**NOTES 9.1: Series and Parallel Circuits**

**Series: One Pathway**



**Voltage in Series**

* Voltage is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ difference in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between two points.
* If electrons\_\_\_\_\_\_\_\_ 12 V from the battery, they will \_\_\_\_\_\_\_\_all 12 V as they travel from the –ve to the +ve terminal of the battery through the circuit
* Staircase analogy –12 steps up-gain potential energy- 12 steps down lose same energy
* Along the circuit, electrical potential energy is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to other types of energy as it passes through resistors and loads
* In light bulbs this energy is converted to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



**Current in Series**

Since electrons \_\_\_\_\_\_\_ each other, they remain evenly spaced out. Within the same pathway, current

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
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**Resistance in Series**

There is only \_\_\_\_\_ pathway. Adding more resistance to the same pathway \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the total resistance and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the current in that pathway.

E.g. Adding a dry and sticky portion of a slide after the last one decreases the rate of flow for ***all*** the people going down the slide.



Adding more bulbs \_\_\_\_\_\_\_\_\_\_\_\_\_ total resistance resulting in total current \_\_\_\_\_\_\_\_\_\_\_\_\_.

**Parallel: Many Pathways**



**Voltage in Parallel**

* Within each \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the total voltage gained by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is lost

*E.g. there could be many water slides (\_\_\_\_\_\_\_\_\_\_\_\_\_\_) people can go down, but every person will go down the same height and end up in the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (positive terminal)*



**Current in Parallel**

The total current will split up at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ point and re-join where the paths meet. More current will flow through paths with \_\_\_\_\_\_\_\_\_\_\_\_ resistance.

*E.g. At the top of a waterslide (junction) an attendant makes people go to the next available slide – the slides with the least resistance will have more people going down it every second.* **

**Resistance in Parallel**

Any time you create another pathway, you \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the total resistance in the circuit. Even if you are adding resistors, adding them in parallel will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the total resistance.

*E.g. Adding another waterslide at the water park will increase the flow of people coming down from the top of the slides.*



**DO THIS!**

* **Check your understanding 9.1 questions pg. 319 #7-10**
* **Complete worksheet**