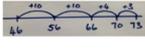
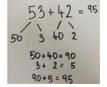
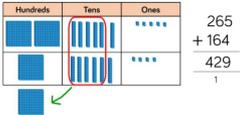
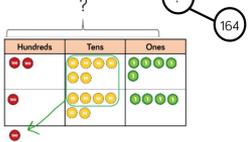
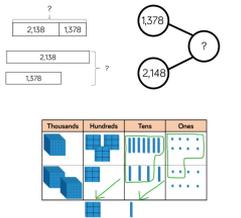
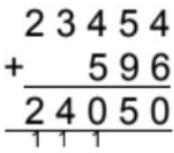
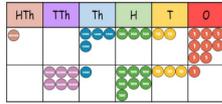
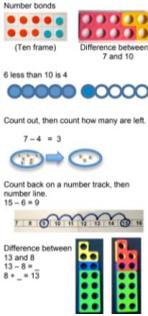
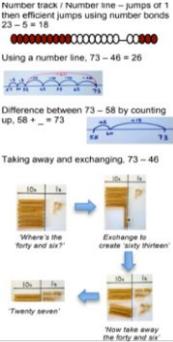
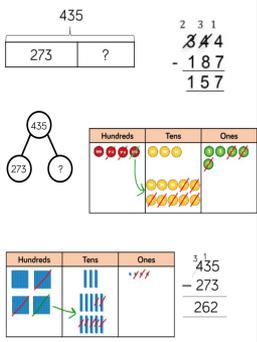
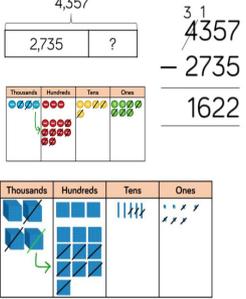
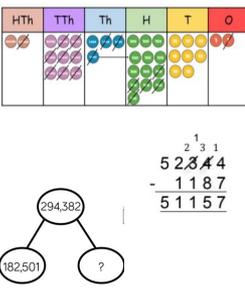
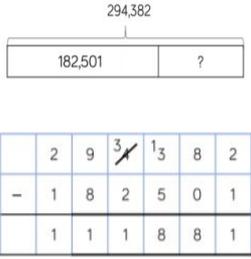


Highlees Primary School
Calculation Policy

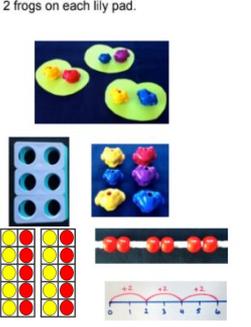
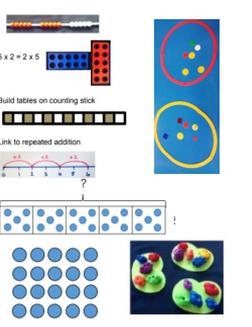
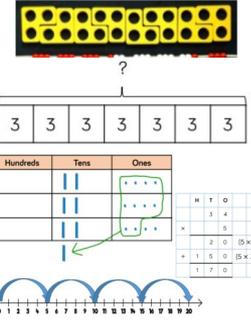
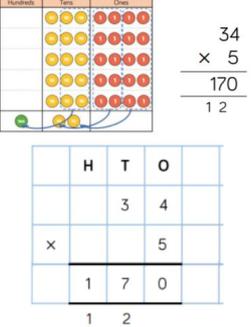
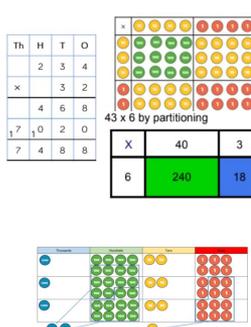
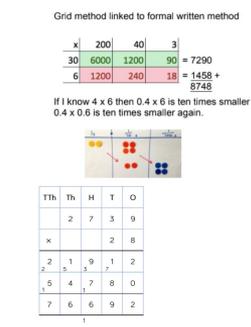
This is designed to be a fluid document which can be adapted to suit the child accordingly.

