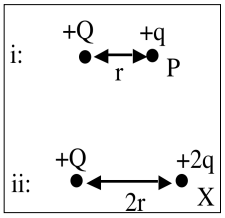
Two test charges are brought separately into the vicinity of a fixed charge +Q.
(Assume PE=0 and V=0 at ∞)



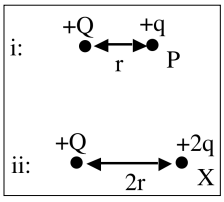
The voltage (V) at point P (in situation i) is

A: greater than…
B: Less than…
C: The same as…

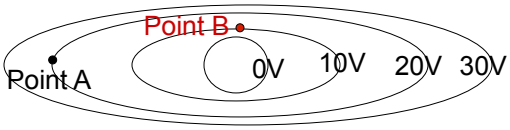
…the voltage (potential, V) at point X in situation ii.

The potential energy, PE of the test charge in situation i is ...

A: Greater than in situation ii
B: Smaller than in situation ii
C: The same for both.

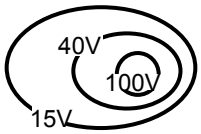


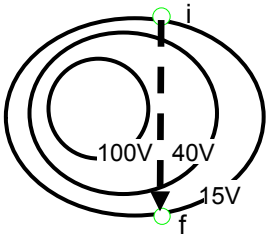
Given the equipotential lines shown, what can we conclude about the E field strengths at A and B?



A) $|E_A| > |E_B|$
B) $|E_A| < |E_B|$
C) $|E_A| = |E_B|$
E) ???

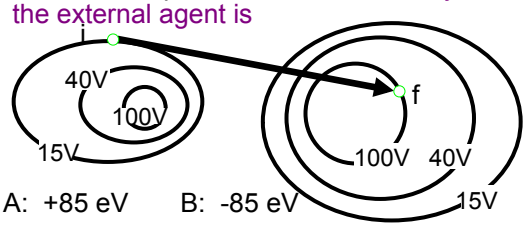
A test charge (+q) is carried from point i to point f at constant speed. The work done by the external agent carrying the test charge is…





A: +
B: -
C: zero
D: ??

A proton is carried from point i to point f at constant speed. The work done by the external agent is

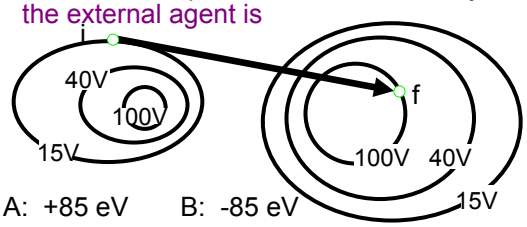


A: +85 eV B: -85 eV

C: >+85 eV D: Between -85 and +85 eV

E: None of these

An electron is carried from point i to point f at constant speed. The work done by the external agent is



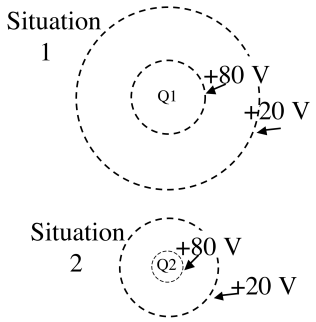
A: +85 eV B: -85 eV

C: >+85 eV D: Between 0 and +85eV

E: None of these/depends

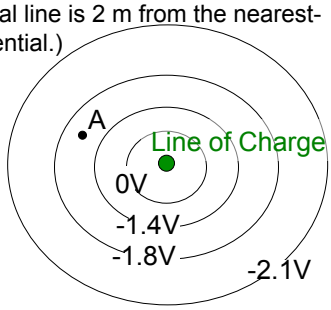
What can you conclude about Q1 and Q2?

A: Q1 > Q2 > 0
B: Q2 > Q1 > 0
C: Q1 < Q2 < 0
D: Q2 < Q1 < 0
E: ??



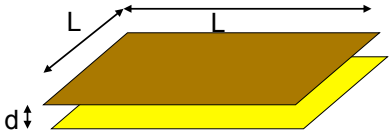
What is the approximate magnitude of the electric field at point A?
(Each equipotential line is 2 m from the nearest-neighbor equipotential.)

A) 0.1 Volts/m
B) 0.2 Volts/m
C) 0.4 Volts/m
D) 0.6 Volts/m
E) ???



Parallel plate capacitor formulae from last time:
$E = 4\pi k\, Q/A$ and $\Delta V = 4\pi\, k\, Q\, d/A$

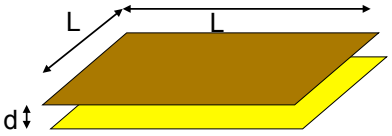
If you fix the charge on a capacitor, and double the spacing between the plates, what happens to the E field between the plates?



A: no change B: up by 2. C: up by 4.
D: decreases by 2 E: none of these

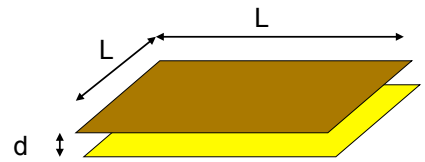
Parallel plate capacitor formulae from last time:
$Q = C\Delta V$, with Capacitance $C = A/(4\pi\, k * d)$

If we *double* the charge on the plates (so +Q and -Q have become +2Q and -2Q), what happens to the *capacitance?*



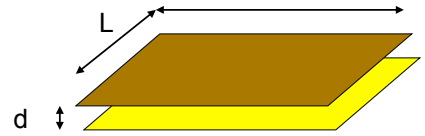
A: no change B: up by 2. C: up by 4.
D: decreases by 2 E: none of these

If we *double* L and *halve* d, by what factor have we changed the capacitance?



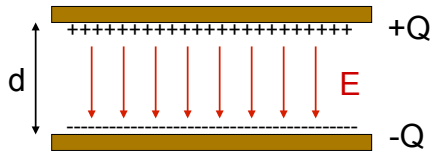
A: no change B: up by 2. C: up by 4.
D: up by 8 E: none of these

Given a parallel-plate capacitor:
If we *double* d, but keep "Q" fixed, by what factor have we changed the E field between the plates?



A: no change B: up by 2. C: up by 4.
D: up by 8 E: none of these

A parallel plate capacitor is charged (the plates are isolated so Q cannot change.) The plates are then pulled apart so that the plate separation d increases.
The total electrostatic energy stored ….



A:increases B:decreases C: stays same