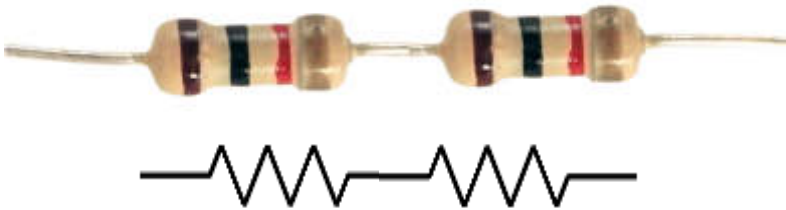




What is Series and Parallel?

When designing and building circuits, multiple resistors are used. Resistor in the circuits can be placed by themselves or grouped in **series** or **parallel**.

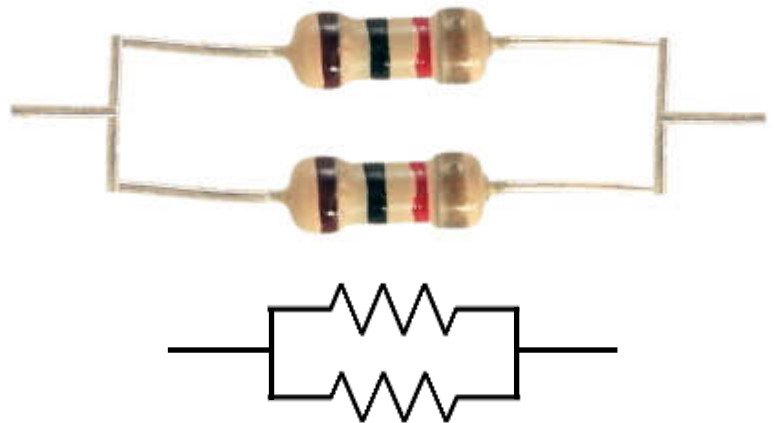
Resistors in Series



These resistors are connected end-to-end making a single path for current to flow.

These resistors are connected across from each other making two paths for current to flow.

