

PHYZ SPRINGBOARD: SERIES CIRCUITS

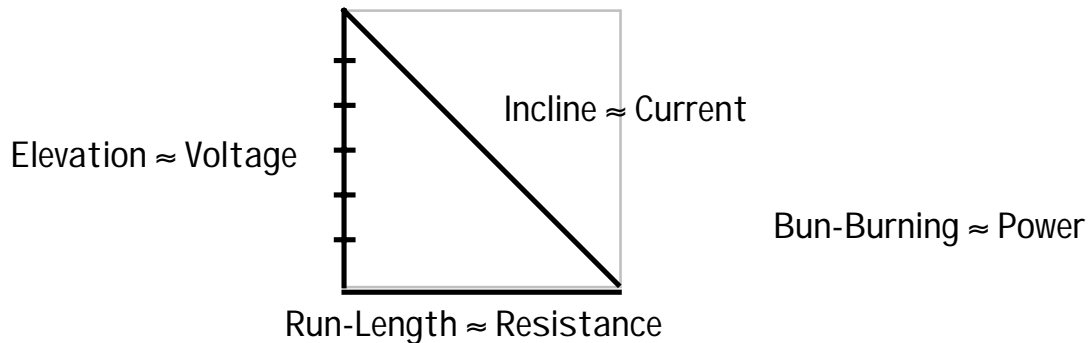


Electric Quantities

1. A simple circuit—such as a battery, bulb, and wire—can be characterized by the voltage, current, resistance, and power associated with it. What happens to these quantities when more and more resistors (bulbs or other electric devices) are connected to the circuit in **series**? Before answering, write the names of each quantity described below.

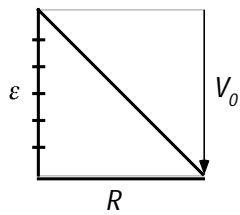
- a. _____ **Current** _____: the rate at which charge flows. (By convention, it is said to flow from the positive terminal of the battery to the negative terminal.)
- b. _____ **Power** _____: the rate at which energy is used or converted.
- c. _____ **Resistance** _____: the extent to which an object obstructs the flow of electric charge.
- d. _____ **Voltage** _____: the amount of energy stored in each unit of charge.

2. How is each of these quantities related to characteristics of the slide?

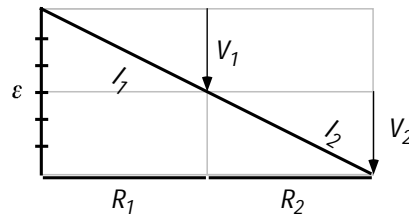


- a. The **elevation** of the slide is like the _____ **Voltage** _____ of a circuit. Going down the slide, riders undergo a vertical drop (V).
- b. The **run length** of the slide is most like the _____ **Resistance** _____ of a circuit.
- c. The **incline** (or flow rate) of a slide is most like the _____ **Current** _____ of a circuit. It's greatest when elevation is \checkmark large ___small and run length is ___large \checkmark small.
- d. The **bun-burning** ability of the slide is most like the _____ **power** _____ of a circuit. It's greatest when _____ **elevation** _____ is _____ **large** _____ and _____ **incline/flow rate** _____ is _____ **large** _____.

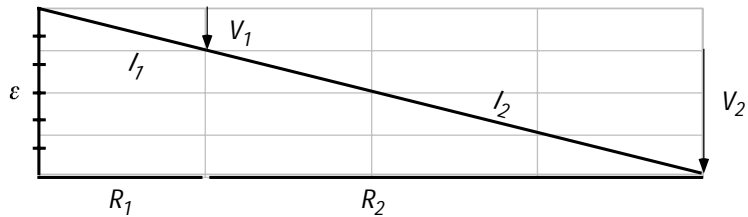
Comparative Slidology



THE SIMPLE SLIDE

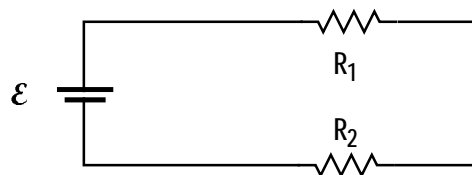
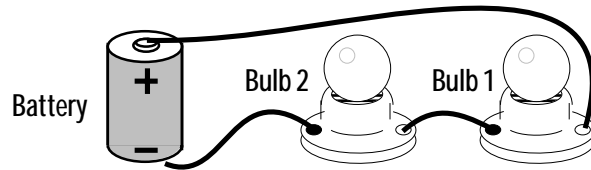
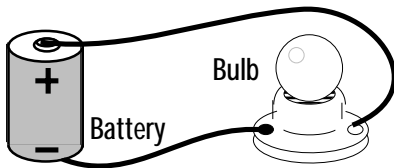


TWO SERIES SLIDES



3. a. Compared to the simple slide, the elevation of a series slide is _____ the same _____
 b. Compared to the simple slide, the incline of a series slide is _____ lesser _____
 c. Compared to the simple slide, the run length of a series slide is _____ greater _____
 d. Compared to the simple slide, the bun-burning on a series slide is _____ lesser _____
4. What characteristic—if any—do both sections of a series slide **always** have in common?
 ___Vertical drop Incline ___Run length ___Bun-burning power

Moving on to circuits



5. a. Compared to a simple circuit, the voltage of a series circuit is _____ the same _____
 b. Compared to a simple circuit, the current of a series circuit is _____ lesser _____
 c. Compared to a simple circuit, the resistance of a series circuit is _____ greater _____
 d. Compared to a simple circuit, the power of a series circuit is _____ lesser _____
6. What characteristic—if any—do both resistors in a series circuit **always** have in common?
 ___Voltage Current ___Resistance ___Power