SCHOLASTIC

PRIME Mathematics

PRIME Mathematics and the New Zealand Context: Analysis of Linkages

Prepared by Lester Flockton

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Mathematics is a universal language of numbers, concepts, and processes that crosses all cultures. For most, its usefulness relates to everyday practical purposes of counting, calculating, estimating, measuring and various recreational activities.

Mathematics curricula around the world have much in common in their content and coverage, but they also have differences in approaches to teaching and learning. Regardless of the approach, learning theory says that students progressively advance through stages of concrete to representational then abstract levels in their development of mathematical concepts and processes.

Some students can comfortably develop the skills and flexibility of cognitive processing (seeing relationships and working things out in their head). This gives those students an advantage in using mental strategies for working with number. Many students in the primary years, however, need a systematic structure for learning that gives them the ability to do, understand and learn mathematics with confidence. They need repeated practice to embed the learning of processes using consistent approaches and methods, and they need to progressively build on what they have previously learned. This is one of the key advantages of PRIME's approach to mathematics teaching and learning compared to approaches that over-rely on mental strategizing which can impede the progress of many students.

New Zealand's primary school mathematics abounds with an ever-growing plethora of mainly online resources that require considerable teacher time to download, search, sift through, choose from, organise into lesson plans, then prepare and assemble the resources needed for teaching programmes. The amount of time that teachers can spend on all of this for one subject among many others is understandably variable. The result is wide variation in the design and effectiveness of mathematics programmes. PRIME can overcome this very real obstacle to a sound, well structured, and suitably resourced teaching and learning programme. It provides a coherent, unified and systematic sequence of learning and content that teachers can readily follow, with the support of guidance and explanation where needed. It is a programme that stands on its own without the need for other sources.

Many New Zealand teachers are not comfortable with a "textbook" approach to mathematics, and nor does PRIME assume that this is how the resource should be used. It presents material that is particularly well suited to practical learning. It can readily connect with contexts that students are familiar with in their everyday lives.

The teacher's role is far from supplementary when using PRIME. As with all good programmes, the teacher explores and works through content with the students, and matches the pace and selection of coverage according to their individual capabilities and needs.

The New Zealand Curriculum (2007) requires that schools provide their students with effectively taught programmes in mathematics and statistics as described on page 26 of the document. PRIME fully connects with that statement. The *achievement objectives* for the various curriculum levels of mathematics and statistics are the official reference points for teaching and assessing student learning, including National Standards. Consistent with the intent of the NZC, the curriculum objectives give schools the opportunity to design content and coverage of programmes, and the approach they choose to use for mathematics teaching and learning. PRIME fits this opportunity. It can give schools the confidence of a skillfully designed, balanced and credible programme for teaching and learning.

Lester Flockton

NZC	**PRIME**
1. Number & Algebra	1. Numbers & Operations
	2. Algebra
2. Geometry & Measurement	3. Measurement
	4. Geometry
3. Statistics	5. Data Analysis

NZ Curriculum Levels Objectives in Relation to PRIME Objectives

Number and Algebra

<table>
<tr><th>NZC</th><th>NZ National Standards</th><th colspan="2">PRIME 1A & 1B</th></tr>
<tr><td rowspan="2">Level 1

Number strategies
• Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.
Number knowledge
• Know the forward and backward counting sequences of whole numbers to 100.
• Know groupings with five, within ten, and with ten.
Equations and expressions
• Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.
Patterns and relationships
• Generalise that the next counting number gives the result of adding one object to a set and that counting the number of objects in a set tells how many.
• Create and continue sequential patterns.</td><td>After 1 year at school

1. apply counting-all strategies;
2. continue sequential patterns and number patterns based on ones.</td><td colspan="2"></td></tr>
<tr><td>After 2 years at school

1. apply counting-on, counting-back, skip counting, and simple grouping strategies to combine or partition whole numbers;
2. use equal sharing and symmetry to find
3. fractions of sets, shapes, and quantities;
4. create and continue sequential patterns by identifying the unit of repeat;
5. continue number patterns based on ones,
twos, fives, and tens.</td><td>PRIME 1A
NUMBERS

Numbers 0 - 10
• Number Bonds
• Telling number stories
Addition
• Making addition stories
• Addition with number bonds
• Other methods of addition
Subtraction
• Making subtraction stories
• Subtraction with number bonds
Ordinal numbers and positions
• Naming positions
Numbers to 20
• Counting and comparing
Addition and subtraction within 20
• Addition within 20
• Subtraction within 20</td><td>PRIME 1B
NUMBERS

