



Using Numicon to support Te Mātaiaho, The New Zealand Curriculum

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Mathematics and Statistics Years 0–8

OXFORD

Using Numicon to support Mathematics and Statistics Years 0–8

Numicon is a proven approach to teaching and learning designed to give children the understanding of mathematical ideas and relationships that is essential for successful reasoning and problem-solving. The use of apparatus builds children's mental image of abstract concepts, and helps to develop their understanding of the connections between different areas of mathematics. The resources cover the key mathematical ideas for processes in mathematics: Number, Algebra, Measurement, Geometry, Statistics and Probability that are essential foundations for further mathematical thinking.

We have correlated focus activities from Numicon's Firm Foundations, and Number, Pattern and Calculating, Geometry, Measurement and Statistics, and a dedicated Statistics and Probability Booklet (coming soon) to the New Zealand Curriculum to support teachers in their planning. These correlations will be useful whether schools choose to follow the focus activities in the order outlined in the Numicon Planning documents (which we would recommend), or prefer to explore the topics in maths and dip in and out of the teaching materials for different topics.

Where the document states 'Activity to follow', we will be adding dedicated new activities to ensure full coverage of the curriculum. This document will be updated in mid-April 2025.

The Numicon Approach fulfils the curriculum for students in a knowledge-rich environment where the concepts are taught alongside the processes of being a mathematician. Where you see references to processes, these are embedded in the learning experiences every week, and include:

- The use of representations to communicate with self and others
- Connections within maths and the daily lives of the students
- Investigations
- Generalising
- Explaining and justifying
- Working systematically

Included in the Numicon programme is the strong connection with the language of maths. Every week teachers are provided with a list of words and terms to use in their teaching through meaning and usage. There is an expectation that these words are used by the teachers, displayed on walls, etc. Students are also encouraged to use these words and terms with confidence. For further information read the online Implementation Guides.

Numicon teaching materials featured in this correlation:

Firm Foundations

Number, Pattern and Calculating 1–6

Geometry, Measurement and Statistics 1–6

Statistics and Probability Booklet 1–6 (coming mid-April 2025)

Key:

Firm Foundations

FF: Firm Foundations (usually followed by activity card number, e.g., FF 5 is Firm Foundations Activity Card 5); **ADMT:** All doing maths together with Numicon; **LNPR:** Learning about number patterns and relationships (numbered activities, e.g., LNPR 5.1 is Activity Card 5, Activity 1); **MGP:** Maths games and puzzles; **CNIB:** Counting and number ideas book; **SSR:** Stories, songs and rhymes; **HFA:** Healthy food activity; **RPSWC:** Role play, small world and construction; **SNFSR:** Stories, non-fiction, songs and rhymes; **OMPP:** Outdoor maths and physical play; **EAD:** Expressive arts and design; **SWMP:** Sand, water and messy play; **UW:** Understanding the world.

Numicon 1–6

NPC: Number, Pattern & Calculating; **NNS:** Numbers & Number System; **Calc:** Calculating; **P&A:** Pattern & Algebra; **GMS:** Geometry & Measures; **Geo:** Geometry; **Mea:** Measures; **SF:** Securing Foundations; **GS:** Getting Started; **PFT:** Preparing for Formal Testing; **Inv:** Investigations; **PW:** Paired Work; **WCPD:** Whole-Class Practice and Discussion.

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Notes: We recommend that you follow the Numicon Teaching Progression; one week provides the foundational and mathematical connections to the next and future learning. Please see the [Numicon Planning Documents](#) on Numicon Online NZ for details.

The document includes direct links to the relevant Numicon 1–6 teaching activities online. Firm Foundations content is not hyperlinked but can all be accessed [here](#).

Phase 1

Number

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Number structure	<p>subitise (recognise without counting) the number of objects in a collection of up to 5</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 7 ADMT, LNPR 7.1–7.2, MGP, SNFSR, SWMP, OMPP, pages 73–76</p>	<p>subitise (recognise without counting) the number of objects in a collection of up to 10, including by combining two patterns of 1–5 objects</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 7 ADMT, LNPR 7.1–7.2, MGP, SNFSR, SWMP, OMPP</p> <p>NPC1 SF 1, 2, 3, 4, 5</p>	<p>group objects in a collection of at least 10, subitise the number of objects in each part, and find the total number in the collection using the parts</p> <p>NPC1 SF 2 GS 5</p> <p>NPC1 SF 3 NNS 1, 2</p> <p>NPC1 SF 7 NNS 2</p> <p>NPC1 SF 11 NNS 1</p> <p>NPC1 NNS 2</p> <p>NPC1 NNS 4.7</p>	<p>estimate the number of objects in a collection of less than 100, using patterns and groupings</p> <p>NPC2 GS 3</p> <p>NPC2 NNS 1, 3 (PW 2) 4.2 (PW 2) 5.2, 5.3</p>	<p>Use a range of materials and images that represent structured and unstructured patterns and collections (e.g., dot patterns, 10s frames, dice, materials that can be grouped in 10 such as ice-block sticks).</p> <p>Also use language that quantifies and compares pattern arrangements (e.g., more, less, the same, different, combine, separate).</p> <p>Connect subitising to partitioning collections of objects (e.g., 6 and 2 on two dice are the same as 5 and 3 on two 10s frames).</p>
	<p>count forwards or backwards from any whole number between 1 and 10, and then between 1 and 20</p> <p>FF Daily routines, pages 35–38</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 1 ADMT, SNFSR, pages 50–51</p> <p>FF 2 ADMT, page 54</p> <p>FF 4 ADMT, page 62</p> <p>FF 7 HFA, page 75</p> <p>FF 10 OMPP, page 88</p> <p>FF 11 OMPP, page 92</p> <p>FF 15 OMPP, page 108</p> <p>FF 16 SNFSR, SWMP, OMPP, pages 111–12</p> <p>FF 18 ADMT, LNPR 18.5, page 118</p>	<p>count forwards or backwards in 1s, 2s, and 10s from any whole number between 1 and 20, and then between 1 and 100</p> <p>FF Daily routines, pages 35–38</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 1 ADMT, SNFSR, pages 50–51</p> <p>FF 2 ADMT, page 54</p> <p>FF 4 ADMT, page 62</p> <p>FF 7 HFA, page 75</p> <p>FF 10 OMPP, page 88</p> <p>FF 11 OMPP, page 92</p> <p>FF 15 OMPP, page 108</p> <p>FF 16 SNFSR, SWMP, OMPP, pages 111–12</p> <p>FF 18 ADMT, LNPR 18.5, page 118</p> <p>NPC1 SF 1 NNS 2 + whole-class suggestions</p> <p>NPC1 NNS 3</p>	<p>count forwards or backwards in 1s, 2s, 5s, and 10s from any whole number between 1 and 100</p> <p>NPC1 SF 1, SF 9</p> <p>NPC1 SF 2 NNS 1</p> <p>NPC1 Calc 2</p> <p>NPC1 NNS 2 + whole class suggestions, 3</p> <p>NPC2 NNS 1.1, 1.2, 1.3, 1.4, 1.5</p>	<p>count forwards or backwards in 2s, 3s, 5s, and 10s from any whole number between 1 and 1,000</p> <p>NPC2 NNS 1, 2.6</p> <p>NPC2 P&A 1.7, 5</p> <p>GMS2 Mea 2.1</p>	<p>Use a range of materials (e.g., number lines, 100s boards, number flip charts, 1,000s books, a Slavonic abacus, ice-block stick bundles).</p> <p>In general, support students to practise counting (e.g., in 2s and 5s) in short sequences (e.g., at year 3, “Count in 1s from 895 to 904; count in 2s from 90 to 110.”).</p> <p>Investigate short patterns in multiples of 2s, 3s, 5s, and 10s, using rhymes, songs, choral counting, the grouping of discrete objects, the recording of patterns, and picture books.</p> <p>Have students practise finding 1, 10, or 100 more or less for a given number. Use materials to support students to identify numbers and patterns (e.g., 100s boards, 1,000s books).</p> <p>Connect to te reo Māori to support place-value (PV) understanding (e.g., tekau mā tahi (10 and 1), toru tekau mā rua (30 and 2)).</p> <p>Activity to follow</p>

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Number structure	<p>identify, read, and write whole numbers up to at least 10</p> <p>FF Daily routines, pages 35–38</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 2 ADMT, CNIB, pages 54–55</p> <p>FF 4 LNPR 4.3, page 62</p> <p>FF 5 LNPR 5.1–5.2, MGP, pages 66–67</p> <p>FF 9 OMPP, page 84</p> <p>FF 11 MGP, CNIB, pages 90–91</p> <p>FF 15 LNPR 15.2, page 106</p> <p>FF 16 SWMP, page 112</p>	<p>identify, read, and write whole numbers up to at least 20, and represent them using the ten-and-ones structure of teen (11–19) and -ty (multiples of 10) numbers (e.g., $17 = 10 + 7$, $20 = 2 \times 10$)</p> <p>FF Daily routines, pages 35–38</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 2 ADMT, CNIB, pages 54–55</p> <p>FF 4 LNPR 4.3, page 62</p> <p>FF 5 LNPR 5.1, 5.2, MGP, pages 66–67</p> <p>FF 6 ADMT, page 70</p> <p>FF 9 OMPP, page 84</p> <p>FF 11 MGP, CNIB, pages 90–91</p> <p>FF 15 LNPR 15.2, page 106</p> <p>FF 16 SWMP, page 112</p> <p>FF 18 ADMT 18.4, SWMP, pages 118–19</p> <p>NPC1 SF 6</p> <p>NPC1 NNS 1, 2, 3</p>	<p>identify, read, and write whole numbers up to at least 100, and represent them using base 10 structure</p> <p>NPC1 NNS 4</p> <p>NPC2 NNS 1.6</p> <p>NPC2 NNS 2, 3</p>	<p>identify, read, and write whole numbers up to at least 1,000, and represent them using base 10 structure</p> <p>NPC2 NNS 1, 2, 3, 4</p> <p>NPC2 Calc 6.1, 6.2</p> <p>NPC3 NNS 1.3, 1.4, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 3.5</p>	<p>Have students practise saying, reading, and writing any given number within an identified number range. Use materials to support this (e.g., number flip boards, PV flip charts and houses).</p> <p>Explain that base 10 structure is based on groups of ten (ten ones form one ten, ten tens form one hundred, ten hundreds form one thousand etc.) and that both the position and value of a digit indicate the quantity it represents (e.g., 64 has 6 tens and 4 ones, $60 + 4 = 64$).</p> <p>Have students investigate and represent the base 10 structure of numbers using a range of materials and digital tools (e.g., 100s boards, PV houses, PV blocks, ice-block sticks, arrow cards, number fans, words, numerals).</p> <p>Investigate odd and even numbers and the patterns they notice.</p> <p>Connect numerals, representations of them, and language (e.g., 652 represented with PV money: “$652 = 600 + 50 + 2$, 6 hundreds + 5 tens + 2 ones, six hundred and fifty two”).</p>

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Number structure	<p>compare and order whole numbers up to at least 10 and ordinal numbers (e.g., 1st, 2nd, 3rd) using words</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 1 LNPR 1.2, 1.7, pages 50–51</p> <p>FF 2 ADMT, LNPR 2.1–2.5, MGP, OMPP, pages 54–56</p> <p>FF 3, LNPR 3.3, MGP, pages 58–59</p> <p>FF 4 ADMT, LNPR 4.3, OMPP, pages 62–63</p> <p>FF 5 LNPR 5.1, HFA, pages 66–67</p> <p>FF 6 HFA, page 71</p> <p>FF 9 ADMT, SWMP, OMPP, pages 82 and 84</p> <p>FF 10 LNPR 10.5, MGP, pages 86–87</p> <p>FF 14 ADMT, MGP, SNFSR, pages 102–3</p> <p>FF 17 SWMP, page 115</p> <p>FF 18 LNPR 18.6, OMPP, pages 119–20</p>	<p>compare and order whole numbers up to at least 20 and ordinal numbers (e.g., 1st, 2nd, 3rd) using words or numerals and suffixes</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 1 LNPR 1.2, 1.7, pages 50–51</p> <p>FF 2 ADMT, LNPR 2.1–2.5, MGP, OMPP, pages 54–56</p> <p>FF 3 LNPR 3.3, MGP, pages 58–59</p> <p>FF 4 ADMT, LNPR 4.3, OMPP, pages 62–63</p> <p>FF LNPR 5.1, HFA, pages 66–67</p> <p>FF 6 HFA, page 71</p> <p>FF 9 ADMT, SWMP, OMPP, pages 82 and 84</p> <p>FF 10 LNPR 10.5, MGP, pages 86–87</p> <p>FF 14 ADMT, MGP, SNFSR, pages 102–3</p> <p>FF 17 SWMP, page 115</p> <p>FF 18 LNPR 18.6, OMPP, pages 119–20</p> <p>NPC1 SF 4, 5, 6, 7</p> <p>NPC1 NNS 1, 4</p> <p>NPC2 NNS 2.7, 4.1</p>	<p>compare and order whole numbers up to at least 100</p> <p>NPC1 NNS 4</p> <p>NPC2 NNS 3, 4</p>	<p>compare and order whole numbers up to at least 1,000</p> <p>NPC2 NNS 4</p> <p>NPC2 Calc 4.13</p> <p>NPC3 NNS 2, 3</p> <p>NPC3 NNS 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.11</p> <p>NPC4 NNS 1, 2</p>	<p>Show the sequencing of numbers using a number line (select-numbered, marked, or empty). Change the number-line orientation from horizontal to vertical if students need support with the concepts of before and after.</p> <p>Explain and use the language of comparison when demonstrating why one number is larger or smaller than another (e.g., “63 is larger than 36, as 6 tens is larger than 3 tens”).</p> <p>Show how the position of digits in the PV structure helps us to order and compare two- and three-digit numbers.</p>

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Number structure	partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns FF Everyday counting, pages 45–48 FF 18 CNIB, page 119 NPC1 P&A 1.7 NPC1 Calc 3.2, 3.3, 3.4, 3.5 Activity to follow	partition and regroup up to 20 objects in different ways, using a systematic approach and noticing patterns FF Everyday counting, pages 45–48 FF 18 CNIB, page 119 NPC1 SF 7 NNS 1, 2 NPC1 NNS 2.1, 2.2 NPC1 Calc 8.9, 8.11, 8.13, 9.1, 9.2, 9.8 Activity to follow	partition and regroup whole numbers up to at least 100, using a systematic approach and noticing patterns (e.g., $10 + _ = 70$, $20 + _ = 70$, $30 + _ = 70$) NPC1 Calc 9.7, 9.8, 9.9, 9.10 NPC2 Calc 1.6, 6.1, 6.2, 6.3, 6.4	partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patterns (e.g., $400 + 300 = _$, $350 + _ = 500$) NPC2 Calc 6.1, 6.2, 6.3, 6.4 NPC3 NNS 5 NPC4 NNS 1	Investigate and represent the partitioning of numbers using appropriate materials for the year level – for example: <ul style="list-style-type: none"> • multilink cubes, bead strings, 10s frames, and counters, at 6 months and year 1 • a Slavonic abacus, ice-block sticks, and PV money, at year 2 • PV money and PV blocks, at year 3. Connect students’ subitising with pattern understanding (at 6 months and year 1) and known groupings and facts (at years 2–3). Explain and discuss how to systematically record the partitioning of numbers (e.g., using partitioning diagrams, tables, vertically-listed equations).
Operations		use estimation to predict results and to check the reasonableness of calculations Activity to follow	use estimation to predict results and to check the reasonableness of calculations Activity to follow	use estimation to predict results and to check the reasonableness of calculations Activity to follow	Explain and spend time developing the concepts of: <ul style="list-style-type: none"> • estimation, using the language of ‘about’, ‘more or less’, and ‘close to’ • rounding, using 100s boards and number lines marked with the multiples of 10 or 100, progressing to unmarked number lines at year 3. Have students investigate and connect practical estimation situations that involve quantities and measures (e.g., the number of balls in a box, the number of steps to the door, the length of a piece of string).
			identify the nearest ten to any whole number up to 100 NPC2 NNS 5	round whole numbers up to 1,000 to the nearest hundred or ten NPC2 NNS 5 NPC3 NNS 6	

