

We've got the NEW 2024 Mathematics + Statistics curriculum covered!

COMPREHENSIVE TEACHER MAPPING GUIDE



All you need is this **mapping guide**,
the **Connecting All Strands** books
with the **Supplementary** booklets
to fully cover the curriculum.



Maryanne Tipler
and
Susan Timperley

CAXTON
EDUCATIONAL

TEACHER MAPPING GUIDE

A full detailed guide connecting **every** objective in the **2024 New Zealand Curriculum for Mathematics and Statistics for Years 3–8**. It covers both the Caxton Educational New Zealand Mathematics **Connecting All Strands** student books Years 3–8 (2A, 2B, 3A, 3B, 4A and 4B) and each companion Supplementary Student Books (Years 3–8).

HOW TO USE OUR GUIDE

Column one lists the objectives from the 2024 Mathematics and Statistics curriculum.

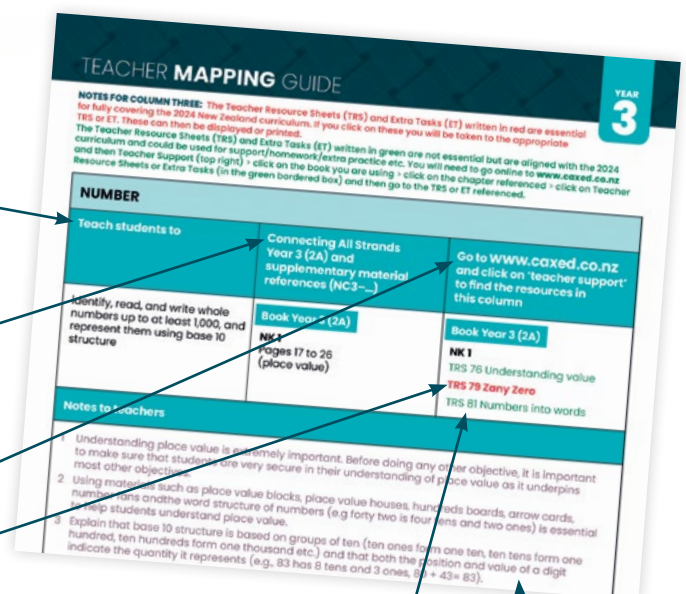
Column two gives you the page references from our existing Year 3 (2A) student book and from our supplementary student book (numbered NC3–...).

Column three lists our online resources.

Red text: The Teacher Resource Sheets (TRS) and Extra Tasks (ET) written in red are essential for fully covering the 2024 New Zealand curriculum. If you click on these you will be taken to the appropriate TRS or ET. These can then be displayed or printed.

Green text: The Teacher Resource Sheets (TRS) and Extra Tasks (ET) written in green are not essential but are aligned with the 2024 curriculum and could be used for support/homework/extra practice etc. You will need to go online to **www.caxed.co.nz** and then “**Teacher Support and Mapping Guides**” (top right) > click on the book you are using > click on the chapter referenced > click on Teacher Resource Sheets or Extra Tasks (in the bordered boxes at the top of the page > Go to the resource sheet or extra task referenced.

Notes to teachers (purple text) are under the three columns and give notes and also links (in red) to our existing online teacher notes, where applicable.



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NUMBER NUMBER STRUCTURE		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
estimate the number of objects in a collection of less than 100, using patterns and groupings	NC3–1 (estimating a number of objects)	
Notes to teachers		
- As well as using sheet NC3–1, use a range of materials and images to show to students to estimate how many. - You could use tens frames, ice block sticks and counters etc and ask students ‘how many?’ - Encourage students to use language such as “more”, “less”, “the same”, “different”, when describing amounts. - You could toss two dice and ask students to show the total in different ways on tens frames or with ice block stick etc		

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NUMBER NUMBER STRUCTURE		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
count forwards or backwards in 2s, 3s, 5s, and 10s from any whole number between 1 and 1,000	Book Year 3 (2A) NK 7 Pages 51 to 54 (1, 10 or 100 before or after a number) NC3–2 to 4 (counting forwards and backwards in 2s, 3s, 5s and 10s) NC3–5 (patterns in multiples)	

Notes to teachers

- Students need a lot of practice at counting in 2s, 3s, 5s and 10s. Visit this objective regularly.
- Use number lines, 100s boards, number flip charts, 1,000s books, a Slavonic abacus, ice-block stick bundles or choral count in a circle to help students practice counting.
- Ask students to count from one number to another in different groups of numbers. For example, count from 30 in 3s up to 42 or in 2s from 90 to 110.
- Asking students to sit in a circle and skip count can be turned into a game where if you pass, or get an answer wrong, you are out.
- You could record choral counting on the board and ask students to identify patterns. Also ask students to identify and generalise patterns on the hundreds board, such as when counting in 2s or 5s or 10s.

NC3–5

- Finding multiples of these numbers helps with learning basic facts.
- Finding multiples patterns is another way of practising counting in 2s, 3s 5s and 10s.

