

PHY 1401 – General Physics I
Reaction Time - Free Fall

Name: _____

Introduction

In this activity, we will apply the ideas of free fall to make a simple measurement of each student's reaction time. The idea is that one person drops a meter stick and another catches it. From the distance the meter stick fell, the reaction time can be estimated.

Materials

Meter stick

Procedure - Reaction Time

In the space below, in a few sentences describe a procedure for measuring the reaction time. Be detailed about how you will conduct your procedure and what exactly you will measure.

Data

Make a data table listing each person in your group's name and the distance the meter stick fell. Leave a third blank column for the reaction time and two other blank columns for a question below.

Data Analysis

The only measurement you will make is the distance the stick fell. Write down the appropriate equation that will allow you to determine the reaction time from the measured distance. In what units should the distance be measured?

Procedure - Aural versus Visual

In the space below, describe how you could modify your procedure to test if each student has the same reaction time if they see the stick drop versus if they only hear that the stick has dropped.

Data Analysis

Carry out the procedure you have just described and put your data and results in the data table you made on the first page.

Questions

- Q1)** Would you say that the members of your group typically had a faster reaction time to an aural stimulus (hearing) or a visual one? Explain based on your results.
- Q2)** How might you improve your procedure to get a more accurate result for the reaction time?
- Q3)** An old bar room trick is the following. One person holds a dollar bill with the long side down so that Washington's head is between the thumb and forefinger of a second person's open hand. The first person drops the dollar bill. If the second person can catch it by closing the gap between his forefinger and thumb while not moving the rest of his hand then they can keep it. Explain using the results of this activity why this is a sucker's bet.