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

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

Investigation Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Question Statement

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| Scientific question is stated accurately and clearly. Object of inquiry is clear. | Question is stated accurately OR clearly. Object of inquiry is clear. | Question is stated, but is neither clear nor accurate. Object of inquiry is clear. | Object of inquiry is unclear. | \_\_\_\_\_\_\_\_  X \_\_\_\_1\_\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. and 3. Prior Knowledge

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| All facts used in investigation are listed. Source for each fact is cited. | Most facts used in investigation are listed. Source for each fact is cited. | At least some facts used in investigation are listed. Sources for most facts are cited. | At least some facts used in investigation are listed. Few (if any) sources for facts are cited. | \_\_\_\_\_\_\_\_  X \_\_\_\_1\_\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. Evaluation/Hypothesis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| Reasonable evaluation method is proposed and clearly explained. | Reasonable evaluation method is proposed. Explanation is attempted but may not be clear. | Reasonable evaluation method is proposed but not explained | Evaluation method is proposed but appears to be unworkable. | \_\_\_\_\_\_\_\_  X \_\_\_\_1\_\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. Method proposed to answer Question

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| All materials and equipment are listed.  Complete procedure that explains how equipment is used to find answer to question is given. Diagram included that illustrates procedure. | All materials and equipment are listed.  Partial procedure that explains how equipment is used to find answer to question is given. Diagram included that illustrates procedure. | All materials and equipment are listed  Attempt is made to explain procedure but it is not clear how student proposes to answer question. Diagram included that illustrates procedure. | Materials and equipment list is missing or incomplete.  AND/OR  Proposed procedure is unworkable. | \_\_\_\_\_\_\_\_  X \_\_\_\_5\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. Data/Evidence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| All data are clearly organized and presented. All quantities include appropriate units. | All data are presented. All quantities include appropriate units. | Most data are presented. All quantities include appropriate units | Minimal data presented.  AND/OR  Some quantities lack appropriate units | \_\_\_\_\_\_\_\_  X \_\_\_2\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| All results are logically interpreted in attempt to answer question. All calculations used are accurately shown and explained. Graphs may enhance presentation of results. | All results are logically interpreted in attempt to answer question. Some calculations used may be inaccurate or not explained. Graphs may enhance presentation of results. | Attempt is made to interpret results, but interpretation is incomplete or logical reasoning is not evident.  OR  Calculations are not shown. | Minimal attempt made to interpret results. | \_\_\_\_\_\_\_\_  X \_\_2\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. and 9. Evaluation and Troubleshooting

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| Results are evaluated using previously identified method. All discrepancies/errors are identified and explained. For numeric results, % error calculated. Solutions for observed errors proposed (and may be implemented). | Results are evaluated using previously identified method. At least some discrepancies/errors are identified. For numeric results, % error calculated. Solutions for observed errors proposed (and may be implemented). | Results are evaluated using previously identified method. Few, if any, discrepancies/errors are identified. For numeric results, % error may not be calculated. Solutions for observed errors may not be proposed. | Evaluation of results is not clearly based upon previously identified method. Few, if any, discrepancies/errors are identified. For numeric results, % error may not be calculated. Solutions for observed errors may not be proposed | \_\_\_\_\_\_\_\_  X \_\_\_\_5\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. Concluding Argument/Reflection

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **4** | **3** | **2** | **1** | **Total Points** |
| Appropriate Data/Evidence is used to:   * Answer the question * Support or refute the hypothesis   Logical, well-ordered and reasoned argument is presented that cites both Analysis and calculated Error (if applicable). | Appropriate Data/Evidence is used to:   * Answer the question * Support or refute the hypothesis   Logical argument is presented that cites both Analysis and calculated Error (if applicable). | Data/Evidence is used to:   * Answer the question * Support or refute the hypothesis   Argument is presented that does not accurately cite both Analysis and calculated Error (if applicable). | Minimal attempt made to justify answer. | \_\_\_\_\_\_\_\_  X \_\_\_4\_\_\_\_ Multiplier  = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points |

1. Post Lab: Questions should be rewritten and answered in complete sentence = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Points(8pts each)

Comments TOTAL POINTS: \_\_\_\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_\_ (Total Possible)