If you have our Stage books you could use these pages as extra practice.
Stage 5 pages 242 to 247

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NUMBER NUMBER STRUCTURE		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
identify, read, and write whole numbers up to at least 1,000, and represent them using base 10 structure	Book Year 3 (2A) NK 1 Pages 17 to 26 (place value)	Book Year 3 (2A) NK 1 TRS 76 Understanding value TRS 79 Zany Zero TRS 81 Numbers into words
Notes to teachers		
- Understanding place value is extremely important. Before teaching any other objective, it is important that students are very secure in their understanding of place value as it underpins most other objectives. - Using materials such as place value blocks, place value houses, hundreds boards, arrow cards, number fans and the word structure of numbers (e.g forty-two is four tens and two ones) is essential to help students understand place value. - 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., 83 has 8 tens and 3 ones, $80 + 3 = 83$). - Use number flip boards, PV flip charts and PV houses to help students practice saying, writing and reading numbers. - Count in Māori and connect to Māori place value understanding e.g. tekau mā tahi (10 and 1), toru tekau mā rua (30 and 2). This is explored more in Year 4 but if you have the Year 4 (2B) book and want to cover it now you could use Year 4 (2B) pages 20 and 21. - It is important that students understand, rather than rote learn, that the place of a digit tells you its value. Link to online teacher notes for NK 1 If you have our Stage books you could use these for extra practice. Stage 4 page 152 Reading and writing whole numbers up to 100 and beyond Stage 4/5 Chapter 2 pages 20 to 27 Stage 4/5 Page 198 Reading and writing numbers up to 1000.		

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NUMBER NUMBER STRUCTURE		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
compare and order whole numbers up to at least 1000	Book Year 3 (2A) NK 8 Pages 55 to 60 (ordering whole numbers) NC3–6 (ordering using place value)	Book Year 3 (2A) NK 8 TRS 90 Sizing up

Notes to teachers

- 1 Encourage students to work logically and systematically, as suggested in the example on **page 55** of **Year 3 (2A)**, and to ‘think aloud’ to reinforce their own and others’ understanding. You might like to use place value materials or place value charts to provide further support for some students.
- 2 Show numbers using a number line. There are some printable number lines in our generic list of printable masters here.
 - 0 to 10**
 - 0 to 20**
 - 0 to 50**
- 3 Change the number-line orientation from horizontal to vertical if students need support with the concepts of before and after.
- 4 Explain and use the language of comparison when demonstrating why one number is larger or smaller than another (e.g., “65 is larger than 56, because 6 tens is larger than 5 tens”).
- 5 Show how the position of digits in the place value structure helps us to order and compare two- and three-digit numbers.

If you have the Stage book you could use these for extra practice.

Stage 4 NK E pages 162 to 169

Stage 4/5 NK E pages 208 to 213

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NUMBER NUMBER STRUCTURE		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
partition and regroup whole numbers up to at least 1,000, using a systematic approach and noticing patterns (e.g., $400 + 300 = \underline{\quad}$, $350 + \underline{\quad} = 500$)	NC3–7 to 10 (partitioning and regrouping) Book Year 3 (2A) NK 2 Pages 27 to 29 (ones and tens in numbers)	Book Year 3 (2A) NK 1 TRS 77 Roll-a-number
Notes to teachers		
- It is best to do sheets NC3–6 to NC3–10 from the supplementary Year 3 booklet before Year 3 (2A) pages 27 to 29. - Students must be able to easily partition numbers as this leads on to adding and subtracting and multiplying and dividing. It is important students understand how to do this rather than using fill in the gaps worksheets or rote learning. - Use place value money or place value blocks to help students understand how to partition a number. - It can be tempting to show students a trick for finding the number of tens in a number (hiding the ones digit). This should be avoided as it will not help students to understand this important concept. If students notice this pattern, ask them to show why this might be true using place value materials (to demonstrate that there are no tens in the ones place).		

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NUMBER OPERATIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
- round whole numbers up to 1000 to the nearest hundreds and tens - use estimation to predict and to check the reasonableness of calculations	NC3–11 to 14 (rounding to the nearest ten or hundred) NC3–15 and 17 (estimating to check answers)	Book Year 4 (2B) NK 6 TRS 98 Number line support TRS 99 Round up or round down ET 1 Round up or down
Notes to teachers		
- Students need practice at rounding numbers to the nearest 10 and 100 before trying to estimate the reasonableness of calculations. - Number lines are an excellent way to teach rounding as it is easy for students to see which ten or hundred the number is nearest to. - Use language such as ‘about’, ‘more or less’, and ‘close to’ when explaining rounding or estimating. - It is important to point out that it is convention, rather than any logic, that a number half way between two numbers is rounded up rather than down. - Discuss with students where rounding and estimating might be helpful in everyday life and how rounding to tens, or hundreds affects the precision of a calculation. For example, rounding up the cost of groceries means you can be sure you will have enough to pay for them when you get to the check out. - You could look at news articles that report numbers, for example, nearly 400 teaching positions empty this year. Discuss what this means. Did they round to the nearest 100 or nearest 10? When finding the number of students absent from school in Auckland on any one day, did they round the number absent at each school and then add them or did they add them first and then round? - Estimating to check the reasonableness of calculations is best done alongside the teaching of the calculations. You could use sheets NC3–15 to 17 with the addition and subtraction objective. - Estimating quantities and measures are also covered in other objectives. If you have our Stage books you could use the following as extra practice. Stage 5 page 88 Estimating answers when adding and subtracting money		

