



Physics: Core Practical 1 – Determine the acceleration of a freely falling object

Comment: This experiment is probably carried out by students who have recently completed their GCSE course and should have sufficient experience to appreciate the need for precautions to ensure that measurements are accurate. They will be familiar with measurements of time and distance but not in the context of this practical and a diagram will act as part of the instructions to be followed.

	1a Correctly follows instructions to carry out the experimental techniques or procedures	2a Correctly uses appropriate instrumentation, apparatus and materials (including ICT) to carry out investigative activities, experimental techniques and procedures with minimal assistance or prompting.	4a Makes accurate observations relevant to the experimental or investigative procedure.
Working towards (ie orange)	<ul style="list-style-type: none">• Requires assistance to set up apparatus to drop the object in a measurable way• Requires assistance to record the time of fall• Is unable to measure the distance fallen	<ul style="list-style-type: none">• Requires a series of prompts to take readings• Is unable to complete readings for 6 heights in a reasonable time• Requires more than minimal assistance eg help setting up timer or datalogger	<ul style="list-style-type: none">• Readings are not repeated or show poor precision or less than 1 m in range• Final readings produce a poor straight line fit• Requires help in estimating uncertainties
Competent (ie green)	<ul style="list-style-type: none">• Successfully arranges for object to fall in a manner that can be measured ie sphere hits trap door to open it or light gate beam is broken by falling object• Sets up apparatus which will record the time of fall• Is able to obtain a correct measure of the distance fallen	<ul style="list-style-type: none">• Is able to complete readings for 6 heights in a reasonable time• Usually repeats readings• Measures distance fallen consistently accurately ie from bottom of sphere to trap door or from the same point on the dowel and top and bottom of drop	<ul style="list-style-type: none">• Readings usually repeated, recorded to 0.01 s and 0.001 m and the range of heights exceeds 1.0 m• Recordings of time for each height show good precision ie anomalies discarded• Final readings show a good straight line on the graph ie readings are repeatable