

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 1a)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> one to one counting strategies for situations involving addition and subtraction. 	<ul style="list-style-type: none"> whole numbers to 20 number symbols, words and numerals and the quantities they represent the sequence of numbers and how they can be represented doubles to 10 and related halves relevant place value ideas such as the number pairs in 5 and 10, and place value partitioning.
Te Taura me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> creating and extending repetitive patterns. 	<ul style="list-style-type: none"> how to identify the base element of a repeating pattern.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> comparing the size of two objects according to measurement attributes grouping objects according to their properties. 	<ul style="list-style-type: none"> the attributes of something that can be measured, such as length, weight, time, temperature, and cost simple language used to compare measures of objects simple attributes that can be the basis for grouping objects, such as size, colour, the number of corners, sides and faces.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> following and giving directions for movement describing the location of something. 	<ul style="list-style-type: none"> simple words for direction, such as forward, backward, left and right simple position words such as close, distant, beside, middle, front, behind.
Te Tauanga Statistics	<ul style="list-style-type: none"> grouping simple data. 	<ul style="list-style-type: none"> possible categories for sets of simple data.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 1e)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> • skip counting and counting on strategies for situations involving addition and subtraction • grouping strategies for situations involving simple multiplication • equal sharing strategies for situations involving simple division. 	<ul style="list-style-type: none"> • whole numbers to 100 • skip counting forward and backwards in two's, five's and ten's • addition facts to 10 and related subtraction facts • doubles to 20 and related halves • how a number operation is represented as an equation • names, symbols, representations and the meaning of simple fractions such as halves and quarters.
Te Tauira me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> • creating and extending sequential geometric and number patterns. 	<ul style="list-style-type: none"> • the consistent growth of sequential patterns.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> • using non-standard units of measurement • using simple standard units of measurement • the properties of simple polygons and polyhedra. 	<ul style="list-style-type: none"> • attributes of something that can be measured such as rotation, volume and area • that a unit of measurement remains constant • that a unit of measurement is repeated with no overlapping or gaps in order to measure something • the correct beginning and end points for a measurement • the names of simple two and three dimensional shapes such as triangles, quadrilaterals, circles, rectangles, squares, boxes and spheres.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> • following and giving directions for turns • identifying flips, turns, slides and enlargements of an object. 	<ul style="list-style-type: none"> • clockwise and anti-clockwise directions, and simple fractions of a turn • attributes that remain invariant under simple transformations.
Te Tauanga Statistics	<ul style="list-style-type: none"> • creating and interpreting simple data displays such as picture graphs. 	<ul style="list-style-type: none"> • counting category data in order to make statements about the data • the use of pictures to represent data.
Te Tūponotanga Probability	<ul style="list-style-type: none"> • predicting and trialling all possible outcomes of a simple probability situation. 	<ul style="list-style-type: none"> • the basis for making predictions about the outcome of a probability event • the differences that arise between predictions or expectations and the outcomes of a trial.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 2a)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> simple part-whole number strategies for situations involving addition and subtraction. 	<ul style="list-style-type: none"> whole numbers to 1 000 and simple fractions addition facts to 20 and related subtraction facts the order of simple fractions with the same denominator.
Te Tauira me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> patterns resulting from the additive partitioning of a number showing simple relationships patterns resulting from the partitioning of a shape. 	<ul style="list-style-type: none"> patterns arising from ways of representing numbers, such as on a tens frame, a hundreds board, a slavonic abacus, and number line ways of representing relationships such as in arrow diagrams and tables additive number pairs within a number.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> creating and using appropriate measuring tools and units partitioning and adding measurements making judgements about the reasonableness of measurements based on estimates the properties of polygons and polyhedra. 	<ul style="list-style-type: none"> the approximate size of simple standard units of measurement, and their relationship to known sizes such as the length of a pace, and the volume of a container of milk simple fractions of a unit of measurement different types of triangles relevant geometric vocabulary such as vertex, face and edge (side) different types of polyhedra including prisms and pyramids.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> identifying major directions showing and describing simple positions reflecting, translating and rotating simple shapes. 	<ul style="list-style-type: none"> vocabulary for direction and position, such as inland, coastal, to the side, beyond the major compass directions the symmetry of simple shapes.
Te Tauanga Statistics	<ul style="list-style-type: none"> formulating simple questions and collecting relevant data to answer the questions creating and interpreting data displays relevant to the collected data. 	<ul style="list-style-type: none"> how data is recorded in a tally chart how to make statements about the important features of a set of data.
Te Tūponotanga Probability	<ul style="list-style-type: none"> the use of simple language to describe the probability of an outcome. 	<ul style="list-style-type: none"> whether the probability of outcomes of an event are similar (equally likely), different or uncertain.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 2e)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> part-whole strategies and inverse operation strategies for situations involving addition and subtraction repeated addition strategies for situations involving simple multiplication. 	<ul style="list-style-type: none"> whole numbers to 10 000 and simple fractions multiplication facts for 2, 5 and 10, and related division facts names, symbols, representations and the meaning of fractions such as halves, thirds, quarters, fifths, eighths and tenths the order of unit fractions.
