

Achievement Standard

Subject Reference Mathematics and Statistics 1.8

Title Apply knowledge of geometric representations in solving problems

Level 1 **Credits** 3 **Assessment** Internal

Subfield Mathematics

Domain Geometry

Status Registered **Status date** 9 December 2010

Planned review date 31 December 2014 **Date version published** 9 December 2010

This achievement standard involves applying knowledge of geometric representations in solving problems.

Achievement Criteria

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

Explanatory Notes

1 This achievement standard is derived from Level 6 of *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and is related to the material in the *Teaching and Learning Guide for Mathematics and Statistics*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>. The following achievement objectives taken from the Position and Orientation thread of the Mathematics and Statistics learning area are related to this achievement standard:

- construct and describe simple loci
- interpret points and lines on co-ordinate planes, including scales and bearings on maps
- create accurate nets for simple polyhedra and connect three dimensional solids with different two dimensional representations
- use a co-ordinate plane or map to show points in common and areas contained by two or more loci.

- 2 *Apply knowledge of geometric representations* involves:
- selecting and using a range of methods in solving problems
 - demonstrating knowledge of geometrical concepts and terms
 - communicating solutions using geometrical terms or representations.

Relational thinking involves one or more of:

- selecting and carrying out a logical sequence of steps
- connecting different concepts and 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 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 which provide opportunities to apply knowledge or understanding of mathematical concepts and methods. The situation will be set in a real-life or mathematical context.

- 4 The phrase 'a range of methods' indicates that evidence of the application of at least three different methods is required.

- 5 Students need to be familiar with methods related to:
- two-dimensional co-ordinate systems such as grid map references
 - scale diagrams
 - bearings
 - locus
 - constructions
 - nets
 - two-dimensional representations of three-dimensional objects.

- 6 Conditions of Assessment related to this achievement standard can be found at www.tki.org.nz/e/community/ncea/conditions-assessment.php.

Replacement Information

This achievement standard and AS90134 replaced unit standard 5231, unit standard 5237, and AS90150.

Quality Assurance

- 1 Providers and Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against achievement standards.
- 2 Accredited providers and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Accreditation and Moderation Action Plan (AMAP) reference

0233