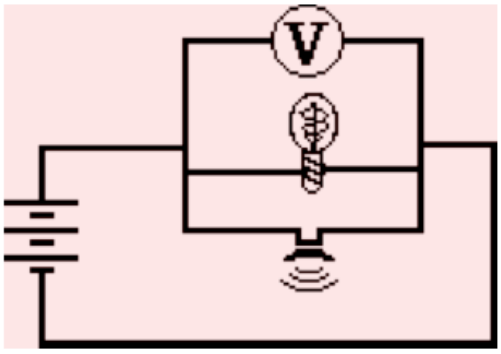
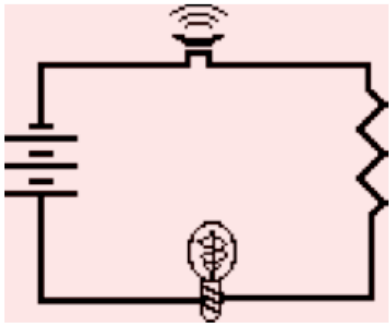
Series Circuits Name:_____ Block:___ Date:_____

1. Electrical devices in circuits can be connected to each other in a number of different ways. The two most common connections are *series* connections and *parallel* connections. Observe the electrical wiring below. Indicate whether the connections are series or parallel.

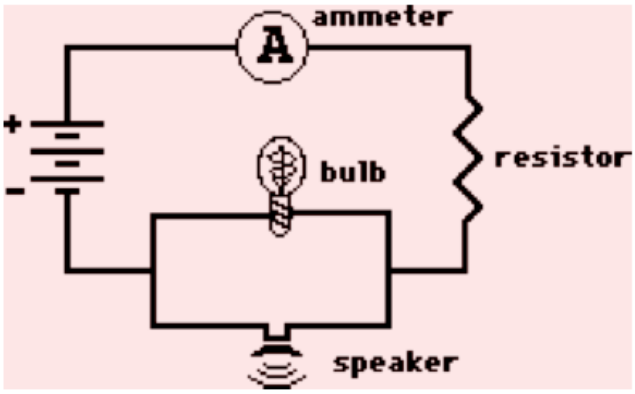


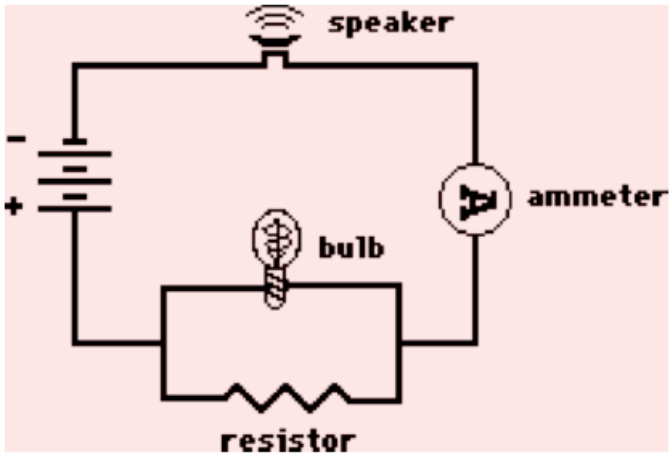
Series or Parallel?



Series or Parallel?

2. Two electric circuits are diagrammed below. For each circuit, indicate which two devices are connected in series and which two devices are connected in parallel.





Series _____ **Series** _____

Parallel _____ **Parallel** _____

3. **Comparing Series vs. Parallel Circuits**
Fill in the table below to indicate the manner in which series and parallel circuits differ.

	Series Circuit	Parallel Circuit
a. **Definition**: The pathway by which charge loops around the circuit is characterized by _____ pathway(s).		
b. **Observation**: If one light bulb goes out, the other light bulbs _____.		
c. **Observation**: As the number of resistors is increased, the overall current _____.		
d. **Observation**: As the number of resistors is increased, the overall resistance _____.		