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Operations	<p>join and separate groups of up to a total of 10 objects by grouping and counting</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 7 ADMT, LNPR 7.1–7.4, MGP, CNIB, RPSWC, SWMP, OMPP, pages 74–76</p> <p>FF 8 ADMT, LNPR 8.1–8.3, MGP, CNIB, SWMP, OMPP, pages 78–80</p> <p>FF 9 ADMT, LNPR 9.1–9.4, MGP, CNIB, SWMP, OMPP, pages 82–84</p> <p>FF 10 ADMT, LNPR 10.1–10.5, MGP, CNIB, OMPP, pages 86–88</p> <p>FF 12 ADMT, LNPR 12.1–12.6, MGP, CNIB, HFA, RPSWC, pages 94–96</p> <p>FF 14 ADMT, LNPR 14.1–14.5, MGP, CNIB, RPSWC, SWMP, OMPP, pages 102–4</p> <p>FF 15 ADMT, LNPR 15.1–15.5, MGP, CNIB, SWMP, OMPP, pages 106–8</p> <p>FF 16 ADMT, LNPR 16.1–16.4, MGP, CNIB, HFA, SWMP, OMPP, pages 110–12</p> <p>FF 17 ADMT, LNPR 17.1–17.5, MGP, CNIB, SWMP, OMPP, pages 114–16</p> <p>FF 18 ADMT, LNPR 18.1–18.3, CNIB, RPSWC, pages 118–19</p>	<p>join and separate groups of up to a total of 20 objects and find the difference between groups by grouping and counting (e.g., $9 + 6$, $7 + _ = 11$)</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 7 ADMT, LNPR 7.1–7.4, MGP, CNIB, RPSWC, SWMP, OMPP, pages 74–76</p> <p>FF 8 ADMT, LNPR 8.1–8.3, MGP, CNIB, SWMP, OMPP, pages 78–80</p> <p>FF 9 ADMT, LNPR 9.1–9.4, MGP, CNIB, SWMP, OMPP, pages 82–84</p> <p>FF 10 ADMT, LNPR 10.1–10.5, MGP, CNIB, OMPP, pages 86–88</p> <p>FF 12 ADMT, LNPR 12.1–12.6, MGP, CNIB, HFA, RPSWC, pages 94–96</p> <p>FF 14 ADMT, LNPR 14.1–14.5, MGP, CNIB, RPSWC, SWMP, OMPP, pages 102–4</p> <p>FF 15 ADMT, LNPR 15.1–15.5, MGP, CNIB, SWMP, OMPP, pages 106–8</p> <p>FF 16 ADMT, LNPR 16.1–16.4, MGP, CNIB, HFA, SWMP, OMPP, pages 110–12</p> <p>FF 17 ADMT, LNPR 17.1–17.5, MGP, CNIB, SWMP, OMPP, pages 114–16</p> <p>FF 18 ADMT, LNPR 18.1–18.3, CNIB, RPSWC, pages 118–19</p> <p>NPC1 SF 4, 5, 6, 7, 8, 9, 11</p> <p>NPC1 Calc 2, 4, 6, 7, 8, 9</p> <p>NPC1 P&A 1</p> <p>NPC2 P&A 2</p> <p>NPC2 Calc 1, 2, 3, 4, 5, 6, 7, 10, 11, 14</p>	<p>add and subtract numbers up to 100 without renaming (e.g., $53 + 21$, $55 - 32$)</p> <p>NPC2 Calc 4, 5.6, 5.7, 5.8, 5.9, 5.10, 5.11, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 13</p>	<p>add and subtract two-digit numbers (e.g., $43 - 28$, $37 + 18$)</p> <p>NPC2 Calc 4, 5.6, 5.7, 5.8, 5.9, 5.10, 5.11, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 13</p>	<p>Explain and discuss addition and subtraction using representations, including:</p> <ul style="list-style-type: none"> discrete materials (counters, blocks, context items), 10s frames, and number lines (at 6 months and year 1) bundles of sticks, number disks, and number lines (at year 2) PV materials (PV money, blocks, and discs) and number lines (at year 3). <p>Connect symbols and equations with problems, using correct vocabulary (e.g., ‘add’, ‘join’, and ‘plus’ for addition). Have students practise decoding and solving word problems.</p> <p>At year 3, explain and connect horizontal equations and the vertical-column method for addition and subtraction.</p> <p>Demonstrate making estimates or mental calculations by connecting to place value, partitioning, and known facts.</p> <p>Use a range of problem types (e.g., result, change, start-unknown).</p> <p>Use worked examples and think-alouds to explain the most efficient approaches when solving problems.</p> <p>Have students investigate and generalise adding 0 to or subtracting 0 from a number (at year 1) and applying the commutative property of addition (e.g., $5 + 4 = 4 + 5$).</p>

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Operations		<p>explore addition facts up to 10 and their corresponding subtraction facts (families of facts), including doubles and halves</p> <p>FF Everyday counting, pages 45-48</p> <p>FF 7 ADMT, LNPR 7.1-7.4, page 74</p> <p>FF 8 HFA, RPSWC, page 79</p> <p>FF 9 LNPR 9.4, page 82</p> <p>FF 10 LNPR 10.2-10.3, page 86</p> <p>FF 11 LNPR 11.1-11.6, MGP, SWMP, pages 90-92</p> <p>FF 13 CNIB, HFA, RSC, SWMP, EAD, pages 99-100</p> <p>FF 14 CNIB, page 103</p> <p>FF 15 ADMT, LNPR 15.2, 15.5, MGP, CNIB, pages 106-8</p> <p>FF 16 ADMT, LNPR 16.1-16.4, MGP, CNIB, SNFSR, HFA, SWMP, pages 110-12</p> <p>FF 17 ADMT, LNPR 17.1-17.5, MGP, CNIB, pages 114-15</p> <p>FF 18 LNPR 18.1-18.3, CNIB, RPSWC, pages 118-19</p> <p>NPC1 Calc 1, 2, 4, 6, 7</p>	<p>recall addition facts up to 10, and explore addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves</p> <p>NPC1 Calc 5.5</p> <p>NPC1 Calc 7</p> <p>NPC2 Calc 1, 2</p>	<p>recall addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves</p> <p>NPC1 Calc 5.5</p> <p>NPC2 P&A 4</p> <p>NPC2 Calc 10, 14</p>	<p>Use materials to investigate addition and subtraction facts (e.g., counters, 10s frames, a Slavonic abacus, multilink cubes), and use part-whole diagrams to develop subtraction facts and connect to addition facts.</p> <p>Explain how to record equations and families of facts, connecting with the language for each operation.</p> <p>Provide a range of tasks to consolidate learning and develop fluency (e.g., physical and digital games, using families of facts and, at year 3, table grids).</p>
			<p>identify the relationship between skip counting and multiplication facts for 2s, 5s, and 10s</p> <p>NPC2 P&A 5.1, 5.2, 5.3, 5.4, 5.7, 5.12</p>	<p>recall multiplication and corresponding division facts for 2s, 3s, 5s, and 10s</p> <p>NPC2 P&A 5</p> <p>NPC2 Calc 8, 9, 15</p> <p>NPC3 Calc 7.3, 7.5 + WCPD</p> <p>NPC3 Calc 10</p>	<p>Use a range of materials to represent skip counting and multiplication and division facts (e.g., 100s boards, choral counting, games, number lines, a Slavonic abacus, families of facts, and, at year 3, table grids).</p> <p>Provide a range of tasks to consolidate learning and develop fluency.</p>

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Operations		multiply and divide using equal grouping or counting FF Daily routines, pages 35–38 FF Everyday counting, pages 45–48 FF 7 HFA, page 74 FF 10 HFA, RPSWC, pages 87–88 FF 11 ADMT, LNPR 11.1–11.6, MGP, CNIB, HFA, SWMP, OMPP, pages 90–92 FF 12 CNIB, page 95 FF 13 ADMT, LNPR 13.1–13.4, MGP, OMPP, pages 98–100 FF 14 CNIB, page 103 FF 16 OMPP, page 112	multiply and divide using equal grouping or skip counting (e.g., in 2s, 5s, and 10s) NPC2 P&A 5 NPC2 Calc 8, 9, 15 NPC3 Calc 5, 7, 10	multiply a one- or two-digit number by a one-digit number, using skip counting or known facts (e.g., 4×6 , 2×23) NPC2 Calc 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 9 NPC3 Calc 5, 7, 10	Represent multiplication and division problems using discrete materials, pictures, diagrams, symbols, number lines, words, equations, digital tools, and, at year 3, arrays, PV materials, and bar models. Use correct mathematical language when discussing multiplication and division (e.g., multiply, groups of, sets of, rows of, equal groups, divide, share equally). Have students practise decoding and solving word problems. Connect with subitising and addition and subtraction concepts when demonstrating solving multiplication and division problems. Explain and represent division as a sharing problem (e.g., “Share 12 marbles equally among 3 friends”) or a grouping problem (e.g., “You have 12 marbles. How many groups of 3 marbles can you make?”).
				divide whole numbers by a one-digit divisor with no remainders, using grouping (e.g., $24 \div 3$, $32 \div 4$) NPC2 Calc 15 NPC3 Calc 7.1, 7.2, 7.3, 7.4, 7.5	Use worked examples and think-alouds to explain the most efficient approaches when solving multiplication and division problems. Investigate and generalise multiplying a number by 0 or 1, dividing a number by 1, dividing a number by itself, and why we cannot divide by 0 (e.g., by trying to solve $0 \times _ = 5$). At year 3, explain and use the multiplicative identity (e.g., $5 \times 1 = 5$, $4 \div 1 = 4$) and commutative property (e.g., $3 \times 4 = 4 \times 3$). Demonstrate making estimates or mental calculations by connecting to place value, partitioning, and known facts.

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Rational numbers		identify and represent halves and quarters as fractions of sets and regions, using equal parts of the whole FF Daily routines, Snack time, page 37 FF Everyday counting, pages 45–48 FF 3 EAD, page 60 FF 11 LNPR 11.4, SSR, HFA, SWMP, EAD, OMPP, pages 90–92 FF 12 CNIB, page 95 FF 13 ADMT, MGP, CNIB, HFA, RPSWC, SWMP, EAD, OMPP, pages 90–100 FF 16 HFA, page 111 NPC1 Calc 5	identify, read, write (using symbols and words), and represent halves, quarters, and eighths as fractions of sets and regions, using equal parts of the whole NPC1 Calc 5 NPC1 Calc 8.11 NPC2 Calc 16 NPC3 NNS 7.7	identify, read, write, and represent halves, thirds, quarters, fifths, sixths, and eighths as fractions of sets and regions, using equal parts of the whole and by positioning on a number line NPC2 NNS 6 NPC2 Calc 16 NPC3 NNS 7.1, 7.2, 7.3, 7.5, 8.2, 8.3	Represent fractions using a range of materials – continuous (bar models, number lines), discrete (sets of objects), and digital. Explain and reinforce that when fractions are represented symbolically: <ul style="list-style-type: none"> the denominator is the bottom number and shows how many pieces a whole has been equally split into the numerator is the top number and shows how many of those parts the fraction represents. Have students practise saying, reading, and writing fractions in words and symbols. Explain how to fold paper strips to create fractions of one whole. Label the parts using words and symbols, and use them to create a fraction wall for comparing and ordering fractions. Explain that a fraction is a number that can be placed on a number line.
			directly compare two fractions involving halves, quarters, and eighths NPC2 NNS 6 NPC2 Calc 16.1, 16.2, 16.3, 16.4, 16.6 NPC3 NNS 7.7	compare and order fractions involving halves, quarters, and eighths and identify when two fractions are equivalent NPC2 NNS 6 NPC3 NNS 7.2, 7.3, 7.5, 7.7	

Number continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Rational numbers		find a half or quarter of a set using equal sharing and grouping FF Everyday counting, pages 45-48 FF 7 HFA, page 75 FF 11 ADMT, LNPR 11.5, HFA, pages 90-91 FF 13 ADMT, OMPP, pages 98 and 100 FF 16 CNIB, SWMP, pages 111-12 NPC1 NNS 2 NPC1 Calc 5.5 NPC2 Calc 15 NPC2 Calc 16.3, 16.4, 16.6 Activity to follow	find a half and quarter of a set by identifying groups and patterns (rather than sharing by ones), and identify the whole set or shape when given a half or quarter NPC1 Calc 5, 8.11 NPC2 Calc 16.3, 16.4, 16.6 NPC3 NNS 8.6 NPC3 Calc 16 Activity to follow	find a unit fraction of a whole number (e.g., $\frac{1}{3}$ of 15), and identify the whole set or amount when given a unit fraction (e.g., " $\frac{1}{4}$ of the set is 3. What is the whole set?") NPC3 NNS 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.8 Activity to follow	Investigate a range of practical situations using a range of representations , including materials, drawings and diagrams, and digital tools (e.g., discrete objects, bar models, paper strips for partitioning). Make connections between: <ul style="list-style-type: none"> • symbols, words, and pictures • counting, subitising patterns and known groupings, and skip counting to solve problems (at years 1-2) • skip counting and using known addition and multiplication facts to solve problems (at year 3). Use mathematical language to develop an understanding of fractions (e.g., numerator, denominator, shared equally, divide, partition, equal parts).
				add and subtract unit fractions with the same denominator (e.g., $\frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{3}{8}$) NPC3 NNS 8.5	Investigate adding and subtracting fractions within familiar contexts (e.g., cutting apples into eighths or partitioning paper strips into six equal parts, and then representing addition and subtraction with these materials). Connect representations , including symbols and equations, to drawings and materials (e.g., fraction walls, paper fraction strips), and show them on a number line.
Financial mathematics			recognise and order New Zealand denominations up to \$20 according to their value, make groups of 'like' denominations, and calculate their value GMS1 Mea 2 NPC1 NNS 3.1, 3.2 NPC1 Calc 3, 6.8, 8.3 NPC2 P&A 7.5 GMS2 Mea 2.1, 2.5, 2.6, 3.1, 3.2, 3.3	make amounts of money using one- and two-dollar coins and 5-, 10-, 20-, 50-, and 100-dollar notes. NPC2 P&A 7.5 GMS2 Mea 2, 3	Have students use play money (coins and notes) to represent practical financial situations. At year 2, compare only notes with notes or cents with cents, not a mixture of them. At year 2, investigate appropriate financial situations that involve both saving and spending. Connect to place value, addition and subtraction, and skip counting when calculating amounts.

