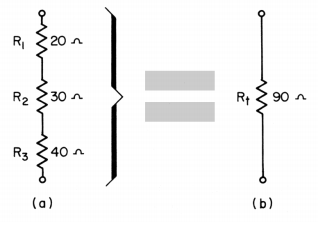
**Series and Parallel Circuits**

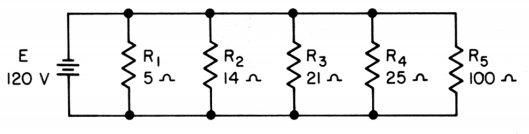
How to Simplify Find Total Resistance (R) Ω in series and parallel circuits.

**Series Circuits**

* Series Circuits are the simplest to work with.
* Series circuit has one shared connection point between components.
* In the image below, we have three resistors of different resistances (**20Ω, 30Ω & 40Ω**)
  + They share a single connection point.
  + When added together the total resistance is **90-Ohms (Ω)**

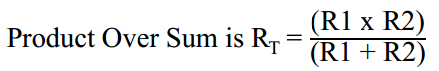


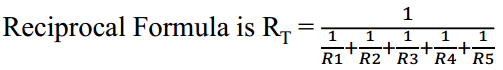
**Parallel Circuits**

* In the image below a parallel circuit is shown.
* Each resistor has **TWO shared connection points** between resistors.
* We **CANNOT add the values** **of each resistor together** like we can in the previous series circuit. So **what do we need to do**?

**Calculating Total Resistance of a Parallel Circuit**

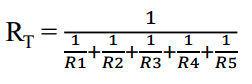
* Two methods can be used to calculate the total resistance of the parallel circuit.
* They are the **Product Over Sum** equation or the **Reciprocal Formula**.

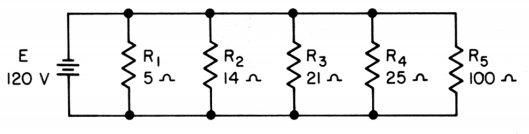




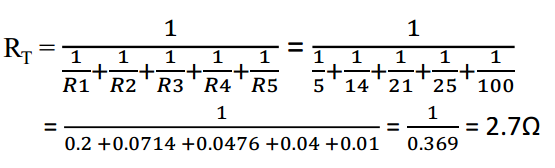
**Calculating Total Resistance of a Parallel Circuit**

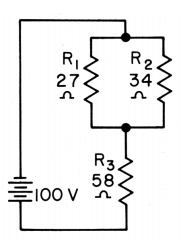
* So let use calculate RT in this circuit using this formula.





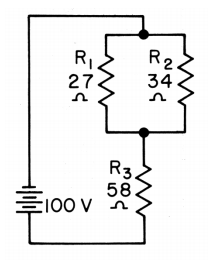
* Plugging the resistance value for each resistor into the formula yields 2.7Ω.



**Series-Parallel Circuits**

* As in the image to the right, if we **combined** a **series** circuit **with** a **parallel circuit** we produce a **Series-Parallel circuit.**
* **R1 and R2** are in **parallel** and **R3** is in **series** with R1 ǁ R2.
* The **double lines** between R1 and R2 is a symbol for **parallel**.
* We need to calculate R1 ǁ R2 first before adding R3.
* Now that we have calculated the resistance of the 2 parallel circuits we can just add that to the series circuit to determine the total circuit resistance.



* Now that we have our total circuit resistance of RT we can calculate circuit current by using Ohm’s Law.
* Resistance RT = 73Ω
* Voltage = 100V

