

Thought-provoking practical physics workshop

فکر انگیز عملی طبیعیات

Lesson: Projectile Motion

A cricket ball thrown by the bowler and hit by a batsman, a basketball thrown by the player, and a tennis ball hit by the player during a serve are all examples of projectile motion. Once shot into the sky, fireworks are projectiles as well. When a child jumps off a swing to land on the ground, the child is also a projectile. A projectile is any object such as a bullet or ball that starts with an initial velocity and then the path that it follows is entirely determined by gravitational acceleration and air resistance.

Objectives

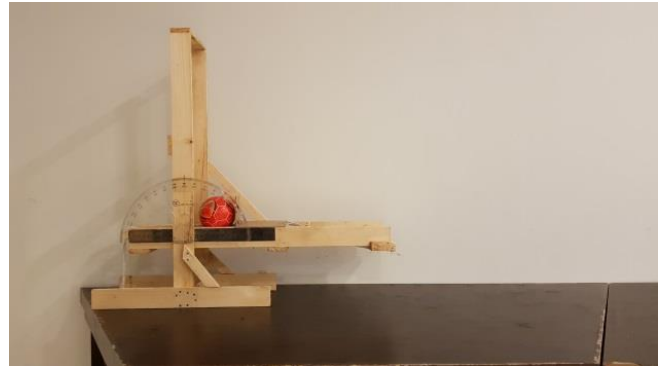
In this experiment, we will use a custom built apparatus, video tracking and analysis to analyze projectile motion. We will launch the object from various heights, angles and velocities. We will determine the horizontal range and compare the time of flight.

How to conduct the experiment

Apparatus: Launcher, objects (projectiles),
Camera, Tripod

Software: Tracker, MS Excel

We will be using a launcher to launch projectiles and a camera to record the trajectory. We will use the software Tracker to plot the trajectory and MS Excel to analyze the plot.





Exploration Points

1. What happens when you use a lighter object such as a cotton ball as a projectile?
2. What happens when you launch two projectiles at 45 degrees and 60 degrees?
- 3.

Safety

Pay attention to the high speeds of the objects being launched.