Algebra

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Equations and relationships		<p>solve true or false number sentences and open number sentences involving addition and subtraction of one-digit numbers, using an understanding of the equals sign (e.g., $2 + 5 = 3 + \underline{\quad}$, $7 - 5 = 6 - 4$ (T or F?))</p> <p>NPC1 P&A 1.7, 1.8 NPC1 Calc 3.7, 8.2 Activity to follow</p>	<p>solve true or false number sentences and open number sentences involving addition and subtraction of one- and two-digit numbers, using an understanding of the equals sign (e.g., $18 + \underline{\quad} = 17 + 6$, $17 = 25$ (T or F?))</p> <p>NPC1 Calc 4, 7 NPC1 P&A 1.7, 1.8 NPC1 NNS 4.3 NPC1 Calc 3.7, 8.2, 8.11, 8.13 NPC2 Calc 14 Activity to follow</p>	<p>solve true or false number sentences and open number sentences involving addition and subtraction, using an understanding of the equals sign</p> <p>NPC2 P&A 2, 3, 7.1, 7.2, 7.3 NPC2 Calc 1.1, 4.8, 4.13, 5.9, 9.7, 9.8, 9.9, 13.4, 13.7, 14.2, 14.4, 14.8 Activity to follow</p>	<p>Represent the equals sign as the ‘same as’ to demonstrate it is a symbol of equivalence.</p> <p>Investigate number sentences using representations such as:</p> <ul style="list-style-type: none"> • 10s frames and discrete materials (at years 1–2) • word problems with comparisons (at year 3). <p>At years 2–3, solve number sentences that have numbers beyond what students are using in operations, so that the emphasis is on the equal relationship, not operating.</p>
	<p>copy, continue, create, and describe a repeating pattern with two elements</p> <p>FF Everyday counting, pages 45–48 FF 1 OMPP, page 52 FF 2 LNPR 2.6, MGP, RPSWC, EAD, pages 56–57 FF 3 ADMT, OMPP, pages 58 and 60 FF 4 ADMT, MGP, RPSWC, EAD, pages 63–64 FF 5 SNFSR, EAD, pages 67–68 FF 6 MGP, SWMP, EAD, OMPP, pages 71–72 FF 7 EAD, page 76 FF 8 MGP, EAD, pages 78 and 80 FF 10 MGP, SWMP, OMPP, pages 87–88 FF 13 EAD, page 100 FF 17 HFA, page 115 FF 18 ADMT, MGP, EAD, pages 118–20</p>	<p>copy, continue, create, and describe a repeating pattern with three elements, and identify missing elements in a pattern</p> <p>FF Everyday counting, pages 45–48 FF 1 OMPP, page 52 FF 2 LNPR 2.6, MGP, RPSWC, EAD, pages 56–57 FF 3 ADMT, OMPP, pages 58 and 60 FF 4 ADMT, MGP, RPSWC, EAD, pages 63–64 FF 5 SNFSR, EAD, pages 67–68 FF 6 MGP, SWMP, EAD, OMPP, pages 71–72 FF 7 EAD, page 76 FF 8 MGP, EAD, pages 78 and 80 FF 10 MGP, SWMP, OMPP, pages 87–88 FF 13 EAD, page 100 FF 17 HFA, page 115 FF 18 ADMT, MGP, EAD, pages 118–20</p>	<p>recognise and describe the unit of repeat in a repeating pattern, and use it to predict further elements using the ordinal position</p> <p>NPC1 SF 2 P&A 3 NPC1 SF 4 P&A 1, 2 NPC1 SF 5 P&A 1 NPC1 SF 7 P&A 1, 2 NPC1 SF 8 P&A 1, 2 GMS1 Geo 2.5</p>	<p>recognise, continue, and create repeating and growing patterns, and describe a rule to explain a pattern</p> <p>NPC2 GS 5, 7, 9, 10 NPC2 P&A 1.5, 1.6, 1.7, 5.11 NPC2 Calc 8.7</p>	<p>Investigate repeating and growing patterns in a range of contexts (e.g., cultural patterns, patterns in the local environment, and on everyday objects).</p> <p>Use materials, sound, movement, and digital tools to represent and continue repeating and growing patterns. At years 2–3, demonstrate recording the pattern in a table.</p> <p>Form generalisations when students notice that repeating patterns constructed in different ways are similar (e.g., ‘red, blue, red, blue’ and ‘hop, jump, hop, jump’ are ABAB patterns). Help students to notice the similarities and differences between patterns by recording them.</p> <p>With students at year 2, generalise by using the unit of repeat and ordinal position to identify further elements in a pattern.</p> <p>Use mathematical language and sentence starters to support students to explain and justify how a pattern is repeating or growing and to predict further terms.</p>

Algebra continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Algorithmic thinking		follow step-by-step instructions to complete a simple task FF Daily routines, pages 35–38 FF Everyday counting, pages 45–48 FF 1 RPSWC, EAD, pages 51–52 FF 2 MGP, page 55 FF 4 RPSWC, OMPP, pages 63–64 FF 6 SWMP, page 72 FF 7 OMPP, page 76 FF 8 OMPP, page 80 FF 9 ADMT, MGP, SWMP, pages 82–84 FF 10 ADMT, page 86 FF 17 OMPP, page 116	follow and give step-by-step instructions for a simple task, identifying and correcting errors as the instructions are followed NPC1 SF 3 NNS 3 NPC1 SF 4 NNS 4 NPC1 SF 8 P&A 3, 4 NPC1 SF 9 P&A 1, 2, 3, 4 NPC1 SF 10 P&A 1 NPC1 SF 12 P&A 1 NPC1 P&A 4 GMS1 Geo 5.2, 5.4, 5.6, 5.7	create and use a set of precise, step-by-step instructions for carrying out a familiar routine or task NPC2 P&A 1	Represent step-by-step instructions using drawings, words, flow diagrams, and verbal instructions that form a sequence. With students, investigate sorting unfamiliar and familiar objects according to a set of instructions, directing a person or object (e.g., through an obstacle course or maze), and following and creating a set of pictorial instructions. Explain, justify, and show how a set of instructions is complete or incomplete, using think-alouds and prompts. Connect a series of events from a story, narrative, or a daily timetable with statements in Number, Algebra, Measurement, and Geometry.

Measurement

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Measuring			<p>estimate and use an informal unit repeatedly to measure the length, mass (weight), volume, or capacity of an object</p> <p>GMS1 Mea 1.3, 4.4, 5.3</p>	<p>estimate and then reliably measure length, capacity, and mass (weight) using whole-number metric units (e.g., from tools with labelled markings)</p> <p>GMS2 Mea 1, 4, 5, 6</p>	<p>Explain estimation, using the language of ‘about’, ‘more or less’, and ‘close to’ to help students reflect on what the quantity or measure might be.</p> <p>Investigate practical estimating and measuring situations, using appropriate measuring tools (e.g., at year 2, balance scales, capacity containers, informal units; at year 3, rulers, measuring jugs and cups, scales).</p> <p>At year 3, explain how to construct and use measurement devices, particularly rulers, measurement containers, and balance scales. Demonstrate how to accurately measure length in centimetres, mass (weight) in grams, and capacity in millilitres (at year 3).</p>

Measurement continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Measuring	<p>directly compare two objects by an attribute (e.g., length, mass (weight), capacity)</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 1 LNPR 1.5–1.6, SNFSR, RPSWC, SWMP, OMPP, pages 51–52</p> <p>FF 2 OMPP, page 56</p> <p>FF 3 LNPR 3.5, page 59</p> <p>FF 4 SWMP, RPSWC, page 64</p> <p>FF 6 SSR, RPSWC, SWMP, EAD, OMPP, pages 71–72</p> <p>FF 7 ADMT, MGP, SNFSR, RPSWC, pages 74–75</p> <p>FF 8 LNPR 8.4, page 78</p> <p>FF 9 LNPR 9.3, 9.4, page 82</p> <p>FF 11 SWMP, page 92</p> <p>FF 12 SWMP, page 96</p> <p>FF 15 LNPR 15.5, SNFSR, page 107</p> <p>FF 16 HFA, page 111</p> <p>FF 17 MGP, RPSWC, OMPP, pages 115–16</p> <p>FF 18 LNPR 18.5, SNFSR, OMPP, pages 118–20</p> <p>GMS1 Mea 5.1</p>	<p>compare the length, mass (weight), volume, or capacity of objects directly or indirectly (e.g., by comparing each of them with another object used repeatedly)</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 1 LNPR 1.5–1.6, SNFSR, RPSWC, SWMP, OMPP, pages 51–52</p> <p>FF 2 OMPP, page 56</p> <p>FF 3 LNPR 3.5, page 58</p> <p>FF 4 SWMP, RPSWC, page 64</p> <p>FF 6 SSR, RPSWC, SWMP, EAD, OMPP, pages 71–72</p> <p>FF 7 ADMT, SNFSR, MGP, RPSWC, pages 74–75</p> <p>FF 8 LNPR 8.4, page 78</p> <p>FF 9 LNPR 9.3, 9.4, page 82</p> <p>FF 11 SWMP, page 92</p> <p>FF 12 SWMP, page 96</p> <p>FF 15 LNPR 15.5, SNFSR, page 107</p> <p>FF 16 HFA, page 111</p> <p>FF 17 MGP, RPSWC, OMPP, pages 115–16</p> <p>FF 18 LNPR 18.5, SNFSR, OMPP, pages 118–20</p> <p>NPC1 SF 10</p> <p>GMS1 Mea 1, 4, 5</p>	<p>compare and order several objects using informal units of length, mass (weight), volume, or capacity</p> <p>GMS1 Mea 1.1, 1.2, 4.1, 4.3, 5.1, 5.2</p> <p>NPC1 SF 4 NNS 3, 4</p> <p>NPC1 SF 10 P&A 1, 2, 3</p>	<p>compare and order objects using metric units of length, mass (weight), or capacity</p> <p>GMS2 Mea 1, 4, 5, 6</p>	<p>Investigate practical measuring situations to compare and order objects – for example:</p> <ul style="list-style-type: none"> • which is longer or shorter, is heavier or lighter, or holds more or less (at 6 months) • comparing and ordering up to three objects (at year 1) • explaining how identical informal units need to be used when measuring (at year 2) • using tools like rulers, measurement containers, and scales (at year 3). <p>Use mathematical language to explain and justify comparative measurement attributes (e.g., long and short; heavy, heavier, and heaviest; the same as; full and empty; more and less; wide, wider, and widest). Include descriptive te reo Māori that makes the properties of objects and shapes clear.</p> <p>Activity to follow</p>
			<p>turn, and describe how far an object or person has turned, using full, half, and quarter turns as benchmarks</p> <p>GMS1 Geo 5</p>	<p>turn, and describe how far an object or person has turned, using full, half, quarter, and three-quarter turns as benchmarks</p> <p>GMS2 Geo 5</p>	<p>Investigate and explain situations involving angles as ‘how far an object or person has turned’. Have students turn physical objects and themselves.</p> <p>Connect turns with fractions (e.g., half, a quarter, three quarters).</p>

Measurement continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Measuring	<p>connect days of the week to familiar events and daily routines (e.g., the class timetable)</p> <p>FF Everyday counting, pages 45–48</p> <p>FF 2 ADMT, page 54</p> <p>FF 7 EAD, page 76</p> <p>FF 8 ADMT, SSR, pages 78–79</p> <p>GMS1 Mea 3.1, 3.2, 3.3, 3.4, 6.1, 6.2, 6.3</p>	<ul style="list-style-type: none"> identify how the passing of time is measured in years, months, weeks, days, hours name and order the days of the week, and sequence events in a day using everyday language of time <p>GMS1 Mea 3.1, 3.2, 3.3, 3.4, 6.1, 6.2, 6.3</p>	<p>name and order the months and seasons, and describe the duration of familiar events using months, weeks, days, and hours</p> <p>GMS1 Mea 3.1, 3.2, 3.3</p> <p>NPC1 SF 1 NNS 1</p> <p>NPC1 SF 5 NNS 2</p> <p>NPC1 NNS 1.5</p> <p>NPC2 P&A 1.2, 1.3, 1.4</p>	<p>identify the duration of events using years, months, weeks, days, hours, minutes, and seconds</p> <p>GMS1 Mea 3.1, 3.2, 3.3</p> <p>NPC2 P&A 1.2, 1.3, 1.4</p> <p>GMS3 Mea 2.3, 2.4, 2.5</p>	<p>Use visual representations to support the sequencing of events (e.g., pictorial daily timetables, calendars, day-and-month cards).</p> <p>Explore estimating the duration of everyday events using minutes and seconds (e.g., “How long is it until the bell rings?”). Practise recalling a sequence of events in the past and predicting future events.</p> <p>Use mathematical language to explain and justify comparisons of duration and points in time (e.g., before, after, soon, later, next, today, tomorrow, yesterday, 1st, 2nd, 3rd).</p> <p>Investigate using a calendar to work out the number of days, weeks, or months until important events (e.g., the number of days until Matariki, the number of weeks until the end of term).</p> <p>Explore informal ways of measuring short periods of time to identify which events last longer.</p>
		<p>tell the time to the hour using the language of ‘o’clock’</p> <p>GMS1 Mea 3.4, 6.1, 6.2, 6.3</p>	<p>tell the time to the hour and half-hour, using the language of ‘past’ and ‘o’clock’</p> <p>GMS1 Mea 3, 4, 6</p>	<p>tell the time to the hour, half-hour, and quarter past and quarter to the hour</p> <p>GMS1 Mea 6</p> <p>GMS2 Mea 7.1, 7.2, 7.3</p>	<p>Use digital and analogue clocks to have students practise telling the time.</p> <p>Connect using visual representations on an analogue clock to skip counting in 5s and fractions (a half and quarter).</p> <p>Connect the ‘structure’ of duration (minutes, hours, days) to our measures of time (“There are 30 minutes in half an hour, 60 minutes in an hour.”).</p> <p>Identify and investigate the specific times of daily events and activities in and out of school.</p>

Measurement continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Perimeter, area, and volume			visualise, estimate, and measure the perimeter and area of 2D shapes, using informal units GMS3 Mea 3.2 GMS4 Mea 6.1, 6.3, 6.6 Activity to follow	visualise, estimate, and measure: <ul style="list-style-type: none"> the perimeter of polygons using metric units the area of 2D shapes using squares of identical size the volume of rectangular prisms (cuboids) by filling them with identical 3D blocks i GMS3 Mea 3.2 GMS4 Mea 6.1, 6.3, 6.6 ii GMS4 Mea 6.4, 6.5, 6.6 iii GMS5 Mea 4.1, 4.2 Activity to follow	Explain and demonstrate that: <ul style="list-style-type: none"> perimeter is the distance around the edge of a 2D shape area is the size of the surface of a 2D shape, or how many squares cover the surface volume is the amount of 3D space a shape takes up, or how many cubes fill the shape. Investigate familiar practical situations involving perimeter, area, and volume. Use think-alouds to demonstrate the use of visualising to identify the appropriate attribute for a measurement task and to imagine the number of units required. Explain the importance of using the same unit when measuring, and that there should be no gaps or overlaps around the outside (perimeter) and inside (area) of 2D shapes, and in filled 3D shapes (volume).

