Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partners: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Science 10: Uniform Motion Lab

Purpose: To determine the average velocity of an object using a displacement vs. time graph

Materials: - Constant velocity car

- Stopwatch

- Metre stick

- Masking tape (~5cm strip)

Experimental Procedure:

1. Set up the materials as shown in class.

 2. Set a START line with masking tape.

 3. Hold the car a few centimetres above the ground and turn it on.

4. Place the car on the ground/table and release it next to the mere stick.

5. Start the stopwatch when the front wheels of the cart reach the START line.

6. Stop the stopwatch when the cart has travelled 30cm. Be careful that use the front wheels to measure the time!

7. Record the time in the data table.

8. Repeat steps 3-7 for 40cm, 50cm, 60cm, 70cm, 80cm, 90cm and 100cm

9. Put the materials away neatly.

Data:

|  |  |
| --- | --- |
| **Displacement** (cm) | **Time** (s) |
| 30cm |  |
| 40cm |  |
| 50cm |  |
| 60cm |  |
| 70cm |  |
| 80cm |  |
| 90cm |  |
| 100cm |  |

Data Analysis:

 1. Plot a graph of **Displacement** vs. **Time**.

 Displacement on the vertical y-axis, time on the horizontal x-axis.

 A graph should be neat and completed in pen.

 The axes need to be labeled, with appropriate units.

 The graph should take up most of a full page of graph paper.

 The scale chosen should be easy to use.

 The curve drawn should be a ***best fit curve.*** DO NOT JOIN DOT TO DOT.

 (For this lab the

 The curve drawn should extend beyond the final data points to the edges of the graph paper.

2. Find the slope of the line from your graph. Circle the two points used to find your slope on the graph and show your slope calculations in the space below. Include proper units.

Point 1 : ( s, cm)

Point 2 : ( s, cm)

$$slope=\frac{rise}{run}= \frac{y\_{2}-y\_{1}}{x\_{2}-x\_{1}}=\frac{ cm - cm }{ s - s }=\frac{ cm}{ s}= ^{cm}/\_{s}$$

Questions:

 1. Most likely your points do not lie on a perfectly straight line, yet theoretically they should. Try to explain why your results are less than perfect.

 2. What is the speed of the car (with appropriate units)?