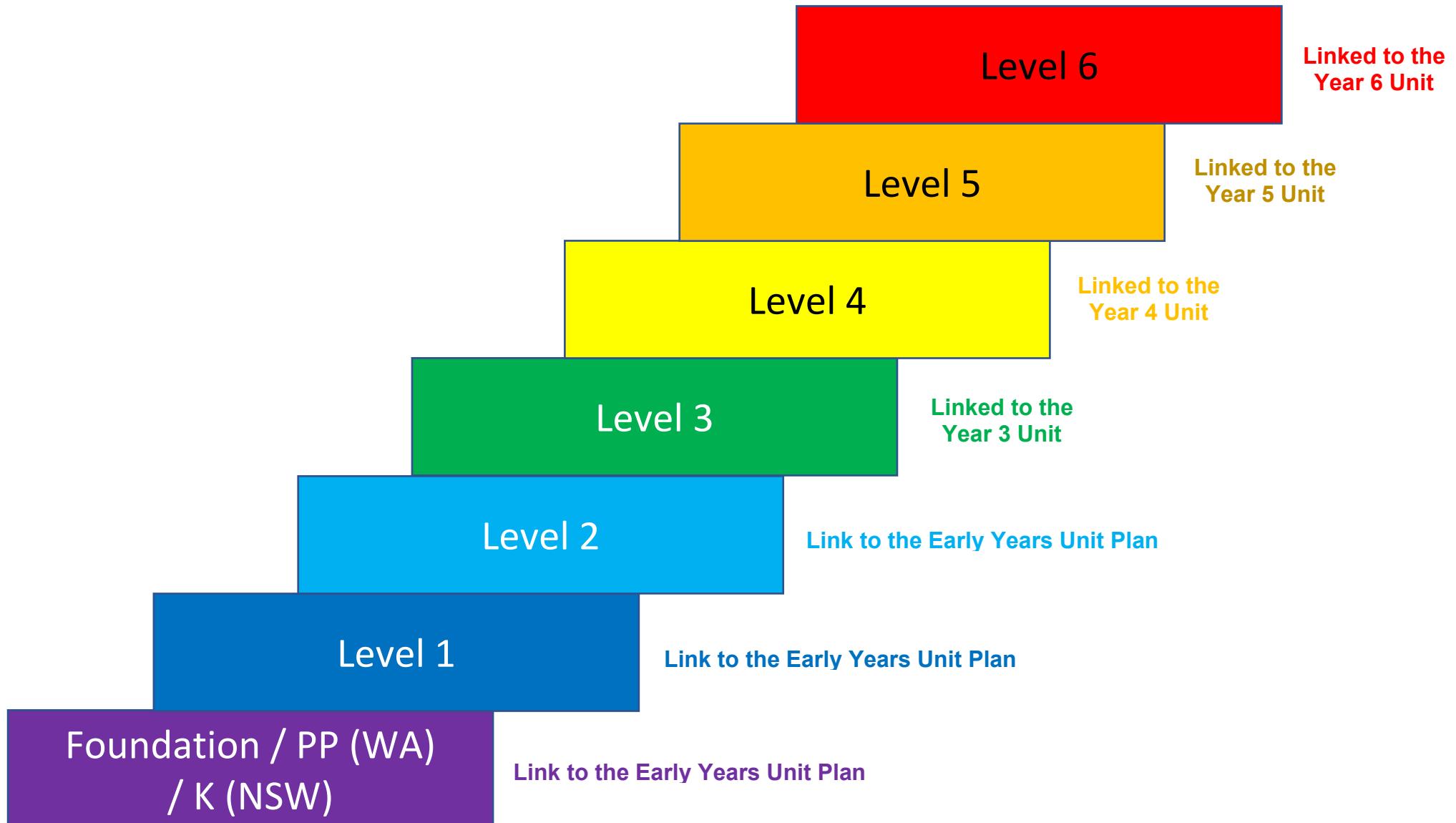


Colour coded by the rainbow



Critical Learning Goals

and Checkpoints

Created and used by teams in Top Ten Mathematics schools (www.toptenmaths.com) to provide a strong sequence of big ideas for each year level, and to guide teachers as to the main priorities for their year level for number and algebra.

Some skills intentionally front-load content that can be achieved earlier, such as students learning the names of the tens by skip-counting by 10 up to 120 during the first year of school, even though the curriculum does not require this to be assessed until Year 1.

Skills and Strategies

Staircases

Mathematical development follows a sequential staircase of skills and strategies. This means that if one step in the staircase is missing, this will become a major obstacle for the student, unless that skill or strategy is addressed, before progressing to more advanced content.

Consider the build to ten addition strategy as an example. To use this strategy, a student must be able to work out that $8 + 5$ can be solved by thinking $8 + 2$ (makes 10) + 3 more makes 13. This appears simple for adults who are fluent, but for students this requires the ability to partition 5 fluently into parts, then hold these parts while applying the 10 facts with fluency as well. It also relies partly on the counting on concept, in that students must start from the larger of the two addends (the 8, rather than the 5). In all, students need to have mastered three previous steps in the addition skills and strategies staircase, in order to have any opportunity to master the build to ten strategy. Without ensuring students have already mastered all these previous steps first, a teacher could spend weeks trying to develop their students' understanding and fluency of the build to ten strategy, to no avail.

