Guided Lesson Notes

Name:_____ **Date:**_____

Electric Circuits and Ohm's Law

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.

electron	*Ohms' law*
voltage	*resistance*
electric current	*power*

conductivity	*amperes*
circuits	*electric power*
Watt	

Current

1. What is the flow of electrons called?

2. **What purpose does a battery serve?**

Rate of Flow

1. **Write the equation for current, both in words and using symbols. Define all variables.**

Equation:	
$I =$	
$Q =$	
$\Delta t =$	

2. **What is the unit of current and what is it equivalent to?**

Resistance

1. **Define the resistance of a material.**

2. **What are four things the resistance in a wire depends on?**

1	

2	
3	
4	

3. What symbol is used to represent ohms, the unit of resistance?

4. Write the equation for resistance. Define all variables.

Equation:	
$R =$	
$\rho =$	
$L =$	
$A =$	

5. How can a device with high resistance, such as a toaster or a lightbulb, use that high resistance in a positive way?

Circuits

(continue on next page)

1. **How does the example of a water tank help explain how an electric circuit works?**

2. **For each of the three components of a circuit, explain how it keeps the current flowing.**

Component	Role
Source	
Load	
Path	

Ohm's Law Practice

1. **Draw the Ohm's law triangle here. Notice that if you cover one of the three variables, V, I, or R, the triangle shows you how to calculate the variable you covered.**

2. **Select one of the problems shown and write out the work necessary to solve it. Choose from:** Example 1, Example 2, **and** Example 3.

Problem:	

Work

Power

1. **Write the equation for power. Define all variables.**

Equation:	
$P =$	
$I =$	
$V =$	

2. **What is the unit of electric power?**

3. **Write two additional forms of the equation for power, using Ohm's Law, $V = IR$, and substitution.**

1	
2	