

Projectile Motion Worksheet

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Part 1: Building a Foundation
What is the shape of the trajectory of a projectile in ideal conditions (ignoring air resistance)?
Hint: Consider the basic physics of projectile motion.
A) CircularB) LinearC) ParabolicD) Elliptical
Which of the following statements are true about projectile motion?
Hint: Think about the characteristics of projectile motion.
A) The horizontal velocity remains constant.
B) The vertical velocity is affected by gravity.
□ C) The trajectory is a straight line.□ D) Air resistance is a significant factor.
Explain what is meant by the horizontal and vertical components of projectile motion.
Hint: Consider how motion can be broken down into different directions.

List the two main forces or influences acting on a projectile in motion.



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1. Force 1 2. Force 2 What is the typical value of acceleration due to gravity on Earth? Hint: Consider the standard value used in physics. A) 8.91 m/s² B) 9.81 m/s² C) 10.81 m/s² D) 11.81 m/s² Part 2: Understanding and Application If a projectile is launched at an angle of 45 degrees, what can be said about its horizontal and vertical components of velocity? Hint: Think about the properties of angles in projectile motion. A) Horizontal is greater than vertical B) Vertical is greater than horizontal C) Both are equal D) Cannot be determined Which factors affect the range of a projectile? Hint: Consider the variables that influence how far a projectile travels. A) Initial velocity B) Launch angle C) Mass of the projectile D) Acceleration due to gravity	Hint: Think about the forces that affect motion.
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Hint: Think about the relationship between angle, height, and distance.

Describe how the launch angle affects the range and maximum height of a projectile.

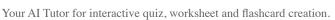


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A projectile is launched with an initial velocity of 20 m/s at an angle of 30 degrees. What is the initial horizontal velocity component?
Hint: Use trigonometric functions to find the horizontal component.
○ A) 10 m/s
○ B) 17.32 m/s
○ C) 20 m/s
○ D) 15 m/s
Given a projectile launched from the ground, which of the following changes would increase its time of flight?
Hint: Consider how different factors influence the duration of flight.
A) Increasing the launch angle
☐ B) Increasing the initial velocity
C) Decreasing the launch angle
D) Increasing the mass of the projectile
Calculate the maximum height reached by a projectile launched with an initial vertical velocity of 15 m/s. Assume $g = 9.81 \text{ m/s}^2$.
Hint: Use the formula for maximum height in projectile motion.

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Part 3: Analysis, Evaluation, and Creation





If two projectiles are launched with the same initial speed but at different angles, which angle will result in the greatest range?
Hint: Consider the optimal angle for maximum distance.
○ A) 30 degrees
O B) 45 degrees
○ C) 60 degrees
OD) 90 degrees
Analyze the following scenarios and identify which will result in the same range for a projectile.
Hint: Think about the angles that produce equivalent ranges.
A) Launch angle of 30 degrees and 60 degrees
□ B) Launch angle of 45 degrees and 45 degrees
C) Launch angle of 20 degrees and 70 degrees
D) Launch angle of 0 degrees and 90 degrees
Explain why the horizontal and vertical motions of a projectile are independent of each other.
Hint: Consider the principles of motion in different directions.
A projectile is launched horizontally from a height of 50 meters. Which factor will most significantly affect the time it takes to hit the ground? Hint: Think about what influences the fall time of a projectile. A) Initial horizontal velocity
OB) Height from which it is launched
C) Mass of the projectile
OD) Launch angle

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Evaluate the following statements and select those that correctly describe the effects of air

resistance on projectile motion.



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A) It decreases the range of the projectile.	
☐ B) It increases the time of flight.	
C) It alters the parabolic trajectory.	
D) It has no effect on the vertical motion.	
Design an experiment to measure the range of a projectile launched at different setup, procedure, and how you would ensure accuracy in your measurements.	angles. Describe the
Hint: Think about the materials and methods needed for the experiment.	
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