

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.
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Classification	Science > Science - Core
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Available Grade	Achieved
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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 °C 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.

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 °C, 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.
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Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 May 2011	N/A
Rollover	2	27 January 2015	N/A
Review	3	27 September 2018	N/A

Consent and Moderation Requirements (CMR) reference	0226
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact NZQA National Qualifications Services nqs@nzqa.govt.nz if you wish to suggest changes to the content of this unit standard.