

## Achievement Standard

<b>Subject Reference</b>	Mathematics and Statistics 2.2		
<b>Title</b>	Apply graphical methods in solving problems		
<b>Level</b>	2	<b>Credits</b>	4
		<b>Assessment</b>	Internal
<b>Subfield</b>	Mathematics		
<b>Domain</b>	Algebra		
<b>Status</b>	Registered	<b>Status date</b>	17 November 2011
<b>Planned review date</b>	31 December 2019	<b>Date version published</b>	5 February 2015

This achievement standard involves applying graphical methods in solving problems.

### Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> <li>Apply graphical methods in solving problems.</li> </ul>	<ul style="list-style-type: none"> <li>Apply graphical methods, using relational thinking, in solving problems.</li> </ul>	<ul style="list-style-type: none"> <li>Apply graphical methods, using extended abstract thinking, in solving problems.</li> </ul>

### Explanatory Notes

- 1 This achievement standard is derived from Level 7 of *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the achievement objectives
- display the graphs of linear and non-linear functions and connect the structure of the functions with their graphs
  - form and use linear, quadratic, and simple trigonometric equations
- in the Mathematics strand of the Mathematics and Statistics Learning Area. It is also related to the material in the *Teaching and Learning Guide for Mathematics and Statistics*, Ministry of Education, at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* achievement objectives to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

- 2 *Apply graphical methods in solving problems* involves:
- selecting and using methods
  - demonstrating knowledge of the properties of functions and graphs
  - communicating using appropriate representations.

*Relational thinking* involves one or more of:

- selecting and carrying out a logical sequence of steps
- connecting different concepts or representations
- demonstrating understanding of concepts
- forming and using a model;

and also relating findings to a context, or communicating thinking using appropriate mathematical statements.

*Extended abstract thinking* involves one or more of:

- devising a strategy to investigate a situation
- identifying relevant concepts in context
- developing a chain of logical reasoning, or proof
- forming a generalisation;

and also using correct mathematical statements, or communicating mathematical insight.

3 *Problems* are situations that provide opportunities to apply knowledge or understanding of mathematical concepts and methods. Situations will be set in real-life or mathematical contexts.

4 Methods include a selection from those related to:

- graphs at curriculum Level 7, their features and their equations
- transformations of graphs
- connecting different representations of relations
- properties of functions (may include domain and range).

5 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

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### Replacement Information

This achievement standard replaced AS90285, AS90292, AS90806, AS90809, unit standard 5253, and unit standard 5255.

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### Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233