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NUMBER OPERATIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
add and subtract numbers up to at least 100 (e.g., $43 - 28$, $37 + 18$)	Book Year 3 (2A) Chapter 2 Pages 75 to 84 (whole chapter) (adding and subtracting using place value partitioning) Chapter 3 Pages 85 to 87 Pages 91 to 96 (finding the missing value using place value partitioning) NC3–18 to 21 (adding and subtracting vertically and horizontally) Chapter 4 Pages 97 to 106 (omit page 100 and page 102 question 1) (practice at adding and subtracting) Chapter 7 page 150 Activity 1 (more practice)	Book Year 3 (2A) Chapter 2 TRS 4 Splitting one number into tens and ones ET 1 Rock pool jumble ET 2 Octopus cave addition ET 3 Subtracting ET 4 Subtraction nets ET 5 Octopus cave subtraction ET 6 Game – Race to the Giant coral Chapter 3 TRS 11 Making the most of what we know TRS 12 Dolphin watch TRS 13 Lifeguards ET 3 Who is the oldest? ET 4 Who caught the most fish? Chapter 4 TRS 16 Do I have to add or subtract ET 4 Adding ET 7 Game – Net 4 ET 8 Holiday spending Chapter 7 TRS 25 Spot the clues
Notes to teachers are on the next page		

Notes to teachers

- 1 You need to cover the next objective “recall addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves” before doing this objective because students need to know their basic facts to 20.
- 2 Use the material in the order in which it is given in column two.
- 3 It is important to use materials alongside explanations of addition and subtraction. Use place value material or money.
- 4 The vertical method for subtraction where students have to rename is covered in Year 4.
- 5 Explain and connect the horizontal method and the vertical-column method for addition and subtraction. This is done on sheets **NC3–18 and 19**.
- 6 Students need to develop the habit of checking their answers to ensure they make sense. It is helpful to ask students before they solve a problem if they think the answer will be more than ... , or less than ... , and how they know this.
- 7 Estimating answers was covered in sheets **NC3–15 to 17**. You could use them here.
- 8 Encourage students to make their thinking visible by writing, drawing, explaining or showing their strategy to others using appropriate place value materials. Working in groups of three with one student explaining, one student modelling with materials, and one student recording, is an effective way of ensuring that each student in the group is engaged and understands the strategy. Students can take turns at each role.
- 9 Using place value materials to represent the addends and insisting on appropriate language (for example, “I will add two tens to these three tens to make five tens” or “I will add 20 to 30 to make 50”) are helpful ways of promoting and making explicit students’ understanding of the quantities involved. Students will sometimes abbreviate their explanations (for example, “I will add the 2 to the 3 and make 5”). These abbreviations should be discouraged as referring to the digit rather than its value affects a student’s ability to recognise when their answer does not make sense.

Chapter 3 notes

- 1 Draw ‘rainbows’ to link the same place in each number

For example, $25 + 46$



- 2 Record the equation vertically on a place value chart, e.g. **Year 3 (2A) page 92 question 4**.

If you have our Stage books you could use these as extra practice.

Stage 4/5 page 70 Hoani’s whānau

Stage 5 pages 74 and 77

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NUMBER OPERATIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
recall addition facts up to 20 and their corresponding subtraction facts (families of facts), including doubles and halves	Book Year 3 (2A) NK 3 Pages 30 to 33 (family of facts) NK 4 Pages 34 to 43 (addition and subtraction basic facts) NK 5 Pages 44 to 47 (adding to and subtracting from a tens number) NC3–22 to 28 (addition and subtraction basic facts)	Book Year 3 (2A) NK 3 TRS 83 Not in my family TRS 84 Turtle families ET 3 Fact family dominoes NK 4 ET 3 Card sharp NK 5 TRS 86 Matching pearls TRS 87 Which tens number? ET 1 Target–game
Notes to teachers		
1 Work through this objective before teaching addition and subtraction for numbers up to 100 and beyond. (the previous objective). 2 It is very important that students get a LOT of practice at their basic facts. Frequent regular practice is best so that the facts can move from short term memory to long-term memory. 3 Use materials to investigate addition and subtraction facts (e.g., counters, 10s frames, an abacus, multilink cubes) and to develop subtraction facts and their connection to addition facts. 4 Explain how to record equations and families of facts. Families of facts are very important for students to understand and be able to produce for ANY calculation. They are needed when checking answers and later when solving equations. Link to online teacher notes for NK 3 NK 4 NK 5		

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NUMBER OPERATIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
recall multiplication and corresponding division facts for 2s, 3s, 5s, and 10s	Book Year 3 (2A) Chapter 5 Pages 107 to 118 (whole chapter) (understanding multiplication) NK 9 Pages 119 to 126 (multiplying by 2s, 5s and 10s) NK 11 Pages 143 to 146 (dividing by 2s, 5s and 10s) NC3–29 and 30 (more practice at multiplication basic facts and 3s basic facts)	Book Year 3 (2A) NK9 TRS 91 Swip, swap NK11 TRS 93 Making tracks Chapter 5 ET1 We’ve got it!– game ET 3 Fact focus

Notes to teachers

- 1 It is very important that students get a LOT of repeated practice as their basic facts. Frequent regular practice is best so that the facts can move from short term memory to long-term memory.
- 2 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 table grids).
- 3 Explain how to record equations and families of facts. Families of facts are very important for students to understand and be able to produce for ANY calculation. They are needed when checking answers and later when solving equations.
- 4 When students have developed an understanding of multiplication they should begin to learn the $\times 2$, $\times 5$ and $\times 10$ facts until they can confidently recall them. When students understand the commutative property of multiplication, this halves the number of facts they need to learn.
- 5 The game *Spin bingo* in **Year 3 (2A) page 120** can be used for the $\times 5$ and $\times 10$ tables. The cards for these are available online **Number Knowledge 9–Game–Spin Bingo** (10 pages).

