

AP Physics - Electricity - Terminal Voltage

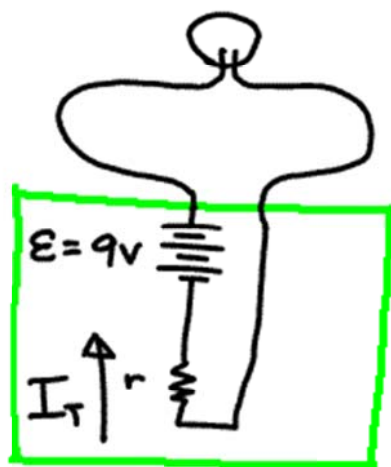
Note Title

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Terminal Voltage

A battery is made of material with internal resistance. For this reason, when a battery is inserted into a circuit, some energy is lost to heat in the battery itself. This has the effect of reducing the voltage at the battery's terminals when it is under load.

We can account for this internal resistance as follows:



\mathcal{E} = Battery EMF
= 9V

r = Internal Resistance of Battery

The voltage at the battery's terminal (V_T) is thus reduced by the current (I_T) flowing through the battery's resistance (r):

$$V_T = \mathcal{E} - I_T r$$

Equation for Terminal Voltage (V_T)