

Physical quantities



- * F Force [N]
- * e charge of an electron $= -1.6 \times 10^{-19}$ [C]
- m_0 mass of electron $= 9.1 \times 10^{-31}$ [kg]
- E electric field [V/m] ~~dV/dx~~ $= dV/dx$
- * $I = i$ current [A] = [C/s]
- J current density [A/m²]
- * $V = v$ Voltage [V] aka potential difference

* \Rightarrow important this class

Units MKSA

meter

kg

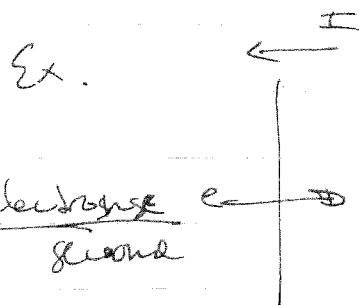
second

amp

Use these consistently and you'll never go wrong.

~~Current~~

$I \equiv$ the charge per unit ~~area~~ time ~~that~~
 \uparrow ~~cross~~ crossing an arbitrarily
 "defined as" chosen plane of observation oriented
 normal to the direction of current flow



$$I = \frac{10 \times 1.6 \times 10^{-19} \text{ C}}{\text{sec}} = 1.6 \times 10^{-18} \text{ A}$$

Current direction is opposite physical motion of electrons. (-ve) charged