

Impulse

As you work through the steps in the lab procedure, record your experimental values and the results on this worksheet. Use the exact values you record for your data to make later calculations.

Measurements and Calculations

What is the mass of the cart?

What is the width of the flag?

What is the starting position of the cart?

What is the height of the starting position?

<p>CHECKPOINT 1: Record the values of the first trial in Data Table 1 below. Ask your TA to check your data from the first run before proceeding to the rest of Data Table 1.</p>
--

Complete the table below.

Data Table 1

Trial #	Stopping Position (m)	Height at Stopping Position (m)	Initial Speed (m/s)	Final Speed (m/s)
1				
2				
3				

CHECKPOINT 2: Ask your TA to check your data from the last 2 runs before proceeding.

Procedure A: Impulse

Calculate the force and the change in momentum for each of the three time intervals and enter the values in the table below.

Data Table 2

Trial #	Area of Force vs. Time Curve (N · s)	Change in Momentum (kg · m/s)
1		
2		
3		
Average		

What is the percent difference between the average area and the average value in the change in momentum? (Percent differences should not be rounded to one significant figure.)

Should these two determinations be the same?

CHECKPOINT 3: Ask your TA to check your impulse calculations.

Procedure B: Energy

Complete the table below.

Data Table 3

Trial #	$\Delta E_{\text{collision}}$ (J)	ΔE_{total} (J)
1		
2		
3		
Average		

What percentage of the energy loss occurred during collision?

Where did the most energy loss occur?

What is the amount of work done by non-conservative forces during collision?

What is the amount of work done by non-conservative forces while the cart is traveling?

Where does the majority of the energy that is lost during the collision go?

Where does the majority of the energy that is lost while the cart travels along the track go?

CHECKPOINT 4: Ask your TA to check your energy loss calculations.