Planning Guide
Advanced Additive to Advanced Multiplicative

Addition and Subtraction

E | CA | AC | EA | **AA** | **AM** | AP

Strategy	Numeracy book reference	Unit in this book	Page
Choose critically from a range of strategies to solve addition and subtraction problems.	***Teaching Addition, Subtraction and Place Value (Book 5)*** No specific reference but this unit revises all Advanced Additive addition and subtraction strategies.	**1 - Addition and subtraction revision** ***We are learning to use an efficient way to solve addition and subtraction problems.***	**18 to 21**
Use multiplication to solve addition and subtraction problems where common factors can be found.	***Teaching Addition, Subtraction and Place Value (Book 5)*** Multiple Ways to Add and Subtract	**2 - Using multiplication to solve addition and subtraction problems** ***We are learning to use multiplication and common factors to solve addition and subtraction problems.***	**22 to 23**
	Average Ability	***We are learning to add and subtract by averaging numbers.***	**24**
		We are learning to use multiplication to add and subtract a series of whole numbers, fractions and decimals – except questions 4 to 6.	**25 to 27**
	Teaching Number Sense and Algebraic Thinking (Book 8) Adding Sequences	***We are learning to use multiplication to add and subtract a series of whole numbers, fractions and decimals – questions 4 to 6.***	**26**
Solve addition and subtraction problems with integers (positive and negative numbers).	***Teaching Addition, Subtraction and Place Value (Book 5)*** Dollars and Bills	**3 - Adding and subtracting integers** ***We are learning to add integers.***	**28 to 29**
	Hills and Dales	***We are learning to add and subtract integers in the real world.***	**30 to 33**
		We are leaning to add and subtract integers.	**34 to 38**
	Teaching Number Sense and Algebraic Thinking (Book 8) 6 Minus 8 Does Work	***We are learning a method of subtracting using negative numbers.***	**39**

Multiplication and Division

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Strategy	Numeracy book reference	Unit in this book	Page
Use standard place value to solve multiplication problems (distributive property).	*Teaching Multiplication and Division (Book 6)* Multiplication Smorgasbord	**4 - Multiplying using place value** *We are learning to multiply using place value.*	**40 to 43**
Use tidy numbers (rounding and compensating) to solve multiplication problems (distributive property).	*Teaching Multiplication and Division (Book 6)* Multiplication Smorgasbord	**5 - Multiplying using rounding and compensating** *We are learning to multiply using rounding and compensating.*	**44 to 47**
Use place value and tidy numbers (rounding and compensating) to solve division problems.	*Teaching Multiplication and Division (Book 6)* Paper Power *Note: The written forms part of this lesson is addressed by unit 20.*	**6 - Dividing using two different strategies** *We are learning to divide using place value or rounding and compensating.*	**48 to 51**
Use proportional adjustment like doubling and halving, thirding and trebling, to solve multiplication problems.	*Teaching Multiplication and Division (Book 6)* Cut and Paste	**7 - Multiplying using proportional adjustment** *We are learning to multiply using doubling and halving.*	**52 to 55**
Use proportional adjustment to solve division problems.	*Teaching Multiplication and Division (Book 6)* Proportional Packets	**8 - Dividing using proportional adjustment** *We are learning to solve division problems using how many times one number will go into another.*	**56 to 59**
Simplify division problems by changing both numbers (halving, thirding etc).	*Teaching Multiplication and Division (Book 6)* The Royal Cooking Lessons	**9 - Dividing by changing both numbers** *We are learning to solve division problems by changing them to simpler problems that have the same answer.*	**60 to 63**

