**Set 1 – Drawing Displacement-Time Graphs**

1. The table below shows the movement of a car as it travels along a straight road.

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
<th>45</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement (m)</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>18</td>
<td>32</td>
<td>40</td>
<td>40</td>
<td>32</td>
<td>20</td>
</tr>
</tbody>
</table>

a) Graph the data on the grid below.

![Grid](image)

b) Determine the displacement at 27.0 s.

c) Identify how long the car took to travel 13.0 m.

d) What was the velocity at 10.0 s?

e) Determine the velocity at 45.0 s.
Set 2 – Interpreting Displacement-Time Graphs

2. The displacement-time graph on the right represents the motion of a car accelerating from rest in a straight line.
   a) Calculate the average speed between \( t = 0 \) s and \( t = 10.0 \) s.
      .................................................................................................................................
      .................................................................................................................................
   b) What is the instantaneous speed at \( t = 20.0 \) s?
      .................................................................................................................................
   c) What is the displacement between \( t = 0 \) s and \( t = 20.0 \) s?
      .................................................................................................................................
   d) Determine the average velocity between \( t = 0 \) s and \( t = 20.0 \) s.
      .................................................................................................................................
      .................................................................................................................................

3. The displacement-time graph on the right represents the motion of a motorbike along a straight race track.
   a) Determine the displacement during the first three seconds.
      .................................................................................................................................
   b) What is the displacement over the entire six seconds of the journey?
      .................................................................................................................................
   c) What is the distance travelled during the six seconds of the journey?
      .................................................................................................................................
   d) Determine the instantaneous velocity at \( t = 2.0 \) s.
      .................................................................................................................................
   e) Find the velocity at \( t = 5.0 \) s.
      .................................................................................................................................
4. A dynamics cart in a physics laboratory moves in a straight line according to the displacement-time graph below.

![Displacement-Time Graph](image)

a) Calculate the displacement between \( t = 0 \) and \( t = 3.0 \) s.

b) What is the speed at \( t = 4.0 \) s?

c) Calculate the velocity at \( t = 1.5 \) s.

d) Determine the velocity at \( t = 11.0 \) s.

5. The position-time graph representing the motion of a person in the aisle of a supermarket is shown on the right.

![Position-Time Graph](image)

a) Describe the motion represented by the graph.
b) Identify the part of the motion where the person had the greatest speed.

6. A distance-time graph for an insect flying in a straight line is shown on the right.

a) Determine how long it takes to travel between 5.0 and 10.0 m.

b) Find how far it travels between 2.0 and 4.0 s.

c) Calculate the velocity at 3.0 s.

d) Convert the graph into a speed-time graph below.