

# Projectile Launcher

## Apparatus

projectile launcher which can be angled, soft projectiles

A simple launcher can be made using a piece of pipe and spring with trigger to release the spring. Alternatively a toy gun with spring which can be mounted on a retort stand and angled can be used.

## Action

The students experiment with firing the projectiles with different launch angles, and see what angle gives them the maximum range.

**Note: Students should be cautioned to keep clear of the projectile launcher when firing, and never look down the launcher.**

## The Physics

Provided initial speeds are the same, the launch angle for maximum range is  $45^\circ$ . To achieve maximum height the projectile should be launched directly upwards so that its initial vertical velocity is a maximum.



## Accompanying sheet

### Projectile Launcher

What is the angle of launch corresponding to maximum range?

What is the angle of launch corresponding to maximum vertical height?

### Warning:

**DO NOT stand in front of the launcher!!!!!!!**