

**PHYSICS****SIMPLE CIRCUIT ANALYSIS****Kirchoff's Rules****SERIES CIRCUIT**

In a series circuit,

- Voltages in a series circuit are
- Current in a series circuit is
- Resistance in a series circuit is

**PARALLEL CIRCUIT**

In a Parallel circuit,

- Voltages in a parallel circuit are
- Current in a parallel circuit is
- Resistance in a parallel circuit is

**PHYSICS****SIMPLE CIRCUIT ANALYSIS**

**RECALL:** Resistance Examples:

You have 3 resistors ( $3\Omega$ ,  $4\Omega$ , and  $12\Omega$ )

1. Calculate the total resistance if they are connected in series.
2. Calculate the total resistance if they are connected in parallel.

**RECALL:** **OHM'S LAW**

Ex: Find the current flowing through a wire if the resistance is  $20\ \Omega$  the voltage through the wire is  $120\ \text{V}$ .



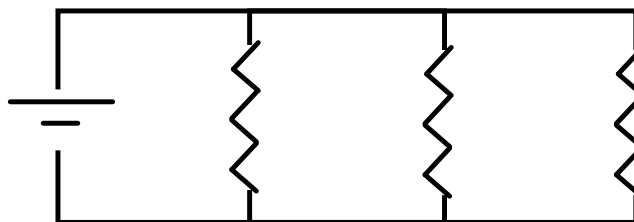
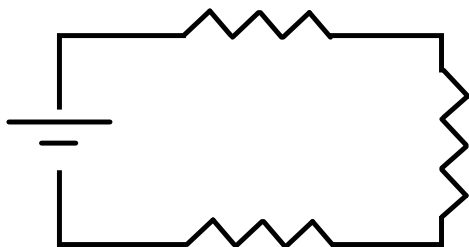
# PHYSICS

## SIMPLE CIRCUIT ANALYSIS

Visualization ...

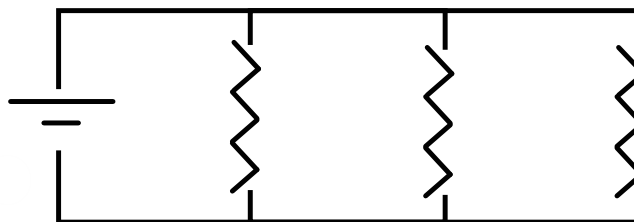
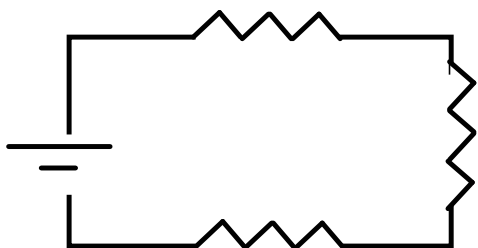
Imagine that a circuit is similar to water moving through pipes. For a series circuit, there is only one pipe for the water to flow through. This means that the current will be constant throughout the entire circuit of pipes.

Now, for a parallel circuit, there are many pathways for the water to flow through. If you add up all the water in the separate pathways you will get the total amount of water.



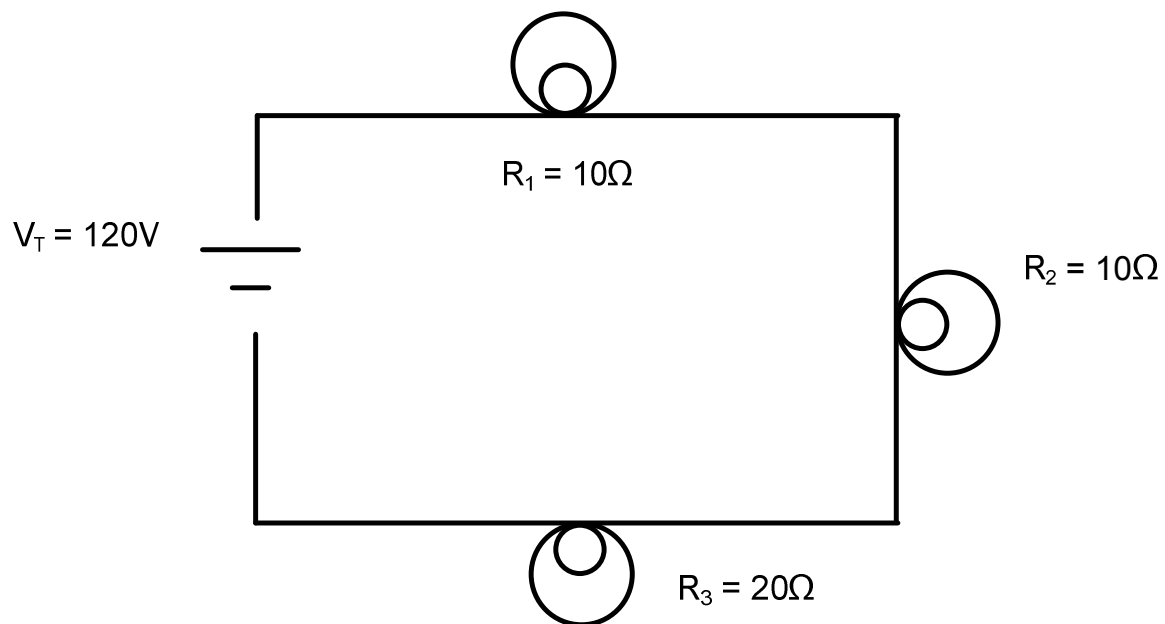
Now imagine you are going through an obstacle course. In a series circuit, you have to go through all obstacles this means you must split your energy to achieve all obstacles.

If you are going through a parallel circuit you have a choice of which obstacle to go through and will therefore use all your energy on that obstacle.



**PHYSICS****SIMPLE CIRCUIT ANALYSIS**

Ex: Solve the following series circuit for all I's, V's and R's



**PHYSICS****SIMPLE CIRCUIT ANALYSIS**

Ex: Solve the following parallel circuit for all I's, V's and R's

