



Learning Guide # 14: 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?)
I can: Process and Analyze Data: 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.	Emerging (EMG) Initial Understanding Developing (DEV) Partial/Near Complete Understanding Proficient (PRF) Complete Understanding Extending (EXT) Sophisticated Understanding	
I can: Analyse Cause and Effect Relationships: 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.	Emerging (EMG) Initial Understanding Developing (DEV) Partial/Near Complete Understanding Proficient (PRF) Complete Understanding Extending (EXT) Sophisticated Understanding	

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
Intro to Parallel Circuits	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 <u>make notes</u> on pages 310-313. Include how voltage, current, and resistance behave in parallel circuits.	Choose your own adventure! Pick up a planning sheet from the Science Kiosk. Create a plan! 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.) You will need to have a teacher approve your plan before beginning the LG.
Modelling and Calculating Parallel Circuits	B. Complete " Parallel Circuit Drawing and Calculations " worksheet. C. Complete the Series and Parallel Circuits Construction Lab (use the simulator at Circuit Construction Kit: DC (colorado.edu))	B. Create 7 different parallel circuits with varying pieces. Include values for voltage, current and resistance across each source and load. Your numbers NEED to make sense! C. Complete the Series and Parallel Circuits Construction Lab (use the simulator at Circuit Construction Kit: DC (colorado.edu))	
Using Ohm's Law in Series Circuits	D. Complete the Electrical Power and Energy Worksheet	D. Complete the Electrical Power and Energy Worksheet	
Lab	Series and Parallel Circuits Construction Lab (this can be done online Circuit Construction Kit: DC (colorado.edu))		
Self Assessment	Reflect on the Fundamental Knowledge and Curricular Competencies. Use the rubric and make goals to improve for your next learning guide.		
Interview or Quiz	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 or the Science Kiosk

User: **THSS**

Password: **science**