Link to online teacher notes for Chapter 5

If you have our Stage books you could use the following for extra practice.

Stage 4/5 pages 242 to 251 (also for the division objective below) and pages 252 and 253

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NUMBER OPERATIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
multiply a one- or two-digit number by a one-digit number, using skip counting or known facts (e.g. 4×6 ; 2×23)	Book Year 3 (2A) NK 10 Pages 127 to 128 (multiplying by 10 and 100) NC3–31 and 32 (multiplying using arrays and place value) NC3–33 and 34 (zero and one) NC3–35 (dividing by 1 and the commutative property)	Book Year 3 (2A) Chapter 5 TRS 17 Using arrays to multiply TRS 18 $2 \times$ or $\times 2$? TRS 20 Am I right? ET 2 Hamish’s towers Book Year 4 (2B) Chapter 5 TRS 14 Using a 10×10 array TRS 18 What do I know? What can I do? ET 1 Double or nothing–game ET 4 Grid lock–game
Notes to teachers are on the next page		

Notes to teachers

- 1 Students need to know their basic multiplication facts for 2s, 3s, 5s and 10s. Plenty of practice is required on a regular basis.
- 2 Connect multiplication with skip counting using jumps on a number line or arrays.
- 3 Represent multiplication and division problems using discrete materials, pictures, diagrams, symbols, number lines, words, equations, digital tools, and arrays, PV materials, and bar models.
- 4 Students may need plenty of practice with using arrays to solve multiplication problems.
- 5 It is extremely important to discourage students from saying that when you multiply by 10 you “add a zero”, or when you multiply by 100 you “add two zeros”, because this thinking confuses students later when they work with decimals and this rule no longer applies. Instead, stress the importance of understanding that the value of each digit in the number becomes tens times larger when the number is multiplied by 10 and moves one place to the left on a place value chart. In the same way, the value of each digit becomes 100 times larger when a number is multiplied by 100 and moves two places to the left on a place value chart.

Sheets NC3–33 to 35

- 1 Rather than just learn these rules, students should explore the rules for multiplying by zero and one.
- 2 When learning about adding and subtracting the same number it is helpful to use materials with small numbers so that students understand that when a number is added and then subtracted there is no change to the quantity.
- 3 Dividing by 1 is important to understand as this is an important concept in algebra and fractions.
- 4 Students should know the commutative property so they they can change the order of multiplication and addition calculations to make them easier.
- 5 For teachers who want to revise for themselves the use of algebraic symbols and the trajectory of algebra in the curriculum this **video** may be helpful.

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NUMBER OPERATIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
divide whole numbers by a one-digit divisor with no remainders, using grouping (e.g. $24 \div 3$, $32 \div 4$)	Book Year 3 (2A) Chapter 6 Pages 129 to 142 (whole chapter) (understanding division) NK 11 Pages 143 to 146 (twos, fives and tens division) NC3–36 (dividing by grouping) Chapter 7 Pages 147 to 156 (whole chapter) (adding, subtracting, multiplying and dividing)	Book Year 3 (2A) Chapter 6 TRS 22 Feeding the seagulls TRS 23 Kebabs TRS 24 Crayons to share or group ET1 One house, one family ET 2 Paying for the picnic ET 3 Daisy chains ET 4 Break down ET 5 Sharing for how many groups? Book Year 4 (2B) Chapter 6 TRS 19 Using 10×10 arrays to divide TRS 20 Lots of food TRS 23 Would that be fair? Book Year 3 (2A) Extra practice for all four operations Chapter 7 TRS 27 What is this? TRS 28 Where did I begin? ET 1 I know your number ET 2 Twenty-game
Notes to teachers are on the next page		

Notes to teachers

- 1 Students need to know their basic division facts for 2s, 3s, 5s and 10s. Encourage students to learn these rather than skip counting backwards when dividing.
- 2 Represent division using diagrams and equal sharing, connecting with known families of facts.
- 3 It is important that students understand the relationship between multiplication and division and that they “undo” each other (are inverse operations). Families of facts cement this relationship and are useful to practice regularly. Remind students that they can check their division answers using multiplication.

Link to online teacher notes for Chapter 6

- 4 Understanding that dividing is the same as grouping objects is a very important concept to understand. **NC3–36** provides extra practice.
- 5 Parts of **Year 3 (2A)** have been picked out specifically to cover this objective.
- 6 The material in **Year 3 (2A) Chapter 7** covers all four operations and you could use this at the end of teaching division to combine all four operations.

If you have our Stage books you could use the following for these references as extra practice.

Stage 4/5 page 242 to 251

Stage 5 pages 124 to 139

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NUMBER RATIONAL NUMBERS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
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 compare and order fractions involving halves quarters and eighths	Book Year 3 (2A) NK 12 Pages 157 to 160 (understanding and naming fractions) Chapter 8 Pages 161 to 163 (representing fractions) Pages 174 to 176 (ordering fractions) NC3–37 (fractions on number lines)	Book Year 3 (2A) NK 12 TRS 95 Fraction blocks Chapter 8 TRS 29 Fraction wall TRS 32 Who will get the most? ET 1 Sickly shellfish ET 2 Multilink cubes ET 5 Take a piece of string

Notes to teachers

- 1 Represent fractions using a range of materials – continuous (bar models, number lines), discrete (sets of objects), and digital.
- 2 Explain and reinforce that when fractions are represented symbolically:
 - 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.
- 3 Have students practise saying, reading, and writing fractions in words and symbols. Use mathematical language to develop an understanding of fractions (e.g., numerator, denominator, shared equally, divide, partition, equal parts).
- 4 Point out to students that a fraction is a number that can be placed on a number line. Number lines are a good way for students to represent and order fractions.

