 **Designing Your Own Experiment** 

*Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Teacher:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Period:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

**Testable Question:** State the question you are testing? (The I.V. and D.V. should be included in your question.) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis:** Write your testable hypothesis. **If…(**tell how you test the I.V.), **then…(**tell your prediction about the D.V)

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**Experiment Design:** Draw and label an illustration that shows the independent variable and dependent variable.

 **Independent Variable Dependent Variable**

**Independent Variable-** State the independent variable that you are testing in your experiment.

**Dependent Variable-** State the dependent variable that you are observing/measuring during the experiment.

**Levels of the I.V.-** List the levels you are testing. **Data Collection:** Will you be collecting quantitative or

 qualitative observations? Highlight one below.

 **Quantitative Observations:** (I’m going to measure my D.V.)

 **Qualitative Observations:** (I’m going to record observations

 about the quality of my D.V.)

**Constants-** List **3** of the most important constants you kept the same during your experiment.

**Same:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Control-** Is there a variable or group in your experiment that you will use for comparison? If so, what is it?

**Same:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Same:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Materials:** List all of the materials you will need to complete your lab.

**Set-up:** Draw a labeled diagram of how your lab will be set up.

**Method of Procedure: -** Write a step-by-step procedure that tells how to do the experiment.

**Data Table:** Make a data table before you start your experiment! ***(The I.V. and D.V., with units, should be included in your table headings.)***

**Conclusions:** Write the answers to these questions below.

1. Were your results what you expected? Why or why not? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. How did your independent variable change your dependent variable? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Where could you have caused error during your lab? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Conclusion (combine the last 3 questions into an amazing concluding paragraph): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What improvements could you make that would be beneficial to the improvement of the experiment?

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1. What is a next step you could take as an extension from this lab?

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**7th Grade Lab Grading Rubric**

**Designing**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Category | Task Indicator | Low | Medium | High | Very High | Comments |
| Problem or Question | You can write a specific question to be tested | Not a question | Is a question but, nature of the lab is not mentioned | Question is missing details or reference to what is tested or expected | Question gives details as to what is being tested and expected |  |
| Hypothesis/ Expected Outcome | Your hypothesis follows the if, then… or lists the expected outcome in a clear manner | Doesn’t use if, then statement but makes a prediction | Uses if, then statement but doesn’t make a prediction of expected outcomes | Uses if, then but is incomplete in expected outcomes | Uses if, then statement with expected outcomes |  |
| Experiment Design | Your procedure follows a logical sequence based on physical properties | Only sentence fragments used | Written narrative is incomplete, many sentence fragments used  | Written narrative explains some steps or is not detailed. Some mechanical errors | Written narrative is logical and explains each step in detail. No mechanical errors |  |
| Variables | Can explain variables and how they are relevant to our investigation | Has variables but are incorrect | Has either words or pictures to describe variables | Outlines variables with words and pictures with little detail | Uses pictures and words to describe how variables will be manipulated and measured |  |

**7th Grade Lab Grading Rubric**

**Processing and Evaluating**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Category | Task Indicator | Low | Medium | High | Very High | Comments |
| Present Data | Your data table includes correct units of measurement and a main title. | Data table is missing all units and some data | Data table is missing most units but contains all data | Data table is missing either title or some units but contains all data | Data table includes all units of measurement, title, and is complete |  |
| Interpret and Explain Results | Interpret and explain results using scientific investigations | Partial explanation given or many errors | Interpretation and explanation is lacking some understanding, many errors | Interpretation and explanation is mostly correct | Accurately interprets data and explains results |  |
| Validity of the Hypothesis | Evaluate the validity of your hypothesis based on your outcomes | No explanation or incomplete ideas | Explanation of discrepancies are lacking, many errors | Explanation of discrepancies but no reasons, few errors | Clear explanation for discrepancies and gives reasons for them |  |
| Validity of the Experiment Design | Evaluate the validity of your experiment design | Description of validity is not based on outcomes, many errors | Description is partially based on outcomes, some errors | Describes the validity of the design based on the outcomes, few errors | Clear description of the validity of your experimental design based on the outcome of the investigation |  |
| Improvements | Suggests improvements or extensions that are beneficial to the improvement of the experiment | No improvements or extensions suggested or multiple errors | One improvement or extension is suggested or several errors | Two improvements or extensions suggested or a few errors | Three improvements or extensions are suggested using complete sentences |  |