

Projectile Motion Investigation

To be validated in a CAP week 2 2024

If a projectile is launched from the same height as it lands it can be shown that the launch angle which gives the maximum range is 45 degrees (in the absence of air resistance). Does this change however when the projectile is launched from a different height than where it lands?

As part of this investigation you should do background research (as per the scientific method).

You may find this simulation useful:

https://phet.colorado.edu/sims/html/projectile-motion/latest/projectile-motion_en.html

Then using the given launch equipment, design and conduct an experiment to investigate the effect launch height has on the angle for maximum range of a projectile.

You should write an experimental report based on the following sections:

Research

Hypothesis.

Variables.

Equipment List.

Method.

Results.

Analysis. (should contain clear and concise treatment of uncertainties)

Conclusion

Evaluation (of experimental method, results obtained and associated uncertainty and how the experiment can be improved).

Discussion (relate your experimental results with your research).

This report is not to be handed in and will not count towards your mark but being able to address these elements will be essential for success in the validation.

You will have access to the apparatus during week 7/8 term 4 2023.