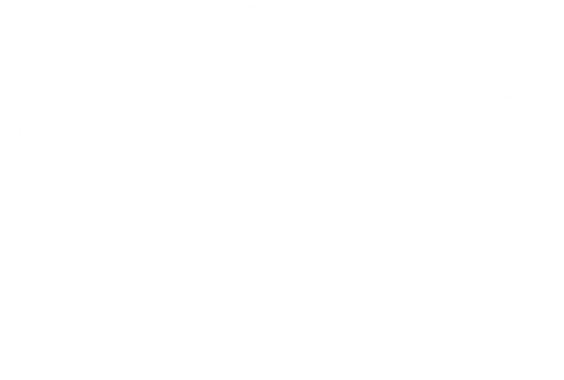
**Capacitors and Dielectrics**



capacitance (unit – Farad)

– dielectric constant in vacuum, in air,

Inserting dielectric medium between capacitor plates, (paper, water, wax) causes electric field to become smaller.

Use of Dielectrics:

* Capacitance increases
* Electric field will decrease
* Potential will decrease

increases

(Gauss’s Law)

If we add a dielectric material, Gauss’s Law -

- induced charge

– Dielectric constant of the material

- Charge in the dielectric material

Without dielectric material,

With dielectric material,

– free charge

- induced charge

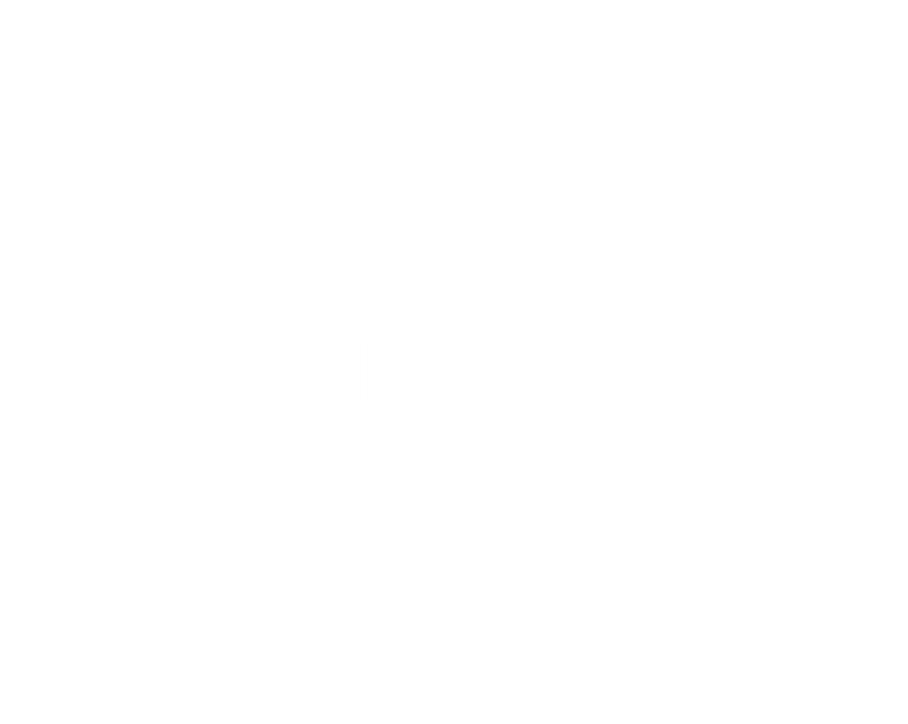
When there is no dielectric medium, induced charge is . ()

Dielectric medium becomes a dipole that oscillates at .

So, the polarity of the battery will change times per second.

′ - real

- imaginary



– dielectric loss factor

RAM – charge always moves

SCRAM – charge does not move (S – Static)

3 Electric Vectors - Electric Field Vector

Polarization Vector

Displacement Vector