Strategy	Numeracy book reference	Unit in this book	Page
Use proportional adjustment like doubling and halving, thirding and trebling, to solve multiplication and division problems.	***Teaching Number Sense and Algebraic Thinking (Book 8)*** Doubling and Halving	**10 - Multiplying and dividing using proportional adjustment** ***We are extending applications of doubling and halving, trebling and thirding.***	**64 to 65**
	Multiply by 25	**11 - Multiplying by 25** ***We are learning a quick way to multiply by 25.***	**66 to 67**
Solve division and multiplication problems using reversibility.	***Teaching Number Sense and Algebraic Thinking (Book 8)*** Reversals with Multiplication and Division	**12 - Exploring multiplication and division** ***We are learning how to reverse multiplication and division problems to make them easier.***	**68 to 70**
Know that changing the order in division matters.	To Turn or Not to Turn	***We are learning that changing the order in division matters.***	**71**
Use the equals sign appropriately.	The Equals Sign Again	***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.***	**72 to 73**
Solve multiplication and division problems that include zero.	Using 0	***We are learning about multiplying and dividing by zero.***	**73**
Solve division problems that involve remainders, expressing the remainders as whole numbers, fractions or decimals, depending on the context.	***Teaching Multiplication and Division (Book 6)*** Remainders	**13 - Dividing with remainders** ***We are learning to solve division problems that have remainders.***	**74 to 77**

Strategy	Numeracy book reference	Unit in this book	Page
Solve multiplication problems using an efficient strategy, knowing why that is the best strategy to use.	*Teaching Multiplication and Division (Book 6)* Multiplication Smorgasbord Cut and Paste	**14 - Multiplying by choosing a strategy** *We are learning to multiply by choosing an efficient strategy.* *Note: This unit concentrates on students choosing an efficient strategy to use to solve multiplication problems and includes* *Using place value* *Using rounding and compensating* *Using proportional adjustment* *Other strategies.*	**78 to 85**
Solve division problems using an efficient strategy, knowing why that is the best strategy to use.	*Teaching Multiplication and Division (Book 6)* The Royal Cooking Lessons Proportional Packets Remainders	**15 - Dividing by choosing a strategy** *We are learning to divide by choosing an efficient strategy.* *Note: This unit concentrates on students choosing an efficient strategy to use to solve division problems and includes* *Using place value* *Using rounding and compensating* *Using proportional adjustment* *Other strategies.*	**86 to 95**
Check the answer to multiplication problems by estimation.	*Teaching Number Sense and Algebraic Thinking (Book 8)* Checking Multiplication by Estimation	**16 - Estimating 1** *We are learning to check the answers to multiplication problems by estimation.* *Note: At the end of Estimating 2 there are more activities for practising estimation.*	**96 to 97 and 101**
Check the answer to division problems by estimation.	*Teaching Number Sense and Algebraic Thinking (Book 8)* Checking Division by Estimation	**17 - Estimating 2** *We are learning to check the answers to division problems by estimation.*	**98 to 101**
Use cross products to solve multi-digit multiplication problems.	*Teaching Multiplication and Division (Book 6)* Cross Products	**18 - Multiplying larger numbers** *We are learning to multiply multi-digit whole numbers.*	**102 to 105**

Strategy	Numeracy book reference	Unit in this book	Page
Use place value to solve multiplication and division problems, including written multiplication algorithms.	*Teaching Multiplication and Division (Book 6)* Paper Power	**19 - Multiplying using place value and written forms** *We are learning to work out multiplication problems using written working forms.*	**106 to 109**
Use standard place value to solve division problems, including written forms.	*Teaching Multiplication and Division (Book 6)* Paper Power	**20 - Dividing using place value and written forms** *We are learning to work out division problems using written working forms.*	**110 to 113**
Find the remainder of a division problem using the calculator.	*Teaching Number Sense and Algebraic Thinking (Book 8)* Finding remainders	**21 - Remainders on the calculator** *We are learning to find remainders using the calculator.*	**114 to 115**
Use divisibility rules for 2, 3, 4, 5, 6, 8, 9.	*Teaching Multiplication and Division (Book 6)* Nines and threes	**22 - Dividing by nine and three** *We are learning to decide if a number is divisible by nine and three.*	**116 to 119**
	Teaching Number Sense and Algebraic Thinking (Book 8) Divisibility Rules	**23 - Divisibility tests** *We are learning some divisibility tests.*	**120 to 121**
Solve problems using a combination of all four operations including using the order of operations.	*Teaching Number Sense and Algebraic Thinking (Book 8)* Order of Operations	**24 - Order of operations** *We are learning to calculate using the conventional order of operations.*	**122 to 125**
Use a range of mental and written strategies to solve multi-step problems that involve a combination of addition, subtraction, multiplication, and division with whole numbers.	*No specific Numeracy book reference*	**25 - Solving problems using all four operations** *We are learning to solve problems using all four operations.*	**126 to 135**

