

Kinematics Answers – NAT 5

1) a) 16ms^{-1} .

b) 64m.

2) a) -2.5ms^{-2} .

b) 10m.

c) 0

3) a) -1ms^{-2} .

b) 16m.

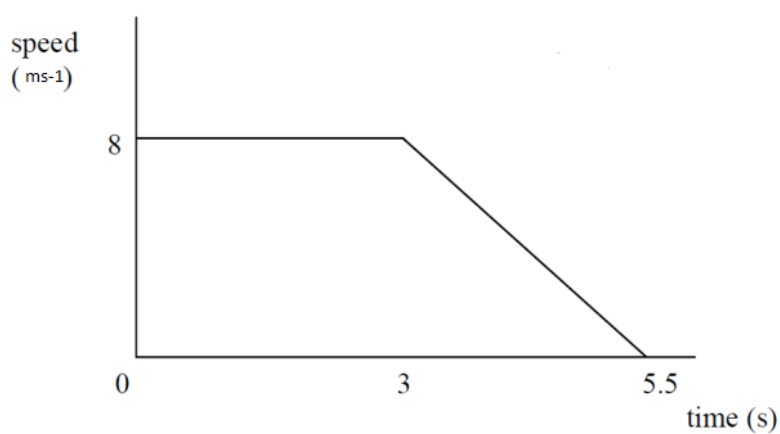
4) a) 0.4ms^{-1} .

b) 0.8ms^{-1} .

5) a) 7200m.

b) 1.5ms^{-1} .

6) a)



b) 34m.

7) a) 0.6s.

b) $12,500\text{ms}^{-2}$.

c) The speed that the ball leaves the racquet with is smaller.

8) a) **Measuring Average Speed**

- Measure the length/distance of track/ one lap
- Record the time taken for one lap
- Then use average speed = distance travelled / time taken

b) Y-axis => Speed in metres per second

X- axis => Time measured in seconds

Straight line to origin from point where time = 4s and speed = 12ms^{-1} .

c) 3ms^{-2} .

9) a) 220,000N.

b) i) 13,440m.

ii) 11.2ms^{-1} .

iii) 0.067ms^{-2} .

iv) 0.033ms^{-2} .

10) a) i) The log is accelerating.

ii) $118.75\text{m} = 119\text{m}$ (3 sig figs!!!)

iii) 2ms^{-2} .

b) **Measuring Instantaneous speed**

- Time taken for the log to pass through the **light gate connected to a timer**
- Measure the length of the log
- Instantaneous speed = length of the log / time to pass through the light gate