Link to online teacher notes for

NK 12

Chapter 8 (miss out Fractions of shapes and Fractions of sets and Finding whole sets from fractions of sets)

- 5 Explain how to fold paper strips to create fractions of one whole. Label the parts using words and symbols and use them for comparing and ordering fractions.
This **video** shows how to fold paper into $\frac{1}{2}$ s, $\frac{1}{4}$ s and $\frac{1}{8}$ s.

If you have our Stage books you might like to use this as extra practice.

Stage 4/5 Chapter 21 page 150 and Chapter 22 page 160 and Chapter 23 (whole chapter)

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NUMBER RATIONAL NUMBERS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
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?”)	Book Year 3 (2A) Chapter 8 Pages 164 to 171 (finding fractions of sets) Pages 172 and 173 (finding the whole given the fraction)	Book Year 3 (2A) NK 12 TRS 95 Fraction blocks Chapter 8 TRS 30 Breaking up TRS 31 Birthday cakes ET 3 Put a ring around it ET 4 Roll and spin–game
Notes to teachers		
Link to online teacher notes for Chapter 8 (Look at the notes for “Fractions of shapes”, “Fractions of sets” and “Finding whole sets from fractions of sets”) Finding the whole 1 If students can use a fraction to find the whole of a shape, this can be used as a scaffold for finding the whole of a set, for example by solving 4 pieces of tomato on $\frac{1}{4}$ of a pizza to give 16 pieces on the whole pizza. If you have our Stage books you might like to use this as extra practice. Stage 4 Chapter 15 page 136 Fractions of shapes		

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NUMBER RATIONAL NUMBERS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
add unit fractions with the same denominator (e.g. $\frac{1}{8} + \frac{1}{8} + \frac{1}{8} = \frac{3}{8}$)	NC3–38 to 41 (adding and subtracting fractions)	
Notes to teachers		
- Knowing that the denominator indicates the number of parts in the whole and that this doesn’t change when we add or subtract pieces is key to understanding how to add and subtract fractions with the same denominator. - Diagrams, such as fraction walls or number lines, or concrete materials such as apples or fraction tiles are the best way to illustrate this concept. For example, cutting an apple into eighths and then using these parts to illustrate adding and subtracting eighths.		

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NUMBER FINANCIAL MATHEMATICS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
make amounts of money using \$1 and \$2 coins and 5-, 10-, 20-, 50-, and 100-dollar notes	NC3–42 and 43 (money)	
Notes to teachers		
- Using play money may be useful when students fill in charts, such as question 1 of the activity on sheet NC3–42 - Have students practise grouping denominations when making amounts using play money and connecting this with place value (our monetary system is based on place value), skip counting (if there are six \$2 coins then skip counting in 2s can help find the total) and multiplication (if there are four \$5 notes then $4 \times \\$5 = \\20). - Connect making amounts of money with shopping. You could set up a play shop with items for the amounts shown in the table in Activity 1 question 1 and ask students to use play money to buy them.		

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ALGEBRA EQUATIONS AND RELATIONSHIPS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
solve true or false number sentences and open number sentences involving addition and subtraction using understanding of the equals sign	Book Year 3 (2A) Chapter 9 Pages 177 to 184 (equations and the equals sign) NC3–44 and 45 (number sentences)	Book Year 3 (2A) Chapter 9 TRS 34 A balancing act TRS 35 What is it worth? ET 2 Ride Combinations ET 3 Filling the gap ET 6 That’s interesting!
Notes to teachers are on the next page		

Notes to teachers

- 1 **Year 3 (2A) pages 180 to 182** explicitly covers the meaning of the 'equals' symbol ($=$) which is used to indicate that quantities have the same value and they 'balance'. Omit any questions that involve multiplication or division, for example, **Activity 1 questions 4 and 5** (You could include these for extension).
- 2 There are several misconceptions about the equals sign. The most common is that this symbol is used to indicate that a calculation should be completed, and the answer written after the equals sign. Use of calculators may contribute to this misunderstanding since pushing the equals button results in an answer on the screen. Students who interpret equals in this way frequently become confused when the equation is written as, for example, $10 = 3 + ?$, or where there is a calculation on either side of the equals sign, for example, $3 + 7 = 15 - 5$.
- 3 It is important that students become familiar with equations that have the equals symbol in a range of locations and realise that wherever it is placed the numbers on either side be equal in value, for example, $7 = 3 + 4$ and $2 + 3 = 5 = 6 - 1$.
- 4 Ensure that when students record their thinking they use the equals symbol correctly. Some students use an equals sign almost like a comma in speech, without checking that each side is actually equal. For example, when solving a problem such as $34 + 22$ they will record their thinking incorrectly as $34 + 22 = 34 + 20 = 54$ and $4 + 2 = 6 = 56$. Encouraging students to begin each new equation on a new line is a good way to combat this, for example
 $30 + 40 = 50$
 $4 + 2 = 6$
 $50 + 6 = 56$

