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

COMPREHENSIVE

TEACHER MAPPING GUIDE

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and
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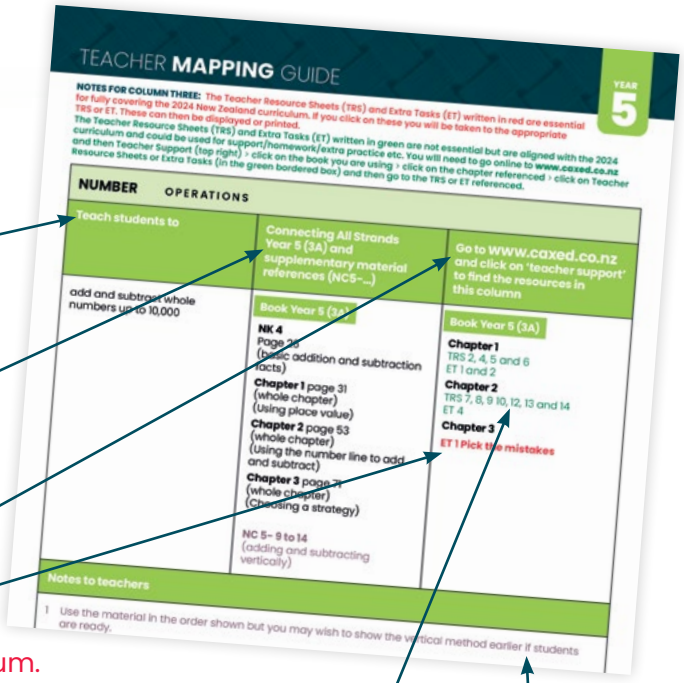
CAXTON EDUCATIONAL

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**


TEACHER MAPPING GUIDE

YEAR 5

NOTES FOR COLUMN THREE: 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.
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NUMBER OPERATIONS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5–...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
add and subtract whole numbers up to 10,000	Book Year 5 (3A) NK 4 Page 29 (basic addition and subtraction facts) Chapter 1 page 31 (whole chapter) (Using place value) Chapter 2 page 53 (whole chapter) (Using the number line to add and subtract) Chapter 3 page 71 (whole chapter) (Choosing a strategy) NC 5- 9 to 14 (adding and subtracting vertically)	Book Year 5 (3A) Chapter 1 TRS 2, 4, 5 and 6 ET 1 and 2 Chapter 2 TRS 7, 8, 9 10, 12, 13 and 14 ET 4 Chapter 3 ET 1 Pick the mistakes

Notes to teachers

1 Use the material in the order shown but you may wish to show the vertical method earlier if students are ready.

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

Column two gives you the page references from our exisiting Year 5 (3A) student book and from our supplementary student book (numbered NC5–...).

Column three lists our online resources.

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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 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
Identify, read, write, compare, and order whole numbers up to 100,000,and represent them using base 10 structure.	**Book Year 5 (3A)** **NK 1** Pages 15 to 17 (place value) **NK 2** Pages 20 and 21 (reading and writing whole numbers) **NK 3** Pages 22 to 25 (nested place value) **NK 7** Pages 50 to 53 (ordering whole numbers)	**Book Year 5 (3A)** **NK 1** TRS 79 **NK 2** ET 2 **Book Year 5 (3A)** **Chapter 1** TRS 1

Notes to teachers

1. Whilst the curriculum only indicates numbers up to 100,000 you may wish to include the questions with higher numbers.
2. It is important for students to understand that each digit in a number stands for a particular value depending on the place of the digit.
3. Begin to get students to understand that the value of a digit on a place value chart increases by ten times for each place moved to the left, and decreases by ten times for each place moved to the right.
4. Showing numbers with equipment, such as place value blocks, helps the understanding of place value.
5. Number structure underpins our measurement system and wherever possible this link should be made.
6. **Link to online teacher notes for NK 1 and NK 3**
7. Being able to read and write numbers helps students to understand place value. Give students practise **saying, reading, and writing given numbers, including large numbers, using PV houses**.
8. Being able to order numbers is very important for estimation, algebraic patterns, ordering fractions and any situation where students are required to make comparisons between numbers – for example, when analysing statistical data.
9. It is helpful to use a number line when ordering numbers. Printable masters for different number lines are available **online** here (scroll to the bottom for the generic printable masters).

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NUMBER NUMBER STRUCTURE		
Teach students to	**Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)**	**Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column**
identify factors of numbers up to 100	**NC5-1 and 2** (Factors)	
Notes to teachers		
1 Understanding factors helps students to understand and remember multiplication and division facts, learn the divisibility rules, understand prime numbers, simplify fractions and scale quantities.		