Critical Checkpoints for Place Value

The big goals, by the end of the unit, are that all students in this year level can:

First Year of School	Count, make and read numbers up to 10 with 1-1 correspondence, says ordinal numbers up to 10	Subitise regular/dot dice formats up to 6 “I see 6!” or “I see 3, I see 3, I see 6!”	Correctly form all digits (0-9 starting from the top, without reversals) Compare and order single-digit numbers	Fluent with one more / less of any single-digit number
Level 1	Count to and back from 120 from any starting point learning the names of the tens first; bridging over 100 correctly, e.g. 99, 100, 101, 102 e.g. 90, 100, 110, 120	Subitise irregular / random formats seeing totals up to 10 using parts, even when arranged randomly, “I see 5, I see 3, I see 8!”	Make tens (2-digit) numbers using bundling materials and place value blocks. Record in place value form (34 as 3t 4 ones), standard (34) and worded forms (thirty-four). Rename (3t 4u, 2t 14u). Round to ten.	Work out one more and one less of a two-digit number
Level 2	Count to and back from 1000 from any starting point by ones, tens and hundreds	Say, record and order 3-digit numbers Place value form (452 = 4h 5t 2), standard (452) and worded forms (four hundred <u>and</u> fifty-two).	Make 3-digit numbers with place value blocks Round to nearest hundred/ten, place on number lines.	Work out ten more / less of 2- and 3-digit numbers Notice patterns (only tens change)

Level 3	Rename 3- and 4-digit numbers 340 as 34 tens, 340 ones, 2h + 14t 4530 as 45 hundreds and 3 tens, or 453 tens	Say, record and order larger places Place value form ($1056 = 1\text{uth} \ 0\text{h} \ 5\text{t} \ 6\text{u}$), standard and worded forms, focus on internal zeroes.	Make larger numbers using place value blocks Round to nearest thousand/ hundred/ ten, number lines.	Work out 100 and 1000 more/less of any 4-digit number
Estimate collections accurately and round to many place values				
Level 4	Connect decimals to money and measurement	Say, record and order 5-digit numbers Including place value form	Flexibly work with 5-digit numbers number lines, round to all places, rename	Recognise equivalence in fractions
Level 5	Work out the factors and multiples of 2-digit numbers Connect factors to divisibility (if you divide 63 by 7, there will be no remainders, since 7 is a factor of 63)	Flexibly work with 6-digit numbers Round to all places; rename; place on number lines; flexible expanded form ($168\ 350 + 150\ 000$, partition 168 350 into 150 000 and 18 350, and double the 150 000 first)	Compare and order decimals up to 3 places (decimats, measurement)	Round decimals
Level 6	Make real-life links to integers and place on number lines	Justify why a number is prime, composite, square or triangular	Rename decimals	Work with millions and beyond

Place Value Staircase

Early Years

Foundation /
Kindergarten

Correctly form all digits from top-to-bottom

Unit 4

Count to 3, then to 5, then to 10, then to 20 with
one-to-one correspondence (touch and say counting)

Place Value Units 2 and 3

Count to 3, then to 5, then to 10, then to
20 by rote (chanting/song)

New Early Years Pack: Place Value Unit 1

Level 1

Foundation /
Kindergarten

Work out one more/less of any single-digit
number, and order numbers up to 10

Units 7 and 8

Unit 5

Subitise (use superhero eyes) to see collections where
numbers are arranged in the same format as dot-dice

Subitise collections that are arranged randomly

Unit 6

Count to 120 by tens, then by ones, understanding
the place value pattern that repeats for every ten

Unit 11

Make 2-digit numbers using bundling materials,
partitioning into tens and ones – place value form

Units 12 and 13

Work out one more / less of any two-digit number

Unit 12

Round to the nearest ten, rename 2-digit numbers
and place 2-digit numbers on number lines

Unit 14

Count to and back from 1000 from any starting point

If there are
no gaps
showing
from earlier
units.

Level 2

Work out ten more / less of any 2-
and 3-digit number

Rename (234 as 23 tens and 4 ones, 234
ones, 22 tens and 14 ones)

Round to the nearest hundred

Make 3-digit numbers using place value blocks,
partitioning into hundreds, tens and ones

Units
14-16

Place Value Staircase

Years 3-6

Level 6

Work with millions numbers and beyond **6E Unit**

Rename decimals **6D Unit**

Justify prime, composite, square and triangular numbers **6C Unit**

Real-link links to integers **6B Unit**

Work out factors and multiples of numbers

Round decimals

Record, compare and order decimals up to 3 places

Flexibly work with hundreds of thousands numbers, recording in all formats (place value form, words, digits), renaming and flexibly partitioning

