

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