**Science Inquiry Checklist**

Do NOT lose this sheet. You will be required to hand it in with each part of your Science Inquiry project. Put this sheet at the front of your logbook.

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| ***CRITERIA*** | ***Self-Assessment*** | ***Teacher Assessment*** |
| **TOPIC** | | |
| 1. **Is your topic of interest to you, original, testable, and of scientific importance?** How did you come up with the idea? |  |  |
| 1. **Has this experiment been performed before?** If so, how are you going to change it to make it original? |  |  |
| 1. **Is your topic ethical and safe?** Are there any forms that need to be completed? Are there any safety precautions that you need to take? |  |  |
| 1. **Is this idea affordable?** Do you have access to the materials needed? Can you afford to complete this experiment multiple times? |  |  |
| 1. **Is this idea practical?** Can you complete multiple trials? Can you complete it in a timely fashion? Can you complete this experiment in the fall and winter? |  |  |
| **Subtotal** |  |  |
| **BACKGROUND RESEARCH** | | |
| 1. **What are the main ideas behind your topic?** Explain this concept in your own words. What do we already know about this topic? |  |  |
| 1. **Has this experiment been performed before?** If so, what were the results? What do these results tell us about the scientific concept? |  |  |
| 1. **Has a similar experiment been performed?** What were the results? What do these results tell us about the scientific concept? |  |  |
| 1. **How is this experiment important to scientific thought and society?** Can we learn something new about the scientific concept? Can this idea benefit society and/or the environment? |  |  |
| 1. **Are your rough notes in your logbook?** |  |  |
| **Subtotal** |  |  |

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| ***CRITERIA*** | ***Self-Assessment*** | ***Teacher Assessment*** |
| **PURPOSE** | | |
| 1. **What is the question you are trying to answer?** Write a problem statement that accurately defines the goal(s) of the investigation in the form of a question to be answered. |  |  |
| 1. **What is your independent variable?** What will you *manipulate* to cause a change in the dependent variable and how will you *measure* the change? |  |  |
| 1. **What is your dependent variable?** What will you *measure* (data with units) that is expected to change in response to the independent variable? |  |  |
| 1. **What is your hypothesis?** Develop a hypothesis that addresses the problem statement, is testable, and predicts the effect of the independent variable on the dependent variable. |  |  |
| 1. **Are your rough notes in your logbook?** |  |  |
| **Subtotal** |  |  |
| **PROCEDURE AND EXPERIMENTAL DESIGN** | | |
| 1. **Have you listed all of the materials?** Do you have amounts with the proper metric units listed? Have you included glassware? Have you included any measuring tools you used? Is the materials list a bulleted list? |  |  |
| 1. **Do you have a detailed experimental procedure?** Is the procedure designed to solve the problem statement? |  |  |
| 1. **Is the lab design controlled?** Are all variables, except the independent variable, held constant? |  |  |
| 1. **Is your procedure described in a numbered sequence?** |  |  |
| 1. **Is your procedure detailed enough that it could be reliably repeated by another student?** |  |  |
| 1. **Has the experiment been repeated multiple times?** Do you have a minimum of 30 subjects? Do you have a minimum of 10 trials? |  |  |
| 1. **Are your rough notes in your logbook?** |  |  |
| **Subtotal** |  |  |

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| ***CRITERIA*** | ***Self-Assessment*** | ***Teacher Assessment*** |
| **DATA AND DATA ANALYSIS** | | |
| 1. **Is your raw data in your log book?** |  |  |
| 1. **Is the raw data presented in a neat and organized manner?** Do you have the units? Is the data in a table? |  |  |
| 1. **Are there pictures of the experiment?** |  |  |
| 1. **Graph and table of the data are completely, accurately, and informatively labeled and titled.** |  |  |
| 1. **Graph and table accurately match the experimental design** |  |  |
| 1. **The information is reported accurately with graphs to scale and data in correct units.** |  |  |
| 1. **Measure of central tendency calculated.** Correct measure of central tendency calculated. Display board shows the measure of central tendency, not the raw data. |  |  |
| 1. **Statistical analysis completed.** Have you calculated the standard deviation? Have you completed a t-test or ANOVA test? |  |  |
| **Subtotal** |  |  |
| **CONCLUSIONS AND VALIDITY** | | |
| 1. **Discuss your results.** Have you repeated your hypothesis? Did you discuss whether your data supported or refuted your hypothesis? Did you use specific examples from the data, with units, to support the discussion? |  |  |
| 1. **Sources of error.** What were the sources of error during the experiment? Did anything go wrong? What tips would you offer other scientists to ensure proper execution of your experimental procedure? |  |  |
| 1. **Was your experiment valid?** Were your results valid? How do you know? What changes, if any, to your original procedure would you recommend? What additional experiments could be performed to further investigate your original question? |  |  |
| **Subtotal** |  |  |

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| ***CRITERIA*** | ***Self-Assessment*** | ***Teacher Assessment*** |
| **DISPLAY** | | |
| 1. **logbook.** Logbook has rough notes of all experimental procedures. Raw data is present. Log book is handwritten. |  |  |
| 1. **lab report.** Lab report has all required components. Abstract is complete and no more than one page. |  |  |
| 1. **Display Board.** Display board has required components. Display board is organized in the correct manner. Display board is creatively designed and is eye-catching. |  |  |
| **Subtotal** |  |  |
| **PRESENTATION** | | |
| 1. **Presenter is able to summarize experiment.** Are you able to state why you chose your topic? Are you able to explain the importance of your experiment? Are you able to state your results and explain their significance? |  |  |
| 1. **Presenter is able to answer questions about their experiment.** Are you able to explain your next steps to the judge? Are you able to answer questions about your experiment appropriately? |  |  |
| 1. **Presenter is able to demonstrate appropriate presentation skills.** Are you able to look your judge in the eyes? Are you speaking with an appropriate speed, volume, and tone of voice? Are you standing and using appropriate body language? |  |  |
| **Subtotal** |  |  |
| **Total** |  |  |

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| --- | --- |
| **SCORING GUIDE** | |
| + | Fully Met |
| √ | Met |
| I | Incomplete |