Geometry

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Shapes	identify, sort by one feature, and describe familiar 2D shapes FF Everyday counting, pages 45–48 FF 3 SWMP, EAD, page 60 FF 4 ADMT, MGP, EAD, pages 62–64 FF 5 EAD, OMPP, UW, page 68 FF 6 EAD, OMPP, page 72 FF 10 SWMP, page 75 FF 13 EAD, page 100 FF 18 EAD, page 120 Covered above plus further exploration through: GMS1 Geo 1.1, 1.3, 1.4, 1.5, 3, 4	identify, describe, and sort familiar 2D and 3D shapes presented in different orientations, including triangles, circles, rectangles (including squares), cubes, cylinders, and spheres GMS1 Geo 1, 2, 3, 4	identify, describe, and sort 2D and 3D shapes, including ovals, semicircles, polygons (e.g., hexagons, pentagons), rectangular prisms (cuboids), pyramids, hemispheres, and cones, using the attributes of shapes GMS1 Geo 1, 3, 4 GMS2 Geo 1, 2, 3, 4	visualise, identify, compare, and sort 2D and 3D shapes, using the attributes of shapes GMS2 Geo 1.3, 1.4, 2, 3, 4 GMS3 Geo 1, 3	Make available a range of 2D and 3D shapes, including tactile shapes and materials (e.g., playdough, pipe cleaners), pictures, diagrams, and digital tools. Investigate 2D and 3D shapes in the environment. Use everyday language and mathematical language (including te reo Māori) to explain and justify the describing and sorting of shapes (e.g., size, corners, colour, texture, sides, angles, faces, edges, vertices, triangle/tapatoru, square/tapawhā rite, same/ōrite, different/rerekē). Use generalisations made by students to clarify and extend understanding (e.g., “Polygons have straight sides”, “2D shapes can be identified on 3D shapes”).
				identify right angles in shapes and objects GMS2 Geo 5.2, 5.4 GMS3 Geo 2, 3.3	
Spatial reasoning	compose by trial and error a target shape using smaller shapes, and decompose a shape into smaller shapes FF Everyday counting, pages 45–48 FF 5 EAD, page 68 GMS1 Geo 1.1, 1.2, 2.1, 2.2, 2.3	anticipate which smaller shapes might be used to compose a target shape, and then check by making the shape GMS1 Geo 1.1, 1.2, 2.1, 2.2, 2.3	anticipate which smaller shapes might be used to compose and decompose a target shape, and then check by making the shape GMS1 Geo 1.1, 1.2, 2	compose and decompose 2D shapes using the attributes of shapes (e.g., lines of symmetry), other shapes, side lengths, and angles GMS2 Geo 1.1, 1.2, 2, 3, 4	Make available a range of materials to compose and decompose 2D shapes (e.g., pattern blocks, attribute shapes, paper shapes, playdough, tangrams). Use think-alouds to demonstrate anticipating how small shapes can fit into or make a new shape. Use as target shapes: <ul style="list-style-type: none"> • shapes partitioned into smaller parts (at 6 months) • continuous whole shapes with no partitions (at years 1–3).

Geometry continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Spatial reasoning		flip, slide, and turn 2D shapes to make a pattern FF Everyday counting, pages 45-48 FF 6 EAD, page 72 FF 18 EAD, page 120 GMS1 Geo 1, 2 GMS2 2.4, 2.5	recognise lines of symmetry in patterns or pictures, and create or complete symmetrical pictures or patterns GMS2 Geo 3	predict the result of a one-step transformation (reflection, translation, or rotation) on 2D shapes GMS1 Geo 1, 2 GMS2 Geo 1.3 Activity to follow	Connect the informal vocabulary of flip, slide, and turn with the formal vocabulary of reflect, translate, and rotate. Investigate practical situations (e.g., making art, paper folding, checking symmetry with mirrors) and a range of artefacts and patterns.
Pathways	follow instructions to move to a familiar location or locate an object FF Everyday counting, pages 45-48 FF 17 OMPP, page 116 FF 18 OMPP, page 120 GMS1 Geo 5	follow and give instructions to move to a familiar location or locate an object FF Everyday counting, pages 45-48 FF 17 OMPP, page 116 FF 18 OMPP, page 120 GMS1 Geo 5	follow and give instructions to move people or objects to a different location, using direction, distances (e.g., number of steps), and half and quarter turns GMS1 Geo 5 GMS2 Geo 5.1	follow and create a sequence of step-by-step instructions (an algorithm) for moving people or objects to a different location GMS1 Geo 5 GMS2 Geo 5.1	Investigate ways of moving to different locations within the classroom and in other parts of the school, using simple maps at year 3. Use picture books that emphasise positional language and movement (e.g., <i>Scatter Cat</i> , <i>Bears in the Night</i> , <i>We're Going on a Moa Hunt</i>). Use spatial language and talk frames to support giving and following instructions (e.g., near, far, next to, beside, on top, under, over, down, up, left, right, turn). Make connections between: <ul style="list-style-type: none"> estimating distance and bodily measures (e.g., the number of steps to the door) half and quarter turns and fractions following or creating instructions and algorithmic thinking.
		use pictures, diagrams, or stories to describe the positions of objects and places FF Everyday counting, pages 45-48 FF 16 RPSWC, page 115 GMS1 Geo 2, 5	interpret diagrams to describe the positions of objects and places in relation to other objects and places GMS1 Geo 5 GMS2 Geo 5	interpret, draw, and use simple maps to locate objects and places relative to other objects and places GMS1 Geo 5 GMS3 Geo 4	

Statistics

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Numicon coverage (all statements)		FF 19 (p.125)	GMS1 S&P1	GMS2 S&P1	
Problem		pose a summary investigative question about a group for which the data will have categorical variables (e.g., colour, brand), and anticipate what the data might show	pose a summary investigative question about a group for which the data will have categorical variables, and anticipate what the data might show (e.g., which outcomes might be more frequent than others)	pose a summary investigative question about an everyday situation, using categorical data and discrete numerical (whole number) data, identify the variable and group of interest, and anticipate what the data might show	Show, with student input, how to: <ul style="list-style-type: none"> pose summary investigative questions about an area of interest identify the variable and group of interest in investigative questions.
Plan		plan to collect data by making observations or questioning others, and discuss how the data-gathering process might affect people	plan survey and data-collection questions for collecting data, identify who and what the data will measure, and discuss how the data-gathering process might affect people		Pose, with student input, survey and data-collection questions that will be used to collect the data required for the investigative question. Explain the distinction between primary and secondary data and the challenges that come with sensitive topics or questions. Investigate how survey questions and the words within survey questions can be interpreted differently by different people.
Data		collect categorical data for one variable	collect categorical data for more than one variable	collect, record, and sort data, or use secondary data sources provided by someone else	Represent data using data cards, recording sheets, and tally tables. Use data cards that represent multiple variables about an individual. Explore investigative questions using secondary data sources.

Statistics continued...

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Analysis		create and make statements about data visualisations (e.g., pictures, graphs, dot plots) for the categorical data, giving the frequency for each category	create and make statements about data visualisations (e.g., pictures, graphs, dot plots) for the categorical data, comparing the frequencies of categories	create and make statements about data visualisations (e.g., pictures, graphs, dot plots, bar graphs) for the categorical and discrete numerical data	Show creating and describing data visualisations, transitioning from data cards to dot plots to bar graphs. Represent data using data cards and picture graphs (for years 1–3), frequency tables and dot plots (for years 2–3), and bar graphs (for year 3). Have students practise using ‘I notice’ statements that include the variable name and context when describing data visualisations. Explain and demonstrate ‘reading the data’ and ‘reading between the data’. Explain how to describe features of data visualisations (e.g., frequency, the least/most frequent category, modes or modal groups, highest and lowest values).
Conclusion		choose from given options the statements that best answer the investigative question		choose from given options the statements that best answer the investigative question, reflect on findings, and compare them with anticipated outcomes	Show, with student input, how to: <ul style="list-style-type: none"> choose the best descriptive statements that answer an investigative question collate, explain, and justify their findings to others.
Statistical literacy		agree or disagree with others’ statements about simple data visualisations (e.g., pictures, graphs, dot plots)	match statements made by others with features in simple data visualisations, and agree or disagree with the statements	identify relevant features in others’ data visualisations, connect these to descriptive statements, agree or disagree with the statements, and suggest improvements to them	Show, with student input, how to: <ul style="list-style-type: none"> read and understand claims made by others and identify corresponding features in data visualisations explain agreements or disagreements with a claim made by others.

Probability

	During the first 6 months Informed by prior learning, teach students to:	During the first year Informed by prior learning, teach students to:	During the second year Informed by prior learning, teach students to:	During the third year Informed by prior learning, teach students to:	Teaching considerations
Numicon coverage (all statements)		FF 19 (p.125)	GMS2 S&P1	GMS2 S&P1	
Probability investigations		engage in stories or games that involve chance-based situations and: <ul style="list-style-type: none"> decide if something will happen, won't happen, or might happen identify possible and impossible outcomes (e.g., for what might happen next) 	engage in chance-based investigations about games and everyday situations to: <ul style="list-style-type: none"> anticipate and then identify possible outcomes collect and record data create data visualisations for frequencies of possible outcomes (e.g., lists, pictures, graphs) describe what these visualisations show answer the investigative question notice variations in outcomes (e.g., how often each of the numbers on a dice come up) 		Investigate probability by playing games of chance using physical objects (e.g., dice, coins, spinners, pulling things out of a hat). Explain and show how to: <ul style="list-style-type: none"> list possible outcomes visualise frequencies of outcomes use the vocabulary that indicates the relative order of probabilities from impossible to certain (i.e., impossible, unlikely, possible, likely, certain).
Critical thinking in probability			agree or disagree with the statements made by others about chance-based situations	explain and question statements about chance-based situations, with reference to data	Show, with student input, how to: <ul style="list-style-type: none"> read and understand claims made by others about chance situations match statements with the relevant chance situation being described explain and justify why they believe a statement is true or not.

Phase 2

Number

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Number structure	skip count from any multiple of 100, forwards or backwards in 25s and 50s NPC3 NNS 3.1 (100s) NPC3 P&A 3.6, 3.7 NPC4 NNS 1.2			Investigate patterns in multiples using 100s boards or 1,000s books. Record choral counting on the board, and ask students to explain patterns and make generalisations or conjectures.
	identify, read, write, compare, and order whole numbers up to 10,000, and represent them using base 10 structure NPC3 NNS 2, 5 NPC4 NNS 1.3, 1.4, 1.5, 1.6, 2 NPC5 NNS 1	identify, read, write, compare, and order whole numbers up to 100,000, and represent them using base 10 structure NPC4 NNS 1.4, 1.5, 1.6 NPC4 NNS 2 NPC5 NNS 1	identify, read, write, compare, and order whole numbers up to 1,000,000, and represent them using base 10 structure NPC5 NNS 1	Use marked number lines to order and compare numbers and place-value (PV) houses and materials to write and represent numbers, using base 10 structure. Support students to: <ul style="list-style-type: none"> practise saying, reading, and writing given numbers, including large numbers, using PV houses use PV houses to generalise that multiplying by 10 moves each digit in a number one place to the left, and dividing by 10 moves each digit one place to the right.
		identify factors of numbers up to 100 NPC4 P&A 4 NPC5 P&A 3.4, 3.5	identify square numbers and factors of numbers up to 125 NPC5 P&A 3.4, 3.6, 3.7, 4.1, 4.4, 4.5, 4.6 NPC6 P&A 1	Represent factors of numbers using arrays, or ordered lists of factor pairs. Use multiplication charts to investigate factors, multiples, and square numbers. Connect to students' understanding of a square to explain and represent a square number and multiplication facts involving the same two numbers.

Number continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Operations	use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations NPC3 Calc 1.4, 9.11, 13.2, 13.5 NPC4 NNS 3	use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations NPC4 NNS 3.3, 3.4, 3.5, 3.6, 3.7 NPC4 Calc 3.3, 4.3, 8.4, 8.5, 8.6, 8.7, 9.1, 9.3, 14.1 NPC5 NNS 4	use rounding, estimation, and inverse operations to predict results and to check the reasonableness of calculations NPC5 NNS 4.8 NPC5 Calc 3.2, 3.3, 5.1, 5.3, 5.4 NPC6 Calc 3	Explain how to round numbers to an appropriate value to make an estimate for a calculation. Explain reasoning using estimation language such as ‘about’, ‘more or less’, and ‘close to’. Connect rounding with: <ul style="list-style-type: none"> known benchmarks (e.g., doubles, halves, multiples of 10), to make estimations and check calculations rounding to an appropriate unit in measurement situations. Use number lines to support rounding, explaining how to find the midpoint between two numbers. Explain and justify findings by connecting to estimates and other checking methods. Use families of facts to show the connection between factors and multiples. Explain how to use families of facts to ‘work backwards’ (e.g. $7 \times 8 = 56$, so $56 \div 8 = 7$).
	round whole numbers to the nearest thousand, hundred, or ten NPC3 NNS 6 (nearest 10 or 100) NPC4 NNS 3, 6.7, 6.9	round whole numbers to the nearest ten thousand, thousand, hundred, or ten, and round tenths to the nearest whole number NPC4 NNS 3.3, 3.4, 3.5, 3.6, 6.9 NPC5 NNS 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8	round whole numbers to a specified power of 10, and round tenths and hundredths to the nearest whole number or one decimal place NPC4 NNS 6.9 (tenths) NPC5 NNS 4 NPC6 Calc 3	
	add and subtract two- and three-digit numbers NPC3 Calc 8, 9, 12, 13, 14	add and subtract whole numbers up to 10,000 NPC4 Calc 1, 2, 3, 4, 8, 9	add and subtract any whole numbers NPC5 Calc 1, 2, 3, 5, 6 NPC6 Calc 1.4, 1.5	Explain and represent addition and subtraction using materials such as PV materials, number lines, and number discs. Explain and connect : <ul style="list-style-type: none"> the horizontal method and the vertical-column method of addition or subtraction making estimates or mental calculations using place value, partitioning, and known facts. Use worked examples and a range of problem types (e.g., result, change and start-unknown), using think-alouds to explain the most efficient approaches. Have students practise decoding and solving word problems, representing them as equations.

Number continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Operations	recall multiplication and corresponding division facts for 4s and 6s NPC3 Calc 10 (2, 4, 8 times tables) NPC4 Calc 5, 6	recall multiplication facts for 7s, 8s, and 9s and corresponding division facts NPC3 Calc 10 (2, 4, 8 times tables) NPC4 Calc 5, 6	recall multiplication facts to at least 10×10 and corresponding division facts NPC4 Calc 5, 6 NPC5 Calc 4.1	Provide a range of tasks for students to practise and develop fluency in new and previously learned multiplication and division facts (e.g., families of facts, multiplication table grids, arrays, games). Investigate patterns in the multiples of times tables and to generalise multiplication problems beyond recalled facts by looking for patterns.
	multiply a two-digit by one-digit number and two one-digit whole numbers (e.g., 23×5 , 7×8) NPC3 Calc 5, 6, 10, 15.1, 15.2, 15.4, 15.5, 15.6, 15.7 NPC4 Calc 10, 12.1, 12.2, 12.3	multiply a three-digit by one-digit number and two two-digit whole numbers (e.g., 245×6 , 34×83) NPC4 Calc 12.4, 12.5, 12.6 NPC5 Calc 12	multiply multi-digit whole numbers (e.g., 54×112) NPC5 Calc 4.5, 7.1, 7.3, 8.1, 8.2, 12 NPC6 Calc 2.1, 2.2	At year 4: <ul style="list-style-type: none"> connect multiplication with skip counting using jumps on a number line or arrays represent division using diagrams and equal sharing, connecting with known families of facts generalise the distributive property of multiplication over addition (e.g., $7 \times 8 = 7 \times (5 + 3) = (7 \times 5) + (7 \times 3)$). At years 5–6, represent multiplication using the area model, and make connections with place value (e.g., $34 \times 7 = 30 \times 7 + 4 \times 7$).
	divide up to a three-digit whole number by a one-digit divisor, with no remainder (e.g., $65 \div 5$) NPC3 Calc 7.1, 7.2, 7.3, 7.4, 7.5, 11.1, 11.2, 11.3, 15.3, 15.4, 15.5, 15.6, 15.8, 16.1, 16.2, 16.3	divide up to a three-digit whole number by a one-digit divisor, with a remainder (e.g., $83 \div 5 = 16$, remainder 3) NPC3 Calc 7.6, 11.2, 11.4 NPC4 Calc 11.4, 11.6, 13	divide up to a four-digit whole number by a one-digit divisor, with a remainder (e.g., $198 \div 7$, $4154 \div 8$) NPC5 Calc 4.3, 4.6, 7.2, 7.3, 8.4, 9.1, 9.2, 13.1, 13.2, 13.3	At years 5–6, represent multiplication using the area model, and make connections with place value (e.g., $34 \times 7 = 30 \times 7 + 4 \times 7$). Explain and demonstrate: <ul style="list-style-type: none"> the vertical-column method for division and multiplication, ensuring students understand and practise the procedure and connect with place value, known facts, and estimation making estimates or mental calculations by connecting to place value, partitioning, and known facts. Have students investigate : <ul style="list-style-type: none"> decoding and solving word problems, representing them as equations multiplication and division in measurement and proportional reasoning situations multiplication to count different combinations (e.g., “If I have 4 tops and 3 pairs of shorts, how many different outfits can I make?”).

