Physical Science

*Engineering & Writing Project – Chapter 10 Motion and Momentum*

**Design Your Own Safe Car**

**Question:** How can you protect the passengers from stops caused by sudden head-on impacts?

**Goals:**

1. Construct a fast car.
2. Design a safe car that will protect a plastic egg from the effects of inertia when t he car crashes.

**Materials:** A box of possible materials is available. If more are needed or wanted they will need to be provided by the students.

**Required Components:**

1. Sketch your design
2. Test your design
3. Write an evaluation of your car design

**Evaluation:** In paragraph or multiple paragraph format, evaluate how your car performed for each goal. Be specific about how successful it was for each goal and the reasons why. Include any evaluations on how to improve the design for better success. Pictures and sketches are great to improve your explanations. (Value: 50 points)

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| --- | --- | --- |
| **3** | **2** | **1** |
| Car design is clearly explained with great detail | Mostly clearly explained | Lacking details |
| Car design features are clearly explained using sound science for speed (X2) | Mostly clear in understanding | Lacking sound science reasoning |
| Car design is clearly explained using sound science for safety (X2) | Mostly clear in understanding | Lacking sound science reasoning |
| Briefly explain your car’s performance in speed and safety | Mostly clear | Lacking details |
| Car performance is compared to other groups’ cars using specific data | Comparison mostly clear | Comparison is difficult to follow |
| Student thoroughly explains how to improve the car design after testing and comparing to other groups ( X2) | Student’s explanation could include other obvious improvements | Student’s explanation is lacking important improvements that should be addressed |
| Predict what effect decreasing the speed of your car would have on the safety of the egg. Thoroughly done. | Some details missing in this evaluation. | Major details are missing in this evaluation. |
| Overall impression is very good and the work is thorough | Impression is mostly good, but there are minor mistakes that detract from the quality. | Mostly good but major mistakes or errors detract from the quality. |
| Paper is supported with evidence throughout | There is evidence but it is poorly organized | Little evidence if any is presented |
| No spell, grammar errors | 1 error | More than 1 error |