

### *Objective*

The goal of this exercise is to

- verify the theoretical prediction that the change in momentum of an object (the impulse applied to that object) is the integral of the applied force on the object over time
- give you experience with the experimental apparatus

### *Materials*

- Vernier [Lab pro](#) and [force plate](#)
- large book

### *Theoretical model*

You'll provide a detailed theoretical analysis in your report.

### *Procedure*

You'll design the procedure and provide detailed descriptions in your report. The basic idea is that you drop the book on the force plate and measure the impulse. Remember that, when the book eventually settles on the plate, the normal force supporting the book is nonzero. It is a good idea to increase the sample rate of the collection instrument – go to Experiment -> Data Collection in Logger Pro. Note that Logger Pro has built-in capacity to take integrals of measured functions.

### *Post-lab & report*

- Attach this sheet as a cover sheet. Do not feel you need to duplicate the information in this cover sheet in your write-up.
- Attach the generic laboratory rubric and checklist as an appendix. Your instructor will refer to those when grading. Use these as a guide to writing your report.
- A photo or careful sketch of your experimental apparatus can be very useful to the reader.