Achievement Standard

Subject Reference Mathematics and Statistics 1.5

Title Apply measurement in solving problems

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

Subfield Mathematics

Domain Measurement

Status Registered **Status date** 9 December 2010

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

This achievement standard involves applying measurement in solving problems.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Apply measurement in solving problems.	• Apply measurement, using relational thinking, in solving problems.	• Apply measurement, 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 Measurement thread of the Mathematics and Statistics learning area are related to this standard:
   • convert between metric units, using decimals
   • deduce and use formulae to find the perimeters and areas of polygons, and volumes of prisms
   • find the perimeters and areas of circles and composite shapes and the volumes of prisms, including cylinders
   • apply the relationships between units in the metric system, including the units for measuring different attributes and derived measures
   • calculate volumes, including prisms, pyramids, cones, and spheres, using formulae.

2 *Apply measurement* involves:
- selecting and using a range of methods in solving problems
- demonstrating knowledge of measurement concepts and terms
- communicating solutions which would usually require only one or two steps.

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 that provide opportunities to apply knowledge or understanding of mathematical concepts and procedures 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 *Measurement* includes the use of standard international metric units for length, area, capacity, mass, temperature, and time. Measures include density, speed and other rates such as unit cost or fuel consumption.

6 Students need to be familiar with methods related to:
- perimeter
- area and surface area
- volume
- metric units.

7 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 5241 and AS90149.

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