Te Tauira me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> working out and using rules for simple patterns. 	<ul style="list-style-type: none"> the use of symbols to express rules for patterns.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> deciding on appropriate units of measurement according to context and required accuracy drawing diagrams and making models of two and three dimensional shapes. 	<ul style="list-style-type: none"> how to use a ruler, compass and right angle to measure and draw objects.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> showing and describing direction and position on simple maps following and giving directions for a path of travel identifying invariant and variant properties of a transformation. 	<ul style="list-style-type: none"> the location and direction of important features of the local environment, such as mountains, rivers, marae and school.
Te Tauanga Statistics	<ul style="list-style-type: none"> category data and discrete data making statements about the results of a statistical investigation, including posing new questions for investigation. 	<ul style="list-style-type: none"> how data is displayed in simple bar graphs and dot plots relevant ethical issues such as ensuring questions do not cause offence or harm to respondents.
Te Tūponotanga Probability	<ul style="list-style-type: none"> expressing probability as a scale interpreting simple data displays to predict the outcome of a probability event. 	<ul style="list-style-type: none"> how to show outcomes on a simple data display, such as a dot plot, a picture graph or a bar graph.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 3a)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> decimal numbers (to one decimal place) simple multiplicative strategies for situations involving multiplication, division and finding the fraction of a number. 	<ul style="list-style-type: none"> whole numbers to 100 000, and fractions multiplication facts to 10 x 10, and related division facts the ordering of simple fractions the conventions of decimal fractions including the relationship to ordinary fractions.
Te Taura me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> additive, simple multiplicative and geometric patterns and relationships patterns resulting from the multiplicative partitioning of a number. 	<ul style="list-style-type: none"> the consistency of a rule to describe a mathematical pattern or relationship.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> various types of measurement scales, and decimal fractions of units of measurement nets of simple three dimensional shapes. 	<ul style="list-style-type: none"> how to use various types of measuring equipment including protractors.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> grids, ordered pairs, major compass points and simple map systems to show and describe a location and path of travel. 	<ul style="list-style-type: none"> the four main compass points and points in between such as south-east conventions for showing location on a grid system.
Te Tauanga Statistics	<ul style="list-style-type: none"> posing relevant questions and collecting appropriate data to explore the questions continuous data such as time-series data making statements about the patterns, trends and important features in a set of data. 	<ul style="list-style-type: none"> how data is displayed in line graphs how the shape of a data display reflects the trends patterns and important features of the data.
Te Tūponotanga Probability	<ul style="list-style-type: none"> exploring simple probability situations expressing probability as a simple fraction between zero and one. 	<ul style="list-style-type: none"> the theoretical and experimental outcomes of a probability event and their comparisons whether probability events are dependent, independent or mutually exclusive.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 3e)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> decimal numbers (to three decimal places) multiplicative strategies for situations involving multiplication, division and finding the fraction of a number. 	<ul style="list-style-type: none"> whole numbers to 1 000 000 and beyond, and fractions wider associations of basic facts such as $3 \times 0.4 = 1.2$ the rounding of whole numbers in order to estimate the results of number operations the ordering of fractions.
Te Taura me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> simple algebraic strategies relevant to a pattern or a simple relationship. 	<ul style="list-style-type: none"> that a variable is an unknown quantity that can be represented using a letter or symbol.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> estimating and working out simple areas and volumes drawing nets of three dimensional shapes. 	<ul style="list-style-type: none"> appropriate units for measuring area and volume the use of grids to work out areas the use of cubes to work out volume.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> creating and describing patterns that arise from repeating transformations transforming an object to obtain an image of that object. 	<ul style="list-style-type: none"> conventions for describing transformations, such as the centre and angle of a rotation, the mirror line, the distance and direction of a translation, and the scale factor of simple enlargements.
Te Tauanga Statistics	<ul style="list-style-type: none"> multivariate category data reviewing the usefulness of various data displays. 	<ul style="list-style-type: none"> how data is displayed in stem and leaf graphs and pie graphs relevant ethical issues such as the anonymity of respondents in a statistical investigation.
Te Tūponotanga Probability	<ul style="list-style-type: none"> more sophisticated language and ways of representing probability. 	<ul style="list-style-type: none"> how to show probability on a fractional number line the use of tree diagrams to show the possible outcomes of combined probability events.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 4a)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> a broad range of multiplicative strategies for a range of situations including those involving percentages and simple ratios to represent quantitative relationships. 	<ul style="list-style-type: none"> whole numbers and fractional numbers the meaning and representation of negative numbers the rounding of whole numbers and decimals equivalent fractions, including common fractions, decimals and percentages factors and multiples of numbers percentages greater than 100%.
