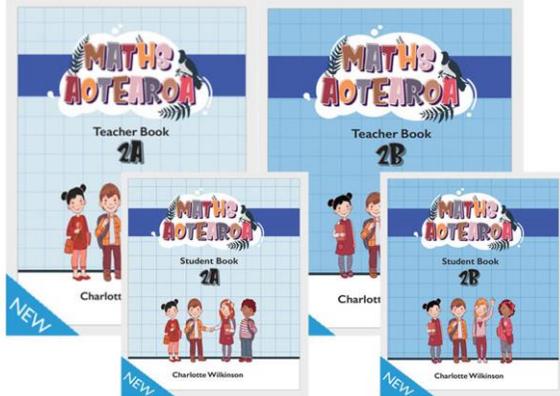| Learning Progressions | Multiplication, Division & Fractions Learning Outcomes | Resources | | |
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| **MT Signpost 1** | • Make a set of objects using one to one counting (to at least a set of 10)<br>• Match the correct numeral to a set of objects up to at least 10<br>• Understand zero as an empty set (nothing of something)<br>• Recognise finger patterns<br>• Write numerals 0 to 10<br>• Recognise and make equal group | **Book 1a Unit 2**<br>Exploring numbers to 10<br>**Cards 1a Unit 2**<br>Nos. 1 – 6<br>**BLM 1a Unit 2**<br>Nos. 5 & 6 | **Level 1a Workbooks**<br>**1** Numbers to 6<br>**3** Numbers to 10 | **Level 1**<br>**Unit 3**<br>Numerals & Sets to 6<br>**Unit 5**<br> Numerals & Sets to 10<br>**Cards Set 1 Stage 0**<br>Nos.10 – 18 |
| **MT Signpost 2**<br>**P&R Signpost 1-2**<br>**S&E Signpost 1** | **Students will be able to:**<br>• Create equal groups from a set of objects<br>• Draw a picture or model with materials an equal grouping type problem<br>• Solve equal group type problems by counting all<br>• Count in twos, fives and tens<br>• Draw a picture or model with materials an equal sharing type problem<br>• Halve a shape into equal pieces<br>• Find half a number by equal sharing between two<br>• Quarter a shape into four equal pieces<br>• Find a quarter of a number by equal sharing between four | **Book 1a Unit 4**<br>Combining, grouping and sharing<br>**Cards 1a Unit 4**<br>Nos 11 – 21<br>**BLM 1a Unit 4**<br>Nos. 3 - 10 | **Level 1a Workbooks**<br>**11** Doubles to 20<br>**12** Equal sharing, halves and quarters | **Level 1**<br>**Unit 14**<br>Skip Counting<br>**Cards Set 2 Stage 3**<br>Nos 16 - 19<br>**Unit 16**<br>Beginning Fractions<br>**Cards Set 3 Stage 4**<br>Nos 1 & 2 |
| **MT Signpost 3**<br>**P&R Signpost 2-3**<br>**S&E Signpost 2** | **Students will be able to:**<br>• Count forwards and backwards in twos, fives and tens<br>• Recognise patterns in counting sequences<br>• Solve an equal grouping type problem using a skip counting sequence<br>• Draw or model with equipment an equal grouping type problem<br>• Begin to use a repeated addition to record an equal grouping situation<br>• Recognise the symbol = as "is the same as" and "is equal to"<br>• Recall doubles and halves to 20<br>• Begin to see a connection between doubles and counting in twos<br>• Recognise odd and even numbers<br>• Know half as two equal parts and two halves as equal to one whole<br>• Know quarters as four equal parts and four quarters as equal to one whole<br>• Recognise the symbols ½ and ¼<br>• Connect the denominator with the number of equal parts<br>• Explore relationship between halves and quarters | **Book 1b Unit 2**<br>Combining Comparing & Ordering<br>**Cards Unit 2**<br>Nos. 5 – 15<br>**BLM 1b Unit 2**<br>Nos 7 – 9<br><br>**Book 1b Unit 3**<br>Beginning Fractions<br>**Cards Unit 3**<br>Nos. 1 - 13 | **Level 1b Workbooks**<br>**18** Equal Grouping<br>**19** Working with Doubles<br>**20** Fractions of Shapes<br>**21** Equal Sharing<br>**22** Fractions of numbers | **Level 1**<br>**Unit 22**<br>Using skip counting & sharing<br>**Cards Set 3 Stage 4**<br>Nos. 21 & 22 |

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| *AT Signpost 3 - 4*<br>*P&R Signpost 3*<br>*S&E Signpost 3* | **Students will be able to:**<br>• Identify any number as odd or even<br>• Solve equal grouping type problems using a skip counting sequence or repeated addition<br>• Use knowledge of doubles to recall the two times table<br>• Connect the ten times table with the symbolic representation of a number<br>• Be able to say how many groups of ten in any 2 digit number<br>• Represent an equal addition statement with a x statement<br>• Use the x symbol in an expression to represent a number of equal groups<br>• Explore the relationship between the 10 times table and the 5 times table<br>• Recognise patterns in the five times table<br>• Explore arrays and notice that multiplications are commutative<br>• Know