

NCEA Mathematics and Statistics Remote Learning and Assessment

Subject matrices are a guide to assessment where remote teaching, learning and assessment have to take place due to a significant event leading to closure of schools over an extended period of time. For example, lockdown, natural disaster, etc.

General Guidance

Students may need access to measuring equipment and appropriate mathematical and statistical software. Access to a device and the internet will be required. This may pose issues around access and equity for some students, which you will need to consider in your programme planning.

Supporting Evidence

The Conditions of Assessment should be read in conjunction with this document.

Mathematics and Statistics Matrix

COLOUR KEY: A colour-coding system to categorise standards according to the advice in this document.

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| Green: | These standards are suitable for remote teaching, learning and assessment. |
| Blue: | Teachers can facilitate assessment against these standards by remote learning with guidance (refer to General Guidance above). |
| Orange: | These standards are suitable for remote teaching and learning provided the candidate has access to appropriate equipment and/or technology. They are not suitable for remote assessment in their current delivery method and/or requirements. Guidance will be provided at the time as required. |
| Red: | These standards require a collaborative process or interaction with others, and are not suitable for remote teaching, learning and assessment. |

| Level 1 | Level 2 | Level 3 |
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| <p>AS 91944 1.1</p> <p>Internal (5 credits)</p> <p>Explore data using a statistical enquiry process</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students need to have access to the technology and software that enables them to create visualisations.</p> <p>Assessing this standard remotely will limit the opportunity for primary data to be used. Instead, secondary data will need to be provided in the form of an appropriately sourced data set.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>The standard, Subject Learning Outcomes, and Unpacking documents provide guidance on the requirements. These are also available on the NCEA website.</p> | | |

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| <p>AS 91945 1.2</p> <p>Internal (5 credits)</p> <p>Use mathematical methods to explore problems that relate to life in Aotearoa New Zealand or the Pacific</p> <p>This standard is suitable for remote learning and assessment on file sharing platforms.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>The standard, Subject Learning Outcomes, and Unpacking documents provide guidance on the requirements. These are also available on the NCEA website.</p> <p>Exemplars for this standard are available on the NZQA Mathematics and Statistics page.</p> | | |

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| <p>AS 91946 1.3</p> <p>External (5 credits)</p> <p>Interpret and apply mathematical and statistical information in context</p> <p>Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> | | |
| <p>AS 91947 1.4</p> <p>External (5 credits)</p> <p>Demonstrate mathematical reasoning</p> <p>Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> | | |

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| | <p>AS 91257 2.2 Internal (4 credits)</p> <p>Apply graphical methods in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | <p>AS 91573 3.1 Internal (3 credits)</p> <p>Apply the geometry of conic sections in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> |

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| | <p>AS 91256 2.1</p> <p>Internal (2 credits)</p> <p>Apply co-ordinate geometry methods in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | |

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| | <p>AS 91258 2.3</p> <p>Internal (2 credits)</p> <p>Apply sequences and series in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | |

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| | <p>AS 91259 2.4 Internal (3 credits)</p> <p>Apply trigonometric relationships in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | <p>AS 91575 3.3 Internal (4 credits)</p> <p>Apply trigonometric methods in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> |

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| | <p>AS 91260 2.5 Internal (2 credits)</p> <p>Apply network methods in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | <p>AS 91576 3.4 Internal (2 credits)</p> <p>Use critical path analysis in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> |

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| | <p>AS 91261 2.6 External (4 credits) Apply algebraic methods in solving problems Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> | <p>AS 91577 3.5 External (5 credits) Apply the algebra of complex numbers in solving problems Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> |
| | <p>AS 91262 2.7 External (5 credits) Apply calculus methods in solving problems Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> | <p>AS 91578 3.6 External (6 credits) Apply differentiation methods in solving problems Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> |
| | | <p>AS 91579 3.7 External (6 credits) Apply integration methods in solving problems Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> |

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| | <p>AS 91269 2.14 Internal (2 credits)</p> <p>Apply systems of equations in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | <p>AS 91574 3.2 Internal (3 credits)</p> <p>Apply linear programming methods in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> |

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| | | <p>AS 91587 3.15</p> <p>Internal (3 credits)</p> <p>Apply systems of simultaneous equations in solving problems</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students may benefit from having access to technology and software that enables them to communicate using appropriate representations.</p> <p>Evidence can be collected in a variety of ways to suit the context and individual student needs. Students need to be able to present their evidence in ways that are free from unnecessary constraints.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> |