NC3-44 and 45

- 1 Encourage students to use logic to work out whether equations are true or false especially when the numbers are outside of their basic facts knowledge.
It is often obvious that one side of the equation is larger than the other. For example, in the equation $473 - 56 = 574 - 57$, 574 is about 100 larger than 473 but 56 and 57 are similar. So the right hand side of the equation must give a value larger than the left hand side so the equation is false.
- 2 When writing an equation for a comparison sentence it is helpful if students write down what they know and what they want to find out.
For example for **Year 3 (2A) Activity 2 question 1** students might write
Total 16 stickers
12 cat stickers
? non cat stickers
 $12 + ? = 16$ or $16 - 12 = ?$

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ALGEBRA EQUATIONS AND RELATIONSHIPS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
recognise, continue, and create repeating and growing patterns, and describe a rule to explain a pattern	Book Year 3 (2A) Chapter 10 Pages 189 to 202 (whole chapter) (repeating and growing patterns)	Book Year 3 (2A) Chapter 10 TRS 38 On and on TRS 39 Hexagonal patterns TRS 40 How far to the beach? TRS 41 Chained up ET 1 Circle, complete, create. Challenge ET 3 Getting bigger ET 4 Gingerbread houses
Notes to teachers		
- You could study Māori and Pasifika or other cultural patterns as appropriate for your class. One way of doing this is to ask students to come dressed in their traditional costume or something patterned that represents their culture and the class could look for repeating and growing patterns and describe them. - Use materials, sound, movement, and digital tools to represent and continue repeating and growing patterns. For example, you could ask students to make up a repeating pattern dance or song and then ask their group or class to find the repeating element. Students could also find a dance or sound on the internet that repeats or grows. - Use mathematical language such as term, repeating, element, growing, pattern, etc and model language by using sentence starters such as, “the repeating part of the pattern is ...”, or “I notice that the number of crosses is ... more than the term number”, or “The next term in the growing pattern is going to have ... because each term is ... more/less than the previous term” etc to support students to explain and justify how a pattern is repeating or growing and to predict further terms.		
Link to online teacher notes for Chapter 10 (All sections)		

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ALGEBRA ALGORITHMIC THINKING		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
create and use a set of precise, step-by step instructions for carrying out a familiar routine or task	NC3–46 and 47 (flow charts)	Book Year 3 (2A) Chapter 7 TRS 28 Where did I begin? ET 1 I Know your number Chapter 14 ET 1 A building to make
Notes to teachers		
1 Mention that the algorithm on sheet NC3–47 could be used in a later objective ‘Follow and create a sequence of step by step instruction (an algorithm) for moving people or objects to a different location’. 2 You could investigate sorting unfamiliar and familiar objects according to a set of instructions. For example, sorting blocks into colours – put the red ones into the shoe box, put the green ones into the bucket and put the blue ones into the bag. This could lead to making a flow chart with decision points such as “Is the block red” etc 3 You could ask the group/class to make up a set of instructions to direct a person or object (e.g., through an obstacle course or maze), following and creating a set of pictorial instructions. 4 Explain, justify, and show how a set of instructions is complete or incomplete, using think-alouds and prompts.		

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MEASUREMENT MEASURING		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
- estimate and then reliably measure length, capacity, and mass (weight) using whole-number metric units (e.g., from tools with labelled markings) - compare and order objects using metric units of length, mass (weight) or capacity.	Book Year 3 (2A) Chapter 11 Pages 203 to 217 (measures) NC3–48 and 49 (putting measures in order)	Book Year 3 (2A) Chapter 11 TRS 42 Measuring Kaimoana TRS 43 A balanced diet TRS 44 Filled to the brim ET 1 This is my ruler ET 2 Rule and measure ET 3 Finding the balance ET 4 Accuracy is important – game
Notes to teachers		
- Make the connection between our measurement system and place value. Larger measures are divided into ten or hundred smaller measures. - 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. - Investigate practical measuring situations to compare and order objects, for example, using tools like rulers, measurement containers, and scales. Link to online teacher notes for Chapter 11 (omit area and volume) - Include descriptive te reo Māori that makes the properties of objects and shapes clear. - Point out to students that different cultures use different measures and also sometimes measures that are called the same are different amounts. For example, a gallon in US is different to a gallon in the UK. Students could explore this more if it is appropriate. - Explain benchmarks and prompt students to develop them. For example, “A big step is about a metre, so roughly how long is the corridor?” - Explain and justify the use of appropriate metric units and tools for measuring a given attribute with the precision necessary for the problem, noting that using smaller units provides more accuracy.		

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MEASUREMENT MEASURING		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
turn, and describe how far an object or person has turned, using full, half, quarter, and three-quarter turns as benchmarks	NC3–50 (turns)	
Notes to teachers		
- Investigate and explain situations involving angles as to how far an object or person has turned. Have students turn physical objects and themselves. - Connect turns with fractions, for example, half, a quarter, three quarters. - You might want to look at turns in relation to a clockface using the terms clockwise and anticlockwise. This is covered in a later objective.		

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MEASUREMENT MEASURING		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
identify the duration of events using years, months, weeks, days, hours, minutes, and seconds	Book Year 3 (2A) Chapter 12 Page 221 to 229 (time) NC3–51 (duration of time)	Book Year 3 (2A) Chapter 12 TRS 47 Counting on the calendar TRS 48 Dates and days ET 4 Race to the New Year –game
Notes to teachers		
Link to online teacher notes for Chapter 12 (up to but not including “Telling the time”) NC3–51 1 Use mathematical language to explain and justify comparisons of duration and points in time, for example, before, after, soon, later, next, today, tomorrow, yesterday. 2 Practice using a calendar to work out the number of days, weeks, or months until important events, for example, the number of days until Matariki, the number of weeks until the end of term or the number of weeks and days until a significant school event such as a concert or fair. 3 Explore informal ways of measuring short periods of time to identify which events last longer, for example, “Is maths longer than writing?” or “Is assembly longer than art?” etc.		

