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

Density Project

Scientific Method Project

This is a project designed to allow you to combine creative problem-solving with the scientific method. The following pages include the rubric and write up portion for your experiment. You must type up your actual report when you turn it in. Although we are sharing supplies, each of you will be taking your own notes.

**YOU MUST SHOW PROOF OF THE EXPERIMENT THROUGH THREE FINISHED ART PIECES (EACH) TO RECEVIE CREDIT FOR PROJECT.**

This project is due NEXT week **Thursday, October 16,2015**. I must have the completed form (completely filled out, data table with graph, proof of experiment and one references) to receive full credit. You may be creative with your graph format.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| DENSITY PROJECT RUBRIC FINAL DUE DATE\_\_\_\_\_ TOTAL: /50 % | | | | | | |
| Student Name: Period: \*\*NO LATE PROJECTS | | | | | | |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Pt | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | | % | 100 | 98 | 96 | 94 | 92 | 91 | 89 | 87 | 85 | 83 | 81 | 79 | 77 | 75 | 73 | 71 | 70 | 68 | 66 | 64 | 62 | 60 | 58 | 56 | 54 | 52 | 51 | 49 | 47 | 45 | | | | | | | |
| **Comments** | Required Components | Performance Level | | | |  |
| **Advanced**  (4) | **Proficient**(3) | **Basic**  (2) | **Below Basic**  (1/0) | |
|  | **Identify the Question / Problem:**  -Clearly stated  - Testable  -Clearly defines the type of measurement being used  - Clearly refined to identify the variable being tested  - Narrow enough to be completed by student within one week’s time  \*\*MUST BE IN THE FORM OF A QUESTION WITH A QUESTION MARK! | In depth, detailed and concise explanation of all components | Meets all criteria | Not clearly explained  or  Missing some components  or  Used a kit | Missing multiple components which affected the outcome of the experiment | |
|  | **Background Research**  -Background Research is stated  -observations and inferences are described and related to the problem  -Work cited page is present or sources are cited.  \*\*AT LEAST ONE SOURCE IS REQUIRED! | In depth, detailed,  and concise  description of  research,  observations,  and inferences  with work cited page. | Meets all  Criteria  With work cited page | Not clearly  explained  or  Missing some  Information  Or no work cited page | Missing research,  observations and/  or inferences  and no work cited page. | |
|  | **Form a Hypothesis:**  - Clearly identifies the testable problem  - Clearly states what the student expects to happen  - Clearly states why the student expects that to happen based on their background research  -Clearly defines the type of measurement being tested  -Uses if…then…because statement  \*\*NAME THE SUBJECT BEING TESTED | In depth, detailed and concise explanation of all components | Meets all criteria | Not clearly explained  or  Missing some components | Missing multiple components which affected the outcome of the experiment | |
|  | **Design an Experiment to Test the Hypothesis:**  -There is only one variable being tested  -Experiment is controlled by identifying all constants | In depth, detailed and concise explanation of all components | Meets all criteria | Not clearly identified  or  Missing some components | Missing multiple components which affected the outcome of the experiment | |
|  | **Design an Experiment to Test the Hypothesis:**  - The design tests the hypothesis  -Materials are clearly listed using bullets  - The procedure is clearly mapped out using numbers for each step  -Procedures are clear and easy to follow so that others can replicate | In depth, detailed and concise explanation of all components | Meets all criteria | Not clearly explained  or  Missing some components  or  More than one variable being tested | Missing multiple components which affected the outcome of the experiment | |
|  | **Design an Experiment to Test the Hypothesis:**  - Multiple repetitions listed…at least 3  - The experiment is safe and doable with all safety concerns identified | In depth, detailed and concise explanation of all components | Meets all criteria | Too few runs to get reliable data  Too few data sets | Incomplete | |
|  | **Design Table to Collect and Organize Data/**  **Collect and Analyze Data:**  - Multiple data sets  **TABLE:**  **-**There is a clear title with measurement units identified when needed  -Columns and rows are clearly labeled with units identified when needed  -Quantitative Data is accurately recorded  -Qualitative notes are recorded | Detailed and in-depth recording of the data  Qualitative notes are clear and easy to understand and related to the problem | Meets all criteria | Inappropriate table or some incorrectly recorded data  Reviewer has to ask questions about table to understand it  Missing Qualitative Notes | Missing multiple components  Table and data is incomplete and reader cannot understand the data from the experiment | |
|  | **Collect and Analyze Data:**  **-**Descriptive and anecdotal data is allowed for this, but please make sure you record materials used and record which materials they were combined with.  -Also record the result IN DETAIL.  -Graph may be more along the lines of an infographic.  - Data is neat and organized | Detailed and in-depth recording of the data | Meets all criteria | Inappropriate graph or some incorrectly recorded data  Reviewer has to ask questions about graph to understand it | Missing components  Graph and data is incomplete and reader cannot understand the data from the experiment | |
|  | **Draw Conclusions:**  - Student’s conclusion is directly connected to and supported by their analysis of the data  - Student clearly restates data, both quantitative and qualitative, in their explanation  -Student explains why the data supports the hypothesis or not  -Student offers a plausible explanation for unexpected outcomes  -Errors and/or improvements are clearly identified…there will be some!  -Student’s analysis walks the reviewer through the graphed data clearly explaining what/when it happened | In depth, detailed and concise explanation of all components | Meets all criteria | Conclusion not tied to the analysis or does not clearly explain  Disconnect between the data and conclusion  Incomplete explanation of how data support hypothesis or plausible explanation of unexpected outcome | Missing components  No connection between data and conclusion  No attempt at analysis | |

Lab Write Up

Problem: \*\*\*Question format…

\*\*REFER TO YOUR RUBRIC FOR IMPORTANT DETAILS!!!

Background Research: \*\*\*At least 1 sources…

Hypothesis: \*\*\* If…then…because statement

j0250135Experimental Design:

Independent Variable (what is being tested)…

Dependent Variable (what is the result of the independent variable)……

Constants…

Materials (bulleted)…

Procedures (numbered)…

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Safety & Repetitions…

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Collect and Analyze Data:

Table & Notes…

Graph…

Draw Conclusions:

What did you learn? Restate data. Does the data support your hypothesis? Any improvements? Errors? (THERE ALWAYS ARE!)