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.

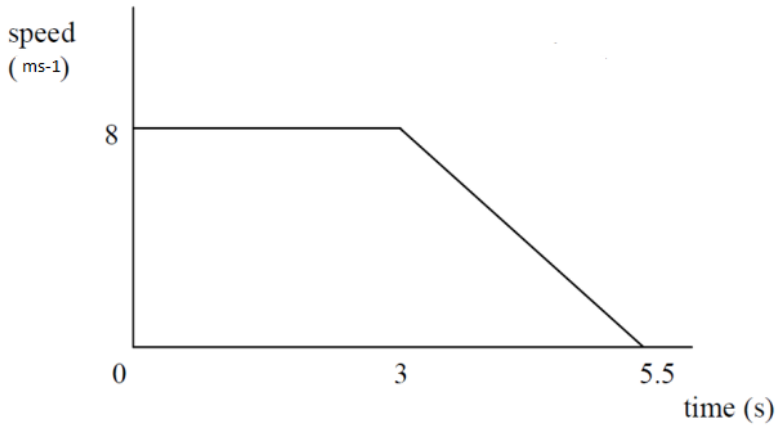
4) a) 0.4ms^{-1}.

b) 0.8ms^{-1}.

5) a) 7200m.

b) 1.5ms^{-1}.

6) a) -3.2ms^{-2}.



b) 34m.

7) a) 0.6s.

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

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

8) a) **<u>Measuring Average Speed</u>**

- 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) 118.75m = 119m (3 sig figs!!!)

iii) 2ms^{-2}.

b) **<u>Measuring Instantaneous speed</u>**

- 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