

3.6 Stage 5.2 Unit: Graphs of Physical Phenomena
3.6.1 Outcomes, Key Ideas and Content from the Syllabus

Patterns and Algebra - Graphs of Physical Phenomena		Syllabus Content p 105
PASS.2.5 Draws and interprets graphs of physical phenomena	Key Ideas Draw and interpret graphs of physical phenomena	
Working Mathematically Outcomes		
Questioning Asks questions that could be explored using mathematics in relation to Stage 5.2 content	Applying Strategies Selects and uses appropriate problem-solving strategies that include selecting and organising key information and identifying and working on related problems	Communicating Uses appropriate mathematical language and algebraic, statistical and other notations and conventions in written, oral or graphical form
	Reasoning Uses mathematical arguments to reach and justify conclusions	Reflecting Links mathematical ideas and makes connections with, and generalisations about, existing knowledge and understanding in relation to Stage 5.2 content
Knowledge and Skills		Working Mathematically
<ul style="list-style-type: none"> interpreting distance/time graphs made up of straight line segments determining which variable should be placed on the horizontal axis drawing distance/time graphs telling a story shown by a graph by describing how one quantity varies with the other eg number of cars at a red light, the temperature of water in a storage heater sketching informal graphs to model familiar events eg noise level within the classroom during the lesson using the relative positions of two points on a graph, rather than a detailed scale, to interpret information 		<ul style="list-style-type: none"> describe the meaning of different gradients for the graph of a particular event (Communicating) distinguish between positive and negative gradients from a graph (Communicating) match a graph to a description of a particular event and explain reasons for the choice (Reasoning, Communicating) compare graphs of the same simple situation, decide which one is the most appropriate and explain why (Applying Strategies, Reasoning, Communicating) use spreadsheets to generate examples of everyday graphs (Applying Strategies) model, record data and sketch graphs to investigate the distance of a moving object from a fixed point in relation to time eg move along a measuring tape for 30 seconds using a variety of activities that involve a constant rate such as: <ul style="list-style-type: none"> walking slowly walking for 10 seconds, stopping for 10 seconds and continuing at the same rate for the remaining 10 seconds to the end of the tape walking for 10 seconds, stopping for 10 seconds and then turning around and walking back to the beginning of the tape for 10 seconds starting at the other end of the line and walking back towards the beginning at a constant speed and record the distance at fixed time intervals so that a graph can be drawn to represent each situation (Applying Strategies, Communicating) use technology such as data loggers to collect data for constant speeds and graph the data to compare and contrast graphs (Applying Strategies, Reasoning)
Technology Data loggers are used in Science for the collection of data and should be readily available in schools.	Links Data – Travel Graphs Coordinate Geometry – Gradient	
Resources Measuring tapes, stop watches List of References (p 48) – No.s 1, 2, 5, 6, 8, 14, 15	Language This unit is language-based in that students need to develop skills in describing change.	