Number continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Operations			use the order of operations rule with grouping, addition, subtraction, multiplication, and division NPC6 Calc 6.3, 6.4, 6.5 NPC6 PFT 3.5, 5.4	Use worked examples to demonstrate a step-by-step layout with one equals sign per line. Have students investigate : <ul style="list-style-type: none"> decoding and solving word problems, deciding which operation to use and why the distributive property of multiplication over addition and subtraction (e.g., $6 \times 18 = 6 \times (20 - 2) = (6 \times 20) - (6 \times 2)$). Explain the commutative, associative, and identity properties, and justify which operations they work for and which they don't.
Rational numbers	identify, read, write, and represent tenths as fractions and decimals NPC3 NNS 7.1, 8.2 NPC4 NNS 5.2, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6	identify, read, write, and represent tenths and hundredths as fractions and decimals NPC4 NNS 6, 7.5, 8	identify, read, write, and represent fractions, decimals (to two places), and related percentages NPC5 NNS 3.2, 3.3, 3.4, 3.5, 7.1 NPC5 Calc 11.1, 11.2	Represent and compare fractions, decimals and percentages using continuous materials (double number lines, fraction walls, 100s squares). Have students practise saying, reading, and writing decimals using decimal PV houses. Explain and represent decimal tenths as a fraction with the denominator as 10, and percentages and decimals (to two places) as a fraction with the denominator of 100. Investigate situations where decimals are used (e.g., in measurements at a sports day).
	compare and order tenths as fractions and decimals, and convert decimal tenths to fractions (e.g., $0.3 = \frac{3}{10}$) NPC3 NNS 7.3 NPC4 NNS 6.7	compare and order tenths and hundredths as fractions and decimals, and convert decimal tenths and hundredths to fractions NPC4 NNS 6.3, 6.7, 6.8, 8.2, 8.7, 8.8	compare and order fractions, decimals (to two places), and percentages and convert decimals, and percentages to fractions NPC5 NNS 3.7, 3.8, 6.1, 6.2, 6.3, 7.4 NPC5 Calc 11.5, 11.6	
	divide whole numbers by 10 to make decimals NPC3 Calc 15.5, 15.6 NPC4 NNS 6.4 NPC4 Calc 7.3, 7.5	divide whole numbers by 10 and 100 to make decimals NPC4 NNS 6.5, 8.4 NPC4 Calc 7.3, 7.5, 7.6, 7.7 NPC5 Calc 7.4, 7.5, 7.6	multiply and divide numbers by 10 and 100 to make decimals and whole numbers (e.g., $1.3 \times 10 = 13$) NPC5 Calc 7 (multiply and divide by 10 and 100 only) NPC6 Calc 2.4	

Number continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Rational numbers	for fractions with related denominators of 2, 4, and 8, 3 and 6, or 5 and 10: <ul style="list-style-type: none"> compare and order the fractions identify when two fractions are equivalent by directly comparing them, noticing the simplest form (e.g., $\frac{3}{6} = \frac{1}{2}$ and $\frac{1}{2}$ is the simplest form) <p>i NPC3 NNS 7.3 NPC4 NNS 5.1, 5.3, 5.4 ii NPC3 NNS 7.6, 7.7, 8.6 NPC4 NNS 5.2, 7.2, 7.3, 7.4</p>	for fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, or 100: <ul style="list-style-type: none"> compare and order the fractions identify when two fractions are equivalent <p>i NPC4 NNS 5.1, 5.3, 5.4 ii NPC4 NNS 5.2, 7.2, 7.3</p>	for fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, or 100: <ul style="list-style-type: none"> compare and order the fractions identify when two fractions are equivalent represent the fractions in their simplest form <p>i NPC5 NNS 6.1, 6.2, 6.3 ii NPC5 NNS 2.5, 2.7 iii NPC4 NNS 7.1, 7.4 NPC5 NNS 6.4, 6.5</p>	Use fraction walls (equivalence materials) to represent and investigate the relationship between the denominator and numerator in a fraction and how we can use this to simplify the fraction. Make connections with known facts such as halving and dividing by 4. Count forwards and backwards in fractions, and place fractions on marked and unmarked number lines.
	convert (using number lines) between mixed numbers and improper fractions with denominators of 2, 3, 4, 5, 6, 8, and 10 NPC3 NNS 8 NPC4 NNS 5.5, 6.3	convert between mixed numbers and improper fractions with denominators of up to 10 NPC5 NNS 2.1, 2.2, 2.3, 2.4	convert between mixed numbers and improper fractions NPC5 NNS 2.1, 2.3, 2.4	Represent improper fractions using words and materials, and place them on a number line. At years 5–6, explain conversion as division with a remainder (e.g., $\frac{11}{4} = 2 \frac{3}{4}$ (11 divided by 4 = 2 r 3)) or multiplication plus a remainder (e.g., $1 \frac{1}{5} = \frac{6}{5}$ ($1 \times 5 + 1$)).
	<ul style="list-style-type: none"> find a unit fraction of a whole number, using multiplication or division facts and where the answer is a whole number (e.g., $\frac{1}{5}$ of 40) identify, from a unit fraction part of a set, the whole set <p>i NPC3 NNS 8.7, 8.8 NPC3 Calc 16.4, 16.5, 16.6 NPC4 NNS 7.3 NPC4 Calc 11.5 ii Activity to follow</p>	<ul style="list-style-type: none"> find a fraction of a whole number, using multiplication and division facts and where the answer is a whole number (e.g., $\frac{2}{3}$ of 24) identify, from a fractional part of a set, the whole set <p>i NPC4 Calc 11.1, 11.2, 11.5 ii Activity to follow</p>	<ul style="list-style-type: none"> find a fraction or percentage of a whole number where the answer is a whole number (e.g., $\frac{3}{8}$ of 48, 30% of \$150) identify, from a fractional part of a set, the whole set <p>i NPC5 NNS 7.2, 7.3, 7.5, 7.6 NPC5 Calc 11.3, 14 ii Activity to follow</p>	Use bar models, diagrams, or paper strips to represent equal parts of a whole. At year 4, represent parts of a whole set using discrete materials to make equal groups. At years 5–6, connect percentages and fractions of a whole to known facts and benchmarks (e.g., 25% and dividing by 4).

Number continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Rational numbers	add and subtract fractions with the same denominators to make up to one whole (e.g., $\frac{3}{8} + \frac{3}{8} + \frac{2}{8} = \frac{8}{8} = 1$) NPC3 NNS 7.4, 8.5	add and subtract fractions with the same denominators, including to make more than one whole NPC4 NNS 5.5	add and subtract fractions with the same or related denominators (e.g., $\frac{1}{4} + \frac{1}{8}$) NPC5 Calc 15.1, 15.2, 15.3, 15.4	Represent the addition and subtraction of fractions using fraction walls, number lines, and equations. At years 4–5, explain that, when adding and subtracting fractions with the same denominator, the numerators are added or subtracted but the denominator stays the same. At year 6, explain how to use equivalent fractions to rename fractions so that they all have the same denominator. Then add or subtract the numerators.
	add and subtract decimals to one decimal place (e.g., $1.3 + 0.2 = 1.5$) NPC5 Calc 2.6 (+ PW 5, 6), 3.4 Activity to follow	add and subtract whole numbers and decimals to two decimal places (e.g., $32.55 - 21.21 = 11.34$) NPC4 Calc 8.7, 9.5 NPC5 Calc 1.2, 1.3, 1.5, 1.6, 2.5, 2.6, 3.4, 3.5, 3.6, 5.4, 5.5, 6.3, 6.4, 6.5	add and subtract whole numbers and decimals to two decimal places (e.g., $250.11 + 135.29 = 385.4$) NPC5 Calc 1.2, 1.3, 1.5, 1.6, 2.5, 2.6, 3.4, 3.5, 3.6, 5.4, 5.5, 6.3, 6.4, 6.5	Explain and demonstrate both the horizontal method for representing an equation, and the vertical-column method for addition or subtraction. Investigate and connect the addition and subtraction of decimals in measurement situations. At year 4, use number lines and decimals to add and subtract tenths, connecting tenths as fractions with tenths as decimals. At years 5–6, connect to methods of adding and subtracting whole numbers.
	use doubling or halving to scale a quantity (e.g., to double or halve a recipe) NPC3 Calc 15.1, 16.1 GMS3 Mea 5.3, 5.6	use known multiplication facts to scale a quantity NPC4 Calc 5.7, 6.8	use known multiplication and division facts to scale a quantity NPC5 NNS 2.6 NPC5 Calc 10.1, 10.2	Represent the multiplicative relationship using diagrams, materials, and bar models. Use problems such as “If this recipe feeds 4 people, how much of each ingredient do we need to feed 20 people?”.
Financial mathematics	make amounts of money using dollars and cents (e.g., to make 3 dollars and 70 cents) NPC3 NNS 4.3, 4.4, 4.5 GMS3 Mea 4	represent money values in multiple ways using notes and coins NPC3 NNS 4.3, 4.4, 4.5 GMS3 Mea 4	<ul style="list-style-type: none"> • solve problems involving purchases (e.g., ensuring they have enough money) • create simple financial plans (e.g., shopping lists, a family budget) NPC4 P&A 2.6, Calc 3.1, 3.2, 3.7, 4.1 GMS4 Mea 2.3, 2.4, 2.5 NPC5 P&A 2.5, Calc 1.2, 1.5, 14.3, 16.4	Have students practise grouping denominations and making amounts using play money, connecting with place value, skip counting, and multiplication. Investigate authentic financial situations and represent findings using equations, spreadsheets, and tables.
	estimate and calculate the total cost and change for items costing whole-dollar amounts NPC3 Calc 8, 13.5 NPC4 Calc 3.7	estimate to the nearest dollar and calculate the total cost of items costing dollars and cents, and the change from the nearest ten dollars NPC4 NNS 3.6, 3.7 NPC4 Calc 1.4, 3.7 GMS4 Mea 2.2	calculate 10%, 25%, and 50% of whole-dollar amounts (e.g., 50% of \$280) NPC5 Calc 11.4 Activity to follow	Investigate practical situations involving calculating costs and giving change. At year 6: <ul style="list-style-type: none"> • use bar models to represent percentages of whole-dollar amounts, and connect to equivalent fractions • explain the procedure of dividing a whole by 10 to find 10%, 2 to find 50%, or 4 to find 25%.

Algebra

	During year 4	During year 5	During year 6	Teaching considerations
Equations and relationships	<p>Informed by prior learning, teach students to:</p> <p>form and solve true or false number sentences and open number sentences involving multiplication and division, using an understanding of the equals sign (e.g., $5 \times _ = 20$; $_ \div 3 = 6$)</p> <p>NPC3 Calc 6.4 NPC4 P&A 2.4, 2.6, 3.6 NPC4 Calc 6.5, 7.6 Activity to follow</p>	<p>Informed by prior learning, teach students to:</p> <p>form and solve true or false number sentences and open number sentences involving all four operations (e.g., $674 + 56 - _ = 671$)</p> <p>NPC3 Calc 9.12 NPC4 P&A 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.2, 3.4, 3.5, 3.6 NPC4 Calc 1.7, 3.4, 6.5, 7.6, 8.2 Activity to follow</p>	<p>Informed by prior learning, teach students to:</p> <p>form and solve true or false number sentences and open number sentences involving all four operations, using an understanding of equality or inequality (e.g., $8 \times 7 < 8 \times 5 + 8$ (T or F?))</p> <p>NPC4 P&A 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3 NPC5 P&A 2, 5 Activity to follow</p>	<p>Represent the equals sign as 'the same as' to demonstrate it is a symbol of equivalence.</p> <p>Explain the difference between an expression (e.g., 4×5), an equation (e.g., $4 \times 5 = 20$), and an inequality (e.g., $4 \times 5 < 4 \times 6$).</p> <p>Have students practise the use of equals and inequality symbols.</p> <p>Investigate inverse operations to find missing numbers in equations.</p>
	<p>recognise and describe the rule for a growing pattern using words, tables, and diagrams, and make conjectures about further elements in the pattern</p> <p>NPC3 P&A 2.5, 2.6, 4 NPC3 Calc 6.5</p>	<p>use tables to recognise the relationship between the ordinal position and its corresponding element in a growing pattern, develop a rule for the pattern in words, and make conjectures about further elements or terms in the pattern</p> <p>NPC4 P&A 1, 5, 7</p>	<p>use tables, XY graphs, and diagrams to recognise relationships in a linear pattern, develop a rule for the pattern in words (i.e., that there is a constant amount of change between consecutive elements or terms), and make conjectures about further elements in the pattern</p> <p>NPC5 P&A 4, 6 NPC5 Calc 10.4, 10.5 GMS5 Mea 2.2, 2.3, 2.4, 2.5, 2.6, 7.3, 7.4</p>	<p>Explain vocabulary in relation to patterns (e.g., ordinal, element, term, position, rule) and how to record the position and term for each element in a pattern.</p> <p>Investigate visual patterns (e.g., tivaevae), making block patterns and representing patterns using pictures and materials.</p>

Algebra continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Algorithmic thinking	<p>create and use an algorithm for generating a pattern or pathway</p> <p>GMS3 Geo 2.1, 2.2, 4</p> <p>Activity to follow</p>	<p>create and use an algorithm for generating a pattern, procedure, or pathway</p> <p>GMS3 Geo 2.1, 2.2, 4</p> <p>Activity to follow</p>	<p>create and use algorithms for making decisions that involve clear choices</p> <p>GMS4 Geo 1.4</p> <p>NPC5 P&A 2, 5, 6</p> <p>NPC5 Calc 1.7, 16</p> <p>NPC6 P&A 2.3, 2.4</p>	<p>Represent a procedure as a sequence of step-by-step instructions (an algorithm). Follow the sequence by 'acting it out', asking students to describe and record each step.</p> <p>Investigate giving directions for, or describing, the most efficient pathway on a maze or map, and sorting numbers according to a set of instructions (e.g., "Sort the odd numbers ... the multiples of 5").</p> <p>Explain and justify how a procedure has been broken into steps, the order of the steps, whether there were any errors or omissions, and, if so, how they were corrected.</p> <p>At years 4-5, investigate creating a sequence of instructions (e.g., to draw a polygon or move through a maze), using digital tools or on paper. Connect with geometry when giving directions or describing pathways.</p> <p>At year 5, connect algorithmic thinking to a procedure for an operation (e.g., for multiplying two numbers).</p> <p>At years 5-6, investigate identifying the transformations used to create geometric patterns.</p> <p>At year 6, investigate using classification diagrams to identify an object, a shape, or data object based on multiple characteristics.</p>

Measurement

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Measuring	measure body parts (e.g., the arm) or familiar objects and use these as benchmarks to estimate and then measure length, mass (weight), capacity, and duration, using appropriate metric or time-based units GMS Mea 1.5 GMS3 Mea 1, 2, 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, 5.2, 5.3, 5.4, 5.5, 6 NPC3 NNS 6.4, 6.5, 6.8	estimate and then accurately measure length, mass (weight), capacity, temperature, and duration, using appropriate metric or time-based units or a combination of units GMS2 Mea 6.4 GMS3 Mea 1.4, 3.3, 5.1, 5.5, 6.1 GMS4 Mea 1.1, 3.1, 3.2, 3.3, 4.3	estimate and then accurately measure length, mass (weight), capacity, temperature, and duration, using appropriate metric or time-based units or a combination of units GMS2 Mea 6.4 GMS3 Mea 1.4, 3.3, 5.1, 5.5, 6.1 GMS4 Mea 1.1, 3.1, 3.2, 3.3, 4.3 GMS5 Mea 1.1, 4.4, 4.5	Investigate practical measuring situations, and have students practise the accurate use and reading of rulers, scales, timers, thermometers, and measuring jugs. Explain and accurately measure: <ul style="list-style-type: none"> at year 4, centimetres, metres, grams, kilograms, and litres, connecting with half units (e.g., 500mL = 0.5L) at years 5–6, centimetres, metres, millimetres, grams, kilograms, litres, millilitres, and degrees Celsius. Connect reading a measuring tool with rounding to the nearest given unit (e.g., 3.6 cm to the nearest cm). Discuss the meaning of measurements in context. Explain benchmarks and prompt students to develop them (e.g., “A big step is about a metre, so roughly how long is our classroom?”).
	use appropriate units to describe length, mass (weight), capacity, and time Covered above	use the appropriate tool for a measurement and the appropriate unit for the attribute being measured Covered above	select and use the appropriate tool for a measurement and the appropriate unit for the attribute being measured Covered above	Explain and justify the use of appropriate metric units or tools for measuring a given attribute with the precision necessary for the problem, noting that using smaller units provides more accuracy.
	use the metric measurement system to explore relationships between units GMS3 Mea 2.3, 2.4, 2.5, 3.1, 3.4, 5.2, 6.2, 6.4 NPC3 NNS 6.8	use the metric measurement system to explore relationships between units, including relationships represented by benchmark fractions and decimals GMS3 Mea 3.1, 3.4, 5.1, 5.2, 5.3, 6.2, 6.4 GMS4 Mea 3.2, 3.3, 3.4, 3.6, 4, 5	convert between common metric units for length, mass (weight), and capacity, and use decimals to express parts of wholes in measurements GMS4 Mea 3.2, 3.3, 3.4, 3.6, 4, 5 GMS5 Mea 1.1, 4.4, 4.5, 4.6, 7.5	Explain measurement prefixes (e.g., milli-, centi-) and how they connect metric units, and how they are based on powers of ten and relate to place value. Investigate how measures can be partitioned and combined like other numbers, and how smaller units are created by equally partitioning larger units.

