2025 NCEA Assessment Report

Subject: Mathematics and Statistics

Level: 1

Achievement standard(s): 91946, 91947

General commentary

The format of both AS 91946 and AS 91947 will remain similar for the 2026 examinations. It should be noted that both assessments are aimed at Level 6 of the New Zealand curriculum, which has a broad level of content. However, knowledge and understanding of the lower levels of the curriculum is both necessary and expected. Teachers and learners should be referring to the Assessment Specifications, Subject Learning Outcomes AND the New Zealand curriculum when considering which aspects should be part of a teaching programme and may or may not be assessed in each of AS 91946 and AS 91947.

Report on individual achievement standard(s)

Achievement standard 91946: Interpret and apply mathematical and statistical information in context.

Assessment

The assessment for AS 91946 was changed significantly for the 2025 round of external examinations, from a submitted report to a written examination. A sample assessment had been prepared and made available to schools earlier in the year and the majority of candidates should be applauded for applying themselves well to the new assessment format.

Commentary

The examiner was impressed by the high-quality responses provided by many of the candidates. There were some excellent responses to the prompts in the questions showing that candidates were well-prepared and had a good understanding of the requirements of the standard.

It was also apparent that many candidates had gaps in their understanding of basic content at this curriculum level. For example, it was disappointing to note that some candidates were not able to provide sufficient evidence of their basic number skills or did not demonstrate sufficient knowledge of data provided in a time series graph. Also, some candidates appeared to be unfamiliar with the idea that they were expected to utilise information in the provided resource booklet to guide them in their responses.

It was a challenge for some candidates to respond appropriately to questions that needed a multi-faceted response and approach. Many candidates were unsure how to respond when a “personal worldview” was requested. This is a key aspect of this achievement standard that learners could make themselves more familiar with.

Candidates are always reminded and encouraged to attempt as much of the examination as possible so that the assessor can identify relevant evidence to award credit.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- made one relevant supported description of features in the statistical displays in context
- used relevant and appropriate information from the resources provided to answer some aspect of the questions
- provided accurate and relevant calculations, utilising percentages and fractions.

Candidates who were awarded **Achievement with Merit** commonly:

- described features of the sample data, time series or relationships between two variables in context with relevant statistical and / or numerical evidence
- used information from more than one source to form and justify their response and / or recommendations
- performed calculations with percentages and fractions in context and clearly communicated their answers.

Candidates who were awarded **Achievement with Excellence** commonly:

- used and interpreted information from the displays and resources in context
- used relevant statistical and numerical information to justify their response
- demonstrated confidence in attempting to answer all aspects of a question to the best of their ability
- combined contextual knowledge and personal worldviews to interpret information and make predictions and / or recommendations.

Candidates who were awarded **Not Achieved** commonly:

- could not form or make relevant accurate calculations with percentages or fractions
- did not use or include relevant context from the provided information in the Resource Booklet
- were not able to identify and describe relevant features when comparing sample data
- offered a comparison of point estimates when comparing samples to form a conclusion
- did not describe and interpret features of times series data
- did not describe and interpret features of relationships between two variables
- did not attempt enough of the question parts to present sufficient evidence.

Achievement standard 91947: Demonstrate Mathematical Reasoning.

Assessment

This assessment was of a similar layout as the 2024 examination. The Achievement Standard covers a broad range of content which cannot be completely assessed in each iteration of the examination. The blend and proportions between the various facets of the achievement standard will undoubtedly change from year to year. Candidates and teachers should be aware, however, that the knowledge and understanding of the entire Achievement Standard is expected for the candidate to attain success.

Candidates should ensure that they follow the instructions provided in the question, e.g. “using an algebraic method, supporting your answer with full mathematical working” means that accessing various possible components on a graphical calculator will not be rewarded without sufficient evidence of the necessary algebraic methods; “factorise AND solve” means that evidence of both aspects needs to be shown by the candidate to attain full marks. Candidates will often be guided

towards which method to use when solving a problem. This guidance must be followed and will be consistent with “demonstrating mathematical reasoning”.

The examination consisted of three questions, with multiple parts, as in previous years. Each question had only one opportunity for Excellence. Opportunities for Achieved, Merit and Excellence were spread throughout the examination. As a result, the parts of a question were not arranged in increasing order of difficulty.