Understand and record decimals as money and measurements (0.6 as \$0.60 and or 0.6m)

Year 4D Decimals Unit

Rename and flexibly partition tens of thousands numbers

Year 4C Place Value Unit

Round tens of thousands numbers to any place value

Year 4B Place Value Unit

Say, record in all forms and order numbers 5-digit numbers

Year 4A Place Value Unit

Estimate large collections with accuracy (within 25%)

Year 3B Place Value Unit

Work out 100 and 1000 more and less than any 2-, 3- and 4-digit number using an understanding of place value (which places change, and which stay the same)

Year 3C Place Value Unit and Year 4C Place Value Softball

Rename 3- and 4-digit numbers

Year 3C Place Value Unit

Round numbers up to 10 000 to the nearest ten, hundred and thousand

Year 3B Place Value Unit

Make 4-digit numbers using place value blocks, recording in digits, words and place value form

Year 3A Place Value Unit

Level 3

Critical Checkpoints for Addition

The big goals, by the end of the unit, are that all students in this year level can:

First Year of School	Count all to solve an addition situation and retell it orally using the word 'and' , e.g. "I have 3 jelly beans AND you have 4 jelly beans. We have 7 jelly beans altogether!"	Orally partition numbers up to 6 (can name all the combinations/ways to make 3, 4, 5 and 6 without materials, e.g. 3 and 3 makes 6, 4 and 2 makes 6, 5 and 1 makes 6)	Fluent with one more than any single-digit number e.g. $7 + 1$, immediately thinks 7 and 1 more is 8 (without materials), later 2 more
Level 1	Draw or write an addition (and) story to match an equation e.g. the student is given $3 + 4$, they draw, write or retell orally: "I have 3 red M&Ms and 4 blue M&Ms, I have 7 altogether!"	Orally recall the 10 facts and partition all numbers up to 10 (knows all the ways to make 7, 8, 9 and 10)	Count on from the larger number by using turnarounds (commutativity) for single-digit additions e.g. $2 + 5$, start at 5 and counts 2 more mentally
Level 2	Fluently recall the doubles facts up to $10 + 10$ ($2+2, 3+3, 4+4, 5+5, 6+6, 7+7, 8+8, 9+9, 10+10$)	Use near doubles and explain how they did it ($6 + 7$, I thought $7 + 7 - 1$ OR $6 + 1$ more)	Build to 10 and explains how (e.g. $7 + 5$, I did $7 + 3 + 2$; or, alternatively, I thought $6 + 6$ by moving 1 from the 7 to the 5)
Add ten to any 2-digit and 3-digit number Notices the pattern that only the tens change, ones stay the same			

Level 3	<p>Add 5 or more numbers using the best strategies for that problem (10s facts, doubles, near doubles, building to 10)</p>	<p>Split, jump and switch strategies up to 3-digits mentally Estimate by rounding first</p>	<p>Mentally solve ways to make 100 (<i>62 and what makes 100?</i>)</p>
Level 4	<p>Estimate answers by rounding Always estimate before solving</p>	<p>Split, jump and switch strategies up to 4 digits mentally</p>	<p>Mentally solve ways to make 1000 (<i>329 and what makes 1000?</i>) Calculate change to the nearest 5 cents</p>
Level 5	<p>Estimate decimal addition by rounding</p>	<p>Selectively choose strategies and use a second to double check</p>	<p>Use the vertical algorithm for larger additions (<u>only</u> when split, jump and switch are not efficient)</p>
	<p>Add and subtract fractions with the same or related denominators</p>		
Level 6	<p>Choose the best strategy to solve multi-step worded problems involving addition (split, jump, switch, vertical; excluding irrelevant information)</p>	<p>Use all addition strategies to add decimals Estimate first by rounding to the nearest whole</p>	
	<p>Add and subtract fractions with different denominators</p>		

Addition Skills and Strategies Staircase



Critical Checkpoints for Subtraction

The big goals, by the end of the unit, are that all students in this year level can:

First Year of School	Model a subtraction with materials and retell it orally using ‘take away’ (e.g. “I had 3 jellybeans, but my brother took one away. 2 were left!”)	Use fingers and drawings to solve subtraction problems	Solve one less than any single-digit number e.g. $7 - 1$, immediately thinks 1 less than 7 is 6 and can solve without materials
Level 1	Fluently recall the backwards 10 facts ($10 - 3 = 7$, because I know $7 + 3 = 10$) Solve a simple worded subtraction problem	Count back to solve subtractions from up to 20	Count on to solve the difference between numbers to 10 (e.g. $9 - 7$, “8 9, it’s 2”)
Level 2	Use backwards doubles and explain how (e.g. $14 - 7$, I thought $7 + 7 = 14$, so $14 - 7 = 7$) Create a simple worded subtraction problem	Counts and jumps back to solve 2-digit subtractions, including jumping back by tens , e.g. $80 - 17$, start with $80 - 10$ to get to 70, then $70 - 7 = 63$	Can count on to solve the difference between numbers up to 20 (e.g. $20 - 17$, the difference is 3)

