Name _____

Dynamics Lab

Objective
The objective of this experiment is to determine the amount of friction acting on an object.

Equipment

- inclined plane
- toy car
- tape measure
- stopwatch

Procedure
Measure the mass of your toy car using the digital balance.

Set up an inclined plane by propping it up on some textbooks, as shown in the image on the right.

Mark a location near the top of the inclined plane with a piece of masking tape.

Roll your toy car down the ramp by releasing it from the marked point on the incline.

Use your stopwatch to measure the amount of time it takes the car to roll **from the base of the ramp** until it comes to a stop. Record the time in your data table (see below).

Measure the distance from the base of the ramp to the rear of the car. Record the distance in your data table (see below).

Repeat the procedure 4 times.

Data

$mass\ of\ car =$ _____ kg

Trial	Distance (m)	Time (s)	Acceleration (m/s^2)
1			
2			
3			
4			

Analysis

For each trial, determine the acceleration of the car while it is rolling to a stop. Record the results in your data table. **In the space below, show your work for only one trial.**

Determine the average acceleration of the car for your 4 trials (add them up and divide by 4). **Show your work in the space below.**

Finally, use Newton's second law to determine the net force acting on the car while it is rolling to a stop. **Show your work in the space below.**

In this scenario, the net force is provided entirely by friction, so the value you have calculated is the amount of friction acting on the car.