

Planning Guide

Early Additive to Advanced Additive

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Addition and Subtraction

Strategy	Numeracy Booklet reference	Unit in this book	pages
Work out how many tens and hundreds are in all of a whole number.	<i>Teaching Addition and Subtraction (Book 5)</i> How Many Ten-dollar Notes?	1 – Tens and hundreds <i>We are learning how many tens there are in numbers less than 1000.</i>	24
	How Many Tens and Hundreds?	<i>We are learning how many hundreds there are in numbers over 1000.</i>	25 to 27
Solve addition problems by forming tens from ones and forming hundreds from tens.	<i>Teaching Addition and Subtraction (Book 5)</i> Saving Hundreds	2 – Adding using tens and hundreds <i>We are learning how knowing 10 ones make 1 ten and 10 tens make 1 hundred can help us solve problems like $567 + \boxed{?} = 800$.</i>	28 and 29
Solve addition and subtraction problems with tidy numbers on the number line.	<i>Teaching Addition and Subtraction (Book 5)</i> Jumping the Number Line	3 – Adding using tidy numbers with problems like $37 + \boxed{?} = 52$ <i>We are learning to jump through a tidy number on a number line to solve problems like $37 + \boxed{?} = 52$.</i>	30 and 31
	Problems like $23 + \boxed{?} = 71$	<i>We are learning to solve problems like $13 + \boxed{?} = 91$ by jumping up by a tidy number on a number line, then jumping back a small number.</i>	32 and 33
Solve addition problems using rounding and compensating (tidy numbers).	<i>No specific Numeracy Booklet reference</i>	4 – Adding using tidy numbers with problems like $15 + 27 = \boxed{?}$ <i>We are learning to solve addition problems by first adding a tidy number then subtracting a small number to compensate.</i>	34 to 37

Strategy	Numeracy Booklet reference	Unit in this book	pages
Solve subtraction problems using equal additions to turn one of the numbers into a tidy number.	<i>Teaching Addition and Subtraction (Book 5)</i> Equal Additions	5 – Subtracting using tidy numbers <i>We are learning to solve problems by equal additions that turn one of the numbers into a tidy number.</i>	38 to 40
Solve subtraction problems using rounding and compensating (tidy numbers).	Problems Like $73 - 19 = \boxed{?}$	<i>We are learning to solve problems like $73 - 19$ by first subtracting a tidy number then adding on a small number to get the answer.</i>	41 to 43
Solve addition and subtraction problems by compensating with tidy numbers.	<i>Teaching Addition and Subtraction (Book 5)</i> When One Number Is Near 100	6 – Adding and subtracting using tidy numbers close to 100 <i>We are learning to solve some addition and subtraction problems by adjusting one number to the nearest 100.</i>	44 and 45
Solve subtraction problems using standard place value partitioning, e.g. $73 - 46 = 73 - 40 = 33$, $33 - 6 = \boxed{?}$.	<i>No specific Numeracy Booklet reference</i>	7– Subtracting using place value <i>We are learning to solve subtraction problems using place value to partition numbers.</i>	46 and 47 and 49
Solve subtraction problems by operating on place value while “parking” ones, tens (hundreds).		<i>This is included in Unit 7 as the activity called “Parking numbers”.</i>	48
Solve comparison and difference problems by reversing (adding instead of subtracting), e.g. $72 - 45 = \boxed{?}$ as $45 + \boxed{?} = 72$.	<i>Teaching Addition and Subtraction (Book 5)</i> Don’t Subtract – Add!	8 – Subtracting by adding instead <i>We are learning that problems like $34 + \boxed{?} = 51$ and $51 - 34 = \boxed{?}$ have the same answer.</i>	50 and 51
	<i>Teaching Number Sense and Algebraic Thinking (Book 8)</i> When Subtraction Becomes Addition	9 – Subtracting bigger numbers by adding instead <i>We are learning to solve problems like $\boxed{?} - 7566 = 13\,987$.</i>	52 and 53

