# INTRODUCTION

**What is Projectile Motion?**

Projectile motion is the motion of an object thrown or projected into the air, subject to only the acceleration of gravity.

In a Projectile Motion, there are two simultaneous independent rectilinear motions:

Along the x-axis: uniform velocity, responsible for the horizontal (forward) motion of the particle.

Along y-axis: uniform acceleration, responsible for the vertical (downwards) motion of the particle.

Acceleration in the horizontal projectile motion and vertical projectile motion of a particle:

When a particle is projected in the air with some speed, the only force acting on it during its time in the air is the [acceleration due to gravity](https://byjus.com/jee/acceleration-due-to-gravity/) (g). This acceleration acts vertically downward. There is no acceleration in the horizontal direction, which means that the velocity of the particle in the horizontal direction remains constant.

**What is a Projectile?**

A projectile is any object thrown into space upon which the primary force acting is gravity. This doesn’t necessarily mean that other forces do not act on it- their effect is minimal compared to gravity. The path followed by a projectile is known as a trajectory. A ball thrown at an angle is an example of a projectile.

# How to use it

1. Enter 1 if the projectile (in this case a ball) is to be thrown from ground. Enter 2 if the ball is to be thrown from a cliff. The difference in the choices is that in the first case, negative y-axis will not be shown in the graph as a projectile will not go underground. However, in the second case, the projectile may fall down the cliff and hence, negative y-direction has to be shown. Do note that if the input is not 1 or 2, the program terminates.
2. Enter any velocity from 0-100 m/s.
3. Enter any angle from 0-90º
4. A new window with the graph will open. The time of flight, maximum height and the horizontal range have been computed and mentioned below.
5. Close the window to exit.

**Do note that all quantities are in SI Unit.**