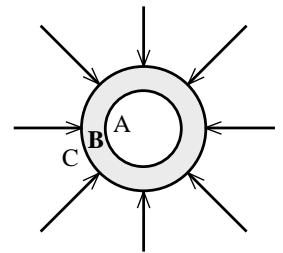


Electric Fields -- Conceptual Questions

- 1.) What does an electric field actually tell you? That is:
 - a.) Is it a vector? If so, what does its direction signify?
 - b.) What does its magnitude tell you?
 - c.) How might electric fields be used in everyday life?
- 2.) An electric field is oriented toward the right.
 - a.) What will an electron do if put in the field?
 - b.) What will a proton do if put in the field at the same point as mentioned in *Part a*?

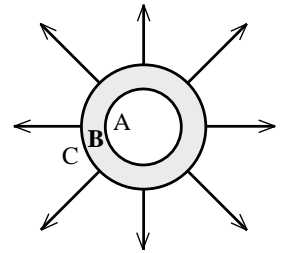
3.) To the right is a cut-away cross-section of a thick-skinned ball. Given the electric field lines as shown:

- a.) Tell me everything you know about *area A*. Note that you may not know *why* your observations make sense, but at least make them.
- b.) Tell me everything you know about *area B*.
- c.) Tell me everything you know about *area C*.



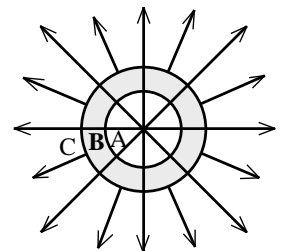
4.) To the right is a cut-away cross-section of a thick-skinned ball. Given the electric field lines as shown:

- a.) Tell me everything you know about *area A*. Note that you may not know *why* your observations make sense, but at least make them.
- b.) Tell me everything you know about *area B*.
- c.) Tell me everything you know about *area C*.

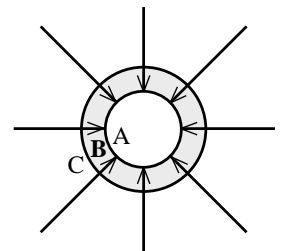


5.) To the right is a cut-away cross-section of a thick-skinned ball. Given the electric field lines as shown:

- a.) Tell me everything you know about *area A*. Note that you may not know *why* your observations make sense, but at least make them.
- b.) Tell me everything you know about *area B*.
- c.) Tell me everything you know about *area C*.

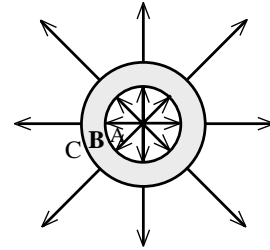


6.) To the right is a cut-away cross-section of a thick-skinned ball. Given the electric field lines as shown:



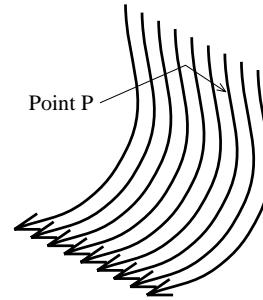
- a.) Tell me everything you know about *area A*. Note that you may not know *why* your observations make sense, but at least make them.
- b.) Tell me everything you know about *area B*.
- c.) Tell me everything you know about *area C*.

7.) To the right is a cut-away cross-section of a thick-skinned ball. Given the electric field lines as shown:



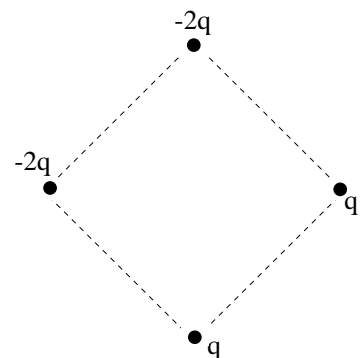
- a.) Tell me everything you know about *area A*. Note that you may not know *why* your observations make sense, but at least make them.
- b.) Tell me everything you know about *area B*.
- c.) Tell me everything you know about *area C*.

8.) An electric field is shown to the right.



- a.) In what direction will a positive charge accelerate if placed in the field at *Point P*?
- b.) Assume the positive charge *is* released at *Point P*. Draw a plausible path for the charge's motion after its release. Think about this. It isn't as simple as it may appear.
- c.) What would be different in *Part a* if a negative charge had been placed at *Point P*?
- d.) Is there any region in which the magnitude of the electric field is a constant (at least to a good approximation)? If so, where on the sketch?

9.) Consider the charge configuration shown to the right. You would like to place a negative charge in the field so that its acceleration is zero.



- a.) Ignoring gravity, where might that be possible?
- b.) Assuming you found a point that fits the bill (there may be more than one, but take just one), what do you know about the electric field at that point?