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MEASUREMENT MEASURING		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
tell the time to the hour, half-hour, and quarter past and quarter to the hour	Book Year 3 (2A) Chapter 12 Pages 230 to 232 (telling the time)	Book Year 3 (2A) Chapter 12 ET 5 Making a clock face ET 6 Hour, half hour and quarter hour
Notes to teachers		
Link to online teacher notes for Chapter 12 (Use “Telling the time”) 1 Connect using visual representations on an analogue clock to skip counting in 5s and fractions (a half and quarter). 2 It is important that students know that there are 30 minutes in half an hour, 60 minutes in an hour and 24 hours in a day etc. 3 Ask students questions about the times of daily events and activities in and out of school, for example “What time is the next break?” or “What time does your after school activity start and end?”		

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MEASUREMENT PERIMETER, AREA AND VOLUME		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
visualise, estimate, and measure: – 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.	Book Year 3 (2A) Chapter 11 Pages 218 to 220 (area and volume) NC3–50 and 51 (perimeter)	Book Year 3 (2A) Chapter 11 TRS 45 How many? ET5 Squaring up ET 6 Measures summary
Notes to teachers		
- Explain and demonstrate that: – perimeter is the distance around the boundary 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. - Use familiar practical situations involving perimeter, area, and volume such as, the perimeter of a table or the classroom and the area of a desk or book cover and the volume of the sink or a small square container. - Ask students to visualise what might be the appropriate unit for a measurement task and to imagine the number of units required. For example ask them what units they might measure the perimeter of the classroom and about how many of these units they would expect it to be. - 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). Link to online teacher notes for Chapter 11 (Area and volume)		

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GEOMETRY SHAPES		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
- visualise, identify, compare, and sort 2D and 3D shapes, using the attributes of shapes - identify right angles in shapes and objects	NC3–52 (symmetry) Book Year 3 (2A) Chapter 13 Pages 233 to 244 (whole chapter) (2D shapes) Chapter 14 Pages 245 to 255 (3D shapes) NC3–55 and 56 (right angles)	Book Year 3 (2A) Chapter 13 TRS 52 Te Taparau – the polygon TRS 53 As simple as A, B, C TRS 54 Shapes inside shapes ET1 Guess my shape – game ET 2 Shape hunt ET3 Let me introduce myself – game Chapter 14 TRS 56 What can this shape do? TRS 57 Sorted! ET 1 A building to make ET 3 I see the world in 3-D ET 4 Groupie – game
Notes to teachers		
1 Being able to recognise lines of symmetry is required for this objective and a later objective. Sheet NC3–54 gives practice at finding lines of symmetry. Link to online teacher notes for Chapter 13 (every section of the teacher notes) Chapter 14 (Omit nets) 2 Encourage students to identify 2D and 3D shapes in the environment. 3 Model using everyday language and mathematical language (including te reo Māori) to explain and justify the describing and sorting of shapes, for example size, corners, colour, texture, sides, angles, faces, edges, vertices, triangle/tapatoru, square/tapawhā rite, same/ōrite, different/rerekē).		

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GEOMETRY SHAPES		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
compose and decompose 2D shapes using the attributes of shapes (e.g., lines of symmetry), other shapes, side lengths, and angles	NC3–57 and 58 (composing and decomposing shapes)	
Notes to teachers		
1 Remind students to look for lines of symmetry when decomposing shapes. 2 Make available a range of materials to compose and decompose 2D shapes as well as using sheets NC3–57 and 58. You could use pattern blocks, attribute shapes, paper shapes, playdough and tangrams.		

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GEOMETRY SPATIAL REASONING		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
predict the result of a one-step transformation (reflection, translation, or rotation) on 2D shapes	Book Year 3 (2A) Chapter 16 Pages 267 to 276 (whole chapter) (transformations)	Book Year 3 (2A) Chapter 16 TRS 65 Shape flip TRS 66 Turning shapes TRS 67 Puzzle mix ET1 Symmetry ET2 Cat flips and slides ET3 Strike a pose ET 4 Moving on ET5 Flip to finish
Notes to teachers		
1 It is important that students connect the informal vocabulary of flip, slide, and turn with the formal vocabulary of reflect, translate, and rotate. Link to online teacher notes on Chapter 16 (all sections) 2 It is helpful if students work with practical situations, for example, making art, paper folding, checking symmetry with mirrors and a range of artefacts and patterns. This is another opportunity for students to dress in, or bring patterns from their culture, for other students to explore.		