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NUMBER OPERATIONS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
• use rounding, estimating and inverse operations to predict results and to check the reasonableness of calculations • round whole numbers to a specified power of 10, and round tenths and hundredths to the nearest whole number or one decimal place	**Book Year 5 (3A)** **NK 6** Pages 46 to 49 (rounding to the nearest 10, 100 or 1000) **NC5-3 and 4** (rounding to the nearest whole number and one decimal place) **NC5 -5 and 6** (estimating answers to calculations) **NC5-7 and 8** (Checking if answers are reasonable)	

Notes to teachers

1 Use the material in the order in which it is listed in the column two. Rounding is best done before estimating since rounding is often needed to make an estimate.
2 Explain reasoning using estimation language such as 'about', 'more or less', and 'close to'
3 It is important that students understand rounding rather than learn rules about it.
A number line is the best way to show rounding because it is easier to see which ten, hundred or thousand the number is closer to.
4 Students often have difficulty drawing number lines and placing the numbers on them
Pre-drawn number lines are available in our generic printable masters **online** here – scroll to the bottom for the generic printable masters list.
5 Give lots of practice at placing numbers on number lines.
6 Connect rounding with:
   - known benchmarks (e.g., doubles, halves, multiples of 10), to make estimations and check calculations
   - rounding to an appropriate unit in measurement situations.
7 Explain how to use families of facts to 'work backwards' when estimating (e.g., 4 × 3 = 12, so 12 ÷ 3= 4).

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NUMBER OPERATIONS

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add and subtract whole numbers up to 10,000	**Book Year 5 (3A)** **NK 4** Page 26 (basic addition and subtraction facts) **Chapter 1** Pages 31 to 42 (whole chapter) (using place value) **Chapter 2** Pages 53 to 70 (whole chapter) (using the number line to add and subtract) **Chapter 3** Pages 71 to 85 (whole chapter) (choosing a strategy) **NC 5- 9 to 14** (adding and subtracting vertically)	**Book Year 5 (3A)** **Chapter 1** TRS 2, 4, 5 and 6 ET 1 and 2 **Chapter 2** TRS 7, 8, 9 10, 12, 13 and 14 ET 4 **Chapter 3** **ET 1 Pick the mistakes**

Notes to teachers are on the next page

Notes to teachers

1 Use the material in the order shown in column but you may wish to show the vertical method earlier if students are ready.

2 It is useful to show the written form of adding and subtracting using place value materials alongside the example.
Go online to Teacher Support for book Year 5(3B), Chapter 3.

TRS 13

TRS 16

3 Remind students that digits with the same place value must be lined up underneath one another when adding and subtracting vertically.

4 Partitioning numbers in different ways helps with understanding that, for example, 12 tens is 1 hundred and 2 tens (as in the worked example for addition). This understanding also helps with subtracting vertically because, for example, 754 can be partitioned as 700 + 40 + 14 (as in the subtraction example). This is needed because 8 ones is bigger than 4 ones.

5 Starting with the worked examples with place value materials could be helpful for many students. You could choose your own example that might require fewer place value blocks such as 132 – 86.

Link to online teacher notes for

Chapter 1

Chapter 2

Chapter 3

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NUMBER OPERATIONS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
Recall multiplication facts for 7s, 8s, and 9s and corresponding division facts	**NC5–15 to 20** (multiplication and division basic facts) **Book Year 5 (3A)** **Chapter 4** **Getting started** Page 94 Game: Who is fastest? (basic facts practice) **Rich task** Page 96 Alien multiplication (basic facts practice) **NC5–21** (multiplication and division patterns)	**Book Year 5 (3A)** **NK 10** TRS 147

Notes to teachers

1 Multiplication and corresponding division facts need to be practised regularly so that they can be recalled quickly when required. This allows students time to focus on the question being asked and does not lead to cognitive overload.

2 Games are a good way to practice basic facts.
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).

3 **NC5–21** Number patterns shows the patterns in multiplication and division and helps generalise multiplication problems beyond recalled facts.

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NUMBER OPERATIONS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
multiply a three-digit by one-digit number and two two-digit whole numbers (e.g., 245 × 6, 34 × 83)	**Book Year 5 (3A)** **NK 9** Page 86 (multiplying tens, hundreds and thousands) **NK 10** Page 88 (multiplying and dividing by 10 and 100) **Chapter 4** Pages 104 to 109 (simpler multiplication practice) **NC5–22 to 25** (multiplication of a three-digit number by one-digit numbers and two-digit numbers)	**Book Year 5 (3A)** **NK 10** TRS 83–Moving digits – game **Chapter 4** **TRS 19 A bit more or a bit less?** **Book Year 6 (3B)** **Chapter 5** TRS 35 and 37 **ET 2 Family of facts**

Notes to teachers

1 Students need to know their basic facts for multiplication and division. Frequent/daily practice is the best way to ensure that these facts move from short-term memory to long-term memory. You could use **NC5–15 to 20** to check what students do and don't know and help them practice.
2 Ensure that students get into the habit of estimating the answers to all calculations.
3 Encourage students to use inverse operations to check answers to multiplication and division problems. Knowing families of facts helps this. **Use ET 4** (link given) in the column to the left to practise this.
4 The references to NZ Curriculum Year 5 (3A) – Connecting all Strands can be used to revise multiplication and multiplying tens, hundreds and thousands and multiplying and dividing by 10 and 100, and choosing a strategy to multiply a 2-digit by a 1-digit number. You could choose to do that as an introduction to the more difficult multiplication in **NC5–22 to 25**.
5 When multiplying using a vertical method, it is important to connect this with place value. Point out that each of the digits in the number being multiplied has a place value. In the multiplication 218 × 6 the 218 is 200 + 10 + 8. When multiplying, the first multiplication is 8 × 6 = 48 followed by 10 × 6 which is 6 tens (60), not 6, and then 200 × 6 which is 12 hundred (1200) not 12. These three answers are then added together to give the final answer.
6 Using place value materials alongside the worked example could be useful for some students.
7 When using the area method or when splitting one of the numbers into an addition (or subtraction) this is using the **distributive property**. For example 5 × 56 can be written as 5 × (50 + 6). It is up to you whether you wish to use this terminology with students.

