

## Investigation to use speed time graphs to analyse a boy's journey

### **Procedure**

Start your stopwatch the moment the boy sets off on the bike. Record the time, in seconds, when the boy reaches each of the incidents in the results table.

### **Results**

Incident	Bike sets off	Leaps bike over hedge	Bike returns in front of lorry	Lorry hits first car	Bike gets down road	Bike stops near bridge
Speed (m/s)	0	6	6	9	9	0
Time (s)						

  

Incident	He first sees Terminator	Terminator shoots at gate chain	Terminator's bike drops into ditch	Lorry turns it burnt	Lorry explodes
Speed (m/s)	12	12	12	12	0
Time (s)					

### **Conclusion**

Plot these results on a speed time graph, with time on the x axis and speed on the y axis. Label each point that the boy changes motion A, B, C, D, E, F, G, H, and I. Point A on the graph is at time 0, speed 0.

Divide the area below the graph line into five triangles and 4 rectangles. Your teacher will show you how on the whiteboard.

### **Analysis**

Work out the following accelerations:

Acceleration A to B \_\_\_\_\_

Acceleration B to C \_\_\_\_\_

Acceleration C to D \_\_\_\_\_

Acceleration D to E \_\_\_\_\_

Acceleration E to F \_\_\_\_\_

Acceleration F to G \_\_\_\_\_

Acceleration G to H \_\_\_\_\_

Acceleration H to I \_\_\_\_\_

Work out the following distances:

Distance A to B \_\_\_\_\_

Distance B to C \_\_\_\_\_

Distance C to D \_\_\_\_\_

Distance D to E \_\_\_\_\_

Distance E to F \_\_\_\_\_

Distance F to G \_\_\_\_\_

Distance G to H \_\_\_\_\_

Distance H to I \_\_\_\_\_

Total distance \_\_\_\_\_