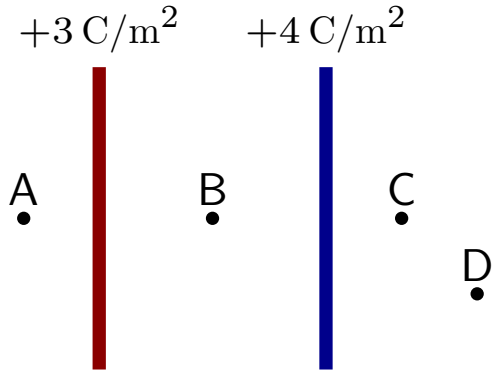
Warm Up Question 1

An infinite plane (flat surface) contains charge with the same charge per area everywhere. As one moves toward the plane does the magnitude of the electric field stay the same, increase or decrease? Explain your answer.

1. The same. The sources have not changed.
2. The same. The electric field calculations predict this.
3. Increase. Distance to the sources decreases.

Question 1

Two uniformly charged infinite plates are as illustrated. Charge densities are given for each plate.

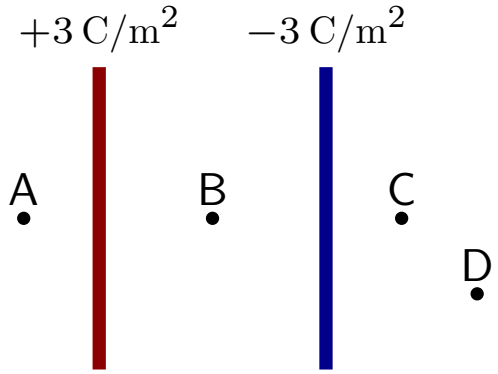


Which of the following best represents the rank of the *magnitudes* of the electric fields at the illustrated locations?

1. $E_\mathsf{A} = E_\mathsf{C} = E_\mathsf{D} > E_\mathsf{B}$
2. $E_\mathsf{A} = E_\mathsf{C} > E_\mathsf{D} > E_\mathsf{B}$
3. $E_\mathsf{B} > E_\mathsf{A} = E_\mathsf{C} > E_\mathsf{D}$
4. $E_\mathsf{B} = E_\mathsf{A} = E_\mathsf{C} = E_\mathsf{D}$

Question 2

Two uniformly charged infinite plates are as illustrated. Charge densities are given for each plate.

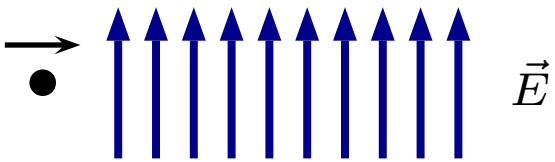


Which of the following best represents the rank of the *magnitudes* of the electric fields at the illustrated locations?

1. $E_\mathsf{A} = E_\mathsf{C} = E_\mathsf{D} < E_\mathsf{B}$
2. $E_\mathsf{A} = E_\mathsf{C} = E_\mathsf{D} > E_\mathsf{B}$
3. $E_\mathsf{A} = E_\mathsf{C} = E_\mathsf{D} = E_\mathsf{B}$
4. $E_\mathsf{B} > E_\mathsf{A} = E_\mathsf{C} > E_\mathsf{D}$
5. $E_\mathsf{B} > E_\mathsf{A} = E_\mathsf{C} > E_\mathsf{D}$

Question 3

A proton enters a region of constant electric field as illustrated.



Which of the following best represents the trajectory of the proton while it is in the field?