Strategy	Numeracy Booklet reference	Unit in this book	pages
Solve addition problems by reversing (subtracting instead of adding).	<i>Teaching Number Sense and Algebraic Thinking (Book 8)</i> Reversing Addition	10 – Adding by subtracting instead <i>We are learning that problems like $\boxed{?} + 145\ 679 = 623\ 455$ are best solved by reversing them.</i>	54 and 55
Solve subtraction problems by doing a different subtraction.	<i>Teaching Addition and Subtraction (Book 5)</i> Problems Like $67 - \boxed{?} = 34$	11 – Subtracting by doing a different subtraction <i>We are learning to solve problems like $67 - \boxed{?} = 34$ by solving $34 + \boxed{?} = 67$ or by finding $67 - 34$.</i>	56 and 57
	<i>Teaching Number Sense and Algebraic Thinking (Book 8)</i> Subtraction to Subtraction	12 – Subtraction with bigger numbers by doing a different subtraction <i>We are learning to solve problems like $74\ 567 - \boxed{?} = 28\ 973$ (reversibility).</i>	58 and 59
Solve addition and subtraction problems by choosing an efficient strategy.	<i>Teaching Addition and Subtraction (Book 5)</i> Mixing the Methods	13 – Adding and subtracting practice <i>We are learning to solve addition and subtraction problems by choosing a strategy.</i> <i>Note: This unit revises all of the addition and subtraction strategies covered in units 1 to 12.</i>	60 to 65
Solve addition problems where the numbers are near doubles.	<i>Teaching Addition and Subtraction (Book 5)</i> Near Doubles	14 – Adding near doubles <i>We are learning to solve addition problems where the numbers are easily related to doubles.</i>	66 and 67
Solve addition and subtraction problems by adding or subtracting the ones and tens separately when appropriate.	<i>Teaching Addition and Subtraction (Book 5)</i> Problems like $37 + \boxed{?} = 79$	15 – Adding and subtracting tens and ones separately <i>We are learning to add mentally the ones and tens separately when appropriate.</i>	68 and 69

Strategy	Numeracy Booklet reference	Unit in this book	pages
Solve addition problems by looking for compatible numbers.	<i>Teaching Addition and Subtraction (Book 5)</i> Three or More at a Time	16 – Adding and subtracting by looking for compatible numbers <i>We are learning to look at the addition and subtraction of three or more numbers to calculate easy combinations first.</i>	70 to 73
Solve addition and subtraction problems where large numbers roll over.	<i>Teaching Addition and Subtraction (Book 5)</i> Large Numbers Roll Over	17 – Adding and subtracting where large numbers roll over <i>We are learning how a number rolls over when 10 of any unit occur in an addition, and how the number rolls back when 10 of any unit occur in a subtraction.</i>	74 and 75
Understand the answer on the left of the equals sign is the same as the answer on the right of the equals sign.	<i>Teaching Addition and Subtraction (Book 5)</i> A Balancing Act	18 – Equals <i>We are learning that the answer on the left of the equals sign is the same as the answer on the right of the equals sign.</i>	76 and 77
Check if the answer to an addition or subtraction problem is reasonable with estimation.	<i>Teaching Addition and Subtraction (Book 5)</i> Estimation as a Check	19 – Checking answers to addition and subtraction using estimation <i>We are learning to check any addition and subtraction with estimation.</i>	78 and 79
	<i>Teaching Number Sense and Algebraic Thinking (Book 8)</i> Checking Addition and Subtraction with Estimation	20 – More estimating answers <i>We are improving our number sense by learning to make estimations after addition and subtraction calculations.</i>	80 and 81
Solve addition problems by exchanging tens for ones, and hundreds for tens, leading to a written algorithm.	<i>Teaching Addition and Subtraction (Book 5)</i> A Standard Form for Addition	21 – Adding using a standard written form <i>We are learning a standard method of doing an addition problem on paper when the numbers are too difficult to add mentally.</i>	82 to 85

Strategy	Numeracy Booklet reference	Unit in this book	pages
Solve subtraction problems by exchanging ones for tens, and tens for hundreds (decomposition leading to a written algorithm).	<i>Teaching Addition and Subtraction (Book 5)</i> Decomposition – A Standard Form for Subtraction	22 – Subtracting using a standard written form <i>We are learning a standard method of doing a subtraction problem on paper when the numbers are too difficult to subtract mentally.</i>	86 to 89
Choose appropriately whether to use a written or mental strategy to solve addition and subtraction problems.	<i>Teaching Addition and Subtraction (Book 5)</i> Mental or Written?	23 – Mental or written for addition and subtraction? <i>We are learning to select wisely between using a mental method and a written method for addition and subtraction problems.</i>	90 and 91
Choose critically from a range of mental strategies to solve addition and subtraction problems.	<i>Teaching Addition and Subtraction (Book 5)</i> Mixing the Methods People's Ages	24 – Adding and subtracting by choosing an efficient strategy <i>We are learning to choose an efficient strategy to solve addition and subtraction problems.</i> <i>This is included in unit 21 as the activity “Years and years”.</i> <i>We are learning to apply mental subtraction methods to an application.</i> <i>Note: This unit revises all of the addition and subtraction strategies covered in units 1 to 23.</i>	92 to 95 and 97 to 99 96

