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| **LEARNING AREA:** MATHEMATICS AND STATISTICS | **STRAND**: STATISTICS | **LEVEL**: 1 - 4 |
| **YEAR** 2016 | **TERM** 1 | **WEEKS**  | **YEAR LEVEL**  |
| NZ Curriculum **KEY COMPETENCY** | [thinking](http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Key-competencies#thinking)[using language, symbols, and texts](http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Key-competencies#language)[managing self](http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Key-competencies#managing)[relating to others](http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Key-competencies#relating)[participating and contributing](http://nzcurriculum.tki.org.nz/The-New-Zealand-Curriculum/Key-competencies#participating) | **NZ Curriculum VALUES**To be encouraged, modeled, and explored | Students will be encouraged to value:**excellence**, by aiming high and by persevering in the face of difficulties**innovation**, inquiry, and curiosity, by thinking critically, creatively, and reflectively**diversity**, as found in our different cultures, languages, and heritages**equity**, through fairness and social justice**community** and participation for the common good**ecological** sustainability, which includes care for the environment**integrity**, which involves being honest, responsible, and accountable and acting ethicallyand to **respect** themselves, others, and human rights. |
| **SCHOOL VALUES** | Striving for excellentTeamworkAchieving personal bestRespect | **POSSBILE RESOURCES** | Digital Learning Objects <http://nzmaths.co.nz/digital-learning-objects> nzmaths Learning Objects <http://nzmaths.co.nz/nzmaths-learning-objects-0> Statistical investigations <http://nzmaths.co.nz/statistical-investigations-units-work> statistical literacy <http://nzmaths.co.nz/statistical-literacy-units-work>probability <http://nzmaths.co.nz/probability-units-work> Figure it out statistics <http://nzmaths.co.nz/figure-it-out-7>  |

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| Statistical Investigation | LEVEL TWO * Conduct investigations using the statistical enquiry cycle:
* posing and answering questions;
* gathering, sorting and counting, and displaying category data;
* discussing the results.
 | Achievement objectives  | LEVEL ONE * Collect everyday objects, sort them into categories, count the number of objects in each category, and display and discuss the results.
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| LEVEL TWO * Conduct investigations, using the statistical enquiry cycle:
* posing and answering questions;
* gathering, sorting, and displaying category and whole number data;
* communicating findings based on the data.
 | LEVEL TWO * Collect everyday objects, sort them into categories, count the number of objects in each category, and display and discuss the results.
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| LEVEL THREE* Conduct investigations using the statistical enquiry cycle:
* gathering, sorting, and displaying multivariate category and whole number data and simple time-series data to answer questions;
* identifying patterns and trends in context, within and between data sets;
* communicating findings, using data displays.
 | LEVEL THREE * plan statistical investigations of an assertion abut a situation
* collect and display discrete numeric data in stem-and-leaf graphs, dot plots and strip graphs, as appropriate.
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| LEVEL FOUR* Plan and conduct investigations using the statistical enquiry cycle:
* determining appropriate variables and data collection methods;
* gathering, sorting, and displaying multivariate category, measurement, and time-series data to detect patterns, variations, relationships, and trends;
* comparing distributions visually;
* communicating findings, using appropriate displays.
 | LEVEL FOUR * Plan statistical investigation arising from the consideration of an issue or experiment of interest
* Collect appropriate data
* Choose and construct quality data displays (frequency tables, bar charts, histograms) to communicate significant features in measurement data
* Collect and display time-series data
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| Statistical Literacy | LEVEL ONE * Interpret statements made by others from statistical investigations and probability activities.
 | **Achievement objectives** | LEVEL ONE  |
| LEVEL TWO * Compare statements with the features of simple data displays from statistical investigations or probability activities undertaken by others.
 | LEVEL TWO  |
| LEVEL THREE* Evaluate the effectiveness of different displays in representing the findings of a statistical investigation or probability activity undertaken by others.
 | LEVEL THREE * Use their own language to talk about the distinctive features, such as outlines and clusters in their own and others’ data displays.
* Make sensible statements about an assertion on the basis of the evidence of a statistical investigation
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| LEVEL FOUR* Evaluate statements made by others about the findings of statistical investigations and probability activities.
 | LEVEL FOUR * Report the distinctive features (outliers, clusters, shape of data distribution) of data displays
* Evaluate others’ interpretations of data displays
* Make statements about implications and possible actions consistent with the results of statistical investigation
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| Probability | LEVEL ONE* Investigate situations that involve elements of chance, acknowledging and anticipating possible outcomes.
 | **Achievement objectives** | LEVEL ONE * Classify events from their experiences as certain, possible, or impossible.
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| LEVEL TWO* Investigate simple situations that involve elements of chance, recognising equal and different likelihoods and acknowledging uncertainty.
 | LEVEL TWO * Classify events from their experiences as certain, possible, or impossible.
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| LEVEL THREE* Investigate simple situations that involve elements of chance by comparing experimental results with expectations from models of all the outcomes, acknowledging that samples vary.
 | LEVEL THREE * Use a systematic approach to count a set of possible outcomes
* Predict the likelihood of outcomes on the basis of a set of observations
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| LEVEL FOUR* Investigate situations that involve elements of chance by comparing experimental distributions with expectations from models of the possible outcomes, acknowledging variation and independence.
* Use simple fractions and percentages to describe probabilities.
 | LEVEL FOUR * Estimate the relative frequencies of events and mark them on a scale
* Find all possible outcomes for a sequence of events, using a tree diagrams
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**SPECIFIC LEARNINGS OBJECTIVES**