Measurement continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Measuring	recognise that angles can be measured in degrees, using 90, 180, and 360 degrees as benchmarks GMS3 Geo 2 GMS4 Geo 3 GMS5 Geo 1, 3	describe angles using the terms acute, right, obtuse, straight, and reflex, comparing them with benchmarks of 90, 180, and 360 degrees GMS3 Geo 2 GMS4 Geo 1, 3 (acute, right, obtuse) GMS5 Geo 1, 3 (degrees, reflex, straight line)	visualise, measure, and draw (to the nearest degree) the amount of turn in angles up to 360 degrees GMS5 Geo 1, 3	Investigate different angles using physical and digital tools and angles in the environment, and comparing and classifying them as acute, right, reflex, or obtuse. Make connections between angles, fractions of a circle, and turns. At year 6, explain , demonstrate, and have students practise estimating angles and measuring and drawing them using a protractor.
	tell the time to the nearest 5 minutes, using the language of 'minutes past the hour' and 'to the hour' GMS2 Mea 7.4	describe the differences in duration between units of time (e.g., days and weeks, months, and years), and solve duration-of-time problems involving 'am' and 'pm' notation GMS2 Mea 7.3 GMS3 Mea 1.5, 2.1, 2.2, 2.3, 2.4, 2.5 GMS4 Mea 1.3, 1.4, 1.5	convert between units of time and solve duration-of-time problems, in both 12- and 24-hour time systems GMS4 Mea 1 GMS5 Mea 7.2 NPC5 Calc 2.3	Represent time using: <ul style="list-style-type: none"> digital and analogue clocks (at year 4), to practise telling the time analogue and digital forms (e.g., "It's 12:45, or a quarter to one."). Investigate using calendars, timetables, schedules, and number lines to work out the time between two events or the duration of an event. Explore solar calendars (e.g., Roman, Gregorian) and lunar calendars (e.g., Maramataka Māori, Chinese). Explain subtracting for duration and inclusive counting (e.g., "For the number of days between now and next Tuesday, start counting from today."). Explain relationships between the units of time (e.g., 60 seconds to the minute, 60 minutes to the hour, 24 hours in a day, 365 days in a year), and use them to convert between units of time.

Measurement continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Perimeter, area, and volume	visualise, estimate, and measure: <ul style="list-style-type: none"> the perimeter of polygons, using metric units (cm and m) the area of shapes covered with squares or half squares the volume of shapes filled with centicubes, taking note of layers and stacking i GMS3 Mea 3.2 GMS4 Mea 6.1, 6.2, 6.3, 6.6 ii GMS4 Mea 6.4, 6.5, 6.6 iii GMS5 Mea 4.1, 4.2	visualise, estimate, and calculate: <ul style="list-style-type: none"> the perimeter of regular polygons (in m, cm, and mm) the area of shapes covered with squares or partial squares the volume of rectangular prisms filled with centicubes, taking note of layers and stacking i GMS3 Mea 3.2 GMS4 Mea 6.1, 6.2, 6.3, 6.6 ii GMS4 Mea 6.4, 6.5, 6.6 iii GMS5 Mea 4.1, 4.3	visualise, estimate, and calculate the area of rectangles and right-angled triangles (in cm^2 and m^2) and the volume of rectangular prisms (in cm^3), by applying multiplication GMS4 Mea 6.4, 6.5 GMS5 Mea 3, 4.1, 4.2, 4.3, 4.4 GMS6 Mea 2.2	Investigate practical measuring situations and connect : <ul style="list-style-type: none"> finding area with multiplication arrays finding area and volume with the commutative property of multiplication how part-units can be combined using number concepts, when finding the area of a shape the area of a right-angled triangle with half the area of a square. Have students represent written methods for calculating, with clearly laid-out working.

Geometry

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Shapes	identify, classify, and describe the attributes of polygons (including triangles and quadrilaterals) using properties of shapes, including line and rotational symmetry GMS3 Geo 2.4 , 3.1 , 3.2 , 3.4 , 3.5 GMS4 Geo 1	identify, classify, and describe the attributes of: <ul style="list-style-type: none"> regular and irregular polygons, using edges, vertices, and angles prisms, using cross sections, faces, edges, and vertices i GMS3 Geo 2.4 , 3.1 , 3.2 GMS4 Geo 2.5 , 3.2 , 3.4 ii GMS2 Geo 2.4 , 4.2 , 4.3 , 4.4 GMS3 Geo 3.1 , 3.2 , 3.3	identify, classify, and explain similarities and differences between: <ul style="list-style-type: none"> 2D shapes, including different types of triangle prisms and pyramids i GMS4 Geo 1 i and ii GMS3 Geo 3	Use a range of 2D and 3D shapes, including tactile shapes, diagrams, student-made constructions, and digital shapes. Investigate line and rotational symmetry using mirrors and tracing paper. Connect to algorithmic thinking by making classification diagrams for classifying shapes.
	compare angles in 2D shapes, classifying them as equal to, smaller than, or larger than a right angle GMS3 Geo 2.3 , 3.1 , 3.2 , 3.4 GMS4 Geo 1.4 , Geo 3.2 , 3.3	identify and describe parallel and perpendicular lines, including those forming the sides of polygons GMS3 Geo 1.1 , 1.2 , 1.3 , 1.4	identify and describe the interior angles of triangles and quadrilaterals GMS4 Geo 3 GMS5 Geo 1.1 , 1.2 , 1.5 , 3.2 (interior angles only), 3.3 , 3.4 , 3.5	Investigate interior angles using digital tools and paper shapes to generalise that the interior angles of a triangle add to 180° and those of a quadrilateral add to 360° . Connect these understandings to ideas about right angles, straight lines, and full turns.
Spatial reasoning	identify the 2D shapes that compose 3D shapes (e.g., a triangular prism is made from two triangles and three rectangles) GMS2 Geo 4.2 , 4.3 , 4.4 GMS3 Geo 1.3 , 1.4	visualise 3D shapes and connect them with nets, 2D diagrams, verbal descriptions, and the same shapes drawn from different perspectives GMS6 Mea 3	visualise and draw nets for rectangular prisms GMS6 Mea 3.1 , 3.3	Represent 3D shapes using digital tools, sketches, blocks, and student-made constructions. Investigate nets that will or will not fold, and match solid shapes with nets.
	visualise, predict, and identify which shape is a reflection, rotation, or translation of a given 2D shape Activity to follow	resize (enlarge or reduce) a 2D shape GMS5 Mea 6.4	visualise, create, and describe 2D geometric patterns and tessellations, using rotation, reflection, and translation and identifying the properties of shapes that do not change GMS4 Geo 3.4 (tessellation) GMS5 Geo 2	Investigate using 2D shapes, squared paper, mirrors, and tracing paper to make and test conjectures about the effects of transformations. At year 5, use a grid to scale a shape and connect the scaling with multiplication or division. At year 6, generalise the properties of shapes that do not change when transformed (e.g., “Which properties of a square stay the same when we rotate it 90 degrees?”).

Geometry continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Pathways	<ul style="list-style-type: none"> use grid references to identify regions and plot positions on a grid map interpret and describe pathways, including those involving half and quarter turns and the distance travelled <p>GMS3 Geo 4</p> <p>GMS4 Geo 4.1, 4.2, 4.3</p>	<p>interpret and create grid maps to plot positions and pathways, using grid references and directional language, including the four main compass points</p> <p>GMS3 Geo 2.1, 2.2, 2.3, 4</p> <p>GMS4 Geo 4.1, 4.2, 4.3</p>	<ul style="list-style-type: none"> interpret and create grid references and simple scales on maps use directional language, including the four main compass points, turn (in degrees), and distance (in m, km) to locate and describe positions and pathways <p>GMS3 Geo 4.3</p> <p>GMS4 Geo 4</p> <p>GMS5 Geo 1.3, 1.4</p> <p>GMS6 Inv 3</p>	<p>Investigate different types of maps (e.g., schematic, topographical, and digital maps).</p> <p>Explain pathways using directional language, including te reo Māori (e.g., whakamua/forwards, whakamuri/backwards, whakamaui/to the left, whakamataui/to the right, raki/north, tonga/south, rāwhiti/east, uru/west).</p> <p>Connect compass points and directional language with turns and angles, and simple scales with proportional reasoning.</p>

Statistics

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Numicon coverage (all statements)	GMS3 S&P1	GMS4 S&P1	GMS5 S&P1	
Problem	use multivariate data to investigate summary and comparison situations with categorical and discrete numerical data, by: <ul style="list-style-type: none"> • posing an investigative question that can be answered with data • making conjectures or assertions about expected findings 		use multivariate data to investigate summary, comparison, and time-series situations, by: <ul style="list-style-type: none"> • posing an investigative question that can be answered with data • making conjectures or assertions about expected findings 	Show, with student input, how to: <ul style="list-style-type: none"> • pose summary and comparison investigative questions • pose time-series investigative questions (at year 6). Connect questions to areas of interest and value to the students and their communities.
Plan	plan how to collect primary data to support answering the investigative question, including: <ul style="list-style-type: none"> • deciding on the group of interest • deciding on the variable or variables for which data will be collected • taking account of ethical practices in data collection 		plan how to collect primary data or how to use provided data, including identifying the variables of interest and, for provided data: <ul style="list-style-type: none"> • identifying who the data was collected from • identifying the original investigator's purpose for collecting the data • deciding if the source is reliable (e.g., by checking if survey questions appear to be biased towards a particular point of view) 	Show, with student input, how to: <ul style="list-style-type: none"> • ask interrogative questions about sources and ethical practices • develop and closely examine survey or data-collection questions • define or establish measures for variables • identify 'who, what, where, when, and how' when using secondary datasets.
Data	use a variety of tools to collect the data, and check for errors in it	use a variety of tools to collect the data, check for errors in it, and correct them by re-collecting the data, if possible	collect primary data and check for errors, and provide information about variables in secondary data (e.g., how data was collected for them and possible outcomes for them)	Show, with student input, how to: <ul style="list-style-type: none"> • use a range of representations for recording data • identify what errors in data look like. Connect multiple variables for individuals, explaining that most datasets use a table design in which each row focuses on an individual and each column includes the data on multiple individuals for one variable.

Statistics continued...

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Analysis	create and describe data visualisations to make meaning from the data, with statements including the name of the variable	create and describe data visualisations to make meaning from the data, with statements including the names of the variable and group of interest	create and describe a variety of data visualisations to make meaning from the data, identifying features, patterns, and trends in context, and including the variable and group of interest	Show, with student input, how to: <ul style="list-style-type: none"> • represent and analyse data visualisations, creating them at first by hand and then with digital tools • identify the different features of data that the data visualisation reveals and how to describe them • read the data, and read 'between' the data. Explain how different data visualisations have different features and how to describe them in context (e.g., in relation to frequency, modes, modal groups, patterns, trends, values for numerical variables).
Conclusion	choose descriptive statements that best answer the investigative question, reflecting on findings and how they compare with initial conjectures or assertions	answer the investigative question, comparing findings with initial conjectures or assertions and their existing knowledge of the world		Show, with student input, how to: <ul style="list-style-type: none"> • choose the best descriptive statements that answer an investigative question • prepare their findings and explain them to others.
Statistical literacy	check the statements that others make about data to see if they make sense, using information to clarify or correct statements where needed	check and, if necessary, improve the statements others make about data, including data from two or more sources	identify, explain, check, and, if necessary, improve features in others' data investigations (e.g., biased survey questions, misleading information or statements)	Show, with student input, how to: <ul style="list-style-type: none"> • identify misleading data visualisations, match others' data visualisations with their statements, and check the claims made by others • interpret pie graphs (but not how to create them) • explain and justify the effectiveness of data visualisations in representing others' findings, using interrogative questions.

Probability

	During year 4 Informed by prior learning, teach students to:	During year 5 Informed by prior learning, teach students to:	During year 6 Informed by prior learning, teach students to:	Teaching considerations
Numicon coverage (all statements)	GMS3 S&P1	GMS4 S&P1	GMS5 S&P2	
Probability investigations	engage in chance-based investigations with equally likely outcomes by: <ul style="list-style-type: none"> posing an investigative question anticipating and then identifying possible outcomes for the investigative question generating all possible ways to get each outcome (a theoretical approach), or undertaking a probability experiment and recording the occurrences of each outcome creating data visualisations for possible outcomes describing what these visualisations show finding probabilities as fractions answering the investigative question reflecting on anticipated outcomes 	engage in chance-based investigations, including those with not equally likely outcomes, by: <ul style="list-style-type: none"> posing an investigative question anticipating and then identifying possible outcomes for the investigative question generating all possible ways to get each outcome (a theoretical approach), or undertaking a probability experiment and recording the occurrences of each outcome creating data visualisations for possible outcomes describing what these visualisations show finding probabilities as fractions answering the investigative question reflecting on anticipated outcomes (at year 6) comparing findings from the probability experiment and associated theoretical probabilities, if the theoretical model exists 		<p>Investigate everyday chance-based situations in order to explore and experience the chance, randomness, variation, and distribution of outcomes.</p> <p>Use digital tools to conduct a large number of trials in order to see what a probability estimate and probability distributions look like.</p> <p>Support students to represent:</p> <ul style="list-style-type: none"> probability outcomes (theoretical and experimental) using lists, tables, tally charts, visualisations of distributions, words, and numbers the chance of an outcome occurring using fractions, decimals, and percentages. <p>Connect investigative questions to outcomes and with all possible ways to get the outcomes.</p> <p>Connect anticipated outcomes with theoretical and experimental distributions.</p>
Critical thinking in probability	agree or disagree with others' conclusions about chance-based investigations	evaluate others' statements about chance-based investigations, with justification	identify, explain, and check others' statements about chance-based investigations, referring to evidence	<p>Show, with student input, how to:</p> <ul style="list-style-type: none"> match the results of chance-based investigations with statements, and check the claims of others' investigations explain and justify the statements made by others about chance-based investigations, using interrogative questions.

