Achievement Standard

Subject Reference	Statistics and Modelling 3.5				
Title	Select and analyse continuous bi-variate data				
Level	3	**Credits**	3	**Assessment**	Internal
Subfield	Statistics and Probability				
Domain	Statistics				
Registration date	9 November 2005	**Date version published**	9 November 2005		

This achievement standard involves completing a statistical analysis of continuous bi-variate data.

	Achievement Criteria	**Explanatory Notes**
Achievement	• Select and analyse continuous bi-variate data.	• Data may be collected by candidates or provided. It should be data for which a linear model is appropriate. Where the data is provided it will involve more than one pair of variables from which the candidate selects a pair. • The analysis will involve: – developing a purpose statement from the data selected – graphing data – using regression to establish a linear relationship between a pair of variables – describing the relationship between at least one pair of variables in context.

	Achievement Criteria	**Explanatory Notes**
Achievement with Merit	• Carry out an in-depth analysis of bi-variate data.	• The analysis will include some of the following: - comparing the relationship between more than one pair of variables - discussing the appropriateness of the model - interpreting correlation coefficients, r, and coefficients of determination, R^2, when appropriate - making predictions from regression equations (interpolation and/or extrapolation) - use of residuals – discussing the difference between correlation and causality when appropriate.
Achievement with Excellence	• Report on the validity of the analysis.	• The report will include justified comments on some of the following: – method(s) of analysis – assumptions made – limitations – improving regression models eg discussing the effect of outliers, fitting piecewise or non-linear models – alternative approaches – data source or data collection method if the student collects own data – potential sources of bias – relevance and usefulness of evidence – how widely the findings can be applied.

General Explanatory Notes

1 This achievement standard is derived from *Mathematics in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1992, and *Mathematics in the New Zealand Curriculum*, *Addendum to Level 8*, Learning Media, Ministry of Education, 1995:
- achievement objectives p. 204, addendum p. 9
- suggested learning experiences p. 205, addendum p. 9
- suggested assessment activities p. 208, addendum pp. 10–11
- mathematical processes p. 23–29.

2 The use of appropriate technology is expected.

3 Students will select a pair of variables from a dataset. This dataset may be supplied or collected by the student.

4 Where the data is supplied, background information about the data collection or source of the data must be provided by the assessor.

5 This achievement standard does not assess sampling concepts or the use of confidence intervals (see AS90288, Mathematics 2.5, and AS90642, Statistics and Modelling 3.2).

Quality Assurance

1 Providers and Industry Training Organisations must be accredited by the Qualifications Authority 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.

Accreditation and Moderation Action Plan (AMAP) reference 0226