Paper Football Physics – Project Rubric

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| **Category / Rating** |  **3**  | **2** | **1**  |
| **Criteria & Constraints** | Students identify at least 3 appropriate criteria and constraints given the problem and design challenge. | Students identify 1-2 appropriate criteria and constraints given the problem and design challenge. | Students do not identify any criteria or constraints given the problem and design challenge. |
| **Brainstormed Designs** | Students have at least 3 different designs from brainstorming. They provide at least 3 descriptions of the designs and at least 2 reasons for choosing the design and how it satisfies each of the criteria and constraints. | Students have at least 3 designs from brainstorming. They provide less than 3 descriptions of the designs and 1 reason for choosing the design and how it satisfies each of the criteria and constraints. | Students have fewer than 3 designs from brainstorming. They do not describe the designs in the report and do not give reasons for choosing the design or how it satisfies the criteria. |
| **Design Description & Discussion** | Students provide a sketch and a full breakdown of the designs for their 3 football designs. They explain the reasoning for their different shapes for the footballs. | Students provide a sketch and a breakdown of 2/3 of the football shapes. They also explain some reasoning for their different footballs. | Students provide a sketch of at least one football. Little to no explanation is given, and no explanation is given for how the group produced the shape for the footballs. |
| **Results** | Students provide a detailed description of the test and the results. They provide the distance traveled and the velocity of each football. | Students provide most information related to their tests. They give an incomplete description of how the test was performed. | Students provide some results of the test. They do not provide the description of how the test was performed or details on the velocity of the footballs. |
| **Analysis** | Students provide detailed analysis of the test results and give reasons and explanations for various design faults, as well as limitations of their design. | Students provide a short analysis of their results, but do not explain the reasoning for the design faults or limitations. | Students do not provide analysis of the results from the experiment or discussion on limitations. |
| **Redesign & Discussion** | Students use their results and analysis to redesign their footballs thoughtfully and with purpose. Reasoning for changes is provided and well explained. | Students use their results and analysis to redesign their footballs. Reasoning for changes is not well explained. | Students provide a redesign of their footballs, but do not explain reasons for changes and do not use analysis of results as reasons for changes. |
|  |  **Total Score** [maximum of 18] |