

Measuring the Acceleration of a Car on a Ramp

Procedure

Briefly, but completely, describe the procedure for this lab – and include a labeled sketch.

Data

Wing Length _____ Ramp Angle _____

Δx	Trial 1		Trial 2		Average		v	
	$t_{A \rightarrow B}$	t_B	$t_{A \rightarrow B}$	t_B	$t_{A \rightarrow B}$	t_B		

Graphs

Using appropriate scales, labels and units, graph your data. First graph a velocity-displacement graph with velocity on the y-axis. Then graph a displacement-time (A to B) graph. Finally, linearize both of these graphs, and draw in their best fits lines.

Questions

- 1) Find the slopes for both of your linear graphs. (Show your work with units)
- 2) Find the y-intercepts for both of your linear graphs. Can you apply the 5% rule? Should you be able to? Are they related? Should they be? Explain your answers.
- 3) Use your slopes, along with the appropriate kinematic equations, to find the acceleration of the car using both of your linear graphs. How do the two values compare? If they were similar, explain why. If they were not, explain why. Either way, explain!
- 4) Calculate $g \cdot \sin \theta$ for your ramp. Use this value as the accepted value and find the percent error for both of your experimental results.

Error Analysis

Thoroughly explain what the main sources of error are for this lab, and how you would correct them.



Researchers at MIT prove that rolling shopping carts will almost invariably hit the most expensive car in their vicinity.