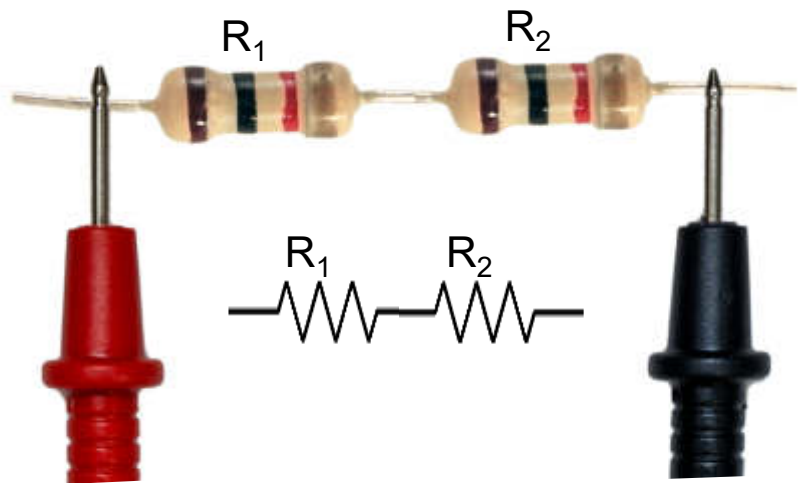
Resistors in Parallel



Resistance Formulas in Series and Parallel

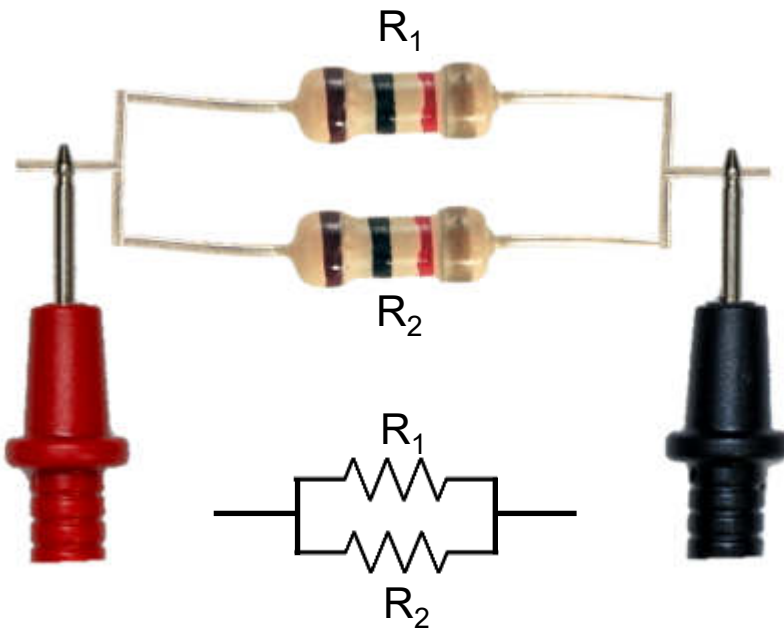
The formula for calculating the total resistance (R_T) of resistors in series is:

$$R_T = R_1 + R_2$$

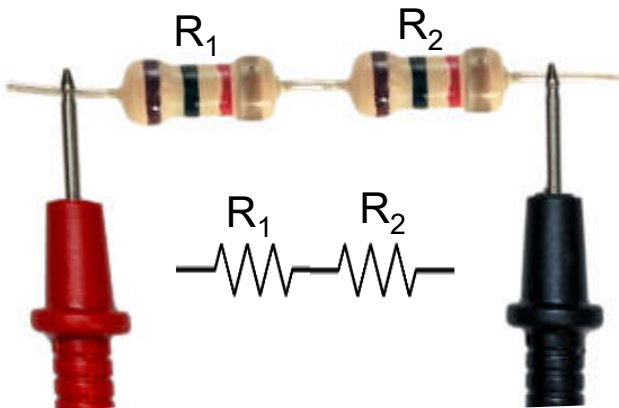


The formula for calculating the total resistance (R_T) of resistors in parallel is:

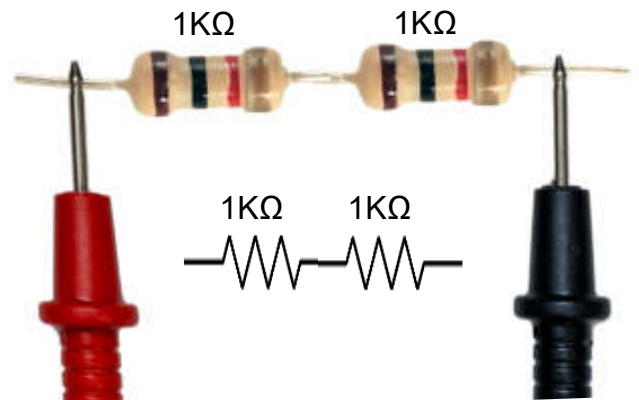
$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$$