Comparing numbers
• Comparison by subtraction
Numbers to 40
• Tens and ones
Addition and subtraction with 40
• Addition and subtraction without regrouping
• Addition and subtraction with regrouping
• Adding three numbers
Halves and quarters
Numbers to 100
• Tens and ones
Addition and subtraction within 100
• Addition and subtraction without regrouping
• Addition and subtraction with regrouping</td></tr>
</table>

<table>
<tr>
<td rowspan="2">Level 2

Number strategies
• Use simple additive strategies with whole numbers and fractions.
Number knowledge
• Know forward and backward counting sequences with whole numbers to at least 1000.
• Know the basic addition and subtraction facts.
• Know how many ones, tens, and hundreds are in whole numbers to at least 1000.
• Know simple fractions in everyday use.
Equations and expressions
• Communicate and interpret simple additive strategies, using words, diagrams (pictures), and symbols.
Patterns and relationships
• Generalise that whole numbers can be partitioned in many ways.
• Find rules for the next member in a sequential pattern.</td>
<td>After 3 years at school

1. apply basic addition facts and knowledge of place value and symmetry to:
– combine or partition whole numbers
– find fractions of sets, shapes, and
– quantities;
2. create and continue sequential patterns with one or two variables by identifying the unit of repeat;
3. continue spatial patterns and number patterns based on simple addition or subtraction.</td>
<td>PRIME 2A: NUMBERS

Numbers to 1000
• Hundreds, tens, ones
• Comparing numbers
Addition and subtraction without regrouping
• Addition without regrouping
• Subtraction without regrouping
Addition and subtraction with regrouping
• Addition with regrouping
• Subtraction with regrouping
Multiplication
• Adding equal groups
• Making multiplication stories
• Multiplication with 40
Division
• Sharing and grouping
• Division with 40
Multiplication tables of 2, 5, 10
• Multiplying by 2, 5, 10
• Dividing by 2, 5, 10</td>
<td>PRIME 2B: NUMBERS

Addition and subtraction
• Finding the missing number
• Mental addition
• Mental subtraction
Multiplication tables of 3 and 4
• Multiplying by 3
• Multiplying by 4
• Dividing by 3
• Dividing by 4
Fractions
• Halves and quarters
• Fraction of a whole</td>
</tr>
<tr>
<td>End of Year 4

1. apply basic addition and subtraction facts,simple multiplication facts, and knowledge of place value and symmetry to:
• combine or partition whole numbers
• find fractions of sets, shapes, and
• quantities;
• create, continue, and give the rule for
• sequential patterns with two variables;
2. create and continue spatial patterns and number patterns based on repeated addition or subtraction.</td>
<td>PRIME 3A: NUMBERS
Numbers to 10,000
• Thousands, hundreds, tens, ones
• Number patterns
• Sum and difference
• Adding ones, tens, hundreds, thousands
• Subtracting ones, tens, hundreds, thousands
• Multiplying ones, tens, hundreds
• Quotient and remainder
• Dividing hundreds, tens, ones
• Problem solving
• Multiplying and dividing by 6
• Multiplying and dividing by 7
• Multiplying and dividing by 8
• Multiplying and dividing by 9
Money
• Adding amounts of money
• Subtracting amounts of money
Mental Math
• Mental addition
• Mental subtraction
• Mental multiplication
• Mental division</td>
<td>PRIME 3B: NUMBERS
Fractions
• Fraction of a whole
• Equivalent fractions
• Adding fractions
• Subtracting fractions
• Problem solving</td>
</tr>
</table>

<table>
<tr>
<td rowspan="2">Level 3
Number strategies
• Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.
Number knowledge
• Know basic multiplication and division facts.
• Know counting sequences for whole numbers.
• Know how many tenths, tens, hundreds, and thousands are in whole numbers.
• Know fractions and percentages in everyday use.
Equations and expressions
• Record and interpret additive and simple multiplicative strategies, using, words, diagrams, and symbols, with an understanding of equality.
Patterns and relationships
• Generalise the properties of addition and subtraction with whole numbers.
• Connect members of sequential patterns with their ordinal position and use tables, graphs, and diagrams to find relationships between successive elements of number and spatial patterns.</td>
<td>End of Year 5

1. apply additive and simple multiplicative strategies and knowledge of symmetry to:
– combine or partition whole numbers
– find fractions of sets, shapes, and quantities;
3. create, continue, and predict further members of sequential patterns with two variables;
4. describe spatial and number patterns, using rules that involve spatial features, repeated addition or subtraction, and simple multiplication.</td>
<td>PRIME 4A: NUMBER