thirds as three equal parts and three thirds as equal to one whole<br>• Knows fifths as five equal parts and five fifths as equal to one whole<br>• Recognises symbols for 1/3 and 1/5<br>• To find a unit fraction of a set by equal sharing using the denominator of the fraction<br>• Finds a quarter of small numbers by repeated halving making use of doubles knowledge | **Book 2a Unit 2**<br>Beginning Multiplication & Place Value<br>**Student Book 2a**<br>Chapters 6 - 8<br><br>**Book 2a Unit 4**<br>Understanding Fractions<br>**Student Book 2a**<br>Chapters 13 & 14 | **Level 2a Workbooks**<br>**4** Multiply by 2, Odd & Even numbers<br>**5** Multiply by 10 & Multiply by 5<br>**11** All about halves and quarters | **Book 2a Unit 2**<br>Beginning Multiplication & Place Value<br>**Student Book 2a**<br>Chapters 6 - 8<br><br>**Book 2a Unit 4**<br>Understanding Fractions<br>**Student Book 2a**<br>Chapters 13 & 14 |
| *MT Signpost 4*<br>*P&R Signpost 3*<br>*S&E Signpost 3* | **Students will be able to:**<br>• Recall multiplication & division facts for x 2 x 5 x 10<br>• Explore patterns and relationships between x2, x4, x5, x10<br>• Build an array to represent a multiplication<br>• Use an array to derive unknown multiplication facts from known facts<br>• Recall or quickly derive the three times table<br>• Recall or quickly derive the nine times table<br>• Use an array to explore doubling and halving<br>• Recall or quickly derive the four times table<br>• Uses an array to solve equal grouping and equal sharing problems<br>• Can represent a sharing situation using the ÷ symbol<br>• Read and write common fraction symbols for proper fractions, improper fractions and mixed numbers<br>• Know the size of the fractional part is dependent on the size of the whole<br>• Place a fraction on a measurement scale (number line) | **Book 2b Unit 2**<br>Multiplication & Division<br>**Student Book 2b**<br>Chapters 6 - 8<br><br>**Book 2b Unit 4**<br>Understanding Fractions<br>**Student Book 2b**<br>Chapters 12 & 13 | **Level 2b Workbooks**<br>**18** Working with x 3 x 9<br>**19** Doubling x2 x4 x8<br>**20** Equal grouping Equal sharing<br>**24** Understanding Fractions | **Book 2b Unit 2**<br>Multiplication & Division<br>**Student Book 2b**<br>Chapters 6 - 8<br><br>**Book 2b Unit 4**<br>Understanding Fractions<br>**Student Book 2b**<br>Chapters 12 & 13 |

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| *MT Signpost 4 - 5*<br>*P&R Signpost 4*<br>*S&E Signpost 3-4* | **Students will be able to:**<br>• Uses an array to explore the distributive property of multiplication<br>• Derives the six, seven and eight times tables<br>• Recognises the relationship between multiplication and division facts<br>• Recall of multiplication & division facts x3 x4 x9<br>• Use recall of x 2, x5 x 10 and arrays to derive unknown multiplication facts.<br>• Connect fractions with multiplication & division.<br>• Recall common fractions, decimals & percentages (½, 0.5, 50%, ¼, 0.25, 25%)<br>• Knows fractions as a proportional relationship – "out of" | **Book 2b Unit 5**<br>Arithmetic Operations<br>**Student Book 2b**<br>Chapters 14 - 17<br><br><br>**Book 3a Unit 1**<br>Properties of Multiplication<br>**Student Book 3a**<br>Chapters 1 - 3 | **Level 2b Workbooks**<br>**25** Understanding Division, Multiples and Factors<br>**26** The Four Operations<br><br>**Level 3a Workbooks**<br>**1** Multiply by 6, 7 & 8 | **Book 2b Unit 5**<br>Multiplication & Division<br>**Student Book 2b**<br>Chapters 14 - 17<br><br><br>**Book 3a Unit 2**<br>Multiplication & Division<br>**Student Book 3a**<br>Chapters 6 - 8 |
