Report: ONE DIMENSIONAL MOTION (PART I)

Name: _______________________________  Section: ________
Partner: _______________________________  Date: ________
Partner: _______________________________

Activity 1: Case 1: Displacement Match.

Before you attempt any motion simulation,

first sketch below the graphs for 1.) v versus t, and 2.) a versus t,

that correspond with the d versus t graph of the proposed distance match. Be sure to label your axes.

Now make your personal simulation of the proposed motion of Case 1 (Displacement Match) as it is shown in the computer.

Include the graph that shows your personal attempt to reproduce the motion of Case 1.
What are your measured positions in the Distance Matching at the times given in the table below? (You may use the computer function Analyze Data). In the same table below also enter (in parentheses) the positions you intended to match.

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Displacement (m)</th>
<th>Time (s)</th>
<th>Displacement (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Calculate the average velocity of the measured object (you) between 2s and 3s? (Show work.)

How does this compare with the intended motion you had to ‘match’?

Calculate the average velocity of the measured object between 8s and 10s? (Show work)

How does this compare with the intended motion?

What is the average velocity of the object between 2s and 8s? (Show work).

What is it in the intended motion?

Comment on the usefulness of averaging over this time-interval.
Under what circumstances are average and instantaneous velocity the same?

Activity 1: Case 2: Velocity Match.

First sketch below the corresponding graphs for:

1.) d versus t, and 2.) a versus t,

that will produce the v versus t graph suggested in Velocity Matching.

The d versus t graph may start at d = 1 meter at time t = 0 second.

Find the values of d at t = 2, 4, 6, 8, 10 seconds.
Now make your simulation of Case 2 (Velocity Match). It will be helpful to check the corresponding x - t and a - t graphs, you just made.

Include the graph that shows your personal attempt to reproduce the motion of Case 2.

Calculate the average acceleration of the measured object (you) between 0s and 4s. (show work).

How does this compare with the intended motion you had to match?

(Do not forget to attach the graphs of your personal position and velocity matches to this lab report.)

END OF REPORT ON PART I