Level 3	Apply fact families to solve subtraction (e.g. $108 - 102$, I know $102 + 6$ is 108 , so it is 6)	Jump back, jump the difference and transformation strategies for 3-digit problems	Mentally solve ways to make 100 (<i>38 and what makes 100?</i>)
Level 4	Estimate answers by rounding Always estimate before solving	Jump back, jump the difference and transformation strategies for 4-digit problems	Mentally solve ways to make 1000 (<i>671 and what makes 1000?</i>) Calculate change to the nearest 5 cents
Level 5	Estimate decimal subtraction by rounding	Selectively choose strategies and use a second to double check	Use the vertical algorithm for larger subtraction (<u>only</u> when mental strategies are not efficient)
Level 6	Add and subtract fractions with the same or related denominators Chooses the best strategies to solve complex worded subtraction problems (jump back strategy, jump the difference strategy, vertical algorithm, get to 9 strategy)	Use the vertical algorithm to subtract decimals	

Subtraction Skills and Strategies Staircase



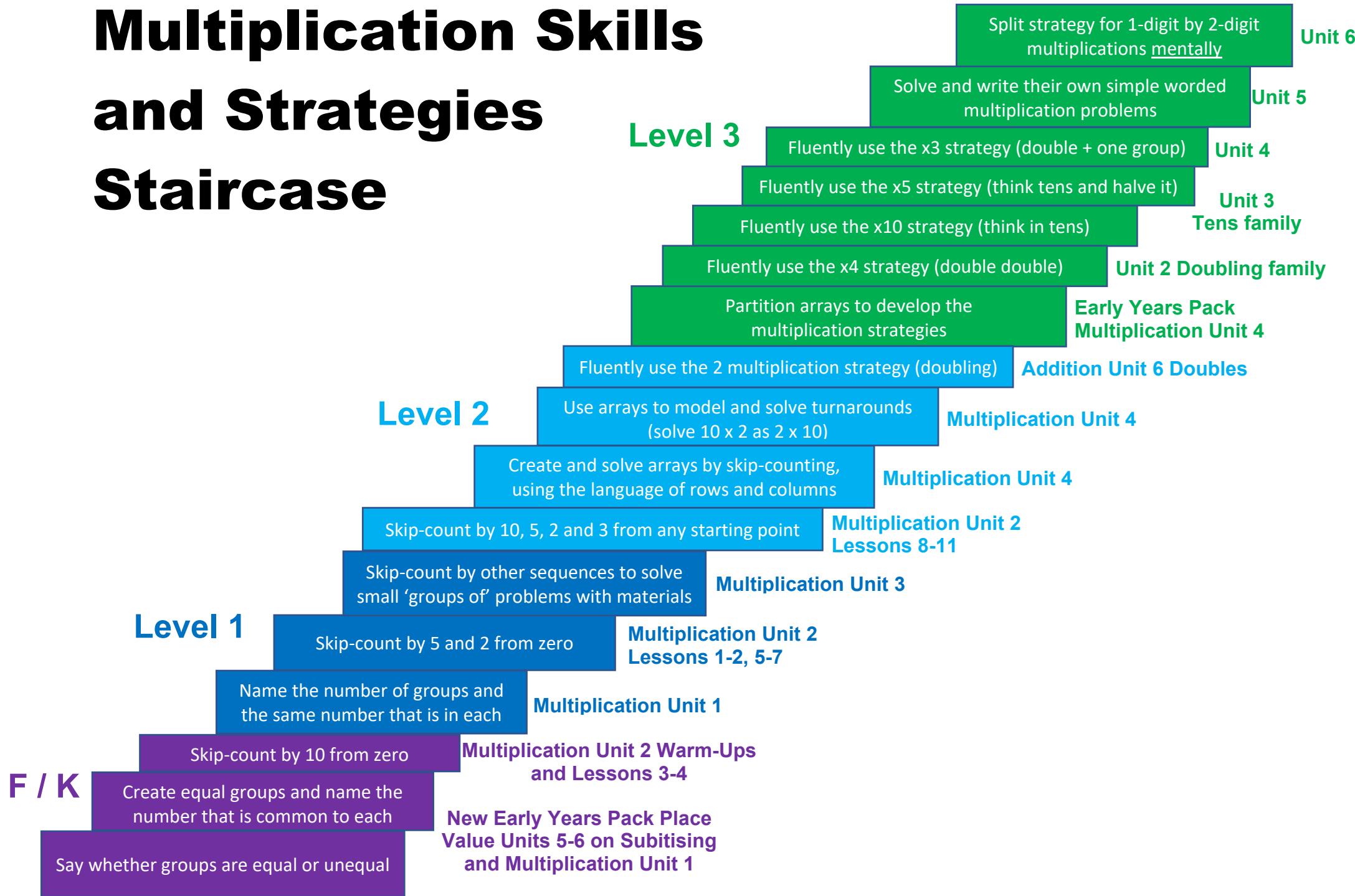
Critical Checkpoints for Multiplication

The big goals, by the end of the unit, are that all students in this year level can:

First Year of School	Say whether groups are equal (fair) or unequal (unfair)	Create equal groups using objects, naming the number that is common to each	Skip-count by 10 from zero up to 120 (learn the names of the tens)
Level 1	Name how many groups there are and the same number that is in each group	Use skip-counting as a strategy to solve small totals, recording using repeated addition number sentences	Skip-count by 5 and 2 from zero
Level 2	Create arrays and solve these by skip-counting (by 10, 2, 5, 3 and 4); use arrays to model turnarounds ($3 \times 2 = 2 \times 3$)	Fluently know the 2 (doubling) multiplication strategy knows the multiples and factors, can write fact families for the 2 times tables	Skip-count by 10, 5, 2 and 3 from any starting point
Level 3	Partition arrays to develop multiplicative strategies (3×6 as double 6 and 6 more, 2×18 as double 18, 4×6 as double double 6)	Use the doubling strategy to solve $\times 4$ (double double) Use double + group to solve $\times 3$	Use place value to solve $\times 10$ Solve $\times 5$ as $\times 10$ halve it, or halve it $\times 10$

Level 3	<p>Write and solve ‘groups of’ problems given a set equation (e.g. create a real-life problem about 10×3, swap with a partner and solve)</p> <p>Split strategy (4×23, think 4×20 and $4 \times 3 = 80 + 12 = 92$)</p>		
Level 4	<p>Multiply 2-digit numbers by applying strategies 4×23 think double double</p>	<p>Use the doubling strategy to solve $\times 8$ (double double double)</p>	<p>Use the tens family to solve $\times 9$ ($\times 10$ take away one group)</p>
	<p>Solve $\times 6$ using $\times 5 +$ group, or $\times 3$ double it strategy, or memory</p>	<p>Solve $\times 7$ using $\times 5 +$ double, or another strategy, or memory</p>	<p>Use the area model for 1-digit by 3-digit problems</p>
	<p>Apply multiplicative thinking to solve real-life problems</p>		
Level 5	<p>Estimate answers using rounding and place value patterns (e.g. 17×52, round to 20×50 $2 \times 5 = 10$, $2 \times 50 = 100$ So: $20 \times 50 = 1000$) $E \approx 1000$</p>	<p>Uses the area model to multiply 1-digit by 4-digits, and 2-digits by 2-digits</p>	<p>Use lattice <u>or</u> vertical algorithm to solve 2-digits by 2-digits</p>
Level 6	<p>Use factors strategies (double one factor, halve the other)</p> <p>Use their <u>preferred strategy</u> (lattice, area, vertical) to solve 2-digit by 3-digit multiplication</p>	<p>Choose their preferred strategy to solve multi-step worded problems</p>	<p>Multiply decimals by powers of ten</p>

Multiplication Skills and Strategies Staircase



Multiplication Skills

and Strategies Staircase

Level 7

Multiply fractions

Unit 10

Multiply decimals by other numbers

Unit 9

Multiply decimals by powers of ten

Unit 9

Choose strategies selectively to solve multi-step worded problems

Problem-solving
PowerPoints

Use their preferred strategy for 2- by 3-digits

Units 6-8

Factors strategies
(double one factor, halve the other)

Unit 8

Lattice OR vertical to solve 1- by 4-digit
and 2- by 2-digit problems

Unit 7

Area model to solve 1- by 4-digit
and 2- by 2-digit problems

Unit 6

Estimate answers by rounding and place
value power of ten patterning

Unit 6

Use the area model for 1-digit by 3-digits

Unit 6

Apply multiplicative thinking to solve
real-life problems

[Unit 5 and Problem-Solving
PowerPoints linked to each unit](#)

Level 4

Fluently solve $x7$ by memory or strategy

Unit 4

Fluently solve $x6$ by memory or strategy
(double the 3s, or $x5 +$ group)

Unit 4

Fluently use the $x9$ strategy
($x10$ take away a group)

Unit 3 Tens family

Fluently use the $x8$ strategy
(double double double)

Unit 2 Doubling family

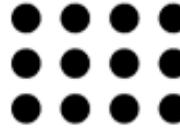
Level 6

Level 5

Critical Checkpoints for Division

The big goals, by the end of the unit, are that all students in this year level can:

First Year of School	Share objects equally between 2 people	Skip-count backwards by 10 from 120	
Level 1	Share objects into equal groups and describe remainders e.g. “13 shared between 5 gives 2 to each with 3 remainders”	Skip-count backwards by 5 and 2 from 120	Write the number sentence for shared between situations with materials showing e.g. $12 \div 3 = 4$
Level 2	Share objects using arrays (arranged into equal numbers of rows and columns)	Fluently divide by 2 (halving), backwards doubles, fact families for twos Use skip-counting as a strategy to solve divisions by 5 and 10	Write division number sentences that include remainders e.g. $20 \div 7 = 2 \text{ r } 6$
Level 3	Create and solve both partitive and quotitive problems (Partition: 8 balloons, 4 people, how many did each person get? Quotition: 8 balloons, each person got 2, how many people?)	Fluently divide by 10 and 5 using the tens family (to divide by 5, divide by 10 then double it) and divide by 4 using half half	Fluently divide by 3 using multiplication fact families