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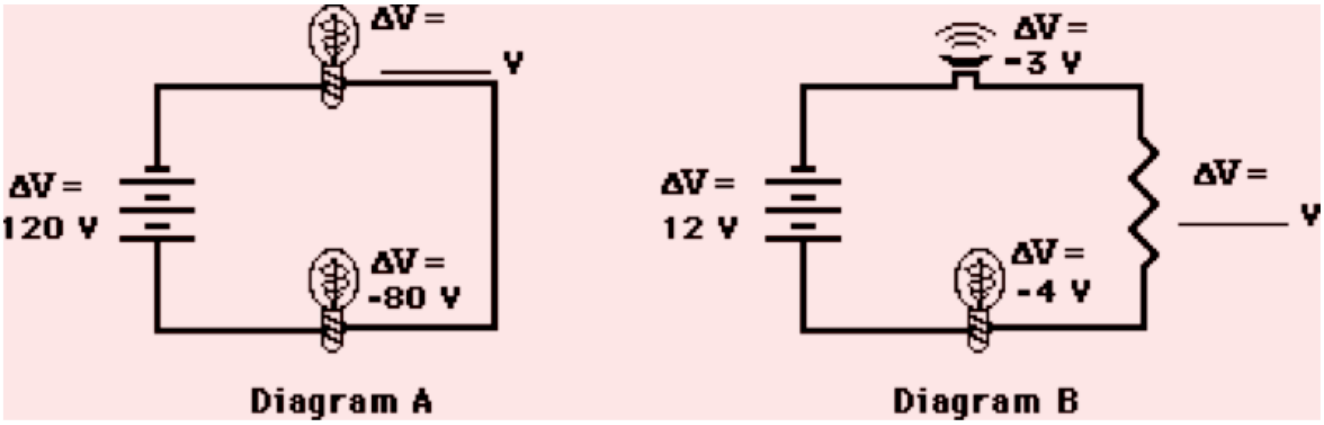
4. The following diagrams represent circuits consisting of two electrical devices connected in series. For each diagram, fill in the blanks to show the voltage drop across the designated device.



5. Express your understanding of equivalent resistance by filling in the blanks.

Having two 4-Ω resistors in series is equivalent to having one _____-Ω resistor.

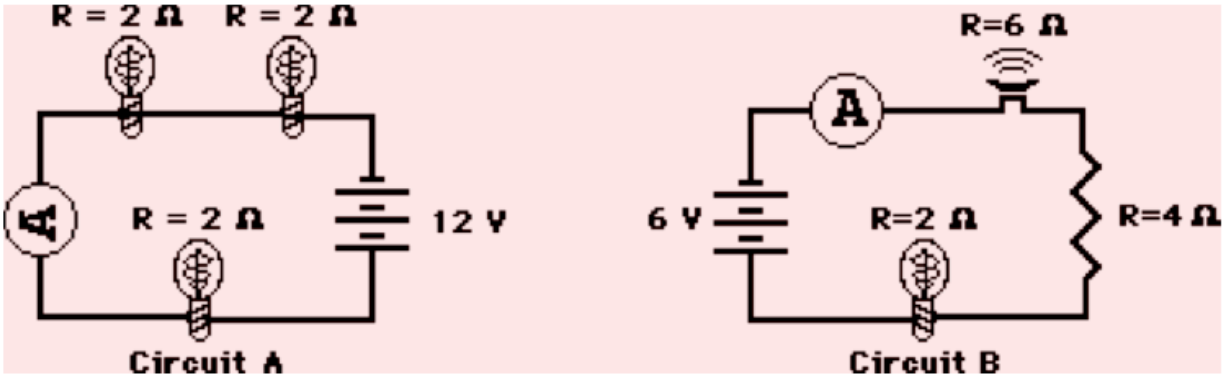
Having three 4-Ω resistors in series is equivalent to having one _____-Ω resistor.

Having four 4-Ω resistors in series is equivalent to having one _____-Ω resistor.

6. **TRUE** or **FALSE**:

Three light bulbs are connected in series. The filament of one of the light bulbs burns out. The remaining two light bulbs will still be lit; yet, their brightness will be noticeably less.

7. Analyze the following circuit and determine the equivalent or total resistance. Then determine the current at the ammeter location.



R_{tot} = _____

I = _____

R_{tot} = _____

I = _____

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8. For the following diagrams, utilize the concept of equivalent resistance and Ohm's Law in order to fill in the blank.