



PHYSICS

Graph Plotting

OCR Physics A Specification H556

M3.2 Plot two variables from experimental or other data

M3.4 Determine the slope and intercept of a linear graph

Plotting Graphs

In Physics, you will be required to plot graphs of results to identify trends and patterns.

As a general rule, you plot the **independent variable** (the variable you choose to change) on the x-axis and the **dependent variable** (the variable that changes as a result) on the y-axis. (You will find this rule becomes less important as we move through the course).

Axes are labelled with the quantity and units. These will be found in the table of data being used for the plot.

A few useful tips for plotting graphs.

- Use scales that are either multiples of 1, 2, 5 or 10. A general rule can be used when selecting a scale – “Is there a coin of that multiple”?
- Graphs should occupy most (at least 2/3rds) of the provided paper
- Points are plotted with small crosses, not dots
- For a straight-line graph, ensure you have a 30 cm ruler

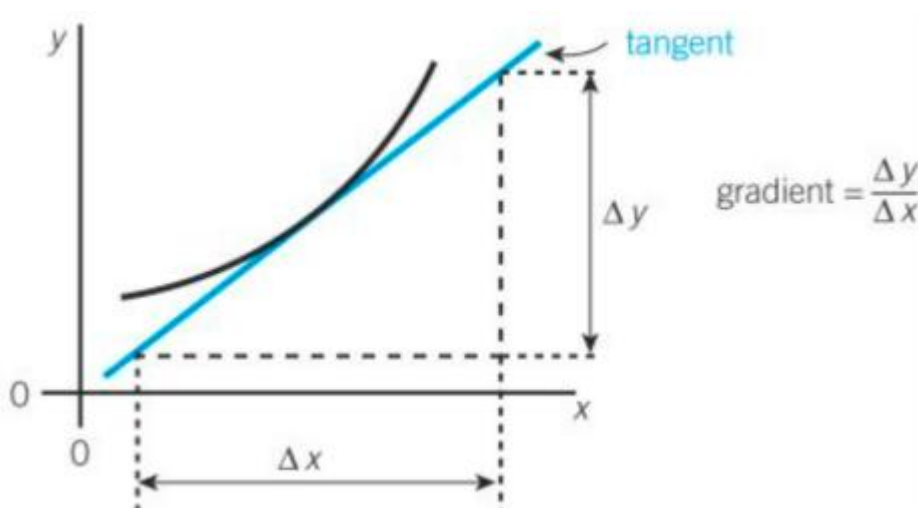
Gradients

You can determine the gradient of a straight-line graph using a triangle that uses **at least half** of the drawn line.

For a curve, draw a tangent first and determine the gradient with a large triangle.

The gradient is worked out using the equation:

$$\text{gradient} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x}$$



Useful video



Physics Online

Drawing Graphs

[Link](#)

Task

1. On provided graph paper, plot the following data, with length as the independent variable and resistance as the dependent. Draw a line of best fit.

Length / m	Resistance / Ω
0.10	0.31
0.20	0.61
0.30	0.92
0.40	1.23
0.50	1.53
0.60	1.84
0.70	2.14
0.80	2.45
0.90	2.76
1.00	3.06

2. Calculate the gradient of the line of best fit.
3. Suggest an appropriate unit for the value of the gradient.

