

Achievement Standard

Subject Reference	Mathematics and Statistics 1.10		
Title	Investigate a given multivariate data set using the statistical enquiry cycle		
Level	1	Credits	4
		Assessment	Internal
Subfield	Statistics and Probability		
Domain	Statistics		
Status	Registered	Status date	9 December 2010
Planned review date	31 December 2014	Date version published	9 December 2010

This achievement standard involves investigating a given multivariate data set using the statistical enquiry cycle.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Investigate a given multivariate data set using the statistical enquiry cycle. 	<ul style="list-style-type: none"> Investigate a given multivariate data set using the statistical enquiry cycle, with justification. 	<ul style="list-style-type: none"> Investigate a given multivariate data set using the statistical enquiry cycle, with statistical insight.

Explanatory Notes

- 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 achievement standard is aligned to the following achievement objectives taken from the Statistical Investigation thread of the Mathematics and Statistics learning area:
 - plan and conduct surveys and experiments using the statistical enquiry cycle
 - determining appropriate variables
 - cleaning data
 - using multiple displays, and re-categorising data to find patterns, variations, in multivariate data sets
 - comparing sample distributions visually, using measures of centre, spread, and proportion
 - presenting a report of findings.

- plan and conduct investigations using the statistical enquiry cycle
 - justifying the variables used
 - identifying and communicating features in context (differences within and between distributions), using multiple displays
 - making informal inferences about populations from sample data
 - justifying findings, using displays and measures.

2 *Using the statistical enquiry cycle* involves using each component of the statistical enquiry cycle to make comparisons.

Using the statistical enquiry cycle with justification involves linking aspects of the statistical enquiry cycle to the context and the population and making supporting statements which refer to evidence such as summary statistics, data values, trends or features of visual displays.

Using the statistical enquiry cycle with statistical insight involves integrating statistical and contextual knowledge throughout the statistical enquiry cycle, and may involve reflecting on the process or considering other explanations for the findings.

3 Students need to be familiar with the statistical enquiry cycle to investigate a given multivariate data set, which involves:

- investigating data that has been collected from a survey situation
- posing an appropriate comparison question using a given multivariate data set
- selecting and using appropriate display(s)
- giving summary statistics such as the five summary values (minimum, maximum, median, quartiles)
- discussing features of distributions comparatively, such as shape, middle 50%, shift, overlap, spread, unusual or interesting features
- communicating findings, such as informal inference and supporting evidence, 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.

Replacement Information

This achievement standard and AS91036 replaced unit standard 5240 and AS90193.

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.