

Title	Demonstrate knowledge of mathematical principles, conductors and insulators		
Level	3	Credits	7

Purpose	People credited with this unit standard are able to demonstrate knowledge of: <ul style="list-style-type: none"> – mathematical principles used in electrical work; and – conductors, insulators, current, and resistance.
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Classification	Electrical Engineering > Core Electrical
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Available grade	Achieved
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Guidance Information

This unit standard can be used together with other relevant unit standards, additional learning and workplace training to meet the requirements of the Electrical Workers Registration Board (EWRB) core competencies, available at <https://www.ewrb.govt.nz>.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of mathematical principles used in electrical work.

Performance criteria

1.1 Transpose mathematical formulas.

Range three mathematical formulas each with three unknowns or variables.

1.2 Use calculators to calculate answers to mathematical problems.

Range includes but not limited to — Ohm's law, Pythagoras, Trigonometry.

1.3 Demonstrate the use of calculator functions.

Range must include at least two of — square, square root, sine, cosine, tangent, brackets.

Outcome 2

Demonstrate knowledge of conductors, insulators, current, and resistance.

Performance criteria

- 2.1 Identify the characteristics of conductors, insulators, semiconductors and their use in the electrical industry.
- 2.2 Describe the fundamental principles of voltage, current, resistance and two effects of electrical energy.
- Range may include but is not limited to — heat, light, motion, chemical reaction.
- 2.3 Define conventional current flow with reference to electron flow.

Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 March 2022	N/A

Consent and Moderation Requirements (CMR) reference	0003
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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 Waihangā Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihanga.nz if you wish to suggest changes to the content of this unit standard.