This assessment required a candidate to be familiar and confident with a wide range of methods and procedures. A combination of these methods and procedures was required in any part of a question and for the award of any level of achievement. Linking these provides evidence of “relational and abstract thinking.”

Commentary

The assessment as a whole provided candidates with multiple opportunities at all levels to provide evidence of their knowledge and understanding. It was pleasing to see that those candidates with a positive approach attempted all question parts, even though initially it may have appeared to be daunting.

Question 1 provided a selection of algebra, Pythagoras, trigonometry, and graphing. The excellence question was not done well. Part (b) showed that candidates needed to be better prepared in the various methods of how to solve a pair of simultaneous equations. Only the very best of candidates were able to provide evidence of the possible different features related to an exponential graph. Candidates should be familiar with features and aspects of all of linear graphs, parabola graphs, and exponential graphs.

Question 2 provided opportunities for candidates to impress with questions relating algebra and geometry, three-dimensional trigonometry, and measurement problems. It was pleasing to see many candidates showing confidence in these aspects of their mathematics. It was noted though that part (c), involving factorising and solving a quadratic equation, highlighted gaps in many candidates’ knowledge.

Question 3 provided further opportunities relating graphing, Pythagoras, and algebra. Many candidates did not have the necessary skills to find the equations of a straight line graph or a parabola.

Both teachers and candidates must be aware that knowledge and understanding of all aspects of this achievement standard, i.e. Pythagoras’ Theorem, trigonometry, graphs, algebra, geometry, and measurement in perhaps unfamiliar settings are essential for success in this assessment. This can be a challenge for many candidates to be confident in all components.

Candidates are expected to demonstrate an understanding of the mathematical concepts, rather than directly transferring results from a graphical calculator. An answer without appropriate working and justification will be marked as “Correct Answer Only” and will gain grade u, at best.

Those students who had strengths in all components of the Achievement Standard, particularly in algebra, were the ones who attained the top grades.

Candidates are always encouraged to attempt as much of the examination as possible so that the assessor can identify relevant evidence to award credit.

Grade awarding

Candidates who were awarded **Achievement** commonly:

- found a missing side using trigonometry
- found a missing side using Pythagoras in a three-dimensional problem
- recognised and calculated the common ratio of the exponential pattern given in a table

- calculated the volume and weight of a triangular prism and cuboid
- were able to find the equation of a straight line
- showed understanding of the basic angle rules.

Candidates who were awarded **Achievement with Merit** commonly:

- calculated side lengths and angles using Trigonometry and Pythagoras in two-dimensional and three-dimensional problems
- calculated the number of truck-loads of dirt required for a triangular prism and cuboid involving the use of Pythagoras' Theorem, as well as calculating volumes and weight
- were able to find the equation of a parabola using either the vertex or roots method
- showed a good understanding of all aspects of the trigonometric ratios
- calculated the length of a quarter circumference given the radius.

Candidates who were awarded **Achievement with Excellence** commonly:

- were able to find the equation of an exponential graph using data provided in a table of results
- calculated the number of truck-loads of dirt required for a triangular prism and cuboid, involving Pythagoras, volume, and weight
- solved simultaneous linear equations algebraically
- calculated the difference in length between a curve and a direct line, giving the answer in terms of a variable
- were able to factorise and solve a quadratic equation with the co-efficient of x^2 that is greater than one, without a common factor
- used Pythagoras and trigonometry in problems involving two dimensions and three dimensions
- were able to form and rearrange formulae related to the circumference and Pythagoras formulae.

Candidates who were awarded **Not Achieved** commonly:

- did not attempt enough of the question parts to gain sufficient evidence
- needed to be better prepared on all aspects of the necessary content
- were confused between the necessary calculations for surface area and volume
- were unable to recognise an exponential pattern from a table of values
- were not able to apply either Pythagoras' Theorem or trigonometry knowledge to finding either angles or lengths
- were not able to find the equation of a straight line, perhaps omitting the negative sign for the gradient of the line
- were not able to make progress in solving a pair of simultaneous equations, using algebra
- were unable to complete multiple steps in a problem
- were not able to find the volume of a simple prism
- were confused with the accurate units necessary for an area, inserting the "squared" unit in the incorrect place.