Achievement Standard

Subject Reference   Mathematics and Statistics 3.3

Title   Apply trigonometric methods in solving problems

Level   3   **Credits**   4   **Assessment**   Internal

Subfield   Mathematics

Domain   Trigonometry

Status   Registered   **Status date**   4 December 2012

Planned review date   31 December 2016   **Date version published**   4 December 2012

This achievement standard involves applying trigonometric methods in solving problems.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Apply trigonometric methods in solving problems.	• Apply trigonometric methods, using relational thinking, in solving problems.	• Apply trigonometric methods, using extended abstract thinking, in solving problems.

Explanatory Notes

1   This achievement standard is derived from Level 8 of *The New Zealand Curriculum,* Learning Media, Ministry of Education, 2007; and is related to the achievement objectives:
   • Manipulate trigonometric expressions
   • Form and use 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, 2012, at http://seniorsecondary.tki.org.nz.

2   *Apply trigonometric methods 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
   • 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:
- trigonometric identities
- reciprocal trigonometric functions
- properties of trigonometric functions
- solving trigonometric equations
- general solutions.

5   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 replaced unit standard 5268 and AS90637.

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