

Year 13 Statistics



St Andrew's College

Student Handout 2017:

Introduction

Programme of Learning

Assessment

Kei hopu tōu ringa ki te aka tāepa, engari kia mau ki te aka matua.

Grasp not the vine that hangs loosely, but that which is firmly anchored.

Kia ora and welcome to Year 13 Statistics for 2017

Mathematics is the exploration and use of patterns and relationships in quantities, space, and time. Statistics is the exploration and use of patterns and relationships in data. These two disciplines are related but different ways of thinking and of solving problems. Both equip students with effective means for investigating, interpreting, explaining, and making sense of the world in which they live.

Mathematicians and statisticians use symbols, graphs, and diagrams to help them find and communicate patterns and relationships, and they create models to represent both real-life and hypothetical situations. These situations are drawn from a wide range of social, cultural, scientific, technological, health, environmental, and economic contexts.

Statistics involves identifying problems that can be explored by the use of appropriate data, designing investigations, collecting data, exploring and using patterns and relationships in data, solving problems, and communicating findings. Statistics also involves interpreting statistical information, evaluating data-based arguments, and dealing with uncertainty and variation.

Key Learning Outcomes

In a range of meaningful contexts, students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to:

Carry out investigations of phenomena, using the statistical enquiry cycle:

- conducting experiments using experimental design principles, conducting surveys, and using existing data sets

- finding, using, and assessing appropriate models (including linear regression for bivariate data and additive models for time-series data), seeking explanations, and making predictions

- using informed contextual knowledge, exploratory data analysis, and statistical inference

- communicating findings and evaluating all stages of the cycle.

Make inferences from surveys and experiments:

- determining estimates and confidence intervals for means, proportions, and differences, recognising the relevance of the central limit theorem

- using methods such as resampling or randomisation to assess the strength of evidence.

Investigate situations that involve elements of chance:

- calculating probabilities of independent, combined, and conditional events

- calculating and interpreting expected values and standard deviations of discrete random variables

- applying distributions such as the Poisson, binomial, and normal.

Course Endorsement:

It is possible to gain Course Endorsement in Year 13 Statistics. Course endorsement provides recognition for a student who has performed exceptionally well in an individual course.

Students will gain an endorsement for a course if, in a single school year, they achieve:

- 14 or more credits at Merit or Excellence, and
- at least 3 of these credits are from externally assessed standards and 3 credits are from internally assessed standards.

Year 13 Statistics Programme 2017

	TERM I	TERM II	TERM III	TERM IV
1	30-Jan to 3-Feb 6-Feb Waitanai Day 3.11 Experiments	1-May Teacher Only 3.10 Inference	24-Jul Teacher Only 3.14 Probability	16-Oct 3.13 and 3.14 REVISION
2	10-Feb 13-Feb	5-May 8-May	28-Jul 31-Jul	20-Oct 23-Oct
3	17-Feb 20-Feb	12-May 15-May	4-Aug 7-Aug	27-Oct 30-Oct Labour day
4	24-Feb 27-Feb	19-May 22-May	11-Aug 14-Aug	3-Nov 6-Nov Study Leave Begins
5	3-Mar 6-Mar 3.11 - context given 3.11 - check problem plan research 3.11 - RUN EXPERIMENT 3.11 check graphs 3.11 Analysis conclusion 3.13 Probability	26-May 29-May 3.10 - context given 3.10 - check problem plan research 3.10 check graphs 3.10 Analysis conclusion	18-Aug 21-Aug	10-Nov 13-Nov NCEA Exams Start
6	10-Mar 13-Mar	2-Jun 5-Jun Queens BDay 3.8 Time Series	25-Aug 28-Aug 3.14 end of topic test 3.13 Probability Concepts - RISK	17-Nov 20-Nov Cant. Anniversary
7	17-Mar 20-Mar	9-Jun 12-Jun	1-Sep 4-Sep Winter Tournament	24-Nov 27-Nov
8	24-Mar 27-Mar Summer Tournament	16-Jun 19-Jun	8-Sep 11-Sep	1-Dec 4-Dec Teacher Only Teacher Only
9	31-Mar 3-Apr	23-Jun 26-Jun	15-Sep 18-Sep School Exams	8-Dec
10	7-Apr 3.13 end of topic test 3 WEEKS BREAK	30-Jun 3-Jul 3.8 - context given 3.8 - check problem plan research 3.8 check graphs 3.8 Analysis conclusion 2 WEEKS BREAK	22-Sep 3 WEEKS BREAK	

