Title	**Demonstrate knowledge of units, notation, and calculations in science**		
Level	**4**	**Credits**	**4**

Purpose	People credited with this unit standard are able to demonstrate knowledge of: Système International (SI) base and derived units of measurement and their corresponding quantities, as used by laboratories; and quantity calculations.

Classification	Science > Science - Core

Available grade	Achieved

Guidance Information

Guidance Information

1 For the purpose of this unit standard units and notation in science cover the knowledge of: Système International (SI) units, physical quantities, rearranging equations, manipulating units, dimensional analysis, standard form, indices, and logs and exponents.

2 Calculations include knowledge of the use of calculators, including the +, -, x, /, square, square root, powers and reciprocal functions, and order of operations.

3 Range
standard form - rounding is appropriate to the problem given in a science/laboratory context.

4 Glossary
derived quantity – refers to a property of a
- body or
- substance or
- phenomenon

that has a magnitude which can be expressed as a number with a unit (e.g. temperature) can be expressed as ºC from the base unit K.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of Système International (SI) base and derived units of measurement and their corresponding quantities, as used by laboratories.

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Performance criteria

1.1 The base unit is defined in relation to the measure and expressed in accordance with SI nomenclature.

Range measure includes – temperature, mass, mole, time, candela, distance, electrical current.

1.2 Discuss the relationship between SI base units and derived units.

Range derived units – five of ºC, N, Lux, J, Pa, V, W, R, S; evidence – name, symbol, derived quantity.

Outcome 2

Demonstrate knowledge of quantity calculations.

Performance criteria

2.1 Calculations involving transposition of formulae are applied within a science/laboratory context.

Range concentration (ppm, w/v; v/v; w/w), percentage concentrations, (by weight and by volume), molarity, molecular weight; evidence of four are required.

2.2 Prefixes of unit and powers of ten used are consistent with the unit and quantity in standard form.

Range micro, nano, milli, kilo, pico.

Replacement information	This unit standard replaced unit standard 9183.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 May 2011	31 December 2025
Rollover	2	27 January 2015	31 December 2025
Review	3	27 September 2018	31 December 2025
Review	4	30 November 2023	31 December 2025

Consent and Moderation Requirements (CMR) reference	0226

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

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