

Free Fall – Procedure – Alternate Lab

EQUIPMENT

Objects to drop

Tape measure or meterstick

Scissors

String

PROCEDURE

Please print the worksheet for this lab. You will need this sheet to record your data.

Audacity[®] can be used for very accurate time measurements if the event being measured has a distinct sound at the beginning and end.

- 1 Use Audacity[®] to measure the fall time for an object in free fall. We recommend using the roll of tape, as it won't be damaged by hitting the ground. There are three major components to doing this.
 - a Measure the height from which you can drop the tape. You should make it relatively high, about 2 m or so. (Should you measure from the top, bottom, or middle of the tape?)
 - b The end of the fall is easy to record. Audacity[®] should clearly hear the tape hit the ground.
 - c There needs to be a sound at the beginning of the fall, too. One way to do that is to suspend the tape with some string, and start the fall by cutting the string with the scissors, snapping the scissors together quickly to make a "click."
- 2 Take data for five more drops, changing the height each time (higher or lower). **Make the different heights at least 20 cm apart.**
- 3 Calculate your experimental value of g . Use linear regression, a common mathematical method for analysis of this sort. **See the [Linear Regression](#)¹ document if you're not sure how to do this.**

¹../regression/manual.html