

Achievement Standard

Subject Reference	Mathematics and Statistics 2.14		
Title	Apply systems of equations in solving problems		
Level	2	Credits	2
		Assessment	Internal
Subfield	Mathematics		
Domain	Algebra		
Status	Registered	Status date	17 November 2011
Planned review date	31 December 2019	Date version published	5 February 2015

This achievement standard involves applying systems of equations in solving problems.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Apply systems of equations in solving problems. 	<ul style="list-style-type: none"> Apply systems of equations, using relational thinking, in solving problems. 	<ul style="list-style-type: none"> Apply systems of equations, using extended abstract thinking, in solving problems.

Explanatory Notes

- 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
 - form and use linear and quadratic equations
 - form and use pairs of simultaneous equations, one of which may be non-linear 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.

- Apply systems of equations in solving problems* involves:
 - selecting and using methods
 - demonstrating knowledge of concepts and terms
 - 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 and terms
- 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 or solve a problem
- 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
 - forming and using a pair of simultaneous equations, one of which is non-linear
 - forming and using a system of linear inequations
 - connecting different representations of equations or inequations
 - interpreting solutions of a system of equations or inequations in context.
- 5 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

Replacement Information

This achievement standard and AS91261 replaced AS90284, AS90806, AS90809, and unit standard 5246.

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