

CONCEPT: CAPACITORS

- Two parallel plates of equal and opposite charge produce a _____ electric field between them.
 - UNIFORM = same magnitude everywhere always.
 - Electric field points (**FROM** | **TO**) positive plate (**FROM** | **TO**) negative plate.



- These are known as CAPACITORS → Things that _____.
 - Between plates, $E =$ _____ - Outside of plates, $E =$ _____
 - ϵ_0 is the VACUUM PERMITTIVITY, and $\epsilon_0 =$ _____
 - Q is the charge on each plate, A is the area of each plate.

EXAMPLE: The electric field between two parallel plates is 1000 N/C. If the plates have an area of 5 cm², what is the charge on each plate?

EXAMPLE: A capacitor produces an electric field E when it is formed by two plates that have charges Q and $-Q$. What happens to the electric field if the charge doubles, but the area of the plates halves?

PRACTICE: KINEMATICS IN A CAPACITOR

An electron moves into a capacitor at an initial speed of 150 m/s. If the electron enters exactly halfway between the plates, how far will the electron move horizontally before it strikes one of the plates? Which plate will it strike?