Algebraic Thinking

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Strategy	Numeracy book reference	Unit in this book	Page
Find out whether a number is prime or non-prime, and use primes to find the factors of a number.	***Teaching Number Sense and Algebraic Thinking (Book 8)***	**26 - Prime numbers**	
	Prime Numbers	*We are learning to find prime numbers.*	**136 to 139**
	Factor Trees	*We are learning to use factor trees to find all the prime factors of a number.*	**140 to 141**
	The Seive of Eratosthenes	*This is included in "We are learning to find prime numbers" in the Prime Investigations section, question 3.*	**139**
Explore leap years and lunar years.	***Teaching Number Sense and Algebraic Thinking (Book 8)***	**27 - All about years**	
	Leap Years Turn of the Century The Lunar Year	*We are learning to find which years are leap years and about the lunar year.* ***Note: This unit consists of two investigations.***	**142 to 143**
Find the relationship between square numbers and square roots and geometric squares and the relationship between cube numbers, cube roots and geometic cubes.	***Teaching Number Sense and Algebraic Thinking (Book 8)***	**28 - Squares, square roots, cubes and cube roots**	
	Squaring	*We are learning that squaring a number gives the area of a square that has sides of that length.*	**144 to 145**
	Square Roots Locating Square Roots	*We are learning that if we know the area of a square we can find the length of the side by finding the square root.*	**146 to 147**
	Cubes and Cube Roots	*We are learning how finding cubes and cube roots relates to finding volumes and sides of cubes.*	**148 to 149**