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| LEVEL ONE | * Count all the objects using tally marks
* Fill in tables
* Use correct vocabulary to discuss probability
* Collect and sort objects into categories
* Display objects and describe the display using appropriate vocabulary
* Draw a block graph to show results
* Classify events as certain, possible, or impossible
 | **VOCABULARY REQUIRED** | Bar graph block graph collect display labels might objects pictograph show sort will won’t  |
| LEVEL TWO | * Collect data methodically
* Display data using tally marks
* Read tally marks
* Display data in a pictograph, bar chart, block graph
* Read and interpret pictograph, bar chart, block graph
* Sort activities and events into categories of probability
* Choose outcomes of events or activities
* Pose questions for investigations
* Interpret display of data
* Discuss data displays using appropriate vocabulary
* Compare results of data displays
* Report results on investigations
* Use appropriate vocabulary to discuss probability
 |  Always bigger biggest certain chance impossible investigation likely never outcomes smaller smallest sometimes survey unlikely value |
| LEVEL THREE | * Plan a survey
* Collect data
* Organise data appropriately
* Display data on a pictogram, bar chart, stem-and-leaf chart, dot plot
* Draw a strip graph
* Answer questions about a graph
* Discuss results of a survey making inferences based on the results
* Evaluate statements about data displays
* Interpret results of a survey
* Work out possible outcomes of an event
* Describe the likelihood of an event occurring
* Predict one of two events as more likely
* Predict one of a number of events as most / least likely
* Write all possible outcomes of an event as a list or a table
* Round measurement data to the nearest whole number where necessary
* Report results of statistical investigation
* Graph simple time series data
* Interpret frequency table
 | Axes certain collection sheet distribution even chance fair impossible likely outcomes probability results uneven chance unfair unlikely spread |
| LEVEL FOUR | * Interpret time-series data
* Interpret grouped data
* Draw histogram to show grouped data
* Use databases to sort data
* Pose questions for statistical investigations
* Plan a statistical investigation
* Process the data of statistical investigations
* Report results of statistical investigations
* Devise a method to obtain a representative sample
* Interpret frequency table
 | **VOCABULARY REQUIRED** | Database histogram horizontal axis representative sample  |

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|  | PROBLEM SOLVING | DEVELOPING LOGIC AND REASONING  | COMMUNICATING MATHE IDEAS |
| LEVEL 1,2,3,4 | * Pose questions
* Plan exploration
* Devise and use strategies
* Find and use a model
* Devise and use a model
* Use equipment appropriately
 | * Classify objects
* Classify numbers and ideas
* Make conjectures
* Prove or refute conjectures
* Generalise ideas and conjectures
* Interpret information and results
* Follow a chain of reasoning
* Use words and symbols to describe, continue and generalise patterns
 | * Use own and mathematical language to explain ideas
* Devise and follow instructions
* Record and discus results
* Report results coherently.
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