25



Use the Word Bank to fill in the missing term.

Word Bank		
newton	newton per coulomb	
coulomb	coulomb per newton	

The SI unit of the electric field is newton per coulomb ✓

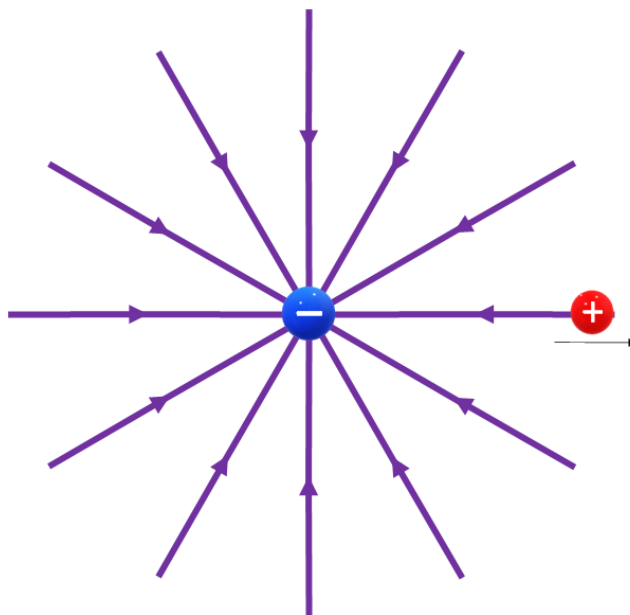
QUESTION 26



Use the Word Bank to fill in the missing term.

Word bank		
electric potential energy	mechanical energy	
magnetic energy	gravitational potential energy	

When a force is applied on a positive charge causing it to move against an electric field created by a negative source charge, its **electric potential energy** is transformed into kinetic energy.



QUESTION 27



Use the Word Bank to fill in the missing term.

Word Bank		
zero	positive	
negative	infinity	

Equipotential is the surface where the difference in electric potential between any two points is

zero



QUESTION 28



What is the electric field strength at a distance of 15 cm from a source charge of magnitude 12

μC

?

Remember $K =$

$$9.0 \times 10^9 \text{ N}\cdot\text{m}^2 / \text{C}^2$$

.



$$4.5 \times 10^6 \text{ N/C}$$



$$3.2 \times 10^6 \text{ N/C}$$



$$4.8 \times 10^6 \text{ N/C}$$



$$2.8 \times 10^6 \text{ N/C}$$

QUESTION 29

*Select the best choice from the drop-down menu.*

The electric field strength is

$$17.28 \times 10^6 \text{ N/C}$$



at a distance of 25 cm

from a source charge, where the magnitude of the source charge is 120

 μC

.

Remember, $K =$

$$9.0 \times 10^9 \text{ N}\cdot\text{m}^2 / \text{C}^2$$

QUESTION 30



Select the correct choice from the drop-down menu.

The method used in Millikan's experiment relied on the electrostatic force ✓ ▼ on the oil drop is equal to the gravitational force.

