

A good topic and a well-focused research question allow the student to extend IB physics knowledge in a new area since the bow does not obey Hooke's Law. This potentially dangerous experiment is conducted safely at an archery club.

The abstract is close to meeting the requirements of the top mark but the introduction is incomplete. The approach is simple and uses accessible and good technology and maths software. However, the methodology used to determine the average speed of the arrow from pictures lacks details and is not clearly explained. A better release mechanism would improve results but the student recognizes the limitations of the procedure followed. Relevant physics is understood but the investigation should go deeper into the physics of the recurve bow and compare results with other researchers.

The overall reasoned argument can be followed easily but has some weaknesses. Significant figures are not always respected and uncertainties are not consistent or exact. The analysis is good but limited.

The essay is generally well organized; however, some elements of the appendix should be in the core of the essay including a sample of the data and diagrams used to determine the speed of the arrow. The title page should stand on its own (without the research question), the abstract should appear before the table of contents and the bibliography before the appendix.

The lack of consistency and exactness in the use of terms and symbols describing work, energy, efficiency, as well as the style used, weakens the quality of the language. Only SI units should be used in the core of the essay. A graph showing both curves (work and kinetic energy) as a function of draw length would have been very effective. The essay represents a good and serious effort. The overall achievement is situated at the low end of the top range.