**Project Title:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_\_\_\_

Project by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_\_\_\_

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| --- | --- | --- | --- | --- | --- | --- |
| **Marks** | **4 (A)** | **3 (B)** | **2 (C+)** | **1 (C)** | ***0 (I)*** | **score** |
| **PART 1** | **FRAMING THE PROBLEM [12 marks]** |  |
| Research Question | * States problem as a question
* Is measurable and testable
 |  | * States a problem that is vague but measurable and testable
 | * States a problem that is vague and is not measurable, or is difficult to test
 | *No research question* | /4 |
| Background Research | * Research is thorough and relevant to the investigation
* Ideas are clearly explained
 |  | * Research has some relevance to the investigation
* Some ideas are explained.
 | * Minimal research
* Info gathered was not explained, or is not relevant to the investigation
 | *No evidence of research* | /4 |
| Works Consulted (Bibliography) | * Sources of info properly credited
* Proper format.
* Many references from at least 3 types of sources
* Uses only reliable sources (i.e. not wiki)
 | * Some sources of info incorrectly cited or absent
* Some formatting errors
* Fewer than three types of sources included
 | * Citing of sources is poorly done.
* Not properly formatted.
* Few references are cited
* Uses some sources that are not necessarily reliable (i.e. wiki)
 | * Very few references are cited (1 or 2)
* Most sources are not reliable (i.e. wiki)
 | *None given* | /4 |
| **PART 2** | **EXPERIMENTAL DESIGN [28 marks]** |  |
| Originality and Creativity | * Highly original project that demonstrates a novel approach
* Shows resourcefulness and creativity in the design, use of equipment, constructions, and/or the analysis
 | * Imaginative project that makes creative use of available resources
* Well thought out, and some aspects are above average
 | * Project design is simple with some evidence of imagination
* Uses common resources or equipment
* Topic is current or common
 | * Project design is simple with little evidence of student imagination
* Can be found in books, magazines, or websites
 | *No clear project design* | /4 |
| Hypothesis and/or Prediction | * Hypothesis is clear, testable, and clearly addresses the problem stated.
* It shows a direct relationship to the background research.
 | * Hypothesis is clear, testable, addresses the problem stated.
* It shows some connection to the background research.
 | * Hypothesis is not clear, testable, or does not address the problem stated.
* It shows limited connection to the background research.
 | * Hypothesis is not clear, not testable and does not connect with the stated problem.
* It shows no connection to the preliminary research.
 | *None given* | /4 |
| Variables and Controls (X2) | * Independent and dependent variable are both clearly and correctly identified.
* Controlled variables are listed.
* Appropriate sample size and/or number of trials.
* Control group clearly identified
 |  | * Either Independent or dependent variables are either not clearly/correctly identified.
* Some controlled variables are listed
* Sample size and/or number of trials are not appropriate.
 | * Neither independent nor dependent variables are clearly or correctly identified.
* Sample size and number of trials are not appropriate.
 | *No independent or dependent variable listed. No controls listed.* | \_\_\_\_\_ X 2 = /8 |
| Materials | * All materials listed clearly
* Exact quantities listed
 | * All materials listed
* Some quantities listed
 | * Most materials listed
* Quantities of materials is unclear
 | * Many materials needed are not included and quantities are not given
 | *No materials listed* | /4 |
| Procedure (X2) | * Experiment is a well-constructed test of the hypothesis.
* Procedures are outlined in a step-by-step method that could be followed by anyone without additional explanations.
* The experiment is replicated.
 | * The procedure is appropriate.
* Most steps are well explained and but there may be 1 or 2 gaps that require explanation.
 | * Mostly complete procedure with little attention to the details of the experiment.
* Steps are not well explained.
 | * The procedure is unclear and missing important steps.
 | *No procedure listed* |  \_\_\_\_\_X 2 =/8 |
| **PART 3** | **RESULTS AND ANALYSIS [12 marks]** |  |
| Results (X2) | * Summarizes data in a way that clearly describes what was discovered using graphs or charts.
* Charts are accurate, easily understood and complete (titles, labels, data key, variables, correct units, etc.)
* Discusses relationships between the variables and thoroughly analyzes trends/patterns. Makes well-reasoned predictions about what might happen if part of the experiment were changed to better test the hypothesis or answer a further question.
 | * Graphic(s) chosen to display data.
* Graphic(s) accurate, but some components (titles, labels, data key, variables, correct units, etc.) are missing.
 | * Graphic(s) chosen inappropriate for the type of data presented.
* Graphic(s) not easily understood.
* Most or all of the components (titles, labels, data key, variables, correct units) are missing.
 | * Does not summarize data clearly.
* The relationship between the variables is unclear or not discussed.
* Makes no predictions about what might happen if part of the experiment were changed to better test the hypothesis or answer a further question.
 | *None given* | \_\_\_\_\_X 2 = /8 |
| Conclusion | * Conclusion is related to both the research question and the hypothesis.
* Shows what has been learned and indicated predictions and/or further questions
 | * Conclusion is related to the research question and provides a good summary of the findings and relates back to the hypothesis
 | * Conclusion is somewhat related to the research question and provides a summary of the findings, but does not tie back to the hypothesis
 | * Conclusion is not related to the research question.
* Contains no reference to the hypothesis.
 | *None given* | /4 |
| **PART 4** | **PRESENTATION [8 marks]** |  |
| Visual Display | * Display is outstanding, extremely informative, and attractive.
* Sections are all displayed in an organized manner which helps the audience understand the entire experiment within an minute or two of explanation
 | * Display is attractive and all parts seem to fit together without being crowded.
* All sections are displayed in an organized manner
 | * Display is organized and relatively easy to understand.
* May be missing some sections
 | * Display is messy and disorganized.
* Lacking in content, missing sections
* Many grammatical errors
 | *No display* | /4 |
| Oral Presentation | * Experiment explained clearly.
* Showed knowledge and interest above and beyond average
* If working in partner, both students participate equally and can both answer questions
 | * Experiment well explained.
* Both students participate equally and both can answer questions adequately.
 | * Explained experiment.
* Explanation fits the purpose.
* One partner speaks more than the other.
* One partner answers more of the questions
 | * Partially explained the experiment.
* Explanation doesn’t fit the purpose.
* One partner dominates the presentation and answers most or all of the questions.
 | *Presentation confusing. Little effort on the part of the student* | /4 |
|  |  |  |  |  | ***TOTAL* /60** |

Student Judge(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Comments: \_\_(please put comments on the sticky notes) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_