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NUMBER OPERATIONS

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divide up to three-digit whole numbers by a one-digit divisor, with a remainder (e.g., 83 ÷ 5 = 16, remainder 3)	**Book Year 5 (3A)** **NK 11** Page 90 (2s, 3s, 5s and 10s in numbers up to 100) **Chapter 5** Pages 114 to 122 (practice at easier division) Pages 123 to 125 (Dividing by a 1-digit number with remainders - using the number line) **Rich tasks** Page 112 The wonder of Zimond and "Robot" game (Basic division practice) **Chapter 6** Pages 126 to 137 (Multiplying and dividing practice **NC5–26 and 27** (Dividing by a one-digit number)	**Book Year 5 (3A)** **Chapter 5** **TRS 30 Are you close enough?** **ET 1 The water park** ET 2 **Book Year 6 (3B)** **Chapter 5** TRS 43 ET 3 and 4 **Chapter 6** **TRS 50 Which equation?** TRS 48, 49, 51 ET 1, 2, 3, 4

Notes to teachers are on the next page

Notes to teachers

1 Students need to know their basic facts for multiplication and division. Frequent/daily practice is the best way to ensure that these facts move from short-term memory to long-term memory. If you did not use it in the previous objective, you could use **NC5–15 to 20** to check what students do and don't know and give them extra practice. You could also use **NK 11** to check on the 2s, 3s, 5s and 10s basic facts. You could use **Year 5 (3A) Chapter 5 pages 114 to 122** to practice some easier division with no remainders before moving on to division with remainders.

2 **Year 5 (3A) Chapter 6** can be used as an introduction to **NC5–26 and 27** which are the sheets which best cover the objective. You can miss Chapter 6 out if your students are ready for **NC 5–26 and 27.**

3 Understanding how multiplication and division are linked and being able to create a family of facts is important. Practising the multiplication facts and the associated division facts together is helpful in establishing this link

4 Remind students that division answers can be checked using multiplication and that calculations should be estimated first.

5 Students may need practice at partitioning numbers.

6 Finding the best way to partition the numbers will be more easily achieved if students know their multiplication and division basic facts. They can use known facts, for example, 67 is best partitioned into 50 + 17 when being divided by 5 because 50 ÷ 5 = 10 and 17 is close to 15 and 15 ÷ 5 = 3. Both are known facts.

7 The connection between multiplication and area, volume and perimeter should be made when doing the perimeter, area and volume section but you could mention it here.

8 Multiplication and division are used when scaling amounts such as in the objective *"use known multiplication facts to scale a quantity".*

9 You could introduce students to the language of division.
Divisor is the number you are dividing by.
Dividend is the number that is being divided.
Quotient is the answer to the division calculation.

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NUMBER RATIONAL NUMBERS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
identify, read, write, and represent tenths and hundredths as fractions and decimals	**NC5–28 and 29** (tenths and hundredths as fractions and decimals)	

Notes to teachers

1 Point out to students how this objective is connected to measurement, for example, 1 mm is $\frac{1}{10}$ of a cm and rulers are divided into cm which are then divided into tenths (mm) or 0·1s
2 Visually showing a whole divided into tenths such as on a number line or using a decimat is useful to help students understand the concept of a tenth. It is important to link this to a place value house to show that 1 tenth is 0·1.
3 Have students practise saying, reading, and writing decimals using decimal PV houses.
4 Explain and represent decimal tenths as a fraction with the denominator of 10.
5 Point out to students where decimals are used such as in measurement (sport's day) and money.

If you have our stage books you could use this for extra practice.
Stage 6 pages 211 to 216

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NUMBER RATIONAL NUMBERS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
compare and order tenths and hundredths as fractions and decimals, and convert decimal tenths and hundredths to fractions	**NC 5–30** (comparing decimals) **NC5–31** (ordering decimals) **NC5–32 and 33** (decimals to fractions) **NC5–34** (comparing tenths)	

Notes to teachers

1. Understanding how decimals and fractions with denominators of 10, 100, 1000 etc relate to each other is key to understanding decimals. Illustrating this with a variety of materials such as place value blocks, tens and hundreds frames, decimats place value houses etc. will help.
2. When comparing decimals, an understanding of decimal place value is crucial. Students may simply look at the digits and compare them as whole numbers and think that 0·08 is larger than 0·3 because 8 is larger than 3, rather than look at their place value. Using materials and visual representations can help.
3. Most students will understand the decimal notation of money and so relating decimals to money is useful.
4. Encourage understanding of this topic rather than rote learning of rules for how to convert between decimals and fractions. Use place value houses and number lines to show this.
5. It is helpful if students know and understand, for example, that $\frac{3}{10} + \frac{7}{100}$ is $\frac{30}{100} + \frac{7}{100} = \frac{37}{100}$. This can be shown using tens and hundreds decimats.