Te Taura me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> expressing simple relationships as algebraic equations. 	<ul style="list-style-type: none"> how a change in one variable will affect other variables.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> converting units of measurement edge measurements and formulae to calculate perimeter, area and volume of simple shapes using rates as units of measurement, such km/h to measure speed representing three dimensional objects as two dimensional diagrams such as in isometric drawing. 	<ul style="list-style-type: none"> various views of an object the use of ratio and scale factor to draw scale diagrams.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> angles to show and describe direction the symmetry of an object under transformation. 	<ul style="list-style-type: none"> the relationship between angles and compass directions line symmetry and rotational symmetry of a shape.
Te Tauanga Statistics	<ul style="list-style-type: none"> posing questions and making assertions as a basis for a statistical investigation comparing the distribution and shape of different data displays using measures of central tendency. 	<ul style="list-style-type: none"> how to calculate mean, median, range and mode of a set of data and how to show these on data displays how data is displayed in stacked bar graphs the variables in a statistical investigation and how information about them is collected and displayed.
Te Tūponotanga Probability	<ul style="list-style-type: none"> determining whether a probability event is fair or biased. 	<ul style="list-style-type: none"> how to express probability as a percentage.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 4e)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> integers and fractions, including decimals and percentages additive and multiplicative strategies for a range of situations involving proportion including ratios and simple rates. 	<ul style="list-style-type: none"> simple powers of numbers, including squares and square roots the accuracy and reasonableness of estimations and calculations the most efficient methods for making calculations in a variety of situations.
Te Taura me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> representing patterns and relationships with words, tables, graphs and equations. 	<ul style="list-style-type: none"> the use of commutative, associative and distributive properties of operations to solve equations the role of vertical and horizontal axes, and ordered pairs to represent a relationship between variables on a graph the role of the slope of a line graph in expressing the relationship between variables.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> a wide range of timetables working out the size of angles. 	<ul style="list-style-type: none"> how to calculate time 24-hour time angles such as complementary angles, supplementary angles, conjugate angles, acute angles and obtuse angles.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> ratios to calculate scale factor and size of image under enlargement combined transformations. 	<ul style="list-style-type: none"> the effect of enlargement on properties of shapes, such as length, area and volume.
Te Tauanga Statistics	<ul style="list-style-type: none"> analysing the results of a statistical investigation critiquing the validity of collecting and displaying data from a sample to represent a population. 	<ul style="list-style-type: none"> how data is displayed in histograms relevant ethical issues such as informing respondents about how the data from a statistical investigation will be used.
Te Tūponotanga Probability	<ul style="list-style-type: none"> comparing the distributions of theoretical and experimental outcomes. 	<ul style="list-style-type: none"> the variability of outcomes of a probability experiment.

MATHEMATICS STANDARD: (PĀNGARAU – TE WHANAKETANGA 5a)

	Students will solve problems and explain solutions involving:	In order to solve such problems, students will need to know and understand:
Te Tau Number (Te Mātauranga Tau me ngā Rautaki Tau) (Number Knowledge and Number Strategy)	<ul style="list-style-type: none"> integers and fractions choosing the number strategy most appropriate to the context. 	<ul style="list-style-type: none"> standard form to represent very large and very small numbers algorithms for computing with fractions and integers.
Te Tauira me te Pānga Patterns and Relationships	<ul style="list-style-type: none"> straight line equations and graphs. 	<ul style="list-style-type: none"> the axis intercepts and slope of a straight line graph, and how these are represented in the equation of the line.
Te Ine me te Hanga Measurement and Shape	<ul style="list-style-type: none"> formulae to calculate sides, perimeter, area, angle, surface area and volume of a wide range of shapes angles of intersecting and parallel lines, and polygons. 	<ul style="list-style-type: none"> the theorem of Pythagoras interior, opposite, corresponding and alternate angles.
Te Wāhi, te Ahunga, me te Panoni Position, Direction and Transformations	<ul style="list-style-type: none"> the symmetry of intersecting and parallel lines, polygons and polyhedra showing and explaining transformations on a plane graph. 	<ul style="list-style-type: none"> the use of vectors to show a translation maps and all their elements such as grids and scales to describe a path of travel.
Te Tauanga Statistics	<ul style="list-style-type: none"> posing questions and hypotheses, conducting statistical investigations and producing reports reviewing the results of a statistical investigation making statements about the relationship of variables. 	<ul style="list-style-type: none"> how data is displayed in box and whisker graphs, and scatter graphs the purpose and usefulness of various data displays relevant ethical issues such as ensuring questions are not biased.
Te Tūponotanga Probability	<ul style="list-style-type: none"> multi-level probability situations. 	<ul style="list-style-type: none"> how to calculate probabilities of combined events.