

Newton's Laws Car Design/Crash Test Project

Research Report

Name _____

Assigned Vehicle: _____



Summary:

Student will conduct research into the Physics of automobile crashes, the safety features of an assigned vehicle, and the performance of their assigned vehicle in crash tests. Students will produce a formal report. The report will be written in the student's own words and should have 2-3 pages of text (double spaced, 11-point font, 1-inch margins) and images/drawings to support the text. The report must have a bibliography worksheet completed with at least 3 sources NOT INCLUDING Wikipedia.com, Howstuffworks.com, About.com, or Ask.com. Any direct quotations from sources must also be placed in "quotes" with the source in (parentheses) immediately after the quotation. Projects without a bibliography worksheet or turned in 1 day late will receive at 10 point deduction.

Grading rubric:

Section 1 – Physics of car crashes: _____/15 points

Student discusses how the concepts of velocity, acceleration, Newton's Laws of Motion, kinetic energy, and the Laws of Conservation of Momentum and Energy relate to automobile crashes. Student cites examples of how different variables (mass, velocity, etc.) influence the potential for injury in a crash. Student discusses how the science relates to the design concepts of "crumple zones" and "safety cages." Drawings or pictures are used to support the text.

Section 2 – Specific design: _____/10 points

Student includes a picture of their assigned vehicle and discusses safety features included in that vehicle.

Section 3 – Crash test performance: _____/15 points

Student discusses results of crash testing by the National Highway Traffic Safety Administration (NHTSA) and/or the Insurance Institute for Highway Safety (IIHS) for their specific vehicle. Included should be specific successes or failures noted by these agencies and the student's hypotheses on how the design could be improved based on the content in Section 1.

Section 4 – Guidelines and format: _____/10 points

Paper is free of mistakes in spelling, grammar, and punctuation. Bibliography Worksheet is complete with three references. Paper is written or typed neatly. Paper is free of folds, tears, etc. and meets guidelines for length, margins, and spacing.

Section 5- Extra Credit: _____/5 points

Include an extra section that discusses how increasing efficiency (fuel _{mileage}) affects the safety and cost of an automobile OR include a section comparing this model year of car to other model years of the same model.

TOTAL: _____/50 POINTS