

Question 1

Two spheres are held fixed and charges are fixed to the spheres (the charges cannot move). Various probes are placed at the point labeled P and they do not modify the charges in the spheres.

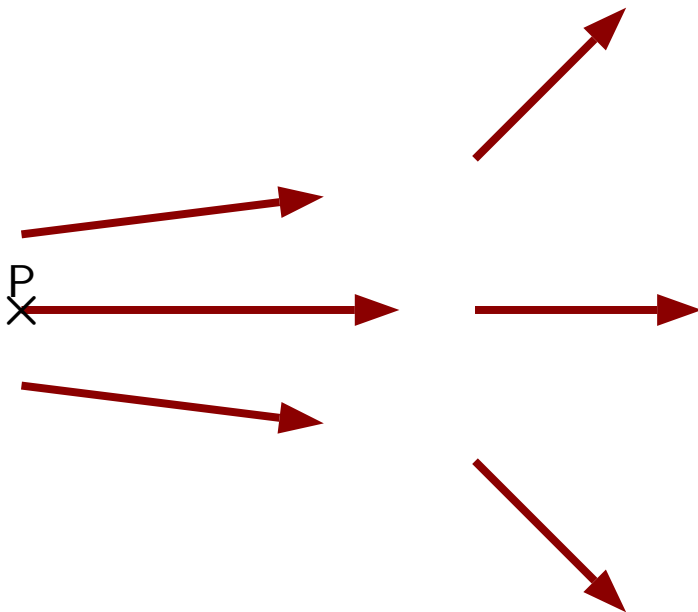


Which of the following is true of the electric field *produced by the spheres*?

1. It's the same when a $+6\text{ C}$ probe is at P compared to a $+2\text{ C}$ probe is at P.
2. It's larger when a $+6\text{ C}$ probe is at P compared to a $+2\text{ C}$ probe is at P.
3. It's smaller when a $+6\text{ C}$ probe is at P compared to a $+2\text{ C}$ probe is at P.

Question 2

The electric field produced by a hidden charge collection of charged particles (sources) is illustrated below.

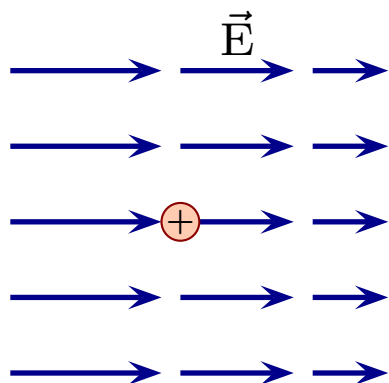


A probe is placed at point P. Which of the following is true of the force exerted by the electric field on the charged particle?

1. The force points right *regardless* of the probe.
2. The force points left *regardless* of the probe.
3. The force could point right or left, depending on the probe.

Question 3

Source charges produce the illustrated electric field. A positive probe charge is held at rest at the indicated location and then released.



What happens after the charge is released?

1. It remains stationary.
2. It moves left with increasing speed.
3. It moves left with decreasing speed.
4. It moves right with increasing speed.
5. It moves right with decreasing speed.

Question 4

Two point charges with equal magnitude but opposite sign are located as illustrated.



A third charge, Z, is placed at point P.

Which of the following best represents the net electric field produced by A and B at the location of Z?

1. $\rightarrow$ if Z is positive; $\leftarrow$ if Z is negative.
2. $\leftarrow$ if Z is positive; $\rightarrow$ if Z is negative.
3. $\rightarrow$ if Z is positive; $\rightarrow$ if Z is negative.
4. $\leftarrow$ if Z is positive; $\leftarrow$ if Z is negative.