Calculating Resistance in Series



$$R_T = R_1 + R_2$$



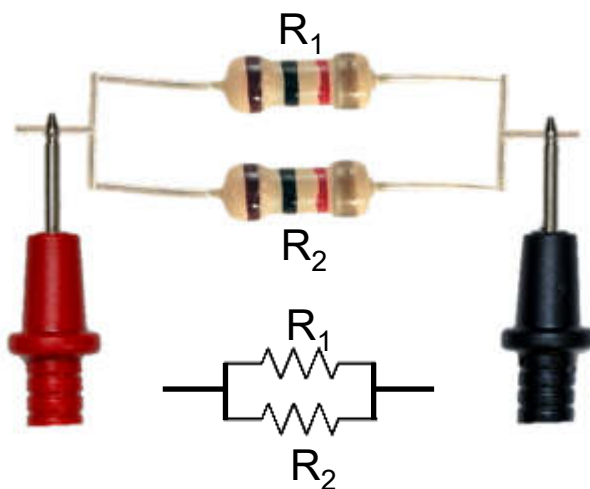
$$R_T = 1K\Omega + 1K\Omega$$

$$R_T = 2K\Omega$$

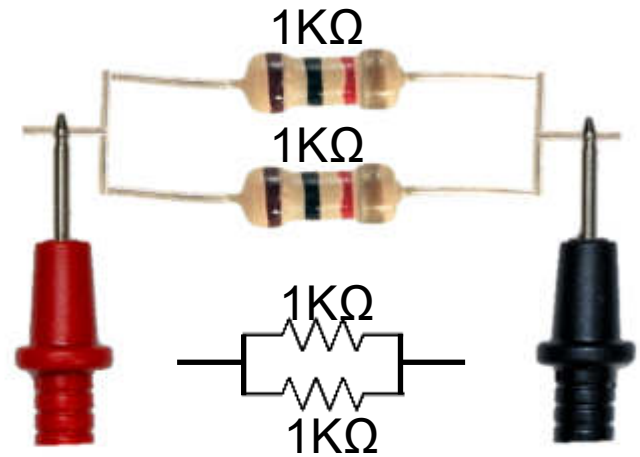
The overall resistance of the two 1K Ω resistors in **series** is the sum of their resistance values. The measure of total resistance here is 2K Ω !



Calculating Resistance in Parallel



$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$$



$$\frac{1}{R_T} = \frac{1}{1000} + \frac{1}{1000}$$

$$\frac{1}{R_T} = \frac{2}{1000}$$

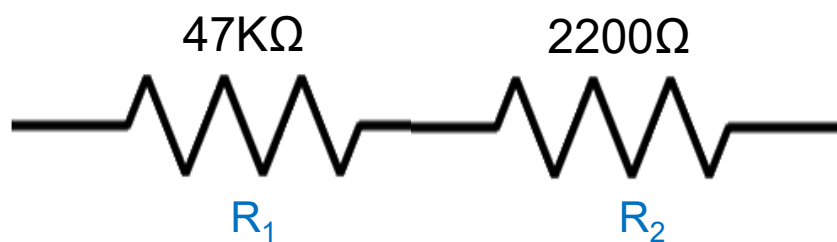
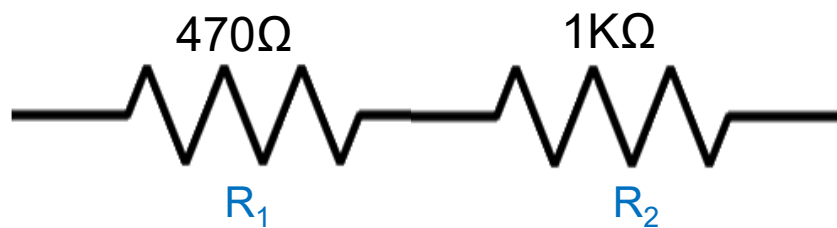
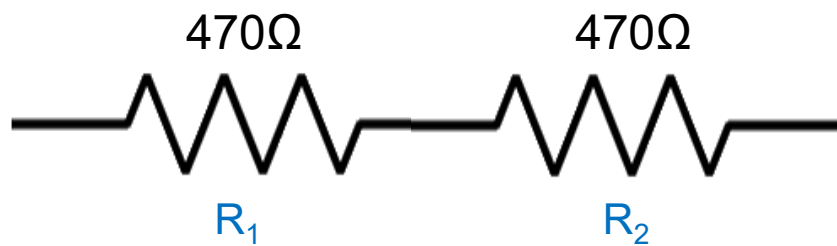
$$\frac{1}{R_T} = \frac{1}{500}$$

$$R_T = 500\Omega$$

The overall resistance of two resistors in **parallel** is always less than the same resistors in series.
The measure of resistance here is 500 Ω!



Let's Figure Out the Total Resistance Value of The Resistors in Series!



Let's figure out the resistance value of these resistors in Parallel!

