**Gravity Racer Grading**

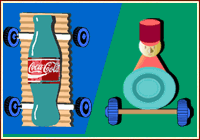
Name:

Group:

| **ITEM** | **Journal REQUIREMENTS** | **Point Value** |
| --- | --- | --- |
| **Format** | Title of project at top center of 1st page  Partners at the top left of 1st page  **Headers** for each step underlined or somehow standout and numbered  Dates for all entries | 1 point each- 10 total |
| **Section Title** | |  |
| **Identify the Need** | Record the goals for the project | 5 points total |
| **Identify Criteria & Constraints** | List the criteria and constraints in a two column table | 10 points |
| **Research Existing Technology & needed information** | **Research:**  Record notes about how gravity cars work, basics of motion (potential and kinetic energy, momentum, friction), and other information needed to successfully complete the project | 10 points total (3 MLA and 7 notes) |
| **Brainstorm a Solution** | **Summary of Team Member Ideas:**  List ideas from each team member  Include drawings  **Observations:**  What experience do you have with cars rolling? List ideas that stem from these | 10 points  10 points  10 points |
| **Use a decision making tool** | Create a decision making matrix to show how/why you chose the design  Describe your choice and explain why this was the best choice- include tradeoffs and risk-benefit discussion  Draw your most promising design | 10 points  10 points  10 points |
| **Build and test prototypes** | -date all entries and ideas  -describe each prototype  -include ideas from all members  -number prototypes  -drawings of each prototype included | 50 points |
| **Evaluate prototypes** | -For each prototype tested, record notes on how well each prototype performs  -describe changes made and reasons for changes  -describe additional tradeoffs or changes you made | 30 points |
| **Final Test** | -Final drawing with measurements  -drawings include a side view and an aerial view  -drawings should be labeled with items the car was made from  -Record final results of test- how far in distance challenge; did the car meet the second goal? Calculate the speed of the car for the best trial. | 20 points for diagrams  15 points for data |

| **Component** | **Report Description** | **Value** |
| --- | --- | --- |
| **Topic Sentence** | restate the goals of the project using your own words and past tense | **5 points** |
| **Body Sentences 1 & 2** | describe the research or experience that inspired your design. discuss how this specifically influenced your first prototype design.  written explanation shows a clear understanding of the technology design process. shows basic understanding of aerodynamics and speed. | **10 points** |
| **Body Sentences 3-7** | describe the process of creating and editing prototypes. why did you make changes? why did you keep certain aspects of the design? | **10 points** |
| what issues arose during testing of prototypes? what successes were achieved? Why? How were these linked to design and research phase? | **10 points** |
| **Body Sentences Final 2-3** | Describe the final design- description of car, measurements, and results of test. Describe why you think the car performed this way. | **10 points** |
| **Concluding statement** | What would you change and why if you were to redo the project with the same parameters? | **5 points** |

|  | **5-4** | **4-3** | **3-2** | **2-1** |
| --- | --- | --- | --- | --- |
| **Design** | Design is clear and simple. Design uses materials provided.  Drawing includes measurements and an accurate list of materials used. | Design is fairly clear and most of the materials are listed. Some measurements are included with the drawing. | Design is unclear. Few of the materials are listed. Inaccurate measurements are included or not all are listed. | Design is confusing. Materials are not listed correctly. Measurements are all inaccurate or missing. |
| **Working Cooperatively** | Participates in all aspects of the planning, decision making, and construction. | Participates in most aspects of group planning, decision-making and construction. | Participates in some aspects of group planning, decision-making and construction. | Participates in a limited manner. Allows others to plan, make decisions, and construct. |
| **Device Demonstration** | Car traveled at least 1 meter in test one and stopped at the 1 meter goal line in test two. | Car traveled at least 1 meter in test one, but did not stop on the goal line in test two. | Car traveled between ½ meter and 1 meter during test one and did not stop on goal line for test two. | Car traveled less than ½ meter in test one and did not stop on goal line during test two. |
| **Process** | Lab journal includes full details regarding the design process. | Lab journal includes all steps of the design process. More detail needed. | Lab journal missing some steps of the process and detail is inadequate. | More than two steps of the process are missing and detail is inadequate. |



**Sample Diagram:**

Make sure to show measurements: length, width, height

Make sure to label parts used from your "shopping list": bottles, cardboard, straws, etc.