Level 3	<p>Using an array, record the full multiplication and division fact family</p>	 <p>3 rows of 4 is 12 4 columns of 3 is 12 12 shared into 3 rows is 4 12 shared into 4 columns is 3</p> <p>$3 \times 4 = 12$ $4 \times 3 = 12$ $12 \div 3 = 4$ $12 \div 4 = 3$</p>
Level 4	<p>Use fact families to solve and justify answers to divisions by 6, 7 and 9 ($49 \div 7 = 7$ because $7 \times 7 = 49$)</p>	<p>Fluently use halving strategies to divide (to divide by 8 think half half half, as well as dividing larger numbers by 2 and 4 using repeated halving)</p>
	<p>Estimate answers to larger division problems by applying power of ten patterns to single-digit multiplication facts</p>	
	<p>Use the reverse area model to partition a dividend into easier to divide parts</p>	
Level 5	<p>Uses near multiplication facts to solve divisions with remainders ($27 \div 4$, thinks $4 \times 6 = 24$, so $4 \times 6 + 3 = 27$, so it is 6 r 3)</p>	<p>Apply multiplicative thinking to solve real-life problems</p>
	<p>Use the multiply to divide strategy to solve divisions with remainders</p> <p>$253 \div 6$, solve by: $6 \times \underline{40} = 240$, $6 \times \underline{2} = 12$, so $42 \text{ r } 1 = 42 \frac{1}{6}$ OR $240 \div 6 = 40$ $13 \div 6 = 2 \text{ r } 1$, so $42 \frac{1}{6}$</p>	<p>Use different notations to represent division</p> <p>$25 \div 4, 4 \overline{)25}, \frac{25}{4}$</p> <p>Record remainders as fractions and decimals where appropriate for the context of the problem</p> <p>$25 \div 4 = 6 \frac{1}{4} \text{ or } 6.25$</p>

<h3>Understand and apply the divisibility tests</h3>			
Level 6	Divide 4-digit numbers by 1-digit using short division or another preferred strategy	Use the multiply to divide strategy or short division for 4-digit divisions by a 2-digit number on paper e.g. to solve $564 \div 18$: $18 \times 10 = 180$ $18 \times 20 = 360$ $18 \times 30 = 540$ So, it will be 30 groups of 18 + 1 more group of 18 (540 + 18 = 558) with 6 remainders, so 31 r 6	Chooses the best strategies to solve complex worded problems involving division (estimating, multiply to divide strategy, reverse area model, short division algorithm)
Divide decimals by powers of ten			

Division Skills and Strategies Staircase

F / K

Skip-count backwards by 10

Share objects equally between 2 people

Division Unit 1

Pre-warm up and warm-down songs and games

Level 1

Record answers using division number sentences, e.g. $12 \div 3 = 4$

Division Unit 2

Share objects into equal groups and describe remainders

Division Unit 2

Skip-count backwards by 5 and 2 from 120

Patterns Unit 2

Record answers and remainders, e.g. $19 \div 5 = 3 \text{ r } 4$

Division Unit 2

Share objects equally using arrays

Division Unit 2 by using the variations focused on arranging materials into arrays for these lessons

Level 2

Fluently divide by 2 up to 20 (halving, backwards doubles and fact families for the 2 times tables)

Applying Addition Unit 6 Doubles and Division Unit 1 Share between 2

Use skip-counting as a strategy to solve divisions by 5 and 10

Division Unit 3

Create and solve partitive and quotitive division problems, understanding the difference between these two types of division situations

Years 3-6 Division Unit 2

Use an array to record a multiplication and division fact family

5 for free – main menu lesson

Level 3

Divide by 3 using the multiplication fact family

Unit 4

Divide by 5 using reverse times tables strategies ($\div 10$, then double)

Unit 3

Divide by 10 using place value patterns

Division Unit 3

Divide by 4 using halving strategies

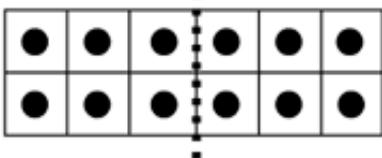
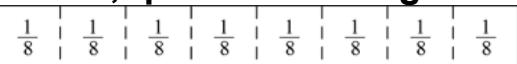
Division Unit 3

