

Constant Velocity Lab

Experiment No: 2

Submitted by:

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Period 3

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PROBLEM

What is the Motion of the Buggy?

The Purpose of the lab is to examine the motion of the buggy.

Students should be able to:

- Measure the position of the buggy with respect to time
- Create a position vs. time graph for the buggy
- Develop a mathematical model for the motion of the buggy

MATERIALS

1. Dune buggy
2. Meter stick
3. Stop watch
4. Tape (Marking device)

LABORATORY SETUP



PROCEDURE

Part 1

1. Set the buggy at a slow speed using the dial.
2. Mark the starting point on the floor using a piece of masking tape. (This is the 0 cm point.) When you begin, the front of the car should be at the starting point.
3. As the timer reads the time aloud (every 2 seconds) the marker should mark the position of the front of the car with a small piece of masking tape. Take 10 data points.
4. Measure the displacement of all the marks from the starting point and record the data in the data table in data table 1 and repeat.

Part 2

5. Set the buggy car to a fast speed using the dial.
6. Remove the tape from part 1.
7. Repeat steps 2-3 from part 1.
8. Measure the displacement of all the marks from the starting point and record the data in data table 2 and repeat.

Part 3

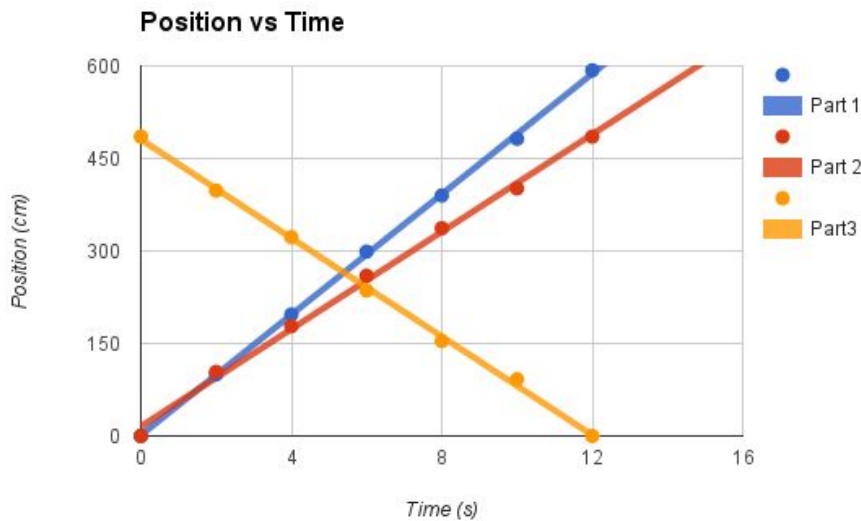
9. Remove the tape from part 2.
10. See your teacher for the instructions for part 3.
11. Record your data in table 3 and repeat.

DATA

Part 1		Part 2		Part 3	
Time (s)	Position (cm)	Time (s)	Position (cm)	Time (s)	Position (cm)
0	0	0	0	0	485.5
2	100	2	104	2	398
4	197	4	178	4	322.5
6	297	6	260	6	236

8	390	8	337	8	154
10	482	10	401.5	10	92
12	593	12	485.5	12	0

ANALYSIS

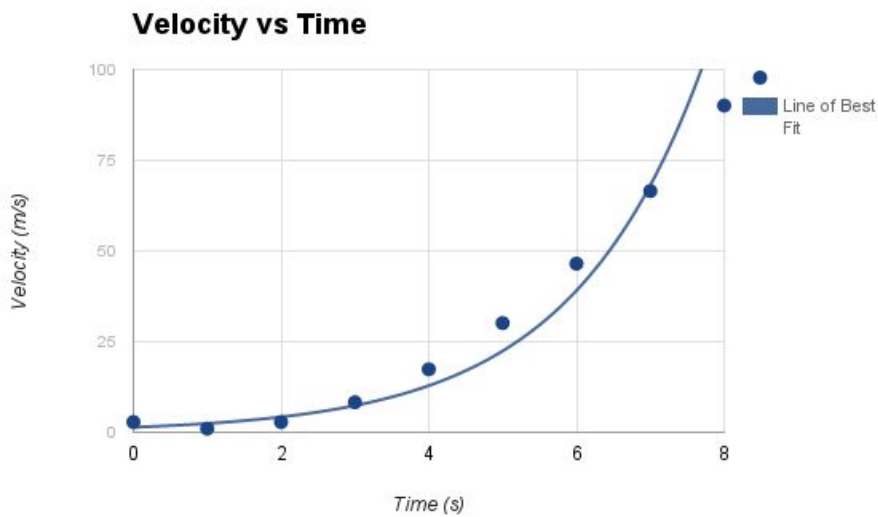


1. Yes, our data point fall in some-what of a straight line
2. Velocity
3. The slope of Part 1 and Part 2 are both in the positive direction but at different slopes.
4. Constant, the car does not accelerate.
5. The line of best fit would be a linear line if it was a constant velocity.
6. Part 3 is different because the car is going in the opposite direction (negative slope) and it starts at 485.5 cm on the graph.
7. The Slope of part 3 is negative and it tells me the car is going in the negative direction.
8. Constant, the car does not accelerate.
9. Human error, friction of the pavement, surface of the earth, two different cars, charge of the batteries in the cars.

CONCLUSION

Constant Velocity is when an object travels the same distance every second.

PROBLEM SOLVING



1. What quantity do you get from the slope of this graph?
2. Approximately how fast is the object moving at 5s?
3. Given the points (0,0) and (8,90.118), find the slope of the graph.
4. What does the slope represent of the graph?
5. Describe the object's velocity (Constant, Increasing, Decreasing, At Rest) and explain your answer.