

Achievement Standard

Subject Reference	Mathematics and Statistics 3.10		
Title	Use statistical methods to make a formal inference		
Level	3	Credits	4
		Assessment	Internal
Subfield	Statistics and Probability		
Domain	Statistics		
Status	Registered	Status date	4 December 2012
Planned review date	31 December 2016	Date version published	4 December 2012

This achievement standard involves using statistical methods to make a formal inference.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Use statistical methods to make a formal inference. 	<ul style="list-style-type: none"> Use statistical methods to make a formal inference, with justification. 	<ul style="list-style-type: none"> Use statistical methods to make a formal inference, with statistical insight.

Explanatory Notes

- 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:
 - Carry out investigations of phenomena, using the statistical enquiry cycle:
 - using existing data sets
 - seeking explanations
 - using informed contextual knowledge, exploratory data analysis, and statistical inference
 - communicating findings and evaluating all stages of the cycle
 - Make inferences from surveys and experiments:
 - determining estimates and confidence intervals for differences
 - use methods such as resampling to assess the strength of the evidence

in the Statistics 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>.
- Use statistical methods to make a formal inference* involves showing evidence of using each component of the statistical enquiry cycle.

Use statistical methods to make a formal inference, with justification involves linking components of the statistical enquiry cycle to the context, and/or to the populations,

and referring to evidence such as sample statistics, data values, or features of visual displays in support of statements made.

Use statistical methods to make a formal inference, with statistical insight involves integrating statistical and contextual knowledge throughout the statistical enquiry cycle, and may include reflecting about the process; considering other relevant explanations.

- 3 Using the statistical enquiry cycle to make a formal inference involves:
 - posing a comparison investigative question using a given multivariate data set
 - selecting and using appropriate displays and summary statistics
 - discussing sample distributions
 - discussing sampling variability, including the variability of estimates
 - making an appropriate formal statistical inference
 - communicating findings in a conclusion.
 - 4 Conditions of Assessment related to this achievement standard can be found at www.tki.org.nz/e/community/ncea/conditions-assessment.php.
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Replacement Information

This achievement standard replaced unit standard 5270 and AS90642.

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