| *MT Signpost 5*<br>*P&R Signpost 4*<br>*S&E Signpost 4* | **Students will be able to:**<br>• Recalls or quickly derives multiplication & division facts<br>• Recognises and uses patterns between and within multiplication tables<br>• Can represent the multiplication tables in a graph<br>• Know multiplication is associative (multiply numbers in any order)<br>• Uses x 10 and multiplication facts (30 x 2 = 3 x 2 x 10)<br>• Understands fractions as a proportional part/whole relationship<br>• Compare an order fractions on a number line<br>• Understands relationship between multiplication, division and fractions<br>• Understands one place decimals as representing tenths<br>• Can record a multiplicative equality statement and knows it can be solved by division (8 x ? = 96) | **Book 3a Unit 3**<br>Patterns & Relationships in Multiplication, Division and Fractions<br>**Student Book**<br>Chapters 7 & 8<br><br>**Book 3a Unit 4**<br>Beginning Decimals<br>**Student Book**<br>Chapters 9 - 11 | **Level 3a Workbooks**<br>**4** Multiplication & Division<br>**5** Fractions<br>**6** Decimals -Tenths | **Book 3a Unit 2**<br>Multiplication & Division<br>Chapter 7<br>**Student Book 3a**<br>Chapter 7<br><br>**Book 3a Unit 3**<br>Fractions & Decimals<br>**Student Book 3a**<br>Chapters 8 – 11<br><br>(Significant restructuring in new edition) |

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| *MT Signpost 6* <br> *P&R Signpost 4-5* <br> *S&E Signpost 4-5* | **Students will be able to:** <br> • Recognise and explore square numbers <br> • Multiply a two or three digit number by a single digit multiplier using standard partitioning <br> • Makes a sensible estimate for a multi digit by single digit multiplication <br> • Use the x 10 factor between columns <br> • Use doubling and halving with appropriate numbers <br> • Use rounding and compensating with appropriate numbers <br> • Use a standard written algorithm for multiplying a multi digit by a single digit <br> • Use a standard written algorithm for division <br> • Use division as the inverse of multiplication <br> • Use the denominator of a fraction symbol as the divisor <br> • Use the terminology multiples and factors <br> • Identify multiples and closest multiples <br> • Identify factors of a given number <br> • Recognise multiplicative patterns in fraction sequences <br> • Use multiplication to find equivalent fraction <br> • Understand decimals as a restricted set of equivalent fractions <br> • Use equivalent fractions to convert a fraction to a decimal <br> • Use equivalent fractions to convert fractions to a percentage <br> • Uses multiplication and division to find the non-unit fraction of a quantity <br> • Recognise ratio as comparing the fractional parts of the whole <br> • Use multiplication to simplify ratios <br> • Express a ratio using ratio notation : <br> • Recognise a proportion as comparing the fractional part to the whole <br> • Solve simple multiplicative comparison (proportional) problems. <br> • Understand "of" as multiply X <br> • Use algebraic convention of a letter symbol understanding the letter can represent a single value in an equation <br> • Use the algebraic convention of no symbol for multiplication when one value is represented by a letter | **Book 3b Unit 1** <br> Properties of Multiplication <br> **Student Book 3b** <br> Chapters 1 & 2 <br><br> **Book 3b Unit 3** <br> Extending Multiplicative Thinking <br> **Student Book 3b** <br> Chapters 6 – 9 <br><br> **Book 3b Unit 4** <br> Decimals & Percentages <br> **Student Book 3b** <br> Chapters 10 - 13 <br><br> **Book 3b Unit 5** <br> Exploring Algebra <br> **Student Book 3b** <br> Chapters 14 & 15 | **Level 3b Workbooks** <br> **9** Practicing Multiplication <br> **12** Extending Multiplication <br> **13** Extending Division <br> **14** Fractions | **Book 3b Unit 2** <br> Multiplication & Division <br> **Student Book 3b** <br> Chapters 4 – 8 <br><br> **Book 3b Unit 3** <br> Fractions, Decimals & Percentages <br> **Student Book 3b** <br> Chapters 9 - 13 <br><br> **Level 3b Unit 4** <br> The Four Operations <br> **Students Book 3b** <br> Chapters 14 – 16 <br><br><br> (Significant restructuring in new edition) |

