

## 9C & D SUVAT Equations

1. A cyclist is travelling along a straight road. She accelerates at a constant rate from a speed of  $4\text{ms}^{-1}$  to a speed of  $7.5\text{ms}^{-1}$  in 40 seconds. Find:

a) The distance travelled over this 40 seconds

b) The acceleration over the 40 seconds

2. A particle moves in a straight line from a point A to B with constant deceleration of  $1.5\text{ms}^{-2}$ . The speed of the particle at A is  $8\text{ms}^{-1}$  and the speed of the particle at B is  $2\text{ms}^{-1}$ . Find:

a) The time taken for the particle to get from A to B

b) The distance from A to B

After reaching B the particle continues to move along the straight line with the same deceleration. The particle is at point C, 6 seconds after passing through A. Find:

c) The velocity of the particle at C

d) The distance from A to C

3. A particle is moving in a straight line from A to B with constant acceleration  $5\text{ms}^{-2}$ . The velocity of the particle at A is  $3\text{ms}^{-1}$  in the direction AB. The velocity at B is  $18\text{ms}^{-1}$  in the same direction. Find the distance from A to B.

4. A particle is moving in a straight horizontal line with constant deceleration  $4\text{ms}^{-2}$ . At time  $t = 0$  the particle passes through a point O with speed  $13\text{ms}^{-1}$ , travelling to a point A where  $OA = 20\text{m}$ . Find:

a) The times when the particle passes through A

b) The total time the particle is beyond A

c) The time taken for the particle to return to O

5. A particle is travelling along the x-axis with constant deceleration  $2.5\text{ms}^{-2}$ . At time  $t = 0$ , the particle passes through the origin, moving in the positive direction with speed  $15\text{ms}^{-1}$ . Calculate the distance travelled by the particle by the time it returns to the origin.