Whole numbers
• Numbers to 100,000
• Rounding numbers
• Factors
• Multiples
Multiplication and division of whole numbers
• Multiplication by 1-digit numbers and by 10
• Division by 1-digit numbers and b y 10
• Multiplication by 2-digit whole numbers
Fractions
• Mixed numbers
• Improper fractions
• Addition of fractions
• Subtraction of fractions
• Product of a fraction and a whole number
• Conversion of measurements</td>
<td>PRIME 4B: NUMBER

Decimals
• Tenths
• Hundredths
• Thousandths
• Rounding
Four operations of decimals
• Addition
• Subtraction
• Multiplication
• Division</td>
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<td>End of year 6

1. additive and simple multiplicative
2. strategies flexibly to:
– combine or partition whole numbers, including performing mixed operations and using addition and subtraction as inverse operations
– find fractions of sets, shapes, and
– quantities; determine members of sequential patterns, given their ordinal positions;
3. describe spatial and number patterns, using:
– tables and graphs
– rules that involve spatial features,
– repeated addition or subtraction, and
– simple multiplication.</td>
<td>PRIME 5A: NUMBER

Whole numbers
• Numbers to 1 000 000 000
• Approximation and estimation
• Factors
• Multiples
Multiplication and division of whole numbers
• Multiplying by tens, hundreds or thousands
• Dividing by tens, hundreds or thousands
• Order of operations
• multiplication
• Division
• Problem solving
Fractions
• Fractions and division
• Addition and subtraction of unlike fractions
• Addition and subtraction of mixed numbers
• Product of fractions and mixed numbers
• Division of fractions by whole numbers
• Division of whole numbers by fractions
Ratio
• Find a ratio
• Equivalent ratios
• Comparing 3 quantities</td>
<td>PRIME 5B: NUMBER

Decimals
• approximation
• Multiplication by tens, hundreds, or thousands
• Division by tens, hundreds, or thousands
• Multiplication by 2-digit whole numbers
• Multiplication of decimals
• Conversion of measurements
• Problem solving
Percent
• percent
• Expressing fractions as percentages
• Percentage of a quantity
• Rate
Algebra
• Algebraic expressions</td>
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<tr>
<td rowspan="2">Level 4
Number strategies and knowledge
• Use a range of multiplicative strategies when operating on whole numbers.
• Understand addition and subtraction of fractions, decimals, and integers.
• Find fractions, decimals, and percentages of amounts expressed as whole numbers, simple fractions, and decimals.
• Apply simple linear proportions, including ordering fractions.
• Know the equivalent decimal and percentage forms for everyday fractions.
• Know the relative size and place value structure of positive and negative integers and decimals to three places.
Equations and expressions
• Form and solve simple linear equations.
Patterns and relationships
• Generalise properties of multiplication and division with whole numbers.
• Use graphs, tables, and rules to describe linear relationships found in number and spatial patterns.</td>
<td>End of year 7

1. apply additive and multiplicative strategies flexibly to whole numbers, ratios, and equivalent fractions (including percentages);
2. apply additive strategies to decimals;
3. balance positive and negative amounts;
4. find and represent relationships in spatial and number patterns, using:
– tables and graphs
– general rules for linear relationships.</td>
<td>PRIME 6A

Algebra
• Algebraic equations
Fractions
• Division of fractions by fractions
Decimals
• Division by 2-digit whole numbers
• Division of whole numbers by decimals
• Division of decimals by decimals
• Mixed calculations with fractions and decimals
• Mixed operations on decimals
Ratio
• Ratio and fraction
• Ratio and proportion</td>
<td>PRIME 6B

Percent
• Part of a whole as a percent
• One quantity as a percentage of another
More problem solving:
• Whole numbers and decimals
• Fractions
• Ratio
• Percent
• Speed
• Volume
• Triangles and four-sided figures</td>
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<td>End of year 8

1. apply multiplicative strategies flexibly to whole numbers, ratios, and equivalent fractions (including decimals and percentages);
2. use multiplication and division as inverse operations on whole numbers;
3. apply additive strategies flexibly to decimals and integers;
4. find and represent relationships in spatial and number patterns, using:
– tables and graphs
– equations for linear relationships
– recursive rules for non-linear
– relationships;
5. apply inverse operations to simple linear relationships.</td>
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Geometry & Measurement

