Circuits Tool Box (Conclusions for Series and Parallel Circuit Lab)

Type of Circuit	Path of Electron	Voltage V	Current I	Equivalent Resistance R_{eq}	Type of Circuit
Series	**No Choice**	**Adds**	**Same**	$R_{eq} = R_1 + R_2 + R_3$	Series
Parallel	**Choice**	**Same** for each branch	**Adds** for each branch	$1/R_{eq} = 1/R_1 + 1/R_2 + 1/R_3$	Parallel

Best way to do **Parallel R_{eq}** is take the resisters **2 at a time** and do **POS (Product over Sum)**

$$R_1R_2/(R_1 + R_2)$$

V = IR Voltage = Current * Resistance (Ohm's Law) **R** is slope **of Voltage-Current** graph

P = IV Power = Current * Voltage (also $P = I^2 * R$) **P** is area of rectangle **of Voltage-Current** graph

Current = Brightness = Power (for a set voltage) **Powers of Resistances ALWAYS ADDS to = Power of Voltage Source**

Resistance in wire is assumed zero. However in reality, the longer the wire is the more resistance it has. Also, the hotter a wire is the more resistance it has.

Also: Ammeters measure Current going THROUGH wires and circuit elements are ALWAYS hooked in SERIES and always have extremely LOW RESISTANCE. You have to BREAK a circuit and INSERT an Ammeter. Symbol is:

Voltmeters measure Voltage ACROSS wires and circuit elements and are ALWAYS hooked in Parallel and always have extremely HIGH RESISTANCE. You NEVER BREAK a circuit and INSERT an Ammeter. Symbol is: