

Electric Flux *Permittivity*
(*Gauss's Law*)

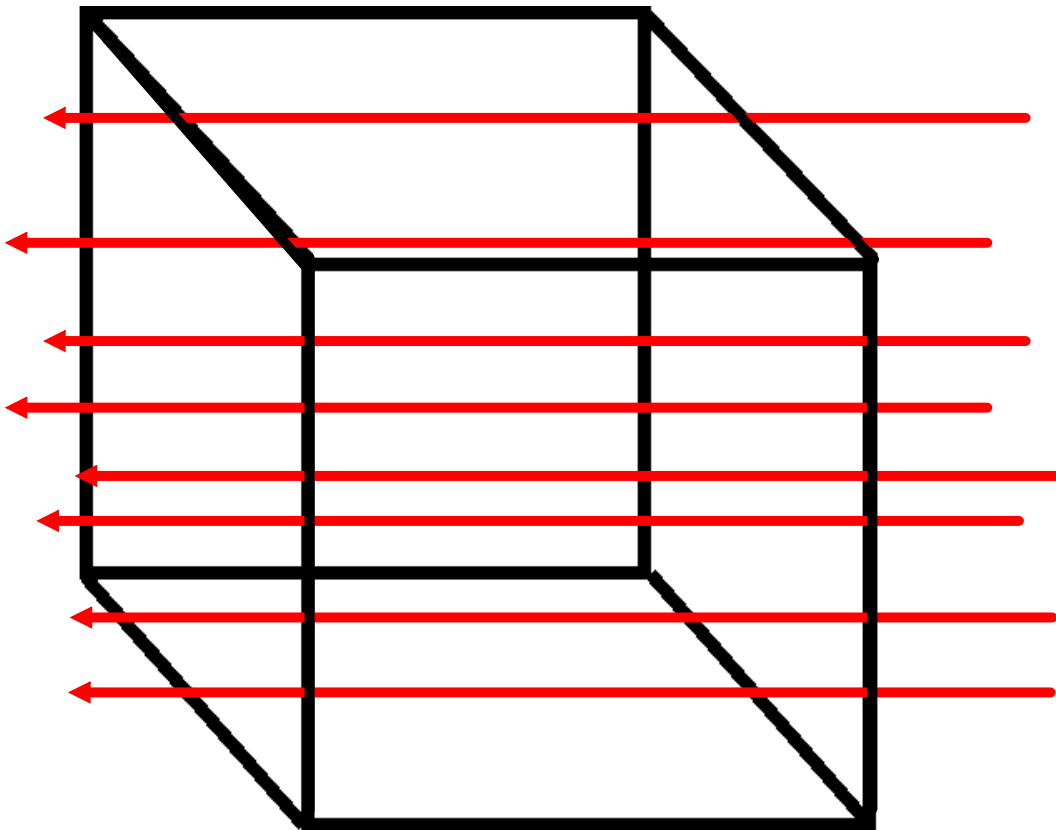
$$\phi_e = E A \cos\theta = q/\epsilon_0$$

The electric flux is equivalent to the number of electric field lines passing through an area.

(a surface integral of electric field and area)

It tells the density of the electric field.

What is the electric flux through the cube (running N-S and E-W) shown below if a side is 2cm long and the electric field passing through the cube runs E-W and is 200 N/C?



$$\phi_e = E A \cos\theta = q/\epsilon_0$$

$$\text{So; } \phi_e = (200 \text{ N/C}) (.0004\text{m}^2) = .08$$

What would be the electric flux through a sphere with no net electric charge on the surface?

$$\Phi = \frac{q}{\epsilon_0}$$