NZC	NZ National Standards	PRIME	
Level 1 **Measurement** • Order and compare objects or events by length, area, volume and capacity, weight (mass), turn (angle), temperature, and time by direct comparison and/or counting whole numbers of units. **Shape** • Sort objects by their appearance. **Position and orientation** • Give and follow instructions for movement that involve distances, directions, and half or quarter turns. • Describe their position relative to a person or object. **Transformation** • Communicate and record the results of translations, reflections, and rotations on plane shapes.	***After 1 year at school*** 1. compare the lengths, areas, volumes or capacities, and weights of objects directly; 2. sort objects and shapes by a single feature and describe the feature, using everyday language; 3. represent reflections and translations by creating patterns; 4. describe personal locations and give directions, using everyday language.		
	After 2 years at school 1. compare the lengths, areas, volumes or capacities, and weights of objects and the durations of events, using self-chosen units of measurement; 2. sort objects and shapes by different features and describe the features, using mathematical language; 3. represent reflections and translations by creating and describing patterns; 4. describe personal locations and give directions, using steps and half- or quarter turns.	**PRIME 1A** **GEOMETRY** **Plane shapes** • *Basic plane shapes* • *Making patterns and shapes* • *Problem solving* **Solid shapes** • *Basic solid shapes* • *Positions of solid shapes* • *Patterns of solid shapes* **MEASUREMENT** **Length** • *Comparing length* • *Measuring length* **Mass** • *Comparing mass* • *Measuring mass* **Calendar and time** • *Reading a calendar* • *Telling time* **Money** • *Notes and coins*	**PRIME 1B** **MEASUREMENT** **Mass** • *Comparing mass* • *Measuring mass* **Calendar and time** • *Reading a calendar* • *Telling time* **Money** • *Notes and coins*

<table>
<tr>
<td rowspan="2">Level 2

Measurement
• Create and use appropriate units and devices to measure length, area, volume and capacity, weight (mass), turn (angle), temperature, and time.
• Partition and/or combine like measures and communicate them, using numbers and units.
Shape
• Sort objects by their spatial features, with justification.
• Identify and describe the plane shapes found in objects.
Position and orientation
• Create and use simple maps to show position and direction.
• Describe different views and pathways from locations on a map.
Transformation
• Predict and communicate the results of translations, reflections, and rotations on plane shapes.</td>
<td>After 3 years at school

1. measure the lengths, areas, volumes or capacities, and weights of objects and the duration of events, using linear whole number scales and applying basic addition facts to standard units;
2. sort objects and two- and three-dimensional shapes by their features, identifying categories within categories;
3. represent reflections, translations, and rotations by creating and describing patterns;
4. describe personal locations and give directions, using whole-number measures and half- or quarter-turns.</td>
<td>PRIME 2A
MEASUREMENT

Length
• Length in meters
• Length in centimeters
• Problem solving
Mass
• Mass in kilograms
• Mass in grams
• Problem solving</td>
<td>PRIME 2B
MEASUREMENT

Money
• Dollars and cents
Time
• Telling time
• Time intervals
• Other units of time

GEOMETRY
Plane shapes
• Line segments and curves
• Forming shapes
• Patterns of plane shapes
• Problem solving
Solid shapes
• Properties of solids
• Solid figures
• Patterns of solid shapes</td>
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<td>End of year 4

1. measure the lengths, areas, volumes or capacities, weights, and temperatures of objects and the duration of events, reading scales to the nearest whole number and applying addition, subtraction, and simple multiplication to standard units;
2. sort objects and two- and three dimensional shapes by two features simultaneously;
3. represent and describe the symmetries of a shape;
4. create nets for cubes;
5. describe personal locations and give directions, using simple maps.</td>
<td></td>
<td>PRIME 3B
MEASUREMENT
Length
• Metres and centimetres
• kilometres
• millimetres
Mass
• Kilograms and grams
• Problem solving
Volume and capacity
• Volume
• litres
• Litres and millilitres
Time
• Hours and minutes
• Other units of time
Area
Square units
• Area in square centimeters and square meters
GEOMETRY
Angles
• Right angles
• Perpendicular and parallel lines
• Perpendicular line segments
• Parallel line segments
• Horizontal and vertical line segments</td>
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<tr>
<td rowspan="2">Level 3

