

## Speed-time graphs – transcript

Speed-time graphs illustrate the motion of an object, and how this changes over time.

This experiment will show how a speed time graph can be constructed.

The track is set up with four main sections.

Clamps and stands are used to secure the first slope.

A flat section is followed by another steeper slope.

The end of the track rests on the stool.

To check that there is nothing to impede the path of the car, it is run along the track.

An app can be used to time the path of the car. There are also programmes available to use with a laptop and camera set-up.

To provide a scale for the video analysis a metre rule is clamped vertically next to the track.

A piece of white card with a large spot on it is stuck to the roof of the toy car. It should be clearly visible to the camera.

When the car is released its speed down the track is recorded.

The independent variable (time) is plotted along the horizontal axis.

Speed is plotted on the vertical axis. This is the dependent variable.

Now the data points from the experiment can be plotted.

The data points should be joined with a smooth line of best fit which passes through the origin.

The final thing to do is to add a title to the graph.

Now the graph is complete it is possible to see the sections where the car has changed speeds.

The steep gradient of the graph shows that the speed of the car is increasing rapidly.

Here the gradient is shallower. This shows that the speed of the car is increasing less quickly.

What would the speed-time graph look like if the car slowed down or came to a stop?