


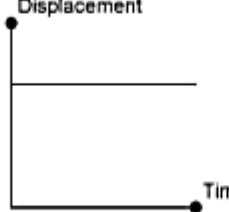

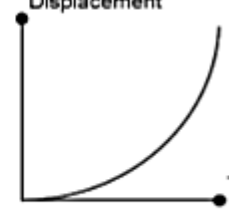
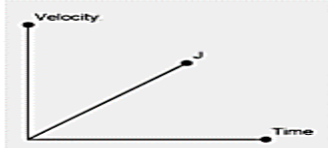

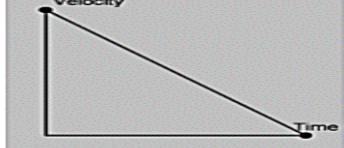
**SUVA SANGAM COLLEGE**

**YEAR 11**

**PHYSICS**

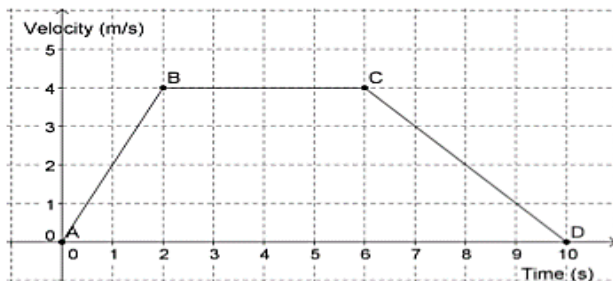
**WORKSHEET- 8**

**STRAND 1 MECHANICS**

<b>NO.</b>	<p><b>CONCEPT IN BRIEF: KINEMATICS</b></p> <p><b>Displacement – Time Graph</b></p> <ul style="list-style-type: none"> <li>These show the motion of an object very clearly and allow you to find position and velocity at any time. Any graph that you see will be a combination of these sections.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: flex-end; text-align: center;"> <div style="text-align: center;">  <p>Constant velocity</p> </div> <div style="text-align: center;">  <p>Stationary</p> </div> <div style="text-align: center;">  <p>Acceleration</p> </div> <div style="text-align: center;">  <p>Deceleration</p> </div> </div> <ul style="list-style-type: none"> <li>Note: The slope of displacement- time graphs give velocity.</li> </ul>																						
1	<p>A toy truck is moving towards east at 2 m/s for 2 seconds. For the next 4 seconds, the toy truck is not moving at all. Finally the truck moves towards west at 1 m/s for 4 seconds.</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 5px;">Displacement in meters</td> <td>2</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td> </tr> <tr> <td style="padding: 5px;">Time in seconds</td> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td> </tr> </table> <p>(a) Draw a graph of displacement vs time graph                  (b) Find the slope of the graph between 0 seconds to 2 seconds and explain what the slope represents.</p>	Displacement in meters	2	4	4	4	4	4	3	2	1	0	Time in seconds	1	2	3	4	5	6	7	8	9	10
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	<p><b>CONCEPT IN BRIEF: KINEMATICS</b></p> <p><b>Velocity – Time Graph</b></p> <ul style="list-style-type: none"> <li>These are similar to displacement – time graph but velocity is on the y – axis instead of the displacement.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: flex-end; text-align: center;"> <div style="text-align: center;">  <p>Constant acceleration</p> </div> <div style="text-align: center;">  <p>Constant velocity</p> </div> <div style="text-align: center;">  <p>Constant deceleration</p> </div> </div> <p>Note</p> <ul style="list-style-type: none"> <li>Velocity-time graph indicate the rate at which the object is moving.</li> <li>Slope of velocity-time graph gives acceleration.</li> <li>If slope is zero, the acceleration will be zero.</li> <li>Area below the graph of velocity-time graph gives displacement or distance.</li> </ul>																						

2. A car starts from rest and accelerates for 2 seconds. From time 2 seconds to time 6 seconds, it travels with a constant velocity. From time 6 seconds to time 10 seconds it travels in the opposite direction.

**Velocity against Time Graph**



1. Find the slope AB and explain what it represents.
2. Find the slope of the line BC and what does the answer mean.

**CONCEPT IN BRIEF: KINEMATICS**  
**EQUATIONS OF MOTION**

**1<sup>st</sup> equation:  $v_f = v_i + at$**

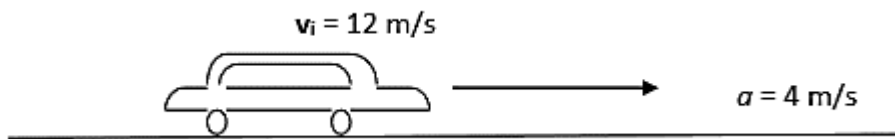
**2<sup>nd</sup> equation:  $d = v_i t + 1/2 at^2$**

**3<sup>rd</sup> equation:  $v_f^2 = v_i^2 + 2ad$**

**Where**  $v_f$  = final velocity  
 $v_i$  = initial velocity  
 $a$  = acceleration  
 $t$  = time  
 $d$  = distance

- It is important to list down what is given in the question. If an object starts from rest, it means initial velocity ( $v_i$ ) equals zero.

- 3 A car moves with an initial velocity of 12 m/s and accelerates at 4 m/s<sup>2</sup>.



- (a) Calculate distance travelled after 7 seconds.
- (b) Calculate the velocity of the car after it has travelled 30 meters.