Phase 3

Number

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Number structure	identify, read, write, compare, and order whole numbers using powers of 10 (e.g., $10,000 = 10^4$) NPC5 NNS 1.5, 1.6 NPC5 P&A 1.3 NPC5 Calc 10.4, 10.5	identify, read, write, compare, and order whole numbers and decimals using powers of 10 (e.g., $0.01 = \frac{1}{100} = 10^{-2}$) NPC6 NNS 1, 2 NPC6 Calc 5.1	Represent and order numbers using place-value (PV) expanders or charts and number lines.
	find the highest common factor (HCF) of two numbers under 100, and find the least common multiple (LCM) of two numbers under 10 NPC5 P&A 3	use prime factorisation to represent a number and to find the HCF of two numbers NPC6 P&A 1	Represent factors using factor trees, or systematic lists. Connect HCFs to simplifying fractions, and LCMs when renaming fractions. Generalise conjectures about prime or composite numbers by investigating factors.
	use exponents to represent repeated multiplication, and identify square roots of square numbers up to at least 100 NPC5 P&A 4.4, 4.5, 4.6, 4.7, 5.7 NPC6 Inv 1	identify and describe the properties of prime and composite numbers up to at least 100 and cube numbers up to at least 125 NPC5 P&A 3.4, 3.6, 3.7, 4.7 NPC6 P&A 1.2, 4.5	Investigate and generalise divisibility tests for composite and prime numbers, and connect the results to square and cube numbers and square roots. Investigate and explain patterns in repeated multiplication and represent them using exponent notation. Connect prime and composite numbers with factors, and represent a number as a product of its prime factors (prime factorisation).
Operations	use rounding and estimation to predict results and to check the reasonableness of calculations NPC5 NNS 4.8 NPC5 Calc 3.2, 3.3, 5.1, 5.3, 5.4	use rounding, estimation, and benchmarks to predict results and to check the reasonableness of calculations NPC6 NNS 1.3 NPC6 Calc 3	Explain efficient methods for supporting estimation (e.g., when adding a long list of numbers, look for numbers that can be grouped and summed to roughly 10, 100, 1,000). Connect operations to benchmarks to make estimates (e.g., 73% is roughly $\frac{3}{4}$).
	round whole numbers to any specified power of 10, and round decimals to the nearest tenth, hundredth, or whole number NPC5 NNS 4 NPC6 Calc 3	round whole numbers to any specified power of 10, and round decimals to the nearest tenth, hundredth, thousandth, or whole number NPC5 NNS 4 NPC6 Calc 3	Explain and justify findings, by connecting to estimates and other checking methods such as using the inverse operation.
	recall multiplication facts to at least 10×10 and identify and describe the divisibility rules for 2, 3, 5, 9, and 10 NPC4 Calc 5, 6 NPC5 Calc 4.1 NPC5 P&A 4.1, 6.2 NPC6 P&A 4.5	identify and describe the divisibility rules for 2–11 NPC6 P&A 4.5 (covers divisibility by 2, 3, 5, 9, 10) Activity to follow	Investigate patterns in multiples in 100s boards and multiplication charts to generalise divisibility rules.

Number continued...

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Operations	multiply whole numbers NPC5 Calc 4.5, 7.1, 7.3, 8.1, 8.2, 12		<p>Explain and demonstrate efficient methods using worked examples, including:</p> <ul style="list-style-type: none"> the vertical-column method for division and multiplication, ensuring students understand and practise the procedure and connect with place value, known facts, and estimation making estimates or mental calculations by connecting to place value, partitioning and known facts. <p>Investigate, explain, and justify which method (including the use of digital tools) best suits a given situation.</p> <p>Have students practise decoding and solving word problems and representing them as equations.</p> <p>Represent and make sense of remainders as fractions, as decimals, and when rounded to the nearest whole number.</p>
	divide whole numbers by one- or two-digit divisors (e.g., $327 \div 5 = 65.4$ or 65) NPC5 Calc 4.3, 4.6, 7.2, 7.3, 7.4, 7.5, 7.6, 8.4, 9.1, 9.2, 13 NPC6 Calc 2.3, 2.5, 10 NPC6 PFT 3.1	divide whole numbers (e.g., $327 \div 15 = 21.8$ or $21\frac{4}{5}$) NPC5 Calc 9, 13 NPC6 Calc 2.3, 2.5, 10 NPC6 PFT 3.1	
	use the order of operations NPC6 Calc 6.3, 6.4, 6.5 NPC6 PFT 3.5, 5.4	use the order of operations NPC6 Calc 6.3, 6.4, 6.5 NPC6 PFT 3.5, 5.4	
order, compare, and locate integers on a number line, and explore adding and subtracting integers NPC4 NNS 4 NPC5 NNS 5	order, compare, add, and subtract integers NPC6 Calc 1 NPC6 PFT 3.6	<p>Generalise that a positive number has an opposite negative number, and that when they are added, the answer is zero (e.g., $4 + -4 = 0$).</p> <p>Explain how to:</p> <ul style="list-style-type: none"> find the number of steps between two given numbers on a number line (e.g., -5 and 7) 'read' equations with integers on a number line (e.g., "To solve $-9 + 8$, start at -9 and move eight numbers in the positive direction.") use inequality symbols to compare two integers (e.g., $-5 < -3$). <p>Investigate adding and subtracting integers, using number lines and two-sided counters.</p> <p>Explain the direction of movement on a number line when adding and subtracting integers, and generalise that:</p> <ul style="list-style-type: none"> adding a negative number makes the original number smaller (e.g., $4 + -3 = 1$) subtracting a negative number makes the original number larger (e.g., $-7 - (-3) = -4$). <p>Investigate situations where negative integers are used (e.g., temperature, altitude, debt, profit and loss).</p>	

Number continued...

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Rational numbers	identify, read, write, and represent fractions, decimals (to three places), and percentages NPC5 NNS 3.2, 3.3, 3.4, 3.5, 3.6, 7.1 NPC5 Calc 11.1, 11.2 NPC6 NNS 1.4, 2 NPC6 Calc 5.1	identify, read, write, and represent fractions, decimals, and percentages NPC6 NNS 1.4, 2 NPC6 Calc 5.1	Explain and represent: <ul style="list-style-type: none"> percentages using 100s squares comparing or ordering fractions, decimals, and percentages using double number lines decimals or percentages as fractions with denominators of tenths or hundredths, and then renamed to their simplest form fractions in equivalent forms to support comparing, ordering, and converting. Explain and demonstrate converting a fraction to a decimal or percentage by connecting to the understanding of fractions as quotients (e.g., $\frac{5}{12} = 5 \div 12$). Connect to known benchmarks when comparing and converting (e.g., $\frac{7}{12}$ is a little more than $\frac{6}{12}$, which is a half or 50%).
	compare, order, and convert between fractions, decimals (to three places), and percentages NPC5 NNS 3.7, 3.8, 6.1, 6.2, 6.3, 7.4 NPC5 Calc 11.5, 11.6	compare, order, and convert between fractions, decimals, and percentages NPC6 NNS 2.1, 2.2, 2.4 NPC6 Calc 5.1, 5.2, 8.1, 8.2, 8.3, 8.4 NPC6 PFT 4.4	Represent decimals using PV expanders or charts, and generalise that multiplying by a power of 10 moves each digit that number of places to the left, and dividing by a power of 10 moves each digit that number of places to the right.
	multiply and divide numbers by 10, 100, and 1,000 NPC5 Calc 7 NPC6 Calc 2.4	multiply and divide numbers by powers of 10 NPC5 Calc 7 NPC6 Calc 2.4	
	find equivalent fractions, simplify fractions, and convert between improper fractions and mixed numbers NPC5 NNS 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 6.4, 6.5 NPC6 NNS 2.3	find equivalent fractions, simplify fractions, and convert between improper fractions and mixed numbers NPC5 NNS 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 6.4, 6.5 NPC6 NNS 2.3	Explain simplifying fractions and finding equivalent fractions by using HCFs and LCMs.
	multiply fractions and decimals by whole numbers NPC5 Calc 4.8, 7.4, 7.5, 7.6, 12.3, 15.5, 15.6 NPC5 NNS 7.1, 7.2, 7.3	multiply fractions and decimals by whole numbers NPC5 Calc 4.8, 7.4, 7.5, 7.6, 12.3, 15.5, 15.6 NPC5 NNS 7.1, 7.2, 7.3 NPC6 Calc 9.2, 9.4	Explain the vertical column method for multiplying decimals, making an estimate before calculating. Connect to the multiplicative identity to generalise that multiplying a whole number by a decimal less than one results in a product less than the original whole number.
	find a percentage of a whole number, and find a whole amount, given a simple fraction or percentage (e.g., “25% is \$100. What is the total amount?”) NPC5 NNS 7 NPC5 Calc 4.8, 7.4, 7.5, 7.6, 11.5, 12.3, 15.5, 15.6 NPC6 Calc 5.3, 5.4, 5.5, 9.2, 12	find a percentage of a whole number, and find a whole amount, given a simple fraction or percentage (e.g., “75% is \$45. What is the total amount?”) NPC5 Calc 4.8, 7.4, 7.5, 7.6, 12.3, 15.5, 15.6 NPC5 NNS 7.1, 7.2, 7.3 NPC6 Calc 5.3, 5.4, 5.5, 9.2, 12	Represent situations involving percentages using bar models to show parts of a whole. Explain how to find a percentage of a whole by using the decimal equivalent to multiply the whole (e.g., 35% of 120 = 0.35×120) or by finding 10%, 5%, or 1% of the whole and using operations (e.g., finding 35% of 120 by finding 10%, multiplying this by 3 to get 30%, then adding half of 10%: $12 \times 3 + 6 = 42$).

Number continued...

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Rational numbers	add and subtract fractions with different denominators of up to a tenth, using equivalent fractions (e.g., $\frac{3}{4} + \frac{1}{3}$) NPC5 Calc 15.4 NPC6 Calc 11.2, 11.4, 11.5	add and subtract fractions with different denominators, using equivalent fractions NPC5 Calc 15.4 NPC6 Calc 11.4, 11.5 NPC6 PFT 4.2	Demonstrate and explain renaming fractions, using ideas about equivalence and by finding HCFs and LCMs.
	add and subtract decimals to three decimal places, with an emphasis on estimating before calculating NPC5 Calc 1.2, 1.3, 1.5, 1.6, 2.5, 2.6, 3.4, 3.5, 3.6, 5.4, 6.3, 6.4, 6.5	add, subtract, and multiply decimals, with an emphasis on estimating before calculating NPC5 Calc 1.2, 1.3, 1.5, 1.6, 2.5, 2.6, 3.4, 3.5, 3.6, 5.4, 5.5, 6.3, 6.4, 6.5, 7.4, 7.5, 7.6, 8.3, 12.3 NPC6 Calc 2.4, 4.1, 4.2, 4.4, 9.2, 9.4 NPC6 PFT 4.1	Connect methods for operating on whole numbers with operating on decimals, making an estimate before calculating. Investigate situations where decimals are compared and the differences between them found (e.g., sporting event times and distances). Have students practise decoding and solving word problems and representing them as equations.
	use proportional reasoning to explore multiplicative relationships between quantities (e.g., “If there are 3 red for every 7 blue balls, how many balls are there altogether when there are 18 red balls?”) NPC5 Calc 10	use proportional reasoning to share with unequal proportions (e.g., “We have 100 stickers to share. For every 1 sticker I get, you get 3. How many do we each get?”) NPC6 Calc 7	Investigate proportional reasoning in situations such as mixing paints, cooking from recipes, and sharing resources. Represent situations involving proportional reasoning using diagrams and comparison bar models. Connect proportional reasoning to multiplicative thinking and equivalent fractions.
Financial mathematics	calculate total cost and change for any amount of money NPC5 P&A 2.5 NPC5 NNS 4.6 NPC5 Calc 1.2, 1.5, 3.3, 3.5, 3.6, 5.4, 6.3, 8.5, 13.5, 14.3, 16.1, 16.4	create and compare weekly, monthly, and yearly finance plans (e.g., saving plans, phone plans, budgets, and ‘buy now, pay later’ services) NPC6 Calc 6.1 NPC6 Inv 5, 6 GMS6 Inv 2.1, 2.3, 3.2	Explain and justify ‘best deals’, considering personal priorities. Represent financial plans for practical situations using digital tools such as spreadsheets. Investigate situations where there are financial percentage losses or gains (e.g., calculating discounts or profits, statistics in the media about growth or decline). Connect the ideas of loss and debt with integers.
	apply percentage discounts to whole-dollar amounts NPC5 NNS 7.1, 7.4, 7.5 NPC5 Calc 11.4, 11.5	apply percentage discounts NPC6 Calc 5.1, 13.2	Explain , using worked examples, finding a percentage discount by subtracting from the whole or by multiplying the whole by a decimal fraction (e.g., a 35% discount on \$180 = \$180 – (0.35 × \$180), or 0.65 × \$180).

Algebra

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Equations and relationships	form and solve one-step linear equations (e.g., $t + 7 = 12$, $2s = 14$) NPC6 P&A 2, 3, 4.1, 4.2, 4.3, 4.4	form and solve one- or two-step linear equations (e.g., $5s + 3 = 18$) NPC6 P&A 2, 3, 4.1, 4.2, 4.3, 4.4	Have students practise writing equations to represent word problems. Demonstrate solving one- or two-step equations and using the inverse operation to check findings.
	find the value of an expression or formula, given the values of variables (e.g., "Calculate $w + 12$ when $w = 4$ ") Activity to follow	find the value of an expression or formula, given the values of variables NPC6 P&A 3	Investigate variable values in practical situations with familiar formulae (e.g., for area, volume, speed). Have students practise substituting measurements or given values into formulae.
	describe and use the commutative, distributive, and associative properties of operations (e.g., $a \times b = b \times a$) Commutative: NPC2 Calc 1.4, NPC5 Calc 4.1 Associative: NPC3 Calc 6.5, NPC4 P&A 3.8, NPC6 Calc 2.1, 2.2 Distributive: NPC4 Calc 10.3, 10.4, NPC5 Calc 8.1, 8.2, 8.3, 8.5, NPC6 Calc 2.2, 2.3	simplify algebraic expressions involving sums, products, differences, and single brackets (e.g., using the distributive property, $2(x + 3) + 1 = 2x + 6 + 1 = 2x + 7$) NPC6 P&A 3.4, 3.5 Activity to follow	Represent terms in algebraic expressions using algebra tiles. Represent algebraic expressions and equations using the conventions of algebra (e.g., $3 \times b$ or $b \times 3$ is written as $3b$). At year 8, explain how to simplify algebraic expressions by collecting like terms together. At year 8, investigate systematic expansion approaches, including expansion tables, connecting to the distributive property.
	identify the constant increase or decrease in a linear pattern, use variables and algebraic notation to represent the rule in an equation, and use the rule to make conjectures NPC5 P&A 5 NPC6 P&A 2, 3, 4 Activity to follow	determine if a pattern is linear and, if it is, write the equation for the pattern and use the equation to make conjectures NPC6 P&A 2, 3, 4	Represent a pattern using a table, model, or diagram, and use it to generalise a rule for the pattern. Use the rule and an XY graph to justify a conjecture for another term in the pattern. Investigate the history, meaning, and structure of growing patterns (e.g., tukutuku, other well-known patterns such as the Fibonacci sequence).
Algorithmic thinking	create, test, and revise algorithms involving a sequence of steps and decisions NPC5 P&A 2.6, 2.7, 5.5, 6.4, 6.5 NPC5 Calc 1.6	create, test, revise, and use algorithms to identify, interpret, and explain patterns NPC6 P&A 3.3, 3.4, 3.5, 4.1, 4.2 NPC6 Calc 4.4, 9.5 NPC6 PFT 3.3, 3.4, 4.1	Connect an algorithm with an operation such as the vertical-column method for multiplication or with the procedure for adding fractions. Represent algorithms using flow charts, numbered step-by-step instructions, or digital tools. Explore algorithms by investigating : <ul style="list-style-type: none"> the formula function of a spreadsheet and the effect of changing the value of a variable in a formula (e.g., hourly wages) sorting and filtering multivariate data sorting numbers according to a set of instructions (e.g., the sieve of Eratosthenes) to find prime numbers situations that can be described and tested (e.g., divisibility, the use of transformations in a shape pattern, converting between units of measurement) creating, testing, and revising a set of instructions using a digital tool.