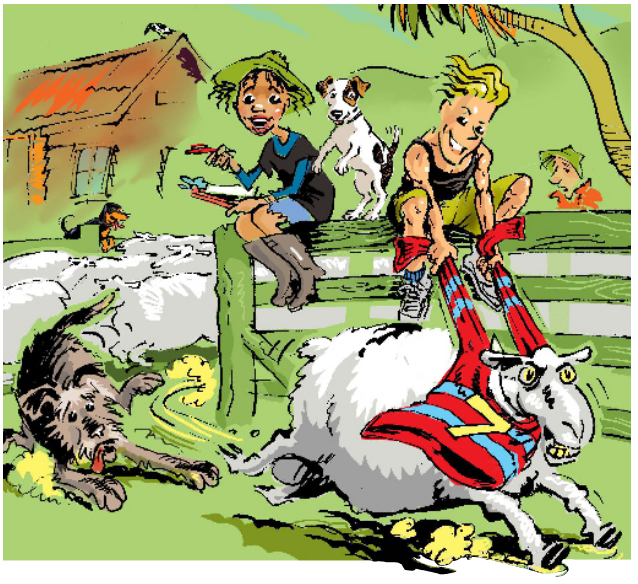
Number Knowledge

E | CA | AC | EA | AA | AM | AP

Being developed	Numeracy book reference	Number knowledge in this book	Page
Identifies multi-digit numbers up to millions and the relationship between the place of a digit and its value.	***Teaching Number Knowledge (Book 4)*** Number Fans Place Value Houses Number Hangman Reading Decimal Fractions More Reading Decimal Fractions	**Number knowledge unit A** ***Place value***	**150**
Knows the number that is ten, hundred or a thousand times bigger or smaller than a given number.	***Teaching Number Knowledge (Book 4)*** Digits on the Move	**Number knowledge unit B** ***Multiplying and dividing by 10, 100 and 1000***	**151**
Recall the number of groupings of tens, hundred, and thousands that can be made from a number of up to seven digits.	***Teaching Number Knowledge (Book 4)*** Arrow Cards Number Hangman Close to 100 Nudge Tens in Hundreds and More Estimating Zap	**Number knowledge unit C** ***Thousands, hundreds, tens, ones and tenths***	**152**
Round whole numbers and decimals, with up to two places, to the nearest thousand, hundred, ten, whole number or tenth.	***Teaching Number Knowledge (Book 4)*** Swedish Rounding Sensible Rounding	**Number knowledge unit D** ***Rounding***	**155**
Order decimals to three places.	***Teaching Number Knowledge (Book 4)*** Card Ordering Arrow Cards Rocket – Where Will It Fit? Squeeze – Guess My Number Bead Strings Who Wins?	**Number knowledge unit E** ***Ordering numbers*** ***Note: There is more ordering of decimals in the Advanced Multiplicative Book 2 Number Knowledge section.***	**159**

Being developed	Numeracy book reference	Number knowledge in this book	Page
Say the forwards and backwards decimal word sequences by thousandths, hundredths, tenths, ones, tens, etc, starting at any whole number.	***Teaching Number Knowledge (Book 4)*** Number Fans Place Value Houses Number Hangman Skip-counting on the Number Line Hundreds Boards and Thousands Book Beep Lucky Dip	**Number knowledge unit F** ***Counting on and back***	**161**
Say the number one-thousandth, one-hundredth, one-tenth, one, and ten, etc, before and after any given whole number.	***Teaching Number Knowledge (Book 4)*** Number fans Skip-counting on the Number Line Lucky Dip	**Number knowledge unit F** ***Counting on and back***	**161**
Recall the groupings of numbers to 10 that are in numbers to 100 and finds the resulting remainders, e.g. sixes in 38.	***Teaching Number Knowledge (Book 4)*** Dividing – Think About Multiplying First	**Number knowledge unit G** ***Dividing a two-digit number by a one-digit numbers***	**164**
Recognise and work with negative numbers in context.	***No specific number knowledge activities***	**Number knowledge unit H** ***Negative numbers***	**165**
Recall multiplication and division facts to 10 x 10, and the corresponding division facts.	***Teaching Number Knowledge (Book 4)*** Dividing – Think About Multiplying First Multiplication Flash Cards Loopy Multiplication Madness In And Out Bowl a Fact Beep Number Mats and Number Fans Bridges Addition Flash Cards	**Number knowledge unit I** ***Number practice*** ***Note: There is only a little multiplication and division basic facts practice, as there is plenty of material available elsewhere.*** ***e.g Figure it out.***	**166**

Being developed	Numeracy book reference	Number knowledge in this book	Page
Identify factors of numbers to 100 including prime numbers.	*No specific number knowledge activities*	**Number knowledge unit J** *Factors*	**168**
Find common multiples of numbers to 10.	**Beep**	**Number knowledge unit K** *Multiples*	**170**
Convert between fractions and decimals such as tenths, fifths, thirds, halves and quarters.	**Number Fans**	**Number knowledge unit L** *Fractions and decimals*	**172**
Know the square numbers to 100 and the corresponding square roots.	*No specific number knowledge activities*	**Number knowledge unit M** *Squares and square roots*	**174**
Record the results of calculations using equations and diagrams.	*No specific number knowledge activities*	*Note: There is plenty of practice on this in all of the strategy units.*	
Carry out a short written algorithm for multiplication and division of a three-digit whole number by a single-digit number.	*No specific number knowledge activities*	*Note: There is plenty of practice on this in strategy units 19 and 20.*	



New Zealand Curriculum Mathematics

Stage 7 Advanced Multiplicative Book 1

Addition, Subtraction, Multiplication, Division and Algebra