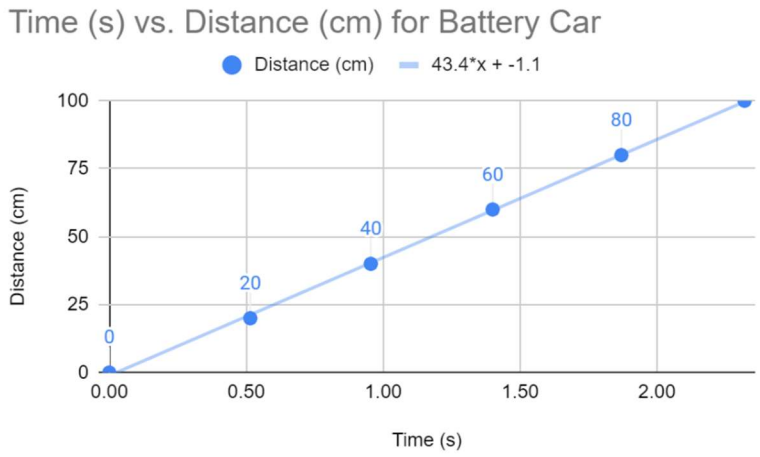
Lily Pattison 8/30/2022 Unit 1 Lab 1

Claim: The battery-operated car moves at a constant speed of 44.2478 cm/s.

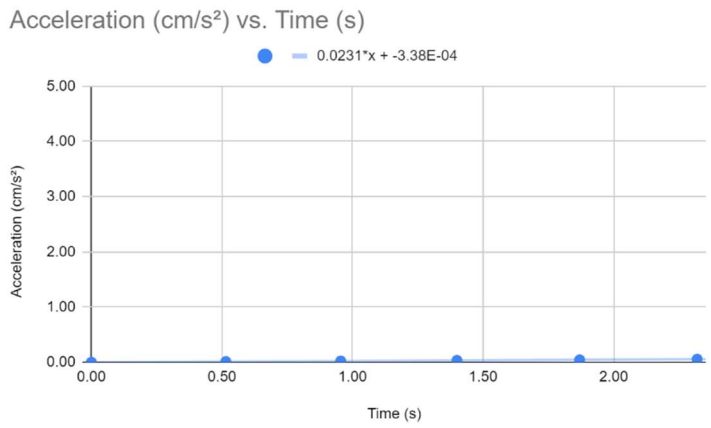
Evidence:

Distance (cm)	Trial 1 Time (s)	Trial 1 Δt
0	0.00	
20	0.43	0.43
40	0.86	0.43
60	1.34	0.48
80	1.81	0.47
100	2.26	0.45

Reasoning:



This graph is linear, showing that the battery powered car traveled at a constant speed. In addition, the Δt (change in time) from one point to the next is generally equal, as shown in the table. This means that there is a constant velocity and constant change in time. The graph below shows acceleration vs. time.



This graph shows that there is no acceleration. To find the speed, we can use $\Delta x/\Delta t$, or change in position over change in time. This is also the same as finding the slope of the first graph. I calculated the speed below.

$\Delta x/\Delta t$

100/2.26

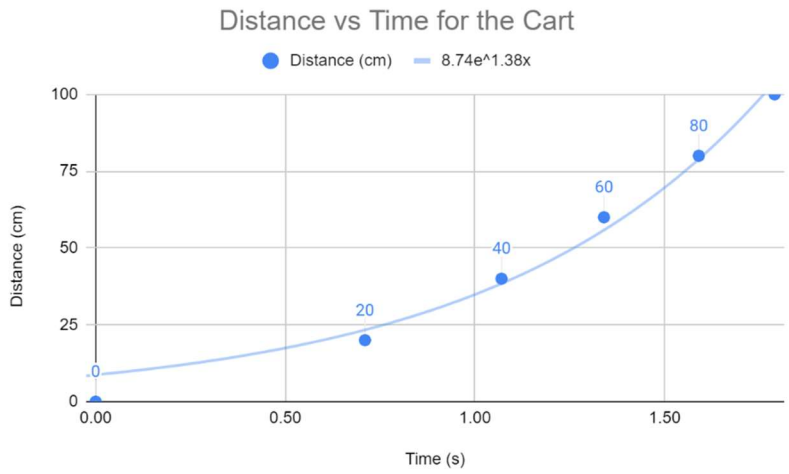
44.2478 cm/s is the speed

Claim: The cart accelerates at an acceleration of 53.4759 cm/s^2.

Evidence:

Distance (cm)	Trial 1 Time (s)	Trial 1 Δt
0	0.00	
20	0.76	0.76
40	1.13	0.37
60	1.4	0.27
80	1.65	0.25
100	1.87	0.22

Reasoning:



This graph is not linear, meaning the cart accelerates as it moves along the path. We can also see this in the Δt on the table. As the cart moves from one point to the next, the change in time between two points decreases. This means the cart is accelerating. The acceleration is calculated below.

Δv /Δt

100/1.87

53.4759 cm/s^2