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, $\mathbf{E} =$ _____
  - Outside of plates, $\mathbf{E} =$ _____
  - 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 cm^2, 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 is the charge doubles, but the area of the plates half?

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?