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divide whole numbers by 10 and 100 to make decimals	**NC5–35** (dividing whole numbers by 10 and 100)	

Notes to teachers

1 It is important that students understand that dividing by 10 moves each digit one place to the right on a place value chart.

So each time you move one place to the right, the value is ten times less, i.e it is divided by 10.

The opposite of this applies to multiplying by 10, each digit moves one place to the left. Each time you move one place to the left on a place value chart, the value is 10 times larger i.e is multiplied by 10.

2 Use place value blocks to show that 10 tens blocks (100) divided into groups of 10 gives ten groups of ten. And ten (shown as ones blocks) divided into ten groups gives 1. Then one whole (as a decimat) divided into ten groups is $\frac{1}{10}$ of a decimat and $\frac{1}{10}$ of a decimat shown as $\frac{10}{100}$ divided into ten groups is $\frac{1}{100}$.

3 Make the connection between our metric measurement system and knowing how to divide by 10. This is useful when converting between units, so 10 mm = 1 cm and 100 cm = 1 m.

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for fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, or 100: – compare and order the fractions – identify when two fractions are equivalent	**Book Year 5 (3A)** **NK 12** Page 138 (understanding fractions) **NK 13** Page 140 (ordering fractions) **NC5–36 and 37** (equivalent fractions) **NC5–38** (simplifying fractions)	

Notes to teachers

1 Use the material in the order given in column two. **NK 12** is a revision of what a fraction is.

2 Working with diagrams such as fraction walls and number lines helps with the understanding of fraction comparisons and equivalent fractions. You can represent and investigate the relationship between the denominator and the numerator in equivalent fractions for example $\frac{2}{4} = \frac{1}{2}$ – the numerator AND denominator in $\frac{2}{4}$ is twice as large as the numerator and denominator in $\frac{1}{2}$.

3 Knowing factors of numbers and basic multiplication and division facts helps students to simplify fractions by dividing both the numerator and denominator,by the same number. If they have difficulty, encourage them to start with 2 and say "Can the numerator and denominator both be divided by 2?" Then try 3, then 5 and so on.

Sometimes simplifying can be done in two or more steps, for example, $\frac{6}{18} = \frac{3}{9} = \frac{1}{3}$, first dividing by 2 and then by 3.

4 It is important that students understand that a fraction is in its simplest form if both the numerator and denominator can only be divided by 1.

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Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
convert between mixed numbers and improper fractions for fractions with denominators up to 10	**NC5–39 and 40** (mixed numbers and improper fractions)	

Notes to teachers

1 To aid understanding using fraction tiles or fraction diagrams as a visual tool will help students to change between mixed numbers and improper fractions. Represent improper fractions using words, materials and number lines.

2 Students need to know that when **any** fraction has the same numerator and denominator it equals one whole. This makes it easier to appreciate that when the numerator is larger than the denominator the fraction will be larger than 1.

3 Explain conversion as division with a remainder, e.g., $\frac{8}{3} = 2\frac{2}{3}$. 8 divided by 3 = 2 r 2 or multiplication plus a remainder, e.g., $3\frac{2}{5} = 5 \times 3 + 2$ fifths.

4 At this point, students often become aware for the first time that a fraction can lie anywhere on a number line, and not only between zero and one. The use of area models (fractions of shapes like rectangles), fraction circles and number lines are particularly helpful tools to develop this understanding.

5 It is useful if students are encouraged to skip count forward and backwards in fractions, for example, one quarter, two quarters, three quarters, four quarters, five quarters, six quarters to help them understand the connection between an improper fraction and a mixed number.

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NUMBER RATIONAL NUMBERS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
• 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	**Book Year 5 (3A)** **Chapter 7** Pages 143 to 154 (finding a fraction of) **Book Year 5 (3A)** **Chapter 7** Pages 155 to 158 (finding the whole)	**Book Year 5 (3A)** **Chapter 7** TRS 32, 33 ET 1

Notes to teachers

1 Working with materials such as fraction sets and bar models can be helpful to remind students that fractions are "parts of wholes" where all parts are of the same size. They can be joined to make wholes, or wholes can be split to make fractions.
2 A sound knowledge of basic multiplication and division facts to 10 × 10 will aid students to achieve better results when working with these objectives.
4 Encourage students to use multiplication and division strategies rather than addition strategies.
5 Emphasise that when finding more than 1 part it is helpful to find how much 1 part is first. Initially students may find it easier to use materials or draw a diagram to help with this.

For the second dot of the objective

1 Encourage students to use multiplication and division strategies rather than addition strategies.
2 Working with materials and/or bar models will aid understanding.
3 Pointing out that they have been given the answer to a "fraction of" problem and that they must find the original number of that problem can help some students understand what is required.

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NUMBER RATIONAL NUMBERS		
Teach students to	**Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)**	**Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column**
add and subtract fractions with the same denominators, including to make more than one whole	**NC5–41 to 44** (adding and subtracting fractions)	**Book Year 6 (3B)** **Chapter 8** **TRS 69 Benny's treats** **TRS 70 Norman on the hunt**
Notes to teachers		
The best way to show students why the numerators, but not the denominators, are added (or subtracted) when adding or subtracting fractions with the same denominator is to demonstrate using materials or diagrams such as fraction walls and number lines This way students understand that we are adding or subtracting a number of, for example, tenths or fifths and that the name of the parts does not change but the quantity of them does.		