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GEOMETRY PATHWAYS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
- follow and create a sequence of step by step instruction (an algorithm) for moving people or objects to a different location - interpret, draw and use simple maps to locate objects and places relative to other objects and places	Book Year 3 (2A) Chapter 15 Page 257 Pages 260 to 263 (giving directions) NC3–59 to 61 (maps and directions)	Book Year 3 (2A) Chapter 15 TRS 60 How do I get there? ET 1 Amazing mazes ET 3 Steering for a spell
Notes to teachers		
- If possible, allow students to watch the second hand on an analogue clock to become familiar with the directions clockwise and anticlockwise and actually screw lids on or off and turn taps on and off etc. during the Practical, Turn me of Year 3 (2A) page 260, to engage ‘muscle’ memory and provide context and purpose for this learning. - At Years 1 and 2 students learned to follow instructions and describe movement from their own perspective. At Year 3 students are beginning to describe from a variety of viewpoints including from above. This mental projection into someone else’s perspective is difficult for many students. Drawing items placed on the floor or a desk from above, or using a counter with an arrow drawn on it to move through a maze or follow a path, will support students as they make this transition. - Using, and encouraging students to use synonyms, for example, below, beneath, underneath instead of under, is particularly important for students who are learning English or who have limited vocabularies. - The algorithm (set of instructions) on NC3–47 question 3 could be used to here to show how an algorithm can be used to give directions. You could ask students to make up another one. - This objective links with the objective ‘turn and describe how far an object or person has turned, using full, half, quarter and three-quarter turns and benchmarks’ in the measuring section. Refer back to sheet NC3–50 if necessary. - Make connections between estimating distances (from measurement) to giving directions (number of steps) and between turns and fractions ($\frac{1}{4}$ turn, $\frac{1}{2}$ turn) Link to online teacher notes on Chapter 15 (Giving directions section)		

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STATISTICS PROBLEM, PLAN, DATA AND ANALYSIS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
- 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 - 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 - collect, record and sort data or use secondary data sources provided by someone else - create and make statements about data visualisations (e.g., pictures, graphs, dot plots, bar graphs) for the categorical and discrete numerical data	Book Year 3 (2A) Chapter 17 Pages 277 to 290 (whole chapter) (surveys) NC3–62 (collecting data)	Book Year 3 (2A) Chapter 17 TRS 70 Choice cards to graphs TRS 71 Tally charts TRS 72 How long does it take? TRS 73 What else can you say? ET3 The school triathlon ET 4 What day is your birthday? ET 5 Fact check ET 6 Make a match
Notes to teachers are on the next page		

Notes to teachers**Link to online teacher notes for Chapter 17 (all sections)**

- 1 **PPDAC** are the first letters of the Enquiry Cycle. **P**ose a question, **P**lan, **C**ollect the **D**ata, **A**nalysed the data, make some **C**onclusions. The enquiry cycle diagram in the book uses more simplified language appropriate for this age group but it is the same processes.
- 2 When using the investigative process with students, take account of ethical practices in data collection. For example, make sure students don't ask inappropriate questions that might offend cultural beliefs or practices, or offend students or people with disabilities, neuro diversity or gender identities. You could ask students "Do you think everyone in your class would be happy answering that question".
- 3 Before students collect data for an investigation, ask them make conjectures about what the outcome of the investigation might be. Once the data has been collected and displayed, ask students to compare their findings with the conjectures they made.
- 4 Connect questions to areas of interest and value to the students and their communities.
- 5 Show students what errors in data look like for example a data point that is completely different to the rest of the data points, such as someone having 24 pets at home, could be a mistake in recording.
- 6 When looking at secondary data and data visualisations, show examples of misleading data such as statements made that don't match the data or a graph that has an axis that is not correct or doesn't start at 0 etc.

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STATISTICS CONCLUSIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
choose from given options the statements that best answer the investigative question, reflect on findings, and compare them with anticipated outcomes	NC3–63 (other people’s statements)	
Notes to teachers		
1 Help students to match (and write) descriptive statements for results of a survey. It is important that the statements match the initial questions.		

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STATISTICS STATISTICAL LITERACY		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
identify relevant features in others’ data visualisations, connect these to descriptive statements, agree or disagree with the statements, and suggest improvements to them	NC3–62 (do you agree with the statements)	
Notes to teachers		
1 Work with students to help them read and understand claims made by others and then work out whether the graph or results do show what is being claimed. This introduces an understanding of misleading graphs and information. 2 It is important that students can explain why they do or do not disagree with a statement. The activity on sheet NC3–64 could be done as a discussion.		

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PROBABILITY PROBABILITY INVESTIGATIONS		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
engage in chance-based investigations about games and everyday situations to: – 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)	Book Year 3 (2A) Chapter 18 Pages 291 to 300 (whole chapter) (probability)	Book Year 3 (2A) Chapter 18 TRS 74 How certain are you? TRS 75 Make a tower ET 1 The roll of a die ET 2 Last one standing – game ET 3 Take a spin
Notes to teachers		
Link to online teacher notes for Chapter 18 (all sections) 1 For the practical in Year 3 (2A) page 298 you could ask students to graph the outcomes and then ask them questions about their graphs 2 It is important to include the Rich Task from Year 3 (2A) page 279 to fully satisfy the curriculum. 3 Paper, rock, scissors is an easy game and provides an opportunity to discuss whether the chance of a successful outcome changes each time you play. Many students think that if they have had a series of unsuccessful turns they must be ‘due’ a successful one.		

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PROBABILITY CRITICAL THINKING IN PROBABILITY		
Teach students to	Connecting All Strands Year 3 (2A) and supplementary material references (NC3–...)	Go to www.caxed.co.nz and click on ‘teacher support’ to find the resources in this column
explain and question statements about chance based situations with reference to data	Book Year 3 (2A) Page 299 Activity 3 question 2 (questioning statements) NC3–65 (probability statements)	
Notes to teachers		
1 Sheet NC3–65 gives students practice at reading and understanding claims made by others about chance situations. Encourage students to explain and justify why they believe a statement is true or not.		