

LAB #3 INVESTIGATING PROJECTILE MOTION

PHYS 1110 CONCEPTUAL PHYSICS

Instructor: _____
 Results: _____ (20 pts max)

Name: _____
 Date: 02/20/20

GETTING STARTED

- Open Google Chrome or other compatible browser and disable all browser pop-up blockers.
- Go to <https://phet.colorado.edu/en/simulation/legacy/projectile-motion>
- Click Play symbol "▶" and select "OK" in the pop-up dialog box.



OBJECTIVES

- Predict how varying conditions will effect the path of a projectile and explain your reasoning.
- Use the PhET simulation to confirm or disprove your predictions.
- Explain why your predictions were correct or incorrect.

DATA COLLECTION

1. Look at the "height" box at the top. What kinematics term does it actually stand for, and what point is it relative to? (Hint: shoot the cannon once and watch the number closely). Explain your reasoning.
It stands for displacement above initial point where the objects are fired.

2. Fire the projectile launcher straight upwards (angle = 90°) at 18 m/s. Using kinematics, determine:

a. the time it should take the projectile to reach maximum height

$$+y \quad \downarrow a = -9.8 \text{ m/s}^2$$

$$\uparrow \quad v_f = 0$$

$$-y \quad v_i = 18 \text{ m/s}$$

$$t = ?$$

$$a = ?$$

$$v_f^0 = v_i + at_{up}$$

$$\frac{-v_i}{a} = t_{up} = \frac{-(18 \text{ m/s})}{-9.8 \text{ m/s}^2} = 1.84$$

$$t_{total} = 2t_{up} = \boxed{3.7 \text{ s}}$$

b. the maximum height reached by the projectile

$$v_f^0 = v_i^2 + 2ad$$

$$\frac{-v_i^2}{2a} = d = \frac{-(18 \text{ m/s})^2}{2(-9.8 \text{ m/s}^2)} = 16.5 \text{ m}$$

height above cannon's level →
 height above ground = 16.5 m + 1.2 m = 17.7 m

- c. Now, using the measuring tape, measure the actual height reached by the projectile (remember to measure from the little plus sign at the base of the cannon). Was your answer to (b) the same as this measurement? If it wasn't, check your math over and find your mistake.

If the calculations + measurements were done correctly it should be the same.

Projectile Motion Simulation Lab Answers

Chao Zhang



Projectile Motion Simulation Lab Answers:

Unveiling the Power of Verbal Beauty: An Psychological Sojourn through **Projectile Motion Simulation Lab Answers**

In a global inundated with monitors and the cacophony of quick conversation, the profound energy and psychological resonance of verbal beauty often diminish in to obscurity, eclipsed by the constant onslaught of noise and distractions. However, located within the lyrical pages of **Projectile Motion Simulation Lab Answers**, a charming function of fictional beauty that pulses with fresh emotions, lies an memorable journey waiting to be embarked upon. Composed by way of a virtuoso wordsmith, this mesmerizing opus manuals visitors on a mental odyssey, gently revealing the latent potential and profound impact stuck within the intricate web of language. Within the heart-wrenching expanse with this evocative examination, we will embark upon an introspective exploration of the book is main subjects, dissect their captivating writing model, and immerse ourselves in the indelible impression it leaves upon the depths of readers souls.

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