

Rocket Launch—Finding Vertical Height and Velocity

Pre-Launch: Think and discuss (no need to solve)

1. What do you need to measure/calculate to determine how fast the projectile leaves the launch pad when launched straight up? Discuss with your group what you will measure, what you will calculate and what formula you will use. Submit a response as a group.
2. What do you need to measure/calculate to determine how high the projectile travels when launched straight up? Discuss with your group what you will measure, what you will calculate and what formula you will use. Submit a response as a group.
3. Discuss how to measure/calculate how high the projectile travels when launched straight up using the Altitude Finder.

Time to launch! Setting the regulator to 60 psi is a good starting point. Collect your data here:

Rocket Launch—Predicting Trajectory

After launching the projectile vertically to obtain an initial velocity, what do you need to measure/calculate to determine how far a projectile will travel at the same pressure when launched at a 60-degree angle? Discuss what formula(s) you will use and make a prediction. Submit a response as a group.

Collecting Data: Record your data for at least 3 trials below using the Precision Air Powered Projectile.

How do your experimental results compare to your prediction? What was the margin of error between your prediction and the actual results? What could have made your prediction more accurate? Discuss as a group.

Repeat this experiment for multiple angles such as 45 degrees and 30 degrees. Collect your data in two tables below:

Finally, explain any sources of error or inconsistencies you might find in your data. For example, is there a wider variance in the distance the rocket travels with higher angles or lower angles? What outside factors could contribute to differences between your predicted and experimental results?