

### Achievement Standard

**Subject Reference**

Mathematics 1.5

**Title**

Use statistical methods and information

**Level**

1

**Credits**

3

**Assessment**

Internal

**Subfield**

Statistics and Probability

**Domain**

Statistics

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This achievement standard involves the use of statistical methods to respond to a question or hypothesis, and the interpretation of statistical information.

	<b>Achievement Criteria</b>	<b>Explanatory Notes</b>
<b>Achievement</b>	<ul style="list-style-type: none"> <li>Use statistical methods to respond to a question or hypothesis.</li> <li>Use statistical information to answer straightforward questions.</li> </ul>	<ul style="list-style-type: none"> <li>The students may pose their own question or hypothesis, or it may be supplied.</li> <li>In responding to their question or hypothesis students are required to:                             <ul style="list-style-type: none"> <li>draw appropriate graph(s) (this will involve the calculation of statistics where appropriate)</li> <li>comment on the features of the data or their display in support of their response.</li> </ul> </li> <li>Students will be required to answer specific questions based on this information.</li> </ul>
<b>Achievement with Merit</b>	<ul style="list-style-type: none"> <li>Pose a question or hypothesis and use statistical methods to produce a justified response.</li> <li>Interpret statistical information.</li> </ul>	<ul style="list-style-type: none"> <li>Students will pose their own question or hypothesis.</li> <li>The response to the student's question or hypothesis must be justified with respect to the features of the data. This may involve:                             <ul style="list-style-type: none"> <li>confidence in student's response to their question by considering the feature(s) e.g. the strength of a relationship, outliers</li> <li>consideration of other features eg measure of centre and the measure of spread, trends, prediction and seasonal variation.</li> </ul> </li> <li>Students will be required to answer a question and justify this, or comment on the validity of a statement, with reference to the features of the information.</li> </ul>

	Achievement Criteria	Explanatory Notes
Achievement with Excellence	<ul style="list-style-type: none"> <li>Evaluate the statistical process used to respond to the question or hypothesis.</li> </ul>	<ul style="list-style-type: none"> <li>The evaluation could include consideration of: <ul style="list-style-type: none"> <li>factors such as limitations of the student's process</li> <li>discussion of what they have done, and why</li> <li>effectiveness or accuracy of their selection of data analysis and displays</li> <li>suggested improvements</li> <li>possible aspects that could be explored to support or extend the investigation.</li> </ul> </li> </ul>

### General Explanatory Notes

- This achievement standard is derived from *Mathematics in the New Zealand Curriculum*, Learning Media, Ministry of Education, 1992:
  - achievement objectives, p. 186, 188, 192
  - suggested learning experiences, p. 187, 189, 193
  - sample assessment activities, p. 190, 194
  - mathematical processes, p. 28.
- For the use of statistical methods, data supplied to the students will be in the form of
  - a common variable for data from two groups (univariate data)
  - bivariate data
  - time series data (In this case, students would not be required to calculate statistics, but would be required to make predictions and comment on trends).
- Students may be required to collect their own data.
- Students who are supplied with an appropriate question or hypothesis, instead of formulating their own, are limited to the award of achievement .
- For the interpretation of statistical information, the following guidelines apply.
  - Students will be provided with statistical information, which may be in the form of a graph or table, with accompanying statistics, such as mean, median, proportions.
  - The statistical information:
    - may include text or graphics or a mix of both
    - should not be technical in nature or require specialist knowledge
    - should contain data that has a local flavour
    - should be readily accessible and easily understood.
  - Features of the information could include strengths and weaknesses, consistency of text and graphics messages, clarity of purpose, appropriateness of the statistics or graphics used, and misleading features.
- Students are expected to use appropriate technology. The emphasis of the standard is on the application of statistical methods, and on interpretation and communication of statistical information and ideas, rather than on the mechanism of calculation or graphing.

### 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