Measurement
• Use linear scales and whole numbers of metric units for length, area, volume and capacity, weight (mass), angle, temperature, and time.
• Find areas of rectangles and volumes of cuboids by applying multiplication.
Shape
• Classify plane shapes and prisms by their spatial features.
• Represent objects with drawings and models.
Position and orientation
• Use a co-ordinate system or the language of direction and distance to specify locations and describe paths.
Transformation
• Describe the transformations (reflection, rotation, translation, or enlargement) that have mapped one object onto another.</td>
<td>End of year 5

1. measure time and the attributes of objects, choosing appropriate standard units and working with them to the nearest tenth;
2. sort two- and three-dimensional shapes, considering the presence and/or absence of features simultaneously and justifying the decisions made;
3. represent and describe the results of reflection, rotation, and translation on shapes;
4. create nets for rectangular prisms;
5. draw plan, front, and side views of objects;
6. describe locations and give directions, using grid references and points of the compass.</td>
<td>PRIME 4A
Angles
• Angle measures
• Turns and 8 point compass
• Problem solving
Perpendicular and parallel line segments
• Drawing perpendicular line segments
• Drawing parallel line segments
Square and rectangles
• Properties of squares and rectangles
Area and perimeter
• perimeter
• Area of a rectangle
• Squares and rectangles
• Composite figures
• Problem solving</td>
<td>PRIME 4B
Measures
• Multiplication
• Division
Symmetry
• Symmetric figures
Time
• seconds
• 24-hour clock</td>
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<tr>
<td>End of year 6

1. measure time and the attributes of objects, choosing appropriate standard units;
2. use arrays to find the areas of rectangles and the volumes of cuboids, given whole number dimensions;
3. sort two- and three-dimensional shapes(including prisms), considering given properties simultaneously and justifying the decisions made;
4. represent and describe the results of reflection, rotation, and translation on shapes or patterns;
5. identify nets for rectangular prisms;
6. draw or make objects, given their plan, front, and side views;
7. describe locations and give directions, using grid references, turns, and points of the compass.</td>
<td>PRIME 5A

Angles
• Angle properties
• Finding unknown measures of angles
• Problem solving
Triangles and four-sided figures
• Angle measures of a triangle
• Isosceles and equilateral triangles
• Drawing triangles
• Four-sided figures
• Drawing four-sided figures</td>
<td>PRIME 5B

Area of triangles, parallelograms and rhombuses
• Area of triangles
• Area of parallelograms and rhombuses
• Problem solving
Tessellations
• Tiling patterns
• Making more tessellations
• Problem solving
Solids
• Identifying solids
• Problem solving
Volume
Units of volume
• Volume of a cuboid and of liquid
• Cubes and cuboids</td>
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<table>
<tr>
<td rowspan="2">Level 4

Measurement
• Use appropriate scales, devices, and metric units for length, area, volume and capacity, weight (mass), temperature, angle, and time.
• Convert between metric units, using whole numbers and commonly used decimals.
• Use side or edge lengths to find the perimeters and areas of rectangles, parallelograms, and triangles and the volumes of cuboids.
• Interpret and use scales, timetables, and charts.
Shape
• Identify classes of two- and three-dimensional shapes by their geometric properties.
• Relate three-dimensional models to two-dimensional representations, and vice versa.
Position and orientation
• Communicate and interpret locations and directions, using compass directions, distances, and grid references.
Transformation
• Use the invariant properties of figures and objects under transformations (reflection, rotation, translation, or enlargement).</td>
<td>End of year 7

1. measure time and the attributes of objects, using metric and other standard measures;
2. make simple conversions between units, using whole numbers;
3. use side or edge lengths to find the perimeters and areas of rectangles and parallelograms and the volumes of cuboids, given whole-number dimensions;
4. sort two- and three-dimensional shapes into classes, defining properties and justifying the decisions made;
5. identify and describe the transformations that have produced given shapes or patterns;
6. create or identify nets for rectangular prisms and other simple solids;
7. draw plan, front, side, and perspective views of objects;
8. describe locations and give directions, using grid references, simple scales, turns, and points of the compass.</td>
<td>PRIME 6A

GEOMETRY
Solid shapes
• Prisms and pyramids
• Cylinders and cones
• Nets</td>
<td>PRIME 6B

MEASUREMENT
Speed
• Speed and average speed

GEOMETRY
Circles
• Radius and diameter
• Circumference
• Area</td>
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<td>End of year 8

1. use metric and other standard measures;
2. make simple conversions between units, using decimals;
3. use side or edge lengths to find the perimeters and areas of rectangles, parallelograms, and triangles and the volumes of cuboids;
4. sort two- and three-dimensional shapes into classes, considering the relationships between the classes and justifying the decisions made;
5. identify and describe the features of shapes or patterns that change or do not change under transformation;
6. create or identify nets for rectangular prisms and other simple solids, given particular requirements;
7. draw or make objects, given their plan, front, and side views or their perspective views;
8. describe locations and give directions, using scales, bearings, and co-ordinates</td>
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Statistics

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<tr>
<td rowspan="2">Level 1

Statistical investigation

• Conduct investigations using the statistical enquiry cycle:

– posing and answering questions
– gathering, sorting and counting, and displaying category data
– discussing the results.