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| | <p>AS 91263 2.8</p> <p>Internal (3 credits)</p> <p>Design a questionnaire</p> <p>This standard should be assessed when students or groups of students can return to school. The standard requires students to design a questionnaire. The process needs to include checking the survey questions by carrying out a desk review and conducting pilot surveys. The student's ability to complete the process will be constrained in a remote learning and assessment environment.</p> | |

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| | | <p>AS 91580 3.8</p> <p>Internal (4 credits)</p> <p>Investigate time series data</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students need access to technology and software that enables them to select and use appropriate displays, find an appropriate model and use the model to make a forecast.</p> <p>A sourced multivariate data set containing appropriate variables must be available to the student. Background information on the data set must be made available, so that students can source material that will help them develop contextual understanding of the situation being investigated.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> |

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| | | <p>AS 91581 3.9</p> <p>Internal (4 credits)</p> <p>Investigate bivariate measurement data</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students need access to technology and software that enables them to select and use appropriate displays, find an appropriate model and use the model to make a prediction.</p> <p>Population data will need to be made available to the student in the form of an appropriately sourced multivariate data set. Background information on the data set must also be provided, so that students can source material that will help them to develop contextual understanding of the situation being investigated.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> |
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| | <p>AS 91264 2.9</p> <p>Internal (4 credits)</p> <p>Use statistical methods to make an inference</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students need access to technology and software that enables them to select and use appropriate displays and measures.</p> <p>Population data will need to be provided in the form of an appropriately sourced multivariate data set. The population data set must be large enough to show a need to sample. Background information on the data set must also be provided. The context of the assessment needs to be familiar and accessible to students.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | <p>AS 91582 3.10</p> <p>Internal (4 credits)</p> <p>Use statistical methods to make a formal inference</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students need access to technology and software that enables them to select and use appropriate displays and summary statistics and make an appropriate formal statistical inference.</p> <p>Population data will need to be made available to the student, in the form of an appropriately sourced multivariate data set. Background information on the data set must also be provided, so that students can source material that will help them to develop contextual understanding of the situation being investigated.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> |
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| | | Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page. |
| | <p>AS 91265 2.10 Internal (3 credits)</p> <p>Conduct an experiment to investigate a situation using statistical methods</p> <p>This standard should be assessed when students or groups of students can return to school. The standard requires students to conduct an experiment, and necessitates a collaborative approach. It is not suitable for remote assessment. The student's ability to complete the process of investigating a situation will be constrained in a remote learning and assessment environment.</p> | <p>AS 91583 3.11 Internal (4 credits)</p> <p>Conduct an experiment to investigate a situation using experimental design principles</p> <p>This standard should be assessed when students or groups of students can return to school. The standard requires students to conduct an experiment, and necessitates a collaborative approach. It is not suitable for remote assessment. The student's ability to complete the process of investigating a situation will be constrained in a remote learning and assessment environment.</p> |

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| | <p>AS 91266 2.11</p> <p>Internal (2 credits)</p> <p>Evaluate a statistically based report</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms.</p> <p>Students need access to appropriate technology. This will allow them to find further information to support their evaluation of the report.</p> <p>An appropriate statistically based report will need to be made available to the students. If possible, students should have access to the survey results.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | <p>AS 91584 3.12</p> <p>External (4 credits)</p> <p>Evaluate statistically based reports</p> <p>Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> |

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| | <p>AS 91267 2.12</p> <p>External (4 credits)</p> <p>Apply probability methods in solving problems</p> <p>Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> | <p>AS 91585 3.13</p> <p>External (4 credits)</p> <p>Apply probability concepts in solving problems</p> <p>Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> |

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| | <p>AS 91268 2.13</p> <p>Internal (2 credits)</p> <p>Investigate a situation involving elements of chance using a simulation</p> <p>This standard is suitable for remote learning and assessment using file sharing platforms. Students need access to technology and software that enables them to select and use appropriate displays and measures.</p> <p>Students need to be provided with a situation to investigate. Background information on the situation must be made available. The context of the assessment needs to be familiar and accessible to students.</p> <p>For authenticity purposes, check points and verbal conferencing with students during the assessment period is recommended. For further advice on how to manage authenticity when assessing during uncertain times, please see the Pūtake module: Tāku Reo, Tāku Mahi - My Voice, My Work. The Conditions of Assessment for this standard can be found on the NCEA website.</p> <p>Exemplars and clarifications for this standard are available on the NZQA Mathematics and Statistics page.</p> | <p>AS 91586 3.14</p> <p>External (4 credits)</p> <p>Apply probability distributions in solving problems</p> <p>Teaching and learning towards assessment of this standard is suitable remotely. Assessment is not suitable remotely. The current Assessment Specifications will continue to apply.</p> |