Multiplication and Division

Strategy	Numeracy Booklet reference	Unit in this book	pages
Work out how many ones, tens, hundreds and thousands are in all of a whole number.	<i>Teaching Multiplication and Division (Book 6)</i> Money Changing	25 – Nesting numbers <i>We are learning to find how many ones, tens, hundreds and thousands there are in all of a whole number.</i>	100 to 103
Use times five facts to work out times six, seven and four facts (using the distributive property).	<i>Teaching Multiplication and Division (Book 6)</i> Fun with Fives	26 – Using times five <i>We are learning to work out our times six, seven and eight tables from our times five tables.</i>	104 to 107
Multiply by tens, hundreds and thousands and other multiples of ten.	<i>Teaching Multiplication and Division (Book 6)</i> Multiplying Tens	27 – Multiplying tens <i>We are learning to multiply tens, hundreds, thousands and other tens numbers.</i>	108 to 111
Solve multiplication problems by taking some off or putting some on, e.g. using times twenty facts to work out times nineteen facts, using times ten facts to work out times nine facts.	<i>Teaching Multiplication and Division (Book 6)</i> A Little Bit More / A Little Bit Less	28 – Multiplying by taking some off or putting some on <i>We are learning to solve multiplication problems by taking some off or putting some on (compensation).</i>	112 to 115
Change the order of the factors to make a multiplication problem easier, e.g. $26 \times 3 = 3 \times 26$.	<i>Teaching Multiplication and Division (Book 6)</i> Turn Abouts	29 – Multiplying by changing the order <i>We are learning to change the order of numbers to make multiplication easier.</i>	116 and 117

Strategy	Numeracy Booklet reference	Unit in this book	pages
Use two times facts to work out three, four, six and eight times facts (using doubling and the distributive property).	<i>No specific Numeracy Booklet reference</i>	30 – Using times two facts <i>We are learning to use times two facts to work out times three, four, six and eight facts using doubling.</i>	118 to 121
Solve division problems using repeated addition and multiplication facts.	<i>Teaching Multiplication and Division (Book 6)</i> Long Jumps	31 – Solving “How many sets of ...?” division problems using addition and multiplication <i>We are learning to solve division problems using repeated addition and multiplication facts we know.</i>	122 to 127
Solve sharing problems by reversing multiplication facts.	<i>Teaching Multiplication and Division (Book 6)</i> Goesintas	32 – Dividing using multiplying <i>We are learning to solve “How many sets of ...?” and “sharing” division problems using multiplication (reversibility).</i>	128 to 135
Using halving to solve division by two, four and eight.	<i>No specific Numeracy Booklet reference</i>	33 – Dividing by two, four and eight <i>We are learning to use our times two facts and halving to divide by two, four and eight.</i>	136 and 137
Choose an efficient way of solving multiplication and division problems.	<i>No specific Numeracy Booklet reference</i>	34 – Multiplying and dividing by choosing a strategy <i>We are learning to choose an efficient strategy to find the answer to multiplication problems.</i> <i>Note: This unit revises all of the multiplication and division strategies covered in units 25 to 33.</i>	138 to 141
Solve problems using a combination of addition, subtraction, multiplication and division mental strategies.	<i>No specific Numeracy Booklet reference</i>	35 – Solving problems with addition, subtraction, multiplication and division <i>We are learning to solve problems with a combination of addition, subtraction, multiplication and division using an efficient strategy.</i>	142 to 149