Statistical literacy

• Interpret statements made by others from statistical investigations and probability activities.

Probability

• Investigate situations that involve elements of chance, acknowledging and anticipating possible outcomes.</td>
<td>After 1 year at school

1. investigate questions by using the statistical enquiry cycle (with support), gathering, displaying, and/or counting category data.</td>
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<tr>
<td>After 2 years at school

1. investigate questions by using the statistical enquiry cycle (with support), gathering, displaying, and/or identifying similarities and differences in category data;
2. describe the likelihoods of outcomes for a simple situation involving chance, using everyday language.</td>
<td></td>
<td>PRIME 1B

Graphs
• Picture graphs</td>
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<tr>
<td rowspan="2">Level 2

Statistical investigation

• 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.

Statistical literacy

• Compare statements with the features of simple data displays from statistical investigations or probability activities undertaken by others.

Probability

• Investigate simple situations that involve elements of chance, recognising equal and different likelihoods and acknowledging uncertainty.</td>
<td>After 3 years at school

1. investigate questions by using the statistical enquiry cycle (with support):
– gather and display category and simple whole-number data
– interpret displays in context;
2. compare and explain the likelihoods of outcomes for a simple situation involving chance.</td>
<td></td>
<td>PRIME 2B

Graphs
• Picture graphs</td>
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<td>End of year 4

1. investigate questions by using the statistical enquiry cycle independently:
• gather and display category and simple whole-number data
• interpret displays in context;
2. compare and explain the likelihoods of outcomes for a simple situation involving chance, acknowledging uncertainty.</td>
<td>PRIME 3A

Graphs
• Block graphs</td>
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<tr>
<td rowspan="2">Level 3

Statistical investigation

• 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.

Statistical literacy

• Evaluate the effectiveness of different displays in representing the findings of a statistical investigation or probability activity undertaken by others.

Probability

• Investigate simple situations that involve elements of chance by comparing experimental results with expectations from models of all the outcomes, acknowledging that samples vary.</td>
<td>End of year 5

1. investigate summary and comparison questions by using the statistical enquiry cycle:
– gather, display, and identify patterns in category and whole-number data
– interpret results in context;
2. order the likelihoods of outcomes for simple situations involving chance, experimenting or listing all possible outcomes.</td>
<td>PRIME 4A

Tables and graphs
• Presenting data</td>
<td>PRIME 4B

Graphs
• Line graphs</td>
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<td>End of year 6

1. investigate summary and comparison questions by using the statistical enquiry cycle:
– gather or access multivariate category and whole-number data
– sort data into categories or intervals, display it in different ways, and identify patterns
– interpret results in context, accepting that samples vary;
2. order the likelihoods of outcomes for situations involving chance, considering experimental results and models of all possible outcomes.</td>
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<td>PRIME 5B

• Understanding Average</td>
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<td rowspan="2">Level 4

Statistical investigation
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.
Statistical literacy
Evaluate statements made by others about the findings of statistical investigations and probability activities.
Probability
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.</td>
<td>End of year 7

1. investigate summary, comparison, and relationship questions by using the statistical enquiry cycle:
gather or access multivariate category and measurement data
sort data and display it in multiple ways,
identifying patterns and variations
interpret results in context, accepting that samples vary and have no effect on one another;
2. order the likelihoods of outcomes for situations involving chance, checking for consistency between experimental results and models of all possible outcomes.</td>
<td></td>
<td>PRIME 6B

Graphs
Pie Graphs</td>
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<td>End of year 8

1. investigate summary, comparison, and relationship questions by using the statistical enquiry cycle:
gather or access multivariate category, measurement, and time-series data
sort data and display it in multiple ways, identifying patterns, variations, relationships, and trends and using ideas about middle and spread where appropriate
interpret results in context identifying factors that produce uncertainty;
2. express as fractions the likelihoods of outcomes for situations involving chance, checking for consistency between experimental results and models of all possible outcomes.</td>
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