Projectile Motion

Talk to a Teacher
http://spoken-tutorial.org
National Mission on Education through ICT
http://sakshat.ac.in

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Learning Objectives

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We will demonstrate,

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- **Projectile Motion PhET simulation**

Pre-requisites

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- **Learner should be familiar with topics in high school Physics**

System Requirement

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- **Ubuntu Linux OS v 14.04**

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- **Java v 1.7**

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- **Java v 1.7**
- **Firefox Web Browser v 53.02.2**

Learning Goals

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- **Determine how each parameter affects the trajectory of an object**

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- **Estimate where an object will land, given its initial conditions**

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- **Determine how each parameter affects the trajectory of an object**
- **Estimate where an object will land, given its initial conditions**
- **Determine how horizontal and vertical motion of a projectile are independent**

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- **Investigate the variables that affect the drag force**

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- **Examine the effect of drag force on the velocity and acceleration**

Definition of a Projectile

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- **A projectile is any object that is fired, pitched or thrown**

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- **The path of the projectile is called its trajectory**

Projectile Motion

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- **Projectile motion is a form of motion in which a projectile is thrown near the Earth's surface**

Effect of Gravity on a Projectile

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- **A projectile moves along a curved path under the action of gravity**

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- **Gravity is the downward force acting on a projectile**

Effect of Gravity on a Projectile

- **A projectile moves along a curved path under the action of gravity**
- **Gravity is the downward force acting on a projectile**
- **Gravity influences its vertical motion and causes the parabolic trajectory**

Examples of Projectile Motion

Examples of Projectile Motion

- **A baseball that has been thrown**

Examples of Projectile Motion

- **A baseball that has been thrown**
- **A bullet that is fired from a gun or a rifle**

Link for PhET Simulation

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http://phet.colorado.edu

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0			

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0	**0.27**		

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0	**0.27**	**3.92**	

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0	**0.27**	**3.92**	**10.35**

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10^0	**0.27**	**3.92**	**10.35**
20^0			

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0	**0.27**	**3.92**	**10.35**
20^0	**0.52**		

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0	**0.27**	**3.92**	**10.35**
20^0	**0.52**	**7.37**	

Tabular Column

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0	**0.27**	**3.92**	**10.35**
20^0	**0.52**	**7.37**	**11.34**

Assignment

Assignment

Cannon's Angle	Time(s)	Range(m)	Height(m)
10^0	**0.27**	**3.92**	**10.35**
20^0	**0.52**	**7.37**	**11.34**
30^0			
40^0			
50^0			

Assignment

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Observe the projectile motion by

1. **Selecting various projectiles**
2. **Changing initial speed and height of the pedestal**

Assignment

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1. **Change various custom parameters and launch the projectile**

Summary

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- **Projectile Motion PhET simulation**

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- Determined how horizontal and vertical motion of a projectile are independent

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- **Investigated the variables that affect the drag force**
- **Examined the effect of drag force on velocity and acceleration**

About the Spoken Tutorial Project

- **Watch the video available at http://spoken-tutorial.org /What_is_a_Spoken_Tutorial**
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- **Conducts workshops using spoken tutorials**
- **Gives certificates to those who pass an online test**
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Forum for specific questions

- **Do you have questions in THIS Spoken Tutorial?**
- **Please visit**

  http://forums.spoken-tutorial.org
- **Choose the minute and second where you have the question**
- **Explain your question briefly**
- **Someone from our team will answer them**

Acknowledgements

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- More information on this Mission is available at http://spoken-tutorial.org/NMEICT-Intro