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NUMBER RATIONAL NUMBERS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
add and subtract whole numbers and decimals to two decimal places (e.g. 32·55–21·21 = 11·34)	**NC5–45 to 48** (adding and subtracting decimals)	

Notes to teachers

1 When teaching adding and subtracting decimals, make the connection to measurement and money.
2 Remember to use our online generic printable masters for **decimal number lines** so students do not have to draw them. **NOTE** – the generic masters are at the **bottom** of this page.
3 You may need to revise decimal place value so that students understand the decimal point notation.
4 It is important that students understand why decimal points have to be lined up when using a vertical method. It is best to use a place value house to illustrate why.
5 Link to adding and subtracting whole numbers.

If you have our Stage books you could use this for extra practice.
Stage 7 book 2 page 68 to 89

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NUMBER RATIONAL NUMBERS		
Teach students to	**Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)**	**Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column**
use known multiplication facts to scale a quantity	**NC5–49 and 50** (scaling quantities)	
Notes to teachers		
1 Represent multiplicative relationships using diagrams, materials or bar models, showing how scaling a recipe for example for 4 people to a recipe for 8 people means multiplying every ingredient by 2. This is a multiplicative relationship. 2 Link this to scaling recipes and scales on maps.		

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NUMBER — FINANCIAL MATHEMATICS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
represent money values in multiple ways using notes and coins	**NC5–51** (Using money)	

Notes to teachers

1 Link the money system to place value.
2 Investigate financial examples that the students in your class can relate to. Get them to group denominations of money to make an amount (using play money).
3 Link this to skip counting. If you have a number of $5 notes, students could use skip counting to find the total, $5, $10, $15 etc.
4 You could use a spreadsheet to investigate making amounts of money.

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NUMBER — FINANCIAL MATHEMATICS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
estimate to the nearest dollar and calculate the total cost of items costing dollars and cents, and the change from the nearest ten dollars	**NC5–52 and 53** (Money)	

Notes to teachers

1 It should be highlighted to students that working with money is a real-life situation where estimating and rounding are used.
2 Students often find working out change or giving change difficult. Using a number line and jumping along from the cost to the amount paid, in amounts that are possible to give as change is helpful. For example, NZ has 10c, 20c, 50c, $1 and $2 coins and $5 and $10 notes which can be given as change so jumps should be in these amounts.
3 Working with play money aids understanding.
4 Connect this to rounding and estimating and adding and subtracting decimals.
5 Investigate situations that are relevant to your class involving calculating costs and giving change.

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ALGEBRA EQUATIONS AND RELATIONSHIPS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
form and solve true or false number sentences and open number sentences involving all four operations (e.g., 674 + 56 – ____ = 671)	**Book Year 5 (3A)** **Chapter 8** **Getting started** Page 159 How many ways can you make it? (forming true equations) Pages 162 to 165 (equals sign) Pages 171 to 174 (Finding missing numbers in strip diagrams) **NC5–54 and 55** (number sentences) **Book Year 5 (3A)** **Chapter 8** **Rich Tasks** Page 161 Animal addition and Number spelling	**Book Year 5 (3A)** **Chapter 9** TRS 77 **TRS 80 It's a problem**

Notes to teachers

1 Students need to understand the meaning of the equals sign, i.e, that it means both sides of the equals sign have the same value. Use the material from the book first before the supplementary material as this will aid with the understanding of equals.

2 Encourage students to see if they can work out the answer to the true/false equations without working out both sides of the equation. For example, in the example given in the objective, 674 is 3 more than 671 so if 56 is added to 674, then 56 + 3 (59) must be subtracted to get 671. So 674 + 56 – 59 = 671. Encourage this sort of reasoning.

Link to online teacher notes for Chapter 8

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ALGEBRA EQUATIONS AND RELATIONSHIPS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
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	**Book Year 5 (3A)** **Chapter 9** Pages 180 to 193 (growing patterns) **NC5–56 and 57** (writing a rule for growing patterns)	

Notes to teachers

1 Use the material in the order given in column two.

2 The material in the book helps students to recognise the additive relationship between successive terms and begins to develop the multiplicative relationship between the term number and the value of the term. The supplementary material cements this multiplicative understanding. Encourage students to look for how the additive relationship between terms is connected to the multiplicative relationship between term number and term value. In the example on page 180 of the book the additive relationship between terms is +2 and the rule is "multiply the tree number by 2 and then add 1." The difference between the terms (2) will always be the multiplier in the rule, in this case 2. Then, students need to look to see if anything needs to added or subtracted to make the rule true. In this example 1 has to be **added**. The rule is Number of paper strips = 2 × tree number + 1 = 3. **NC5–56 and 57** develop this concept this further.

Link to online teacher notes on Chapter 9 (Growing patterns page 180)

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ALGEBRA ALGORITHMIC THINKING

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
create and use an algorithm for generating a pattern, procedure, or pathway	**NC5–58 and 59** (algorithms)	

Notes to teachers

1 An algorithm is a step-by-step set of instructions that can be followed to carry out a sequence of events or a procedure.
2 Students should be encouraged to carefully follow, or act out, the steps and be able to describe what they are doing at each step.
3 Students should create their own algorithms for pathways or mathematical procedures, such as addition or subtraction, and get others to follow their step-by-step instructions. This can help students develop a clearer understanding of how algorithms work.
Examples could be creating a sequence of instructions to give directions to the school office or move through a maze or identifying which transformation has been used to create a pattern etc
4 Connect with geometry when giving directions or describing pathways.
5 Connect algorithmic thinking to a procedure for an operation (e.g., for multiplying two numbers).

