

## The Play-Doh Resistance Experiment

Your assignment should have the following heading:

Question: How can we manipulate a material to affect its resistance?

Introduction: Describe the situation and give reasons, background and explanation leading to your hypothesis.

Hypothesis: A statement predicting the results of your experiment.

Experimental Design (variables)

**Dependent variable** – What will I measure; how will I measure it;

**Independent variable** – What will I change, how will I change it?

How can I measure or describe the change I make each time?

**Controlled variables** - Things that I will keep the same (controlled variables – list at least three)

Materials: (a list of *everything* you need to test your hypothesis)

Procedure: (Tell us exactly what to do, one step at a time.)

Results: What data will you collect, and how will you record it? (you might want to draw a table for writing in your data)

Will you need to do calculations? Maybe a graph?

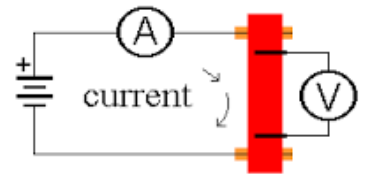
Discussion and analysis: In paragraph form: Describe and interpret the results; were they what you expected? Did you encounter difficulties? Problems with your methods? Other questions you still have? (improvements and extensions)

Conclusion: A short paragraph – Refer back to your hypothesis – Is it supported or refuted by your evidence?

Assessment:

Criterion B: Inquiring and designing and Criterion C: Processing and evaluating

## Play-Doh Circuit



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level	Level descriptor	
1-2	<p>The student is able to:</p> <ul style="list-style-type: none"> <li>state a testable hypothesis</li> <li>state the variables</li> <li>design a <b>method, with limited success</b></li> </ul>	<ul style="list-style-type: none"> <li>reasonable hypothesis included</li> <li>states independent and dependent variables</li> <li>writes materials and procedure that is unclear or has information missing.</li> </ul>
3-4	<p>The student is able to:</p> <ul style="list-style-type: none"> <li><b>outline</b> a testable hypothesis <b>using scientific reasoning</b></li> <li><b>outline</b> how to manipulate the variables, and <b>state</b> how <b>relevant data</b> will be collected</li> <li>design a <b>safe method</b> in which he or she <b>selects materials and equipment</b></li> </ul>	<ul style="list-style-type: none"> <li>hypothesis has some reasons included</li> <li>includes information on what data will be recorded.</li> <li>Includes adequate control variables</li> <li>3-5 data points will be collected.</li> <li>Includes the necessary materials and a correct procedure, which may still have gaps or lack details needed to replicate the experiment.</li> </ul>
5-6	<p>The student is able to:</p> <ul style="list-style-type: none"> <li><b>outline and explain</b> a testable hypothesis <b>using scientific reasoning</b></li> <li><b>outline</b> how to manipulate the variables, and <b>outline</b> how <b>sufficient, relevant data</b> will be collected</li> <li>design a <b>complete and safe method</b> in which he or she <b>selects appropriate materials and equipment</b></li> </ul>	<ul style="list-style-type: none"> <li>hypothesis is clear and testable, and includes scientific reasons for making the hypothesis.</li> <li>Includes complete information on data collection and controlled variables. Five or more data points will be collected.</li> <li>Procedure and materials are clear and complete.</li> </ul>
7-8	<p>The student is able to:</p> <ul style="list-style-type: none"> <li><b>outline and explain</b> a testable hypothesis <b>using correct scientific reasoning</b></li> <li><b>describe</b> how to manipulate the variables, and <b>describe</b> how <b>sufficient, relevant data</b> will be collected</li> <li>design a <b>logical, complete and safe method</b> in which he or she <b>selects appropriate materials and equipment</b></li> </ul>	<ul style="list-style-type: none"> <li>hypothesis is clear and testable, and includes correct scientific reasons for making the hypothesis, perhaps based on research.</li> <li>Includes complete information on data collection and controlled variables. More than five data points will be collected. There is an explanation of how to control the variables, and of how to manipulate or transform the data.</li> <li>Procedure and materials are clear and complete, so that anyone could follow it, and may include suggestions for extending the experiment or for trouble shooting possible difficulties.</li> </ul>
level	Level descriptor	
1-2	<ul style="list-style-type: none"> <li><b>collect and present</b> data in numerical and/or visual forms</li> <li><b>accurately interpret</b> data</li> <li><b>state</b> the validity of a hypothesis <b>with limited reference</b> to a scientific investigation</li> <li><b>state</b> the validity of the method <b>with limited reference</b> to a scientific investigation</li> <li><b>state limited</b> improvements or extensions to the method</li> </ul>	
3-4	<ul style="list-style-type: none"> <li><b>correctly collect and present</b> data in numerical and/or visual forms</li> <li><b>accurately interpret</b> data and <b>describe</b> results</li> <li><b>state</b> the validity of a hypothesis based on the outcome of a scientific investigation</li> <li><b>state</b> the validity of the method based on the outcome of a scientific investigation</li> <li><b>state</b> improvements or extensions to the method that would benefit the scientific investigation</li> </ul>	
5-6	<ul style="list-style-type: none"> <li><b>correctly collect, organize and present</b> data in numerical and/or visual forms</li> <li><b>accurately interpret</b> data and <b>describe</b> results <b>using scientific reasoning</b></li> <li><b>outline</b> the validity of a hypothesis based on the outcome of a scientific investigation</li> <li><b>outline</b> the validity of the method based on the outcome of a scientific investigation</li> <li><b>outline</b> improvements or extensions to the method that would benefit the scientific investigation</li> </ul>	
7-8	<ul style="list-style-type: none"> <li><b>correctly collect, organize, transform and present</b> data in numerical and/or visual forms</li> <li><b>accurately interpret data</b> and <b>describe</b> results <b>using correct scientific reasoning</b></li> <li><b>discuss</b> the validity of a hypothesis based on the outcome of a scientific investigation</li> <li><b>discuss</b> the validity of the method based on the outcome of a scientific investigation</li> <li><b>describe</b> improvements or extensions to the method that would benefit the scientific investigation</li> </ul>	

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