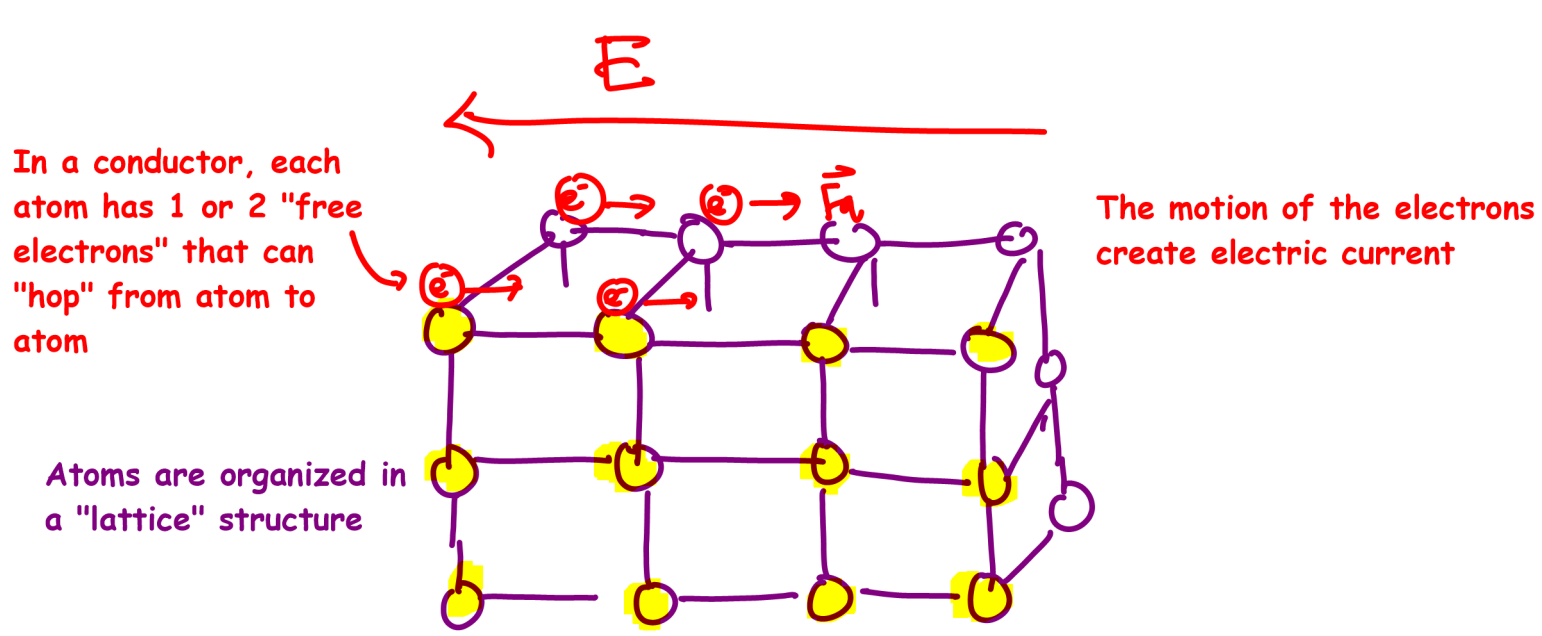
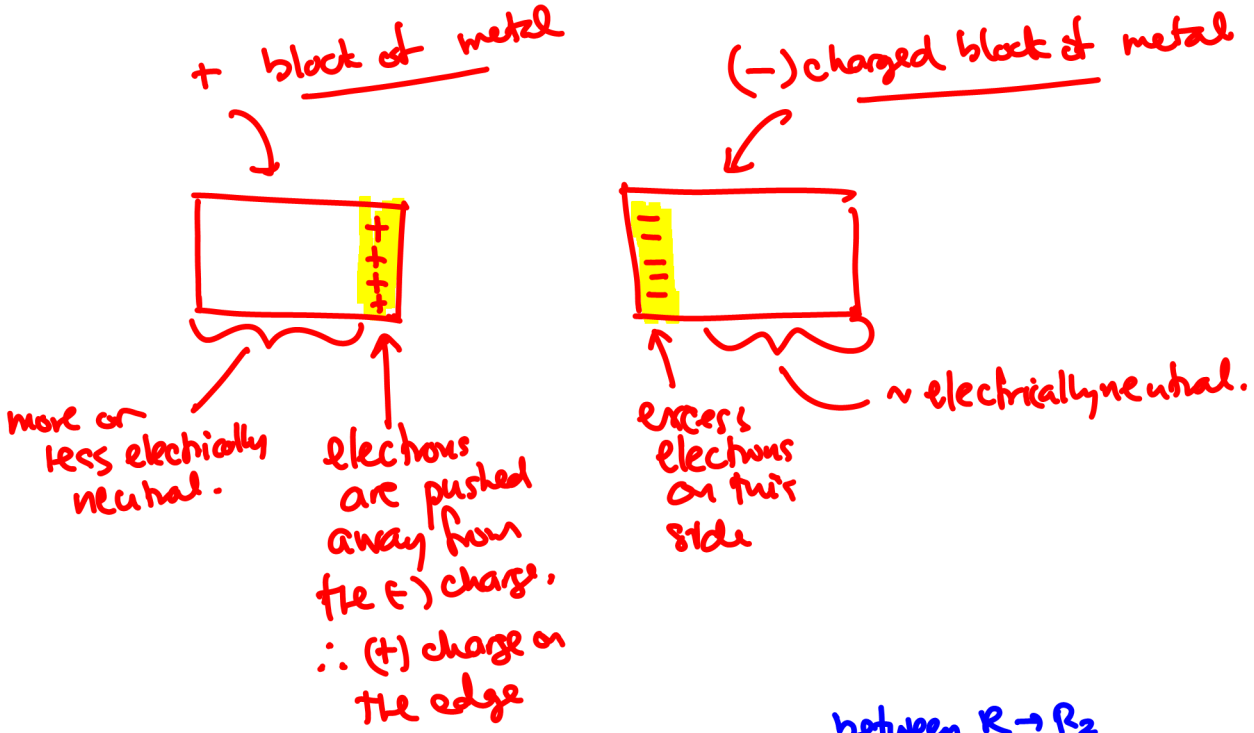
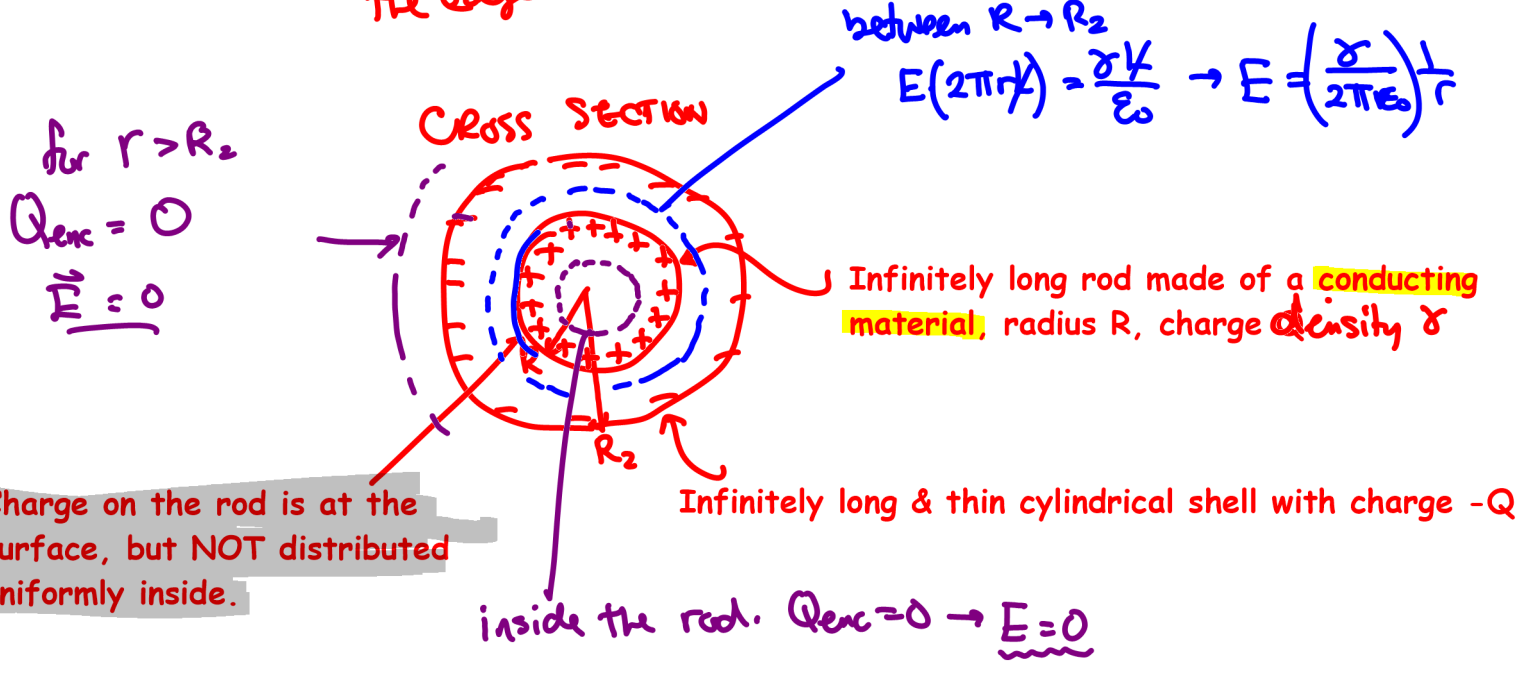

E
In a conductor, each atom has 1 or 2 "free electrons" that can "hop" from atom to atom
The motion of the electrons create electric current
Atoms are organized in a "lattice" structure


+ block of metal
(−) charged block of metal
more or less electrically neutral.
electrons are pushed away from the (−) charge.
∴ (+) charge on the edge
excess electrons on this side
~ electrically neutral.


for r > R₂
Q_enc = 0
E = 0
Cross section
between R → R₂
E(2πrL) = γL/ε₀ → E = (γ/2πε₀)(1/r)
Infinitely long rod made of a conducting material, radius R, charge density γ
Charge on the rod is at the surface, but NOT distributed uniformly inside.
R₂
Infinitely long & thin cylindrical shell with charge -Q
inside the rod. Q_enc = 0 → E = 0