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MEASUREMENT — MEASURING

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
estimate and then accurately measure length, mass (weight), capacity, temperature, and duration, using appropriate metric units or time-based units or a combination of units	**Book Year 5 (3A)** **Chapter 12** Pages 209 to 227 (whole chapter) (Measures)	**Book Year 4 (2B)** **Chapter 13** **ET 5 Stop the clock!–game**
use the appropriate tool for a measurement and the appropriate unit for the attribute being measured	**NC5–60 to 62** (reading decimal scales)	
use the metric measurement system to explore relationships between units, including relationships represented by benchmark fractions and decimals	**NC5–63** (units of measurement)	
describe an angle using the terms acute, right, obtuse, straight, and reflex, by comparing the angle with benchmarks of 90, 180, and 360 degrees	**NC5–64** (angles)	

Notes to teachers are on the next page

Notes to teachers

1 Use the material in the order in which it is listed in column two.
2 At Year 5 students are required to know centimetres, metres, millimetres, grams, kilograms, litres, millilitres, and degrees Celsius
3 Remind students that our measurement systems is based on our decimal numbers system.
4 Connect measurement to our decimal place value system
5 The section in **Year 5 (3A)** does not include reflex angles so straight after the angle work from **Year 5 (3A) Chapter 12 pages 226 and 227**, you can use **NC5–64** so that these are covered. Ask students to point out reflex angles in real life such as their knee (as shown in the example), the angles made by the arms (at the elbow), roofs of houses, etc
6 **NC5–60 to 62** (reading decimal scales) can be used to clearly link place value and the decimal system with measurement. Point out that scales are like number lines with decimals. Ones are divided into tenths just as when we move from the ones to the tenths on a place value chart 1 is divided into tenths.
7 Encourage students to develop benchmarks to help them estimate. For example, a large step is about 1 metre, a cup holds about 250 ml, a block of butter is about $\frac{1}{2}$ kg etc
8 Explain and justify the use of appropriate metric units or tools for measuring a given situation with the precision necessary for the problem, noting that using smaller units provides more accuracy.
9 Students should investigate how measures can be partitioned and combined like other numbers, and how smaller units are created by equally partitioning larger units. So for example 1 kilogram can be partitioned into 1000 equal mg.
10 Estimating the duration of time is covered in a later section.

Link to online teacher notes on Chapter 12 (all sections)

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MEASUREMENT MEASURING

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
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	**Book Year 5 (3A)** **Chapter 11** Pages 197 to 208 (whole chapter) (time) **NC5–65** (converting units of time) **NC5–66** (estimating and measuring time) **NC5–67 to 70** (ordering and adding and subtracting time) **NC5–67 to 70** (ordering and adding and subtracting time)	**Book Year 4 (2B)** **Chapter 13** **TRS 56 Time lines** **ET 6 Time problems**

Notes to teachers

1. Use the material in the order in which it is listed in column two. You might like to do the starter in **Year 5 (3A) page 197** before starting **NC 5–64**.
2. When converting between units of time, it might be helpful to use a number line. Students should know the relationships between units of time such as 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
3. Students often have difficulty with analogue time. It is important that students have access to an analogue clock in the classroom and can refer to that often.
4. Connect units of time such $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of an hour and $\frac{1}{4}$ to, $\frac{1}{4}$ past and $\frac{1}{2}$ past to fractions.
5. To extend this topic you could ask students to explore solar calendars (e.g., Roman, Gregorian) and lunar calendars (e.g., maramataka Māori, Chinese).

Link to online teacher notes on Chapter 11 (all sections)

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MEASUREMENT PERIMETER, AREA AND VOLUME

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	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 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	**Book Year 5 (3A)** **Chapter 13** Pages 228 to 243 (whole chapter) (perimeter, area and volume)	**Book Year 5 (3A)** **Chapter 13** TRS 52, 53, 54 **ET 3 Who made the best estimate?** ET 3 and 4

Notes to teachers

1 Point out the link to multiplication and multiplication arrays when calculating areas of rows of squares for area and remind students that they can multiply in any order (commutative property).
2 Remind students that all answers should include the units being used, for example, cm for perimeter, cm^2 for area or cm^3 for volume.
3 Encourage students to set out their work in a clear and logical way.
4 When calculating area or volume with arrays or partial squares, remind students of the commutative property which says you can add or multiply in any order.

