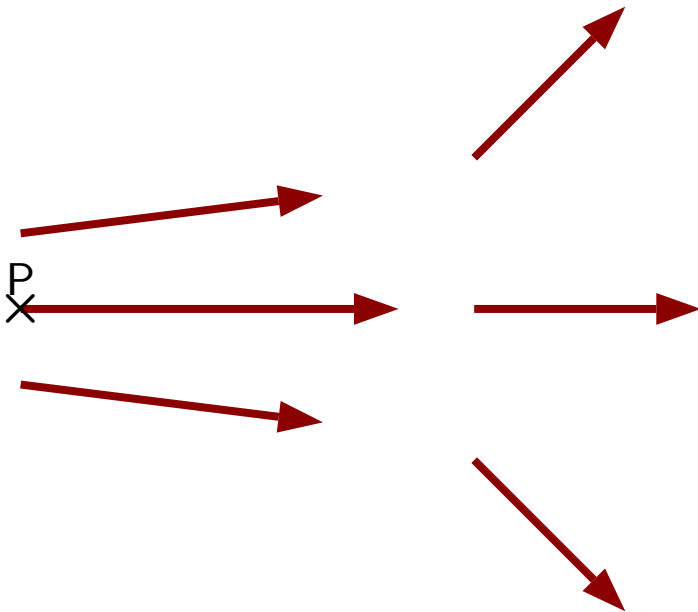


Question 1

The electric field produced by a hidden charge collection of charged particles (sources) is illustrated below. Initially a probe charge with charge 5 C is placed at point P. This is removed and replaced by a new probe charge with charge 10 C , also placed at P.



Which is true at point regarding the electric field produced by the sources at P and the forces on the probe charges?

1. Field is same (for both probes), force is same (for both probes).
2. Field is same, force differs.
3. Field differs, force is same.
4. Field differs, force differs.

Warm Up Question 1

Source charges are placed on two differently sized balls, which are separated and held fixed. Zog places a positively charged probe at the point midway between the balls and then removes it. Geraldine places a negatively charged probe at the point midway between the balls and then removes it. Is there any difference between the electric field (produced by the fixed balls) when Zog's probe charge is present compared to when Geraldine's is present? Explain your answer.

1. Yes. Direction is away from positive, toward negative.
2. Yes. The forces on the probes will be different so the fields are different.
3. Yes. It all depends on the source charges.
4. No. Field does not depend on source charges.

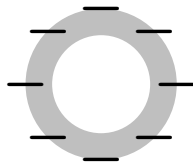
Warm Up Question 2

Consider two charged objects, A and B. In one experiment a probe charge is placed in the vicinity of A at a location where the electric field has magnitude 6 N/C (object B is not present in this experiment). In another experiment a different probe charge is placed in the vicinity of B at a location where the electric field has magnitude 3 N/C (object A is not present in this experiment). Is it possible that the force exerted by A on the one probe is twice that exerted by B on the other probe? Is it possible that the force exerted by A on the one probe is the same as that exerted by B on the other probe? Explain your answers.

1. Yes could be twice, yes could be same.
2. Yes could be twice, no couldn't be same.
3. No couldn't be twice, yes could be same.
4. No couldn't be twice, no couldn't be same.

Question 2

A positively charged plate is placed in the vicinity of a negatively charged ring. The plate and ring are held fixed as illustrated and the charges are evenly distributed on each.



P ×



Consider the statement regarding the electric field **produced by the ring and the plate**:

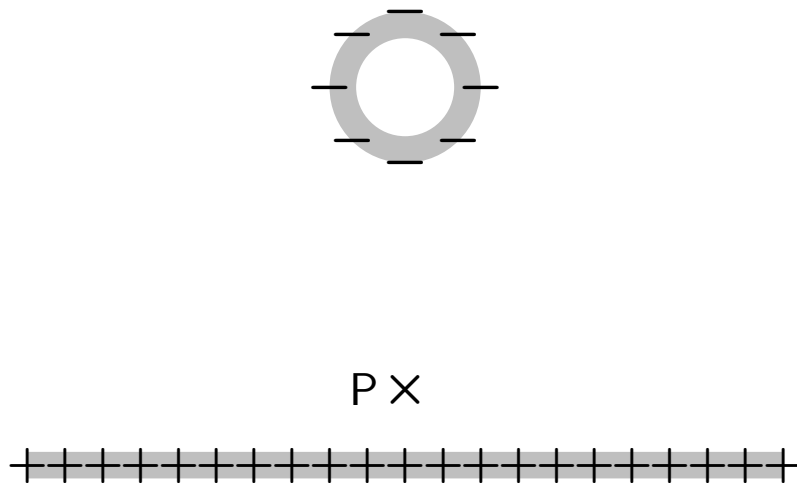
“The electric field at point P describes, or is used to describe, whether the plate attracts or repels the ring.”

Is this statement true or false?

1. True
2. False
3. Depends on the situation.

Question 3

A positively charged plate is placed in the vicinity of a negatively charged ring. The plate and ring are held fixed as illustrated and the charges are evenly distributed on each.



Which of the following best represents the direction of the electric field **produced by the ring and the plate** at P?

1. \uparrow for positive probe charge \downarrow for negative probe charge.
2. \downarrow for positive probe charge \uparrow for negative probe charge.
3. \uparrow for any probe charge.
4. \downarrow for any probe charge.
5. Zero field.