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| *MT Signpost 7*<br>*P&R Signpost 5*<br>*S&E Signpost 5* | **Students will be able to:**<br>• Proficiently use a standard written algorithm for multiplying a multi digit by a single digit<br>• Proficiently use a standard written algorithm for division by a single digit<br>• Explain and use a variety of mental strategies<br>• Make estimates of multi digit multiplications<br>• Uses an empty array for cross product multiplication of multi digit numbers<br>• Uses the x 10 factor between columns for repeated multiplication by 10<br>• Use the notation of powers to represent repeated multiplication<br>• Record a place value position as a power of ten (6000 = 6 x 10³)<br>• Represent square and cubic numbers<br>• Use the symbol for square root and understand the relationship to division<br>• Converts between fractions decimals and percentages<br>• Selects equivalent fraction, decimal or percentage to solve a problem<br>• Use benchmarking and equivalent fractions to compare fractions<br>• Determine the order of operations required to solve a multi-step problem<br>• Use brackets to communicate the order of operations required to solve a multi-step problem<br>• Use the memory button on a calculator when solving multi-step problems<br>• Use inverse operations to solve problems<br>• Solve problems using algebraic convention of a letter symbol knowing the symbol can represent a single value in an equation<br>• Use a spread sheet to perform simple calculations<br>• Use simple formulae on a spreadsheet | **Under development** | **Under development** | **Level 4a Unit 1**<br>Working with whole numbers<br>**Chapter 2**<br>Multiplication & Division<br>**Chapter 4**<br>Introducing exponents<br><br>**Level 4a Unit 2**<br>Working with Fractional numbers<br>**Chapter 5**<br>Fractions, Decimals & Percentages<br>**Chapter 7**<br>Powers of Ten<br><br>**Level 4a Unit 3**<br>Understanding and using equation<br>**Chapter 9**<br>Order of Operation<br>**Chapter 10**<br>Finding the rule<br>**Chapter 11**<br>Using spreadsheets |

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| *AT Signpost 8*<br>*P&R Signpost 6*<br>*S&E Signpost 6* | Students will be able to:<br>• Work efficiently with whole numbers, integers, fractions and decimals<br>• Use divisibility rules<br>• Recognise and explain prime numbers<br>• Find the prime factors of composite numbers<br>• Use exponents to express composite numbers as their prime factors<br>• Use highest common factors to solve problems<br>• Use lowest common multiples to solve problems<br>• Use a calculator to convert any fraction to a decimal<br>• Recognise recurring decimals<br>• Round decimals to a given number of significant figures<br>• Round decimals to a set number of decimal places<br>• Apply the properties of multiplication to decimal fractions<br>• Understand multiplying decimals results in a smaller number<br>• Make a reasonable estimation for decimal multiplication and division<br>• Understand dividing decimals results in a larger number<br>• Uses fractional knowledge and multiplication to solve proportional problems<br>• Uses equivalent ratios to solve proportional problems<br>• Design and use tables to identify number relationships<br>• Use an equation to describe a linear relationship<br>• Understand and use equality to simplify equations<br>• Generalise a linear relationship to create a formula<br>• Use a formula on a spreadsheet to solve a problem<br>• Represents more complex multi-step problems using equations with brackets as required<br>• Solves more complex multi-step problems involving all four operations, | **Under development** | **Under development** | **Level 4a Unit 2**<br>Working with fractional numbers<br>**Chapter 8**<br>Decimal Multiplication & Division<br><br>**Book 4b Unit 1**<br>Working with Whole Numbers<br>**Chapter 1**<br>Factors & Multiples<br><br>**Level 4b Unit 2**<br>Working with Fractional Numbers<br>**Chapter 3**<br>Fractions, Decimals & Percentages<br>**Chapter 4**<br>Decimal Multiplication & Division<br>**Chapter 5**<br>Fractions, Proportions and Ratios<br><br>**Level 4b Unit 3**<br>Understanding and Using Equations<br>**Chapter 6**<br>Creating equations<br>**Chapter 7**<br>Using formulae |

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