Link to online teacher notes on Chapter 13 (all sections)

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GEOMETRY SHAPES

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
identify, classify, and describe the attributes of: - regular and irregular polygons, using edges, vertices, and angles - prisms, using the cross section, faces, edges, and vertices Identify and describe parallel and perpendicular lines, including those forming the sides of polygons	**Book Year 5 (3A)** **Chapter 14** Pages 244 to 260 (whole chapter) (2D and 3D shapes) **Chapter 17** Pages 286 to 296 (whole chapter) (symmetry) **NC5–71 and 72** (Cross-sections of 3D shapes)	**Book Year 5 (3A)** **Chapter 14** TRS 55, 56 ET 1, 2 **ET 3 Prism or not?** **Book Year 6 (3B)** **Chapter 15** **TRS 110 What if we chop it?**

Notes to teachers

1 Encourage students to use the language of shapes such as edges (sides) vertices (corners) and angles to describe 2D shapes and edges, vertices, faces and cross-sections to describe 3D shapes.
2 It is important that students recognise the differences and similarities between shapes and are able to describe these. Use shapes that they are familiar with in the classroom or environment such as table tops, ice cubes, pyramid shaped containers etc.
3 Use a range of 2D and 3D shapes, including actual shapes that students can hold and explore, diagrams, student-made constructions, and digital shapes to practice identifying, sorting and describing attributes of shapes such as regular/irregular, types of angles, classifications such as quadrilaterals, prisms etc, shape of cross-sections, symmetry, parallel edges or sides and so on.
4 Point out parallel and perpendicular lines in shapes in the classroom and environment such as the sides of the door or the top and side of the door or window, the edges and corners of tables and cupboards. The parallel lines on writing paper, in beehive honeycombs, road markings floorboards, swimming pool lane markings etc.
5 Connect sorting shapes to algorithmic thinking by using a flowchart to sort shapes.

Link to online teacher notes on Chapter 14 (all sections)

For symmetry (Chapter 17)

1 Encourage students to use mirrors and tracing paper when investigating line and rotational symmetry in Chapter 17

Link to online teacher notes on Chapter 17 (all sections)

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GEOMETRY SPACIAL REASONING

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
visualise 3D shapes and connect them with nets, 2D diagrams, verbal descriptions, and the same shapes drawn from different perspectives	**Book Year 5 (3A)** **Chapter 15** Pages 261 to 272 (whole chapter) (nets and views)	**Book Year 5 (3A)** **Chapter 15** TRS 58 ET 1, 2, 3

Notes to teachers

1 You could get students to make the models shown on book **Year 5 (3A) page 269, question 2, part a**.
2 Students are not required to be able to draw isometric drawings on dotty paper. However, **question 2 part b** could be used as an extension activity for some students.

Link to online teacher notes on Chapter 15 (all sections)

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GEOMETRY SPACIAL REASONING

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
resize (enlarge or reduce) a 2D shape	**Book Year 5 (3A)** **Chapter 18** **Getting started** Page 297 Larger and larger (instruments that enlarge) Pages 300 to 302 (enlargement) **NC5–73 to 75** (enlarging shapes by a fractional scale factor)	**Book Year 5 (3A)** **Chapter 18** **TRS 63 How I grow** ET 1

Notes to teachers

1 Cover the material in the order in which it is listed in the column two.
2 Use a grid to enlarge or reduce a shape (scaling) and connect scaling with multiplying or dividing.
3 **Year 5 (3A) page 302 question 3**. This question is useful to help students identify which properties do and do not change when a shape is enlarged. Ask students to look at the angles, orientation, lengths and area. From this they should be able to identify that when a shape is enlarged angles and orientation do not change but lengths and area do.
4 Make sure students recognise that all lengths on an enlarged shape enlarge by the same factor. See the answers on page 400 to Activity 1, questions 1 and 2, from page 301 for more clarification.
5 It is really useful to go through step by step, length by length with students to make an enlargement and **TRS 63** online allows you to do this.
6 Connect enlargement with doubling and halving or trebling and thirding.

Link to online teacher notes on Chapter 18 (all sections)

NOTES FOR COLUMN THREE: 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.
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GEOMETRY PATHWAYS

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
interpret and create grid maps to plot positions and pathways, using grid references and directional language, including the four main compass points	**Book Year 5 (3A)** **Chapter 16** Pages 273 to 285 (whole chapter) (maps and position)	**Book Year 5 (3A)** **Chapter 16** TRS 59 ET 1, 2

Notes to teachers

1 To fully cover the "create" part of this objective you need to do the **Rich Task** "Treasure Hunt" on **page 275** and/or the **practicals** on **page 285** of **Year 5 (3A)**.
2 It is important that students work with maps and describe directions that relate to their immediate environment and surroundings. Use the school, marae or the town or city where you live to make this topic relevant to students' lives.
3 Connect compass points with turns ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ and full) and with angles (90°, 180°, 270° and 360°)
4 Explain pathways using directional language, including te reo Māori (e.g., whakamua/forwards, whakamuri/backwards, whakamauī/to the left, whakamatau/to the right, raki/north, tonga/south, rāwhiti/east, uru/west).

