

National Certificate of Educational Achievement

2013 Assessment Report

Mathematics and Statistics Level 1

- 91028** Investigate relationships between tables, equations and graphs
- 91031** Apply geometric reasoning in solving problems
- 91037** Demonstrate understanding of chance and data

COMMENTARY

Candidates maximise their opportunities for success in the standard by attempting all parts of all questions, and by showing working and/or providing explanations.

At all levels of achievement there were frequent instances of candidates not using or not understanding terminology and conventions associated with the content of this standard.

STANDARD REPORTS

91028 Investigate relationships between tables, equations and graphs

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They commonly:

- drew linear graphs
- interpreted linear graphs in context.

NOT ACHIEVED

Candidates who were awarded Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They commonly:

- had difficulty interpreting any graphs in context
- were unable to evaluate expressions
- were unable to use the scales for graph axes.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit commonly:

- formed equations for linear graphs and a straightforward parabola
- drew parabolas and could interpret parabolas in context
- used key features and transformations of linear and non-linear graphs to make comparisons.

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence commonly:

- formed an equation to describe a parabolic context
- drew and could interpret step functions in context
- identified key words in questions and focused on them when writing responses

- included coherent written explanations with their responses.

OTHER COMMENTS

Candidates need to demonstrate an understanding of terminology such as gradient, intercept, intersection, continuous, discrete, parallel, consecutive, horizontal, vertical, straight, curve, translate and use mathematical conventions for the coordinates of points (x, y); and write equations with at least one term on either side of an “=” sign.

91031 Apply geometric reasoning in solving problems

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They commonly:

- used correct trigonometric ratio
- understood the concept of similar triangles
- used Pythagoras’ Theorem correctly
- interpreted questions correctly
- understood simple intersecting and parallel line angle relationships
- understood simple angles in triangles properties
- understood angle properties of polygons
- understood simple angle properties of circle geometry.

NOT ACHIEVED

Candidates who were awarded Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They commonly:

- did not interpret questions correctly
- had little or no understanding of the concepts mentioned above
- were unable to develop clear and logical reasoning.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit commonly:

- demonstrated a better understanding and grasp of the concepts mentioned under Achievement
- were able to make progress with a question using correct reasoning
- were able to interpret questions using bearings
- were able to present a logical argument
- were unable to make final concluding statements that were required for Excellence.

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence commonly:

- were able to present a clear, accurate and logical geometrical argument or proof
- combined an understanding of concepts in a coherent manner
- used algebraic reasoning in explanations
- communicated mathematical insight.

OTHER COMMENTS

Overall the candidates demonstrated an understanding of geometrical concepts.

91037 Demonstrate understanding of chance and data

ACHIEVEMENT

Candidates who were awarded Achievement for this standard demonstrated the required skills and knowledge. They commonly:

- answered questions about graphs and statistics across a range of contexts
- identified relationships, probabilities, statistical features and variation in data
- expressed statistical ideas clearly making use of appropriate language
- made basic interpretations of graphs and statistics
- made sensible suggestions as to how to improve an investigation.

NOT ACHIEVED

Candidates who were awarded Not Achieved for this standard lacked some or all of the skills and knowledge required for the award of Achievement. They commonly:

- did not answer questions accurately
- gave no statistical reasoning behind their answer even though it was requested
- did not correctly evaluate simple probabilities from information presented in a table
- lacked understanding of what a graph was illustrating.

ACHIEVEMENT WITH MERIT

In addition to the skills and knowledge required for the award of Achievement, candidates who were awarded Achievement with Merit commonly:

- interpreted statistical graphs in close detail
- reflected on the validity of a statistical result and were circumspect about how strong a conclusion could be drawn
- demonstrated and understood the difference between measures of spread and measures of central tendency

- answered the questions according to the instructions, giving requested detail, reasons or answers
- demonstrated familiarity with the process of statistical investigation.

ACHIEVEMENT WITH EXCELLENCE

In addition to the skills and knowledge required for the award of Achievement with Merit, candidates who were awarded Achievement with Excellence commonly:

- used valid statistical approaches to decide if an observed result was significant or not
- interpreted graphs carefully and gave clear detail about what they observed
- made insightful suggestions about how investigations might be improved
- calculated more complex probabilities.

OTHER COMMENTS

Candidates need to be aware that the questions are, in many cases, open-ended. They should seek to answer the question in a way that showcases their understanding to the highest level of which they are capable. A candidate's answer to a question may be used to award any grade, but this depends on the quality (not quantity!) of their answer.

Candidates need familiarity with a range of graphs and statistics and need to be able to relate them to the context in hand. Candidates who achieved well in this standard showed familiarity with the statistical enquiry cycle and critically evaluated the experimental contexts presented.

Candidates do need to have experience in, and an understanding of, a variety of statistical investigations to successfully attempt this standard. Most candidates who achieved the standard showed an ability to read graphs and answer questions about statistics across a range of contexts.