Summary of Requirements for Level Three Standards

This section contains a summary of the expected outcomes for each of the Statistics Level Three Achievement Standards. The purpose of this summary is to give students a simplified and easily accessed idea of what will be assessed for each standard. These summaries in no way replace the actual Achievement Standards and it is assumed that teachers will both provide access to the standards and will fully explain the standards to the students during the normal teaching and learning process. Students will also have access to exemplars that indicate achievement levels for each assessment.

<i>Internal assessment credits</i>	<i>External assessment credits</i>
12	8

External Assessments:

91585/2: A.S 3.13 *Apply probability concepts in solving problem.*

External: 4 credits

This achievement standard is derived from Level 8 of The New Zealand Curriculum, and is related to the achievement objective:

- Investigate situations that involve elements of chance
 - calculating probabilities of independent, combined, and conditional events

in the Statistics strand of the Mathematics and Statistics Learning Area.

This department has decided that:

- Skills will be developed across the year and revisited in study time in Term Four.
- Students will be required to sit one common assessment for this standard at the conclusion of text study.
- The school examination will provide evidence for derived grades, should the need arise.
- Students will be summatively assessed in the NZQA external exam at the end of the year.

91586/2: A.S 3.14 *Apply probability distributions in solving problems*

External: 4 credits

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 objectives:

- Investigate situations that involve elements of chance
 - calculating and interpreting expected values and standard deviations of discrete random variables
 - applying distributions such as the Poisson, binomial, and normal

in the Statistics strand of the Mathematics and Statistics Learning Area.

This department has decided that:

- Skills will be developed across the year and revisited in study time in Term Four.
- Students will be required to sit one common assessment for this standard at the conclusion of text study.
- The school examination will provide evidence for derived grades, should the need arise.
- Students will be summatively assessed in the NZQA external exam at the end of the year.

Internal Assessments

91583/2: A.S 3.11 *Conduct an experiment to investigate a situation using experimental design principles.*

Internal: 4 credits

This achievement standard is derived from Level 8 of The New Zealand Curriculum and is related to the achievement objectives:

- Carry out investigations of phenomena, using the statistical enquiry cycle:
 - conducting experiments using experimental design principles
 - seeking explanations
 - using informed contextual knowledge, exploratory data analysis, and statistical inference
 - communicating findings and evaluating all stages of the cycle
- Make inferences from surveys and experiments:
 - using methods such as randomisation to assess the strength of the evidence

in the Statistics strand of the Mathematics and Statistics Learning Area.

This department has decided that:

- Students will have the opportunity to write a practice report for formative assessment before the actual NCEA summative task.
- There will be a resubmission opportunity for this standard should a student fall slightly short of a grade.
- There will not be a reassessment opportunity for this standard.

91582/2: A.S 3.10 *Use statistical methods to make a formal inference.*

Internal: 4 credits

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 objectives:

- Carry out investigations of phenomena, using the statistical enquiry cycle:
 - using existing data sets
 - seeking explanations
 - using informed contextual knowledge, exploratory data analysis, and statistical inference
 - communicating findings and evaluating all stages of the cycle
- Make inferences from surveys and experiments:
 - determining estimates and confidence intervals for differences
 - use methods such as resampling to assess the strength of the evidence

in the Statistics strand of the Mathematics and Statistics Learning Area

91580/2: A.S 3.8 *Investigate time series data*

Internal: 4 credits

This achievement standard is derived from Level 8 of The New Zealand Curriculum 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 additive models for time-series data), seeking explanations, and making predictions
 - using informed contextual knowledge
 - communicating findings and evaluating all stages of the cycle

in the Statistics strand of the Mathematics and Statistics Learning Area

This department has decided that:

- Students will have the opportunity to write a practice report for formative assessment before the actual NCEA summative task.
- There will be a resubmission opportunity for this standard should a student fall slightly short of a grade.
- There will not be a reassessment opportunity for this standard.