Ratios and Proportions

Strategy	Numeracy Booklet reference	Unit in this book	pages
Find fractions of a set using multiplication and division.	<i>Teaching Fractions, Decimals and Percentages (Book 7)</i> Birthday Cakes	36 – Finding fractions of sets <i>We are learning to use multiplication to find fractions of a set.</i>	150 to 153
Use symmetry to find fractions of continuous shapes like lengths, circles and rectangles.	<i>Teaching Fractions, Decimals and Percentages (Book 7)</i> Fractional Blocks	37 – Finding fractions using patterns <i>We are learning to use patterns to find fractions of shapes and sets.</i>	154 to 157
Solve division problems that have fractional answers using halving.	<i>No specific Numeracy Booklet reference</i>	38 – Dividing and fraction answers <i>We are learning to solve division problems that have fractions in the answer.</i>	158 to 161
Create equivalent ratios by repeated copying.	<i>Teaching Fractions, Decimals and Percentages (Book 7)</i> Seed Packets	39 – Equivalent ratios <i>We are learning to solve simple ratio problems by repeated copying.</i>	162 to 165
Measure how many times a unit fraction goes into a whole number, e.g. how many quarters are there in five? ($5 \div \frac{1}{4} = 20$)	<i>No specific Numeracy Booklet reference</i>	40 – Dividing a whole number into parts <i>We are learning how many times a unit fraction goes into a whole number.</i>	166 and 167
Rename improper fractions as mixed numbers using materials with multiplication, and position improper fractions on a number line.	<i>Teaching Fractions, Decimals and Percentages (Book 7)</i> Trains	41 – Improper fractions and mixed fractions <i>We are learning to find where fractions live amongst whole numbers.</i>	168 to 173

Algebraic Thinking

Strategy	Numeracy Booklet reference	Unit in this book	pages
Find relationships in repeating and sequential patterns and represent the relationships using additive and simple multiplicative rules, e.g. in the sequence 3, 7, 11, 15, ... the tenth number can be found by $3 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 39$.	<i>Teaching Number Through Measurement, Geometry, Algebra and Statistics (Book 9)</i> Sticky Moments	42 – Patterns and rules <i>We are learning to find patterns and describe them using rules.</i>	174 to 181
		43 – Number patterns <i>We are learning to recognise and continue number patterns.</i>	182 to 185
Use a rule to create a pattern.	<i>Teaching Number Through Measurement, Geometry, Algebra and Statistics (Book 9)</i> Sticky Moments	44 – Creating number patterns <i>We are learning to use a rule to create a pattern.</i>	186 to 195
Find relationships in patterns and ordered pairs and describe the relationships using word rules, tables and graphs.	<i>Teaching Number Through Measurement, Geometry, Algebra and Statistics (Book 9)</i> Sticky Moments	45 – Tables and graphs <i>We are learning to find relationships in patterns and describe them using rules, tables and graphs.</i>	196 to 199
Interpret relationships shown in equations using the properties of operations and understanding of the equals sign.	<i>No specific Numeracy Booklet reference</i>	46 – Equations <i>We are learning to understand equations.</i>	200 and 201
		47 – Relationships in equations <i>We are learning to describe relationships in equations.</i>	202 to 206

Number Knowledge

Knowledge being developed	Resources	Number Knowledge unit in this book	pages
Identify all of the numbers in the range 1 to 1 000 000. (Number Identification)	<i>Teaching Number Knowledge (Book 4)</i> Number Fans Place Value Houses Number Hangman	Number Knowledge unit A <i>Reading and writing whole numbers</i>	208 and 209
Recall the groupings of tens and hundreds that can be made from four-digit numbers. (Grouping/Place Value)	<i>Teaching Number Knowledge (Book 4)</i> Number Fans Place Value Houses Number Hangman Tens in Hundreds and More	Number Knowledge unit B <i>Tens and hundreds</i>	210
Identify decimals to three decimal places. (Number Identification)	<i>Teaching Number Knowledge (Book 4)</i> Number Fans Reading Decimal Fractions More Reading of Decimal Fractions Zap Close to 100	Number Knowledge unit C <i>Introducing decimals</i> Number Knowledge unit D <i>Reading and writing decimals</i>	211 and 212 213 to 215
Recall the number of tenths and hundredths in numbers up to two decimal places. (Grouping/Place Value)	<i>Teaching Number Knowledge (Book 4)</i> Zap Tens in Hundreds and More Place Value Houses	Number Knowledge unit E <i>Tenths and hundredths</i>	216
Recall multiplication basic facts with tens, hundreds and thousands. (Basic Facts)	<i>Teaching Number Knowledge (Book 4)</i> Digits on the Move	Number Knowledge unit F <i>Multiplying tens, hundreds and thousands</i> Number Knowledge unit G <i>Multiplying and dividing by 10, 100 and 1000</i>	217 218