Measurement

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Measuring	<p>estimate and then measure length, area, volume, capacity, mass (weight), temperature, data storage, time, and angle, using appropriate units</p> <p>GMS2 Mea 6.4</p> <p>GMS3 Mea 1.4, 3.3, 5.1, 5.5, 6.1</p> <p>GMS4 Mea 1.1, 3.1, 3.2, 3.3, 4.3</p> <p>GMS5 Geo 1</p> <p>GMS5 Mea 1.1, 4.4, 4.5</p> <p>Activity to follow</p>	<p>estimate and then measure length, area, volume, capacity, mass (weight), temperature, data storage, time, and angle, using appropriate units</p> <p>GMS2 Mea 6.4</p> <p>GMS3 Mea 1.4, 3.3, 5.1, 5.5, 6.1</p> <p>GMS4 Mea 1.1, 3.1, 3.2, 3.3, 4.3</p> <p>GMS5 Geo 1</p> <p>GMS5 Mea 1.1, 4.4, 4.5</p> <p>GMS6 Mea 4</p> <p>Activity to follow</p>	<p>Connect to benchmarks to make estimations.</p> <p>Have students practise the accurate use of rulers, scales, timers, protractors, thermometers, and measuring jugs in practical situations.</p> <p>Represent all written measurements with their units.</p> <p>Select appropriate tools and units for a situation, and explain and justify choices.</p>
	<p>select and use an appropriate base measure (e.g., metre, gram, litre) within the metric system, along with a prefix (e.g., kilo-, centi-) to show the size of units</p> <p>GMS3 Mea 3, 5, 6</p> <p>GMS4 Mea 3, 4, 5</p> <p>GMS5 Mea 1.1, 3, 4, 5, 6, 7</p>	<p>select and use an appropriate base measure within the metric system, along with a prefix to show the size of units</p> <p>GMS3 Mea 3, 5, 6</p> <p>GMS4 Mea 3, 4, 5</p> <p>GMS5 Mea 1.1, 3, 4, 5, 6, 7</p>	
	<p>convert between metric units of length, mass (weight), and capacity, using whole numbers and decimals to express parts of a unit (e.g., 724 g = 0.724 kg)</p> <p>GMS4 Mea 3.2, 3.3, 3.4, 3.6, 4, 5</p> <p>GMS5 Mea 1.1, 4.4, 4.5, 4.6, 7.5</p>	<p>convert between metric measurement units, including square units</p> <p>GMS4 Mea 3.2, 3.3, 3.4, 3.6, 4, 5</p> <p>GMS5 Mea 1.1, 4.4, 4.5, 4.6, 7.5</p> <p>Activity to follow</p>	<p>Connect measurement conversions with multiplying and dividing by powers of 10 (e.g., 2.05 L = 2050 mL).</p> <p>Investigate measurement conversion situations in which all four operations are applied to whole-number and decimal measures.</p>
	<p>find speed, given distance and time</p> <p>GMS6 Mea 1.3, 1.4</p>	<p>find distance, given speed and time; or time, given distance and speed</p> <p>GMS6 Mea 1.3, 1.4</p>	<p>Investigate the relationship between speed, distance, and time in practical situations, such as timing how long it takes to walk or run a certain distance.</p> <p>Have students practise substituting values into the speed formula.</p> <p>Connect finding the value of variables in the speed formula with solving algebraic equations and multiplication and division operations.</p>
	<ul style="list-style-type: none"> read, interpret, and use timetables and charts that present information about duration convert between units of time, and solve duration problems that involve fractions of time <p>GMS5 Mea 2.2, 2.4, 2.5, 7.2</p>	<ul style="list-style-type: none"> read, interpret, and use timetables, charts, and results that present information about duration convert times to a common unit, such as seconds or minutes, and use decimal units of time (milliseconds) <p>GMS5 Mea 2.2, 2.4, 2.5</p> <p>Activity to follow</p>	<p>Explain how to plan journeys using timetables and charts. Draw on a range of examples, including digital tools.</p> <p>Explain methods of calculating duration (e.g., subtracting time), using worked examples.</p> <p>Investigate the use of decimal units (milliseconds) in situations where a more precise measurement is needed (e.g., sporting events).</p>

Measurement continued...

	During year 7	During year 8	Teaching considerations
	Informed by prior learning, teach students to:	Informed by prior learning, teach students to:	
Perimeter, area, and volume	calculate the perimeter and area of composite shapes composed of triangles and rectangles GMS4 Mea 6.2 , 6.3 , 6.4 , 6.5 , 6.6 GMS5 Mea 3.4 GMS6 Mea 2.1 , 2.4 , 2.5	calculate the volume of triangular prisms and shapes composed of rectangular prisms GMS4 Mea 6.2 , 6.3 , 6.4 , 6.5 , 6.6 GMS5 Mea 3.4 GMS6 Mea 2.1 , 2.4 , 2.5	Investigate perimeter, area and volume, including finding missing lengths, in practical situations. Connect calculations with factors, multiples, and the commutative and associative properties. Represent working for calculations using a clear layout and by sketching composite shapes to show partitioning. Generalise the formulae for finding the area of triangles and volume of triangular prisms, and have students practise substituting measurement values into them. Connect the formulae with spatial representations.

Geometry

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Shapes	classify and name shapes based on their attributes (e.g., triangles, pyramids) GMS3 Geo 3 GMS4 Geo 1	describe triangles, quadrilaterals, and other polygons in relation to their sides, diagonals, and angles GMS6 Geo 1	Use and create a range of 2D and 3D shapes, including shapes that draw on tactile materials, diagrams, and digital tools. Investigate ways of classifying shapes, including by creating algorithms, and using Venn diagrams and tables.
	identify and describe angles at a point, angles on a straight line, and vertically opposite angles GMS5 Geo 1.5 , 3.1 , 3.2 GMS6 Geo 1.5	reason about unknown angles in situations involving angles at a point, angles on a straight line, vertically opposite angles, and interior angles of triangles and quadrilaterals GMS5 Geo 3.1 , 3.2 GMS6 Geo 1.5	Investigate using digital tools and protractors to explore angles. Investigate unknown angles to generalise the following rules: <ul style="list-style-type: none"> the sum of the angles round a point is 360° the sum of the angles on a straight line is 180° vertically opposite angles are equal the sum of the interior angles of a triangle is 180° and of a quadrilateral is 360°. Represent the value of an unknown angle using an equation and angle notation.
Spatial reasoning	visualise, construct, and draw plan views for front, back, left, right, and top views of 3D shapes GMS5 Mea 4.2 , 4.3 , 6.2 GMS6 Mea 3 , 4.1	visualise and draw nets for prisms with a fixed cross section GMS6 Mea 3	Represent plan views and nets, using sketches on grid paper, digital tools, and physical models (e.g., blocks, cardboard nets). Connect to measurement procedures when creating sketches and models.
	transform 2D shapes, including composite shapes, by resizing by a whole number or unit fraction GMS5 Mea 6 (PW 4) Activity to follow	recognise the invariant properties of 2D and 3D shapes under different transformations Activity to follow	Explain and demonstrate resizing a shape using a centre of enlargement within the shape. Investigate transforming shapes to generalise which properties (angles, side lengths, area, orientation) do not change under transformation, and test the resulting generalisations using tracing paper, rulers, and protractors. Investigate the meaning of kōwhaiwhai patterns and other artefacts, and describe the use of transformations in them.
Pathways	interpret and communicate the location of positions and pathways using coordinates, angle measures, and the 8 main and halfway compass points (e.g., NE, which is 45° E from N) GMS4 Geo 4 Activity to follow	use map scales, compass points, distance, and turn to interpret and communicate positions and pathways in coordinate systems and grid reference systems GMS4 Geo 4 GMS5 Geo 1.3 , 1.4 GMS5 Mea 6.3 Activity to follow	Use maps of familiar and unfamiliar locations to: <ul style="list-style-type: none"> explain and investigate the use of 4-digit grid references calculate distances using scales find efficient routes between destinations. Connect pathways to: <ul style="list-style-type: none"> measurement procedures when finding angles and distances proportional reasoning when using map scales algorithms to describe routes between two points. Investigate the navigating techniques of Māori and Pacific voyagers for locating position and finding the direction of travel.

Statistics

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Numicon coverage (all statements)	GMS5 S&P1	GMS6 S&P1	
Problem	investigate, using multivariate datasets, summary, comparison, time-series, and relationship situations for paired categorical data by: <ul style="list-style-type: none"> • posing an investigative question about a local community matter • making conjectures or assertions about expected findings 	investigate, using multivariate datasets, summary, comparison, time-series, and relationship situations by: <ul style="list-style-type: none"> • posing an investigative question about a local community matter • making conjectures or assertions about expected findings 	Show, with student input, how to pose investigative questions, clearly identifying the variable, group of interest, and the intent. Connect investigative questions with conjectures about expected findings.
Plan	plan how to collect or source data to answer the investigative question, including: <ul style="list-style-type: none"> • determining or identifying the variables needed • planning how to collect data for each variable (e.g., how to measure it) or finding out how provided data was collected • identifying the group of interest or who the data was collected from • building awareness of ethical practices in data collection by strategic questioning of data-collection questions or methods 		Explain and discuss ethical practices for the collection and use of data. Represent planning using a planning tool to outline methods of data collection, 'who' and what to measure, and how. Show, with student input, how to pose data-collection and survey questions. Explain the variables and group or groups of interest in secondary datasets. Investigate how survey and data collection questions can be misinterpreted, leading to unreliable data.
Data	collect primary data or gather information about variables in sourced data, create a simple informal data dictionary, and check for errors	collect or source data, including: <ul style="list-style-type: none"> • checking for errors and following up and correcting them when possible • creating an informal data dictionary with information that will help others know about the context 	Show, with student input: <ul style="list-style-type: none"> • a range of data-collection and recording methods • how to identify errors in data, connecting to the context, and explaining why they are errors • how to update primary data when correctable errors are found. Connect multiple variables for individuals, explaining that most datasets use a spreadsheet table design in which each row focuses on an individual and each column includes the data on multiple individuals for one variable.

Statistics continued...

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Analysis	<ul style="list-style-type: none"> create data visualisations for the investigation make statements about the data, including its features and context, in descriptions of distributions 	<ul style="list-style-type: none"> create data visualisations for the investigation, using multiple visualisations to provide different views of the data make statements about the data, including its features and context, in descriptions of distributions 	<p>Show, with student input, how to:</p> <ul style="list-style-type: none"> represent data using dot plots, bar graphs, frequency tables, time-series graphs, two-way tables or graphs, scatter plots, fractions, proportions, and percentages, creating them at first by hand and then with digital tools read the data, read 'between' the data, and read 'behind' the data describe what is seen in the data visualisations, recognising that data are numbers with context, and the context includes variables of interest, groups of interest, counts or proportions for categorical variables, and values and units for numerical variables compare data visualisations of the same variable for different groups by looking at similarities and differences. <p>Explain how different data visualisations have different features and how to describe them in context (e.g., in relation to the middle, distributional shape, joint and conditional proportions, and long-term trends).</p>
Conclusion	communicate findings in context to answer the investigative question, using evidence from analysis and comparing findings to initial conjectures or assertions and their existing knowledge of the world	communicate findings in context to answer the investigative question, using evidence from analysis, considering possible explanations for findings, and comparing findings to initial conjectures or assertions and their existing knowledge of the world	<p>Show, with student input, how to:</p> <ul style="list-style-type: none"> choose the best descriptive statements that answer an investigative question explore explanations or interpretations of findings that connect to the context of the situation under investigation prepare and present succinct findings explain and justify whether or not findings align with initial conjectures or assertions, and if what was found makes sense given what is known about the situation.
Statistical literacy	evaluate the findings of others to check if their claims or statements are supported by the data visualisations they use	evaluate the data-collection methods, data visualisations, and findings of others' statistical investigations to see if their claims are reasonable	<p>Show, with student input, how to:</p> <ul style="list-style-type: none"> identify misleading data visualisations, match others' data visualisations with their statements, and check the claims made by others explain and justify others' statements about the findings of statistical investigations and the process for collecting data, using interrogative questions.

Probability

	During year 7 Informed by prior learning, teach students to:	During year 8 Informed by prior learning, teach students to:	Teaching considerations
Numicon coverage (all statements)	GMS5 S&P2	GMS6 S&P2	
Probability investigations	<p>plan and conduct probability experiments for chance-based situations, including undertaking a large number of trials using digital tools, by:</p> <ul style="list-style-type: none"> • posing an investigative question • anticipating what outcomes are possible and which of them are more or less likely to occur • identifying and systematically listing possible answers to the investigative question • collecting and recording data • creating data visualisations for the distribution of observed outcomes • describing what these visualisations show • finding the probability estimates for the different outcomes • answering the investigative question • identifying similarities and differences between their findings and those of others • reflecting on anticipated outcomes • comparing findings from the probability experiment and associated theoretical probabilities, as appropriate 	<p>plan and conduct probability experiments for chance-based situations, including undertaking a large number of trials using digital tools, by:</p> <ul style="list-style-type: none"> • posing an investigative question • anticipating what outcomes are possible and which of them are more or less likely to occur • identifying and systematically listing possible answers to the investigative question • collecting and recording data • creating data visualisations for the distribution of observed outcomes and for all possible outcomes for theoretical probability models, where they exist • describing what these visualisations show • finding the probability estimates for the different outcomes • proposing possible theoretical outcomes and associated probabilities, for situations where no theoretical model exists • answering the investigative question • identifying similarities and differences between their findings and those of others • reflecting on anticipated outcomes • identifying similarities and differences between findings from the probability experiment and associated theoretical probabilities, as appropriate 	<p>Investigate, using the statistical enquiry cycle, games of chance, other everyday chance-based situations, patterns in possible outcomes, and theoretical and experimental distributions.</p> <p>Represent probability outcomes (theoretical and experimental) using lists, tables, tree diagrams, tally charts, visualisations of distributions, words, numbers, and technology.</p> <p>Explain how to describe and use probability concepts (e.g., outcomes, events, trials, models; theoretical and experimental probability; with and without replacement; the law of large numbers; probability estimates, probability distributions; chance, randomness, and variation).</p> <p>Connect anticipated outcomes with theoretical and experimental distributions.</p> <p>Connect probabilities with proportional reasoning, fractions, and percentages, and with relative frequencies from data investigations.</p>
Critical thinking in probability	identify, explain, and check others' statements about chance-based investigations, referring to evidence		<p>Show, with student input, how to:</p> <ul style="list-style-type: none"> • match the results of others' chance-based investigations with statements • explain and justify the statements made by others about their findings from chance-based investigations, using interrogative questions.