Achievement Standard

Subject Reference   Mathematics and Statistics 3.9

Title   Investigate bivariate measurement data

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 investigating bivariate measurement data.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Investigate bivariate measurement data.	• Investigate bivariate measurement data, with justification.	• Investigate bivariate measurement data, with statistical insight.

Explanatory Notes

1   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 objective:
   • Carry out investigations of phenomena, using the statistical enquiry cycle:
       – using existing data sets
       – finding, using, and assessing appropriate models (including linear regression for bivariate data), seeking explanations, and making predictions
       – using informed contextual knowledge and statistical inference
       – communicating findings and evaluating all stages of the cycle
   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.

2   *Investigate bivariate measurement data* involves showing evidence of using each component of the statistical enquiry cycle.

   Investigate bivariate measurement data, with justification involves linking components of the statistical enquiry cycle to the context, and referring to evidence such as statistics, data values, trends, or features of visual displays in support of statements made.

Investigate bivariate measurement data, with statistical insight involves integrating statistical and contextual knowledge throughout the investigation process, and may include reflecting about the process; considering other relevant variables; evaluating the adequacy of any models, or showing a deeper understanding of the models.

3   Using the statistical enquiry cycle to investigate bivariate measurement data involves:
- posing an appropriate relationship question using a given multivariate data set
- selecting and using appropriate displays
- identifying features in data
- finding an appropriate model
- describing the nature and strength of the relationship and relating this to the context
- using the model to make a prediction
- communicating findings in a conclusion.

4   *Measurement data* can either be discrete or continuous in nature. In regression analysis the y-variable, or response variable, must be a continuous variable. The x-variable or explanatory variable can be either a discrete or continuous variable. The relationship may be non-linear.

5   Use and interpretation of R^2 is not expected at this level.

6   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 replaced unit standard 11119 and AS90645.

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