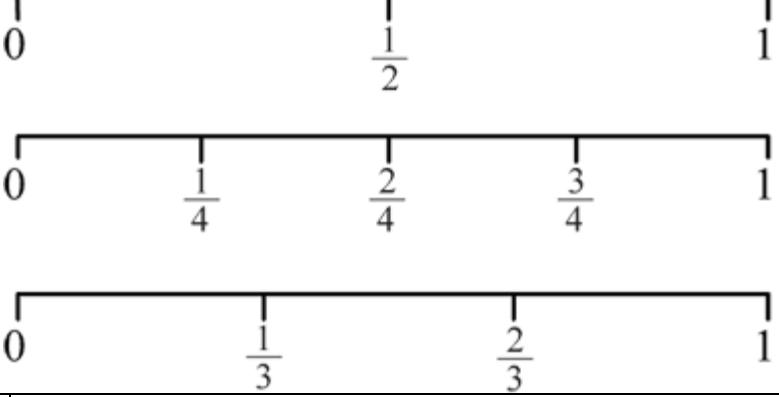
Division Skills and Strategies Staircase

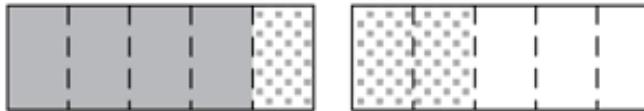


Critical Checkpoints for Fractions and Decimals

The big goals, by the end of the unit, are that all students in this year level can:

First Year of school	Use 'out of' language e.g. 2 out of 3 of the students at the front are girls Know their ordinal numbers to at least 10		
Level 1 <u>(not required by Aus V9 or Vic 2.0, but front-loading for Level 2 content nevertheless)</u>	Describe two equal parts of a whole as two halves explains when something is not half and why	Use fraction notation for halves, understanding this as 1 <u>out</u> of 2 parts  	Solve half of collections 
Level 2	Create halves, quarters and eighths Strategy: Cut in half, then half (for quarters), then half again (for eighths) Use fraction notation for halves, quarters and eighths 	Solve quarters and eighths of collections Strategy: Split the whole collection in half, then half (for quarters), then half again (for eighths)	Compare halves, quarters and eighths, e.g. $\frac{1}{8}$ is less than $\frac{1}{4}$ because it is 1 <u>out of</u> 8 parts, instead of 1 <u>out of</u> 4 e.g. $\frac{1}{2}$ is more than $\frac{1}{4}$ because it is 1 out of 2 parts, rather than 1 out of 4 parts
Level 3	Real-life representations of thirds, fifths and tenths (as well as halves, quarters and eighths) with any numerator	Recognise equivalence to one whole , 5 out of 5 parts makes one whole, so five fifths are needed to make one whole rename 1 as $\frac{2}{2}$ $\frac{3}{3}$ $\frac{4}{4}$ $\frac{5}{5}$ $\frac{8}{8}$	Count by halves, thirds, quarters, eighths, fifths and tenths up to one whole

Level 3	<p>Place halves, quarters, eighths, thirds, fifths and tenths on parallel number lines</p> 
Level 4 Fractions	<p>Understand, identify and create equivalent fractions</p> <p>Convert between improper and mixed fractions, and count by fractions above one whole</p> 
Level 4 Decimals	<p>Represent decimals as money Understanding the wholes as dollars and parts as cents, separated by the decimal point. Show money in decimal and fraction notation, e.g. \$5.35 as 5 whole dollars and 35 out of 100 cents: $5 \frac{35}{100}$ or 5 wholes, 3 ten cents (tenths) and 5 single cents (hundredths): $5 + \frac{3}{10} + \frac{5}{100}$</p> <p>Represent decimals as measurement Understanding wholes as metres and parts as centimetres, separated by the decimal point $50\text{cm} = 0.50\text{m} = 0.5\text{m}$ $140\text{cm} = 1.40\text{m} = 1.4\text{m}$ (zeroes at the end do not change the value)</p>

	Compare unit fractions (numerators of 1), justify the comparison with conceptual reasoning (not LCD)	Compare, order and place decimals of up to 3 places on number lines
	Add and subtract fractions (including worded problems) with the same denominator , including where the result is an improper fraction or mixed numeral	Add mixed numerals with the same or a related denominator
Level 6 Fractions	$\frac{4}{5} + \frac{3}{5} = \frac{7}{5} = 1\frac{2}{5}$ 	$2\frac{1}{5} + 1\frac{2}{5} = 3\frac{3}{5}$

<p>Converting between fractions, decimals and percentages</p> <p>Level 6 Operating with decimals (also mentioned in previous units)</p>	<p>Solve a fraction and percentage (10%, 25%, 50%) of a collection, connecting this to division</p> <p>e.g. to work out $\frac{3}{8}$ of 40, divide 40 by 8 (half half half) = 5, then multiply by 3 ($3 \times 5 = 15$)</p> <p>e.g. to work out 25%, think half of half</p>	<p>Convert between fractions, decimals and percentages</p> <p>'25% means 25 out of 100 or $\frac{1}{4}$ or 0.25'</p> <p>75%, 0.75, $\frac{3}{4}$</p> $1.37 = 137\% = \frac{137}{100} = 1\frac{37}{100}$
	<p>Add or subtract decimals to 3 places</p> <p>First estimating the answer by rounding</p>	<p>Multiply and divide decimals by powers of ten</p>

