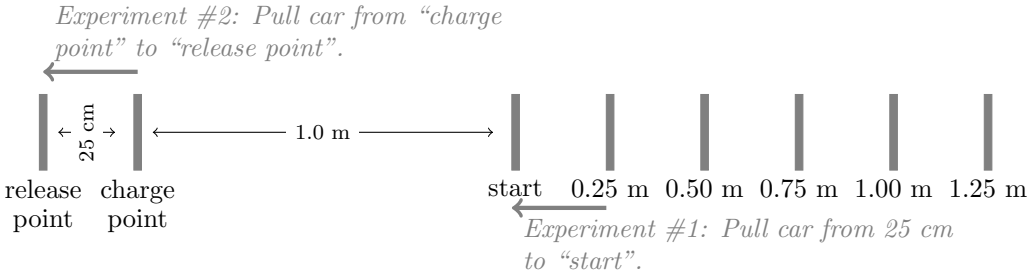
Name: Date: Period:

Car Lab #2 (*Accelerated Motion*)

Procedure:

a) Find a spot on the hallway for your group and mark every 25 cm for 125 cm
b) Set the car at 25 cm and pull it back to the starting line.
c) Measure the time it takes the car to go 0.25 m
d) Repeat for 0.50, 0.75, 1.00, and 1.25 meters. Make sure you pull the car back from 25 cm each time.
e) Repeat three times
f) For experiment #2, make an additional mark ("charge point") 1.0 meters behind the starting line and a second mark ("release point") 25 cm behind that.
g) For experiment #2, pull the car back from "charge point" to "release point," but don't start the timer until the car gets to "start." We are trying to capture the part of the motion where the car is slowing down.



Data

Experiment #1: Accelerating Motion

Trial #1 Time (s)	Trial #2 Time (s)	Trial #3 Time (s)	Average Time (s)	Displacement (m)
0.00	0.00	0.00	0.00	0.00
				0.25
				0.50
				0.75
				1.00
				1.25

Experiment #2: Decelerating Motion

Trial #1 Time (s)	Trial #2 Time (s)	Trial #3 Time (s)	Average Time (s)	Displacement (m)
0.00	0.00	0.00	0.00	0.00
				0.25
				0.50
				0.75
				1.00
				1.25

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Graph

Make a graph on Desmos. Submit a link to the graph on Schoology

a) Start by making a table by clicking the "+" icon at the top
b) Make sure to label the axes using the wrench icon at the right.
c) Zoom out so that you can see the whole graph and so that it fills the page. (you can use the Zoom Fit magnifying glass to do this.)

Analysis

1. Try making a best fit line. How well does this best-fit line represent your data? Give a reason why a line is not good for this data.

2. Instead make a best fit curve of the form $\mathbf{y_1 \sim a_1 x_1^2 + b_1 x_1 + c_1}$. (To make the 'squared'', use the caret [^] on top of the 6 on your keyboard.)

   Best Fit Curve #1 (Accelerated Motion):

   Best Fit Curve #2 (Decelerated Motion):

   After you've done this, make sure to submit your graph on Schoology.

3. Explain why the shape of each graph makes sense.

4. Your graphs are not perfect. What were some aspects that limited the accuracy of our graphs and our precision? What could be done to mitigate these in future experiments?