

Electric Circuits Notebook - Scoring Rubric

Your notebook will be collected at the end of class on _____, _____.

The following items should be in your notebook. They should be clearly organized and easy to find. Use an organizational system and label all work. Each lab will be graded separately. Thirteen Electric Circuits lab grades will be entered into the gradebook. An overall notebook grade will be determined based on your use of the notebook as an organized and effective record-keeping tool which documents your engagement in the learning cycle during classtime and labtime.

Name: _____

Period: _____

Item	Score
<p>C1. Sparky the Electrician Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes informative and labeled sketches of four successful arrangements and of two unsuccessful arrangements. ___ Conclusion clearly and accurately describes the two requirements for an electric circuit. ___ Discussion of Results uses the two requirements to explain why the unsuccessful arrangements were unsuccessful and why the successful arrangements were successful. 	<p>____/3 (Lab score)</p>
<p>C2. First to Light Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes a clearly labeled diagram of the simple circuit and documents the observations made during testing. Observations are pertinent to the Purpose. ___ Conclusion answers the <i>question</i> posed in the Purpose; <i>answer</i> is correct and consistent with the Data section. 	<p>____/3 (Lab score)</p>
<p>C3. Greatest Current Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes a diagram of the simple circuit which was tested; measurements, observations and other results are clearly documented; data is pertinent to the Purpose. ___ Conclusion answers the <i>question</i> posed in the Purpose; <i>answer</i> is correct and consistent with the Data section. Evidence which provides support for the answer is clearly identified and discussed. 	<p>____/3 (Lab score)</p>
<p>C4. Voltage-Current-Resistance Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes the provided table - complete and taped in. Graph is sketched; sketch is clear. Results of linear regression analysis are recorded. Data is accurate; correlation constant if close to 1.00. ___ Conclusion reports an equation relating ΔV, I and R. The equation is correct. ___ Discussion of Results discusses the evidence which supports the equation, explaining how the data and graph lead logically to the equation; attention is given to how and why the slope and the resistance values are related. An error analysis is conducted; a percent error calculation is included; work is shown clearly and labeled. 	<p>____/6 (Lab score)</p>
<p>C5. Round vs. Oblong - The Greatest Resistance? Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes a labeled diagram of the two tested circuits; measurements are recorded and seem reasonably accurate. The resistance values are calculated accurately; work is clearly shown and labeled. ___ Conclusion answers the <i>question</i> posed in the Purpose; <i>answer</i> is correct. 	<p>____/3 (Lab score)</p>
<p>C6. Series vs. Parallel Lab</p>	

<ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes a diagram of the series and the parallel circuit; tests which were conducted are documented; results are clearly recorded. ___ Conclusion/Discussion answers all the <i>questions</i> posed in the Purpose; <i>answers</i> are correct, clearly stated and complete. 	<p>___/4 (Lab score)</p>
<p>C7. Comparing Voltage Drops and Currents in Series Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes a schematic diagram; resistors are labeled and values are stated, along with a unit. Ammeter locations and voltmeter arrangements are shown and labeled as ΔV_1, I_1, etc. Measured values are listed on the diagram; all necessary measurements are made; units are given. Calculations are performed and work is shown in an effort to determine mathematical equations relating the quantities. Data is reasonably accurate. ___ Conclusion/Discussion identifies the mathematical relationships between the voltage drops, currents and resistance values for each resistor. The voltage gain in the battery is compared to the sum of the voltage drops across each individual resistor. All questions are answered (see Questions section on Lab Description page); data is used to support the answers. Discussion is complete and accurate; reveals understanding. 	<p>___/8 (Lab score)</p>
<p>C8. Bulbs in Series Circuits Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes schematic diagrams of the two-bulb series circuit, and the two single-bulb circuits; bulbs are labeled; ammeter locations and voltmeter arrangements are indicated. Relative brightness is indicated using <i>starburst notation</i>. Measured values are listed on the diagram and labeled as $\Delta V_{\text{low } R}$, $\Delta V_{\text{high } R}$, $I_{\text{low } R}$, etc. ; all necessary measurements are made; units are given. Diagrams are legible, labeled and organized. ___ Conclusion/Discussion answers all the <i>questions</i> posed in the Purpose (and the Questions section of the Lab Description page). All comparisons are made. Measured data is used to explain the findings. Discussion is complete and accurate; reveals understanding. 	<p>___/6 (Lab score)</p>
<p>C9. Comparing Voltage Drops and Currents in Parallel Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes a schematic diagram; resistors are labeled and values are stated, along with a unit. Ammeter locations and voltmeter arrangements are shown and labeled as ΔV_1, I_1, etc. Measured values are listed on the diagram; all necessary measurements are made; units are given. Calculations are performed and work is shown in an effort to determine mathematical equations relating the quantities. Data is reasonably accurate. ___ Conclusion/Discussion identifies the mathematical relationships between the voltage drops, currents and resistance values for each resistor. The voltage gain in the battery is compared to the voltage drops across each individual resistor; the current through the battery is compared to the branch currents. All questions are answered (see Questions section on Lab Description page); data is used to support the answers. Discussion is complete and accurate; reveals understanding. 	<p>___/8 (Lab score)</p>
<p>C10. Bulbs in Parallel Circuits Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section includes schematic diagrams of the two-bulb parallel circuit, and the two single-bulb circuits; bulbs are labeled; ammeter locations and voltmeter arrangements are indicated. Relative brightness is indicated using <i>starburst notation</i>. Measured values are listed on the diagram and labeled as $\Delta V_{\text{low } R}$, $\Delta V_{\text{high } R}$, $I_{\text{low } R}$, etc. ; all necessary measurements are made; units are given. Diagrams are legible, labeled and organized. ___ Conclusion/Discussion answers all the <i>questions</i> posed in the Purpose (and the Questions section of the Lab Description page). All comparisons are made. Measured data is used to explain the findings. Discussion is complete and 	<p>___/6 (Lab score)</p>

accurate; reveals understanding.	
<p>C11. Combination Circuits Lab</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section should include the provided sheet - completed and taped in. Work should be shown for the $\Delta V / I$ calculations and the percent error calculations. Other calculations should be performed in an effort to generate equations from the data which respond to the Purpose of the lab; work is clearly shown and labeled so as to communicate the ideas. (Wrong turns, scribbles, and changes in the direction of one's thought should be documented and are always considered a sign of the scientific process.) ___ Conclusion/Discussion states several mathematical equations which related the quantities in the combination circuit. Customary symbols - ΔV_1, ΔV_2, I_1, etc. - are used in the equations. Equations are supported by the data and referenced to the data (or at least included in the Calculations part of the Data section). All questions are answered (see Questions section on Lab Description page); data is used to support the answers. Discussion is complete and accurate; reveals understanding. 	<p>___/8 (Lab score)</p>
<p>C12. Energy Audit Activity</p> <ul style="list-style-type: none"> ___ Included, labeled and organized all parts of the lab report. ___ Data section included provided sheets - completed and taped in. All rooms and appliances in house were included; no major omissions. Data is reasonable. Calculations are correct. ___ Conclusion/Discussion states an estimate of the total monthly cost of electricity. Main sources of electrical energy consumption are identified. 	<p>___/10 (Lab score)</p>
<p>C13. Use of Notebook as a Record-Keeping Tool</p> <p>Ideally, a student would use the notebook to record notes from class lectures, post-lab sections, textbook readings, etc. Answers and discussions of opening questions are provided. The notebook is a record of the involvement of a scientist/student in both class and lab. A blank or even sparsely-used notebook with little evidence of involvement in class is not a sign of a student who has used the notebook to document and record their involvement in class. A diligent student keeps careful records which subsequently become an effective and useful learning tool.</p>	<p>___/10 (HW score)</p>