Fractions and Decimals

Skills and Strategies

Staircase

Level 4

Connect fractions to tenths and hundredths (out of 10, out of 100) with decimal notation including money and measurement links

Year 4
Decimals

Convert between improper fractions and mixed numerals

Fractions Unit 4

Understand, identify and create equivalent fractions

Fractions Unit 3

Count by fractions above one whole, including mixed numeral notation

Fractions Unit 2

Place halves, quarters, eighths, fifths and tenths on number lines (any numerator)

Fractions Unit 2

Count by halves, quarters, eighths, thirds, fifths and tenths

Fractions Unit 2

Recognise equivalence to one whole (5 fifths makes one whole, $\frac{3}{3}$ makes one whole)

Fractions Unit 2

Real-life connections to common proper fractions

Years 3-6 Pack Fractions Unit 2

Compare one half, one quarter and one eighth (numerators of 1)

Early Years Pack Fractions Unit 2

Level 2

Create quarters and eighths of collections

Early Years Pack Fractions Unit 2

Create quarters (half of half) and eighths (half of half of half) of shapes

Early Years Pack Fractions Unit 2

Level 1

Solve half of collections

Fractions Unit 2 (front-loading in advance of curriculum)

Use fraction notation to represent half $\frac{1}{2}$

Fractions Unit 2 (front-loading in advance of curriculum)

F / K

Understand half as two equal parts of one whole and create half of shapes

Early Years Pack Fractions Unit 2 (front-loading in advance of curriculum)

Use 'out of' language

Early Years Pack Fractions Unit 1

Know the ordinal forms of numbers to 10

Early Years Pack Place Value Unit 10

Fractions and Decimals Skills and Strategies Staircase

Level 7

Multiply and divide fractions

Multiply Unit 10
Divide Unit 10

Multiply and divide decimals by powers of ten

Multiply Unit 9
Divide Unit 9

Add and subtract up to 3 decimal places

Add Unit 8
Subtract Unit

Solve a percentage discount or increase

Fractions Unit 8

Level 6

Solve a fraction and percentage of a collection by connecting to division

Fractions Unit 8

Convert between fractions, decimals and percentages

Fractions Unit 7

Add and subtract fractions with different denominators

Fractions Unit 6

Order fractions (numerators that are more than 1), justifying with conceptual reasoning and a range of strategies (benchmarking to half or other fractions, visualising models or fraction wall pieces, residual part thinking, converting to percentages using the *think \$1* strategy) not LCD processes

Fractions Unit 5

Compare decimals to 3 places

Year 5 Decimals Unit

Level 5

Add mixed numerals with the same or a related denominator

Fractions Unit 6

Add and subtract fractions with the same or related denominators, including worded problems

Fractions Unit 6

Compare unit fractions (numerator of 1), justifying with conceptual reasoning and a range of strategies (benchmarking to half, visualising models, fraction wall pieces) not LCD processes

Fractions Unit 5

Critical Checkpoints for Patterns and Algebra

Note: Many of these checkpoints overlap with [Multiplication](#).

The big goals, by the end of the unit, are that all students in this year level can:

First Year of School	Sort objects in different ways and describe the categories they used to classify each collection	Continue and create AB (red, blue, red blue) and similar patterns with objects (shapes, counters), sounds (claps), actions (stomps)			
	Understand that a pattern must repeat and be predictable				
	Skip-count by 10 from zero (in advance of curriculum)				
Level 1	Continue and create ABC, ABB, ABBC patterns or similar with objects, sounds and actions	Solve patterns counting by ones up to and back from 120	Skip-count by 5 up to 120 and backwards		
	Skip-count by 2 up to 120 and backwards	Continue, create and describe rules for patterns that increase or decrease by 10, 5 or 2			
Level 2	Understand, explain and continue additive patterns that increase or decrease by a constant amount 3, 7, 11, __, 19, 23, 27				
Level 3	Understand the equal sign (=) means “is the same as” and must balance in value on both sides				
	Solving missing parts in single-digit addition and subtraction number sentences to balance equations	Skip-count by 3 and 4			

Level 4

Solve missing parts in 2-digit addition and subtraction problems

$$\square + 55 = 83, \square - 15 = 19$$

Skip-count by 6, 7, 8 and 9 using partitioning and ten more compensation strategies
(to skip-count by 8, use a ten more, 2 back strategy, particularly for non-zero starts)

Continue, create and describe rules for patterns that increase or decrease by fractions, including mixed numbers and improper fractions

Level 5

Solving missing parts in multiplication or division number sentences to balance equations

Level 6

Apply the order of operations and understand its use in real-life

Use a table of values for geometric and number patterns to record and solve values of a much later term in the same pattern

e.g. How many matches will you need to make 100 squares?

$\square, \square\square, \square\square\square, \square\square\square\square, \dots \rightarrow$

number of squares	1	2	3	4	...	100
number of matches	4	8	12	16	...	

The pattern is multiplying by 4, so you will need 400 matches to make 100 squares

Create and solve input/output tables involving multiple steps