

# Guided Lesson Notes

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Series Circuits

**Directions:** Complete this study guide as you move through the lesson. By taking notes, you are more likely to remember what you are learning. The completed study guide can be used for practice activities and to prepare for quizzes and exams. Be sure to save each study guide so you can access it when you need it.

### Essential Vocabulary

As you encounter these scientific terms in the lesson, enter the meaning and an example (or two) for each. You can even draw a picture. If there are other unfamiliar words you find, enter them in the blank spaces provided.

<i>series circuit</i>	<i>equivalent resistance</i>

## Multiple Resistors

1. What are the three required components of a closed circuit?

1	
2	
3	

2. What is the most important characteristic of a series circuit?

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3. Is there a limit to the number of resistors you can connect in series? Explain.

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## Characteristics of Series Circuits

1. Fill in the blanks below about series circuits.

<p>In a _____ circuit, the _____ are added _____ _____ on the wire. The _____ flows through one _____ and then through the next and so on. If one of the _____ on the circuit _____, then the _____ circuit stops _____. Take for example, a series of _____</p>
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\_\_\_\_\_ on a circuit. If \_\_\_\_\_ light bulb in this circuit burns out (i.e. the filament breaks), the circuit is no longer \_\_\_\_\_, and there is no \_\_\_\_\_ through which the \_\_\_\_\_ can flow.

**2. Complete the statements below regarding the five characteristics of a series circuit.**


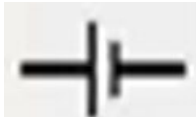

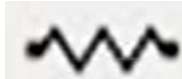


<b>1</b>	There is only one ...
<b>2</b>	The current flowing ...
<b>3</b>	Using Ohm's law ...
<b>4</b>	The total voltage ...
<b>5</b>	The drop in the voltage ...

**Series Circuit Demo**

**1. What happens to the flow of electrons in the circuit when the switch is “turned off” (opened)?**

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2. Describe what each symbol in a circuit diagram represents.

	=	
	=	
	=	
	=	
	=	
	=	

3. How do the currents in different locations in a series circuit compare?

4. How do the voltages across the three resistors compare to the voltage of the battery in this circuit?

### Equivalent Resistance in Series Circuits

1. What are the two ways resistors in a circuit can be combined?

1	
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2. Sketch a drawing of three resistors, R1, R2, and R3, all connected in series with a battery in a circuit.

3. Write the equation that shows that all currents in a series circuit are equal.

4. Write the equation for the equivalent resistance for resistors in a series circuit.

5. How do the individual voltages across the resistors compare with the total battery voltage in a series circuit?

### On Your Own

Select one of the problems listed and complete the table with the appropriate information. Choose from: Equivalent Resistance, Current, or Voltage.



<b>Problem:</b>	
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<b>Picture</b>	<b>Given/Find</b>	<b>Equation</b>	<b>Solution</b>