Link to online teacher notes on Chapter 16 (all sections)

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STATISTICS PROBLEM AND PLAN DATA AND ANALYSIS AND CONCLUSION

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
• use multivariate data to investigate summary and comparison situations with categorical and discrete numerical data, by – posing an investigative question that can be answered with data – making conjectures or assertions about expected findings	**Book Year 5 (3A)** **Chapter 19** Pages 311 to 327 (whole chapter) (displaying and analysing data) **Chapter 20** Pages 328 to 341 (whole chapter) (surveys and collecting data) **NC5–76 and 77** (Interpreting data including outliers and misleading data)	**Book Year 5 (3A)** **Chapter 19** **TRS 71 What's missing or wrong?** **TRS 72 True or false?** TRS 70 ET 1, 2 **ET 3 Misleading graphs** **Book Year 5 (3A)** **Chapter 20** **TRS 73 Prediction** ET 1
• plan how to collect primary data to support answering the investigative question including - deciding on the group of interest - deciding the variable or variables for which data will be collected - taking account of ethical practices in data collection		
• use a variety of tools to collect data, check for errors in it, and correct errors by recollecting the data, if possible		
• create and describe data visualisations to make meaning from the data, with statements including the name of the variable and group of interest		
• answer the investigative question, comparing findings with initial conjectures or assertions and their existing knowledge of the world		

Notes to teachers are on the next page

Notes to teachers

1 You can choose to cover this material in one of two ways.
Either
Follow the sequence of **Year 5 (3A) Chapters 19 and 20** where students learn to display and analyse data (Chapter 19) first and then go on and do their own statistical investigation using the enquiry cycle (PPDAC) (Chapter 20)
Or
You could follow the order of objectives given in the curriculum where students work through the enquiry cycle step by step with their own investigations. This way you may need to stop and teach data visualisations and analysis as you go through the cycle.

2 The enquiry cycle is the same as **PPDAC** which stands for **P**ose, **P**lan, Gather **D**ata, **A**nalyse Data and form **C**onclusions. There is a printable master of this in our generic printable masters in Teacher support online.

3 Make sure students understand that the way data is collected, or from whom it is collected, can affect the results. For example, if they only ask their friends this is not likely to represent the whole class, or, if they only ask 4 people this is not enough to represent the whole class or school.

4 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/school/family would be happy answering that question?"

5 It is really important that the whole process is analysed for possible errors; that data points that don't seem to fit are investigated; that the way data is collected, and displayed, does not lead to wrong conclusions.

6 Encourage students to check their data, graphs and analysis for errors and if necessary, recollect the data or redraw the graph.

7 Make sure students can relate their conclusions to the original question or assertion or comparison.

8 When students look at their results, encourage them to decide if they answer the question; agree/disagree with the assertion; make the required comparison; or do they need to ask more questions or change the question

9 Multivariate data is where several variables are collected at the same time such as when a baby is born, it's heart rate, circumference of it's head, length, weight, etc are collected.
You could encourage students when choosing a topic of interest to explore to think about collecting data for more than one variable.

10 Language that you could introduce students to is "discrete numerical" data which is data that has specific values that are not measurement data but usually counted.
Examples are "number of teeth in someone's mouth or "number of times people went to the movies in the last month".

Link to online teacher notes for

Chapter 19 (all sections)

Chapter 20 (all sections)

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STATISTICS — STATISTICAL LITERACY

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
Check and, if necessary, improve the statements others make about data, including data from two or more sources	**NC 5- 78** (analysing other people's data)	

Notes to teachers

1 Try to find data that others have collected and made statements about relelvant to your class, area, time etc. You could ask students to try and find examples.
2 It is useful to point out that statistical data may be used to give impressions that are not true. Encourage students to question statements and data.

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PROBABILITY — PROBABILITY INVESTIGATIONS AND CRITICAL THINKING IN PROBABILITY

Teach students to	Connecting All Strands Year 5 (3A) and supplementary material references (NC5-...)	Go to www.caxed.co.nz and click on 'teacher support' to find the resources in this column
• engage in chance-based investigations, including those with not equally likely outcomes by: – posing investigative questions – anticipating and then identifying possible outcomes for the investigative questions – 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 investigative questions – reflecting on anticipated outcomes • evaluate others' statements about chance based investigations, with justifications	**Book Year 5 (3A)** **Chapter 21** Pages 342 to 354 (whole chapter) (probability) **NC5–79** (more probability)	**Book Year 5 (3A)** **Chapter 21** **TRS 75A Spin this colour** **TRS 78 I'm a designer** ET 2

Notes to teachers are on the next page

Notes to teachers

1 Investigate everyday chance-based situations in order to explore and experience the chance, randomness, variation, and distribution of outcomes. For example tossing dice, spinning spinners, weather outcomes, guessing colours of clothes someone will wear, etc

2 Encourage students to write probabilities as fractions, decimals or percentages and make the connections to these. Students could be asked to write their probabilities as a fraction, decimal and percentage especially if the number of trials is 10, 100 or 1000.

3 If students make predictions about an outcome, encourage them to make sure that the statements made about the outcome of an experiment is related to the prediction.

4 When students are carrying out the **practicals** of **Year 5 (3A) on page 246** ask "What do you think your result will look like? Why?" and "Are the outcomes equally likely?". It is important that students predict what the outcome might be so that the results either agree with this predication or challenge the thinking around it.

5 Where large numbers of trials are needed to be carried out for a practical probability question using an online tool or adding together the results of several students or groups can help.

Or use digital tools

This simulator has a **tossing a die** many times.

This simulator has an **adjustable spinner**

This simulator has a **coin tosser**.

6 Explain and justify the statements made by others about chance-based investigations, using interrogative questions. Students could do this one group to another group.

Link to online teacher notes on Chapter 21 (all sections)