


<p><b>Linear Graphs</b></p> <p><b>Level 5</b>  <b>Strand: Number and Algebra</b>  <b>Time: 3 Weeks</b></p>		 <p><b>St Hilda's</b>  Collegiate School</p>
<p><b>Key Competencies:</b></p>	<p><b>Achievement Objectives:</b></p>	<p><b>Learning Outcomes:</b></p>
<p><b>Thinking</b></p> <ul style="list-style-type: none"> <li>• Problem solving using</li> <li>• Finding a general term for a pattern/sequence</li> <li>• Solving for an unknown using general term</li> </ul>	<p><b>Equations and Expressions</b></p> <ul style="list-style-type: none"> <li>• Form and solve linear equations to model situations</li> <li>• Manipulate simple expressions</li> </ul>	<p><b>Specific Strategies</b>  <b>Resources</b></p> <ul style="list-style-type: none"> <li>• Activities as attached.</li> <li>• Use material models where possible</li> <li>• Extend the tasks to introduce linear equations and graphs as outlined below.</li> </ul>
<p><b>Literacy: using language, symbols and texts:</b></p> <ul style="list-style-type: none"> <li>• Writing a general term using a simplified algebraic expression</li> <li>• Making reference to the number set the problem belongs to (real, rational, integers, etc)</li> </ul>	<p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>• Finding appropriate pathways for solution <ul style="list-style-type: none"> <li>• Expressing a process or a pathway as an algebraic statement</li> <li>• Showing a linear relationship on the cartesian plane</li> </ul> </li> </ul>	<p><b>Relevant tasks/activities/content</b></p> <ul style="list-style-type: none"> <li>• Where possible in the given tasks, the missing number, or next number in the sequence can be extended to have an algebraic (general) solution. This should then be plotted on the Cartesian Plane so that students gain knowledge of plotting linear graphs as a way of displaying a relationship.</li> </ul>
<p><b>Relating to others:</b></p> <ul style="list-style-type: none"> <li>• Communicating with others using the language of algebra</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Where possible, modify one or more activities to utilise a cooperative learning strategy. For example, the students in a group each have a different (secret) number that fits the given sequence, one by one they say if it fits a</li> </ul>

		collaborate guess at the general term. The group works together until the term fits all clues.
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**Key Vocabulary:**

Integer	Whole Number	Natural Number
Real Number	Rational Number	Real Number
Irrational Number	Axis	Graph
Linear	General Term	Equation

**Assessment:**

<b>Diagnostic</b> What do they know? What can they know?	<b>Formative</b> What are they learning? What do they need to learn?	<b>Summative</b> What have they learned? Can students articulate how they learned it? Student evaluation/reflection
<ul style="list-style-type: none"> <li>A number investigation in the first period of the unit taken in for marking will show the problem solving strategies that the students bring with them</li> <li>Also, Asttle pretest showing ability as measured against the number and algebra strand, level 5)</li> </ul>	<ul style="list-style-type: none"> <li>Sequence/pattern investigation, sowing a general term, graph and extrapolation or interpolation to make a prediction.</li> </ul>	<ul style="list-style-type: none"> <li>The ability to form, plot and use linear expressions to model a practical problem</li> <li>Asttle pretest showing ability as measured against the number and algebra strand, level 5</li> </ul>

Nb, The resources allow for differentiated learning through the selection of tasks for and within each class. The expectation is that each student will complete some of the tasks in each of the activity headings, by negotiation with her teacher.

**Resource and Teaching Order List:**

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|---------------------|---|
| 1.                  | Substitution 10 Ticks Level 6 Pack 1 pages 4, 17, 18            |
| 2.                  | Algebraic Terms 10 Ticks Level 6 Pack 1 pages 5, 11, 12, 23     |
| 3.                  | Sums and Products 10 Ticks Level 6 Pack 1 pages 24, 13, 14      |
| 4.                  | Solving Linear Equations, word problems 10 Ticks Level 6 Pack 1 |
| pages 15, 9, 10, 16 |   |
| 5.                  | Solving Linear Equations 10 Ticks Level 6 Pack 1 pages 6, 7     |

6.  
pages 8  
7.  
26, 29, 30  
8.  
pages 27, 28, 31, 32, 33

Solving linear equations including brackets 10 Ticks Level 6 Pack 1

Forming an equation/finding a pattern 10 Ticks Level 6 Pack 1 pages 25,

Graphing (linear) as an aid to problem solving 10 Ticks Level 6 Pack 1