



**Learning Guide # 9: Parallel Circuits, Power, and Energy**

**BIG IDEA:** Electricity is the flow of electrons.

**Fundamental Knowledge (I know:)**

- Circuits must be complete for electrons to flow.
- How to draw/ model and correctly label a parallel circuit.
- How to use Ohm’s Law to calculate values (V, I, R) in parallel circuits in single or multiple branches.
- Calculate questions related to power and energy consumption.

**Curricular Competencies (I can:)**

	Proficiency Scale Teacher and Student self assessment (Circle one)	Evidence (How do you know?)
<p><b><u>I can:</u></b> <b>Process and Analyze Data:</b> Analyze and interpret circuit diagrams and models for parallel circuits. Construct circuits digitally or with lab equipment. Measure and calculate V, I, and R using Ohm’s Law and appropriate units.</p>	<p><b>Emerging (EMG)</b> Initial Understanding</p> <p><b>Developing (DEV)</b> Partial/Near Complete Understanding</p> <p><b>Proficient (PRF)</b> Complete Understanding</p> <p><b>Extending (EXT)</b> Sophisticated Understanding</p>	
<p><b><u>I can:</u></b> <b>Analyse Cause and Effect Relationships:</b> Use Ohm’s law to describe the relationship between V, I and R in a parallel circuit. Summarize what happens to current in a parallel circuit (multiple branches) with changes in voltage and resistance.</p>	<p><b>Emerging (EMG)</b> Initial Understanding</p> <p><b>Developing (DEV)</b> Partial/Near Complete Understanding</p> <p><b>Proficient (PRF)</b> Complete Understanding</p> <p><b>Extending (EXT)</b> Sophisticated Understanding</p>	

Student Signature

Teacher Signature

**Date**

**Instructions** To help guide your learning, make your way through the activities in Option 1, Option 2, or Option 3. You may “mix and match” between the different Option columns.

TOPIC	OPTION 1	OPTION 2	OPTION 3
<b>Intro to Parallel Circuits</b>	A. Find a video (include the source link) on how to draw parallel circuits. Make notes about how voltage, current, and resistance behave in parallel circuits.	A. Read and <b>make notes</b> on pages 310-313. Include how voltage, current, and resistance behave in parallel circuits.	<p><b>Choose your own adventure!</b></p> <p>Pick up a planning sheet from the Science Kiosk.</p> <p>Create a plan!</p> <p>Make sure you read through the first page of this LG, as you will need to design ways to learn/practice and show your understanding of the topic(s) and skill(s) (competencies.)</p> <p>You will need to have a teacher approve your plan before beginning the LG.</p>
<b>Modelling and Calculating Parallel Circuits</b>	<p>B. Complete "Parallel Circuit Drawing and Calculations" worksheet.</p> <p>C. Complete the <b>Series and Parallel Circuits Construction Lab</b> (use the simulator at <a href="http://Circuit Construction Kit: DC (colorado.edu)">Circuit Construction Kit: DC (colorado.edu)</a> )</p>	<p>B. Create 7 different parallel circuits with varying pieces. Include values for voltage, current and resistance across each source and load. <b>Your numbers NEED to make sense!</b></p> <p>C. Complete the <b>Series and Parallel Circuits Construction Lab</b> (use the simulator at <a href="http://Circuit Construction Kit: DC (colorado.edu)">Circuit Construction Kit: DC (colorado.edu)</a> )</p>	
<b>Using Ohm's Law in Series Circuits</b>	D. Complete the <b>Electrical Power and Energy Worksheet</b>	D. Complete the <b>Electrical Power and Energy Worksheet</b>	
<b>Lab</b>	Series and Parallel Circuits Construction Lab (this can be done online Circuit Construction Kit: DC (colorado.edu))		
<b>Self Assessment</b>	Reflect on the Fundamental Knowledge and Curricular Competencies. Use the rubric and make goals to improve for your next learning guide.		
<b>Interview or Quiz</b>	See your teacher for an interview or to have a quiz slip signed for the test center. Bring your work and staple it to your quiz when complete.		

Resources can be found at [www.THSSscience.com](http://www.THSSscience.com) or the Science Kiosk

User: **THSS**

Password: **science**