

## Work Sheet 1b - Measuring motion

### Follow up activities

In the Measuring motion Investigation on the CD-ROM you will plot graphs of displacement and velocity against time for a rocket. From these graphs you will be able to determine the rocket's velocity and acceleration.

The table below records real displacement and velocity data measured from a Space Shuttle as it was launched.

time (s)	displacement (m)	velocity (m/s)
0.0	0.0	0.0
0.8	2.8	5.2
1.6	8.3	7.8
2.4	15.2	9.8
3.2	23.9	12.4
4.0	35.0	15.2
4.8	48.3	18.4
5.6	64.4	20.7

Plot graphs of the Shuttle's displacement and velocity against time as it lifts off from the launch pad. Choose suitable scales for the axes on each graph so that each graph fills most of a sheet of graph paper. Remember, you can plot points more accurately on a large graph than on a small one.

What feature of the displacement against time graph shows that the Shuttle is accelerating as it leaves the launch pad?

Draw the best straight line through the points on the velocity-time graph. Measure the gradient of this line to find the Shuttle's acceleration. How does this acceleration compare to the acceleration due to gravity?