Level 3 Statistics

GCA 2015 maths	<input type="text"/>
GCA 2016 Predicted	<input type="text"/>

Tracking Progress

<i>EXTERNAL STANDARDS</i>	Practice Test	EOT Test	EOY exam	Derived Grade	Target Grade	Credits
3.13 Probability .						4
3.14 Distributions						4

<i>INTERNAL ASSESSMENTS</i>	Practice Test	Assess Date	FAO Date	Final Grade	Target Grade	Credits
3.11 Experiments						4
3.10 Inference						4
3.08 Time Series						4

Assessment Policy A –Z: 2017

The Mathematics Department's Assessment Policy is as follows:

Assessment tasks: Where possible, you will be offered a range of activities for internal standards and the teacher will teach generic skills, which you will be able to apply to that context.

Appeals: You are welcome to appeal your grade. This appeal needs to have the accompanying paperwork (see your teacher for this) and should be handed into the classroom teacher, who will confer with the moderator of that assessment. If the appeal decision is still not accepted, the decision will lie with the Head of Department.

Authenticity: We are required to have procedures in place to ensure that *we know that you have completed your assessed work on your own*. This means that any internal assessment task will be carried out under teacher supervision. The Statistics based standards are assessed through a written report done over a week. There will be checkpoints for the statistics reports to ensure students are on track. If a checkpoint is missed, your classroom teacher will contact your parents / caregivers.

Due dates: The due date for the Statistical internal assessment will be published on the school's NCEA calendar and you are expected to adhere to this date. No late submissions will be accepted unless they are accompanied by a medical certificate or an extension has been granted prior. If you are absent the week of the assessment, please contact your Mathematics teacher.

Extensions: Extensions will be granted on an individual basis when necessary. Application must be made in writing to the Head of Teaching and Learning (Mr David Bevan) at least two weeks prior to the assessment due date.

Feedback: The practice assessments for all standards are your official opportunities to receive feedback. It is important you make the most of these formative assessment tasks.

Moderation: As a department, we need to ensure that all work is marked to the same standard. Because of this, samples of your work will be given to a senior member of the department to check for consistent marking.

'Not Achieved' versus 'void': Because all internal Statistics assessments use class time, any student who does not hand in / perform a completed internal assessment by the due date will receive a *Not Achieved* grade. Unless notification as to why the assessment will not be completed is given prior to the due date and given approval by the Head of Department, you will receive a *Not Achieved* grade.

Plagiarism: Using or copying other people's work is plagiarism. This can be from another student or text, including a website or secondary text. It is treated very seriously and any suspected plagiarism will be referred to the Head of Department or to the Head of Teaching and Learning. If you are found to have plagiarized or copied other people's work or sections of other people's work and handed it in as your own, the outcome will be a *Not Achieved* for that assessment, along with other disciplinary action.

Pre-entry into 2018 courses: Pre-entry into 2018 courses will be granted on the basis of Common Test results and preliminary examinations. If you do not gain pre-entry, you will need to use your NZQA examination results and risk missing out on a place in a course if the classes are full.

Resubmission: Resubmission are only available for Report based (Statistics) internals but not test based Mathematics internals. Resubmissions will happen by invitation-only and be based on the need for you to demonstrate a specific aspect of the criteria. As per NZQA guidelines, you will receive very limited feedback prior to this resubmission. Resubmissions will not be granted if you have a lot of work to do to achieve the standard.

Reassessment: Reassessments are only available for test based mathematics internals but not Report based (Statistics) internals. You may have one reassessment opportunity only.

School Examination: School Examination results will be used for NCEA derived grades.

Subject Prizes: The following grades will be used to calculate the end of year Prize Winner in each subject: *School Examination results, internal assessment results, Common text results completed in exam conditions.*

Signatures: You will be required to sign that the work completed is your own when you submit your work. Your signature is also required to confirm the grade received is correct. Signing something means you have read and accept responsibility for your work and grade.

Storage of work: All work that is handed in for internal assessment will be kept by your class teacher and stored by the Mathematics Department for the following year.

Please sign: I have read and understand the Mathematics Department's NCEA policy guidelines above:

Student name : _____ signature: _____

Parent / caregiver: _____

Date: _____ 2017

Your Mathematics teacher will give you another copy of this handout and keep it with your assessment material once you have signed it.