Knowledge being developed	Resources	Number Knowledge unit in this book	pages
Order whole numbers in the range 0 – 1 000 000. (Number Sequence and Order)	<i>Teaching Number Knowledge (Book 4)</i> Number Fans Card Ordering Arrow Cards Number Line Flips Bead Strings Who is the Richest?	<i>Number Knowledge unit H</i> <i>Ordering whole numbers</i>	219 and 220
Order decimals. (Number Sequence and Order)	<i>Teaching Number Knowledge (Book 4)</i> Number Fans Card Ordering Arrow Cards Bead Strings Who Wins?	<i>Number Knowledge unit I</i> <i>Ordering decimals</i>	221
Round whole numbers to the nearest thousand, hundred, or ten. (Grouping/Place Value)	<i>Teaching Number Knowledge (Book 4)</i> Sensible rounding	<i>Number Knowledge unit J</i> <i>Rounding to the nearest ten, hundred and thousand</i>	222 and 223
Round decimals, with up to two places, to the nearest whole number. (Grouping/Place Value)	<i>Teaching Number Knowledge (Book 4)</i> Linking Money and Decimal Fractions Sensible Rounding	<i>Number Knowledge unit K</i> <i>Rounding money</i> <i>Number Knowledge unit L</i> <i>Rounding to the nearest whole number</i>	224 225

Knowledge being developed	Resources	Number Knowledge unit in this book	pages
Say the whole number word sequences, forwards and backwards by ones, tens, hundreds, and thousands in the range 0 – 1 000 000. Say the number 1, 10, 100, 1000 before and after a given number in the range 0 – 1 000 000. (Number Sequence and Order)	<i>Teaching Number Knowledge (Book 4)</i> Lucky Dip Using Calculators Rocket – Where Will It Fit? Super Liquorice Loopy	<i>Number Knowledge unit M</i> <i>Skip counting in ones, tens, hundreds and thousands</i>	226 and 227
Say the decimal word sequences, forwards and backwards, in tenths and hundredths. (Number Sequence and Order)	<i>Teaching Number Knowledge (Book 4)</i> Lucky Dip Using Calculators Rocket – Where Will It Fit? Loopy	<i>Number Knowledge unit N</i> <i>Skip counting in tenths and hundredths</i>	228 and 229
Recall addition and subtraction facts to 20, and groupings within a 1000, and multiples of 10 that add to 1000. (Basic Facts)	<i>Teaching Number Knowledge (Book 4)</i> Number Boggle Tens Frames Again Number Mats and Number Fans Bridges	<i>Number Knowledge unit O</i> <i>Addition and subtraction basic facts</i>	230 to 232
Recall groupings of twos, threes, fives and tens in any number up to 100 and the resulting remainders. (Grouping/Place Value)	<i>Teaching Number Knowledge (Book 4)</i> Counting Skip-counting on the Number Line Fabulous Fives Beep	<i>Number Knowledge unit P</i> <i>Twos, threes, fives and tens in numbers to 100</i>	233

Knowledge being developed	Resources	Number Knowledge unit in this book	pages
Recall multiplication and division facts for 2, 3, 5 and 10 times tables. (Basic Facts)	<i>Teaching Number Knowledge (Book 4)</i> Number Mats and Number Fans Bowl a Fact In and Out Multiplication Madness Dividing? Think About Multiplying First	<i>Number Knowledge unit Q</i> <i>Multiplication and division basic facts</i>	234 to 238
Identify the symbols for any fraction including tenths, hundredths, thousandths. (Number Identification)	<i>Teaching Number Knowledge (Book 4)</i> Fraction Pieces Creating Fractions More Geoboard Fractions Non-unit Fractions	<i>Number Knowledge unit R</i> <i>Identifying fractions</i>	239 and 240
Say the forwards and backwards word sequences for halves, quarters, thirds, fifths and tenths. (Number Sequence and Order)	<i>Teaching Number Knowledge (Book 4)</i> Who Has More Cake?	<i>Number Knowledge unit S</i> <i>Counting on and back in fractions</i>	241 and 243
Order unit fractions for halves, thirds, quarters, fifths and tenths. (Number Sequence and Order)	<i>Teaching Number Knowledge (Book 4)</i> Card Ordering Who Has More Cake?	<i>Number Knowledge unit T</i> <i>Ordering fractions</i>	243





New Zealand Curriculum Mathematics
Stage 6 Advanced Additive
Number and Algebra