Addition	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Written Method</p>	<p>Read, write and interpret mathematical statements involving addition (+) and equals (=) signs</p> <p>To represent and use number bonds and related facts within 20.</p>	<p>To recall and use addition facts to 20 fluently, and derive and use related facts up to 100.</p> <p>To show that addition of two numbers can be done in any order (commutative).</p> <p>To recognise and use the inverse relationship between addition and subtraction and to use this to solve missing number problems.</p>	<p>To add numbers with up to three digits, using formal written methods of columnar addition.</p> <p>To estimate the answer to a calculation and use inverse operations to check answers.</p>	<p>To add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate.</p> <p>To estimate and use inverse operations to check answers.</p>	<p>To add whole numbers with more than 4 digits, including using formal written methods (columnar addition).</p> <p>To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p>
<p>Concrete, pictorial and abstract</p> <p>(Examples, this is not designed to be an exhaustive list nor are teachers limited to only use examples from their year group. We trust our teachers as professionals to use their judgement.)</p>	<p>Number bonds</p>  <p>(Ten frame) Numicon</p> <p>Use bonds of 10 to calculate bonds of 20</p>  <p>Count all</p>  <p>Count on</p>  <p>Count on, on number track, in 1s</p> 	<p>Number track / Number line – jumps of 1 then efficient jumps using number bonds</p> $18 + 5 = 23$ $46 + 27 = 73$ Count in tens then bridge. Partition & Add (tens & ones) <p>Partition and bridge</p>   	 $\begin{array}{r} 265 \\ + 164 \\ \hline 429 \end{array}$ 	 	 	
<p>With jottings or in your head</p> <p>Abstract/ mental</p>	<p>To add one-digit and two-digit numbers to 20 including 0.</p> <p>Solve one-step problems that involve addition using concrete objects and pictorial representations, and missing number problems such as $17 = ? + 9$</p>	<p>To add numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> a two-digit number and ones a two-digit number and tens two two-digit numbers adding three one-digit numbers <p>To solve problems with addition using concrete objects and pictorial representations.</p>	<p>To add numbers mentally, including:</p> <ul style="list-style-type: none"> a three-digit number and ones a three-digit number and tens a three-digit number and hundreds <p>To solve problems including missing number problems, using number facts, place value, and more complex addition.</p>	<p>To solve two-step addition problems in contexts, deciding which operations and methods to use and why.</p>	<p>To add numbers mentally with increasingly large numbers.</p> <p>To solve multi-step problems involving addition in contexts, deciding which operations and methods to use and why including understanding the meaning of the equals sign.</p>	<p>To solve multi-step addition problems in contexts, deciding which operations and methods to use and why.</p>
<p>Foundations of mathematics</p>	<ul style="list-style-type: none"> 1 more Largest number first. Add 10. Number bonds to 10 Ten plus ones. Doubles up to 10 Use number bonds of 10 to derive bonds of 11 	<ul style="list-style-type: none"> Number bonds to 10 & within 10 Add 1 digit to 2 digit by bridging. Partition numbers, add tens then ones Doubles up to 20 and multiples of 5 Add multiples of 10. Partition and recombine 	<ul style="list-style-type: none"> Add multiples of 10, 100 Add single digit bridging through boundaries Add single digit bridging through boundaries Partition second number to add Pairs of 100 Use near doubles to add Add near multiples of 10 and 100 by rounding and adjusting Partition and recombine 	<ul style="list-style-type: none"> Add multiples of 10s, 100s, 1000s Fluency of 2 digit + 2 digit Partition second number to add Decimal pairs of 10 and 1 Use near doubles to add Adjust both numbers before adding Add near multiples Partition and recombine 	<ul style="list-style-type: none"> Add multiples of 10s, 100s, 1000s, tenths. Fluency of 2 digit + 2 digit including with decimals Partition second number to add Use number facts, bridging and place value Adjust numbers to add Partition and recombine 	<ul style="list-style-type: none"> Add multiples of 10s, 100s, 1000s, tenths, hundredths Fluency of 2 digit + 2 digit including with decimals Partition second number to add Use number facts, bridging and place value Adjust numbers to add Partition and recombine

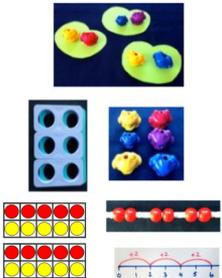
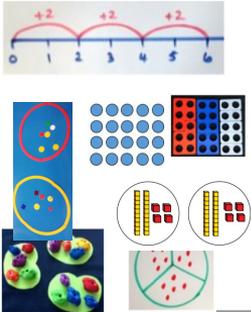
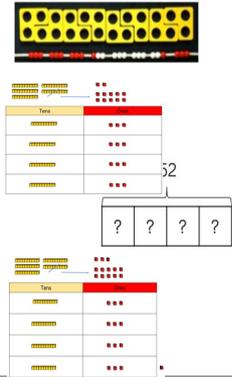
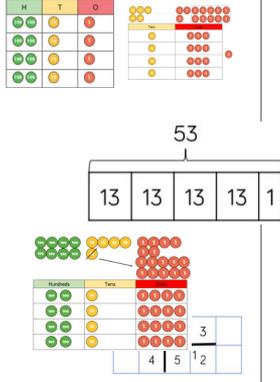
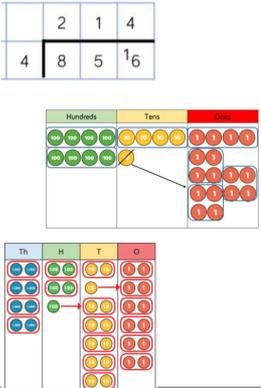
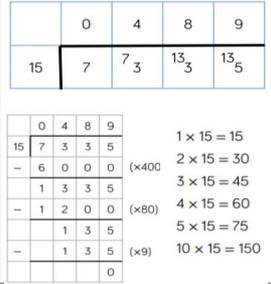
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>add, more, sum, make, total, How much more is...? one more, altogether</p>	<p>addition, add, more, and, makes, sum, total, altogether, count on, one more, two more...ten more..., how many more to make? How many more is...than...? How much more is...?</p>	<p>addition, add, more, and, makes, sum, total, altogether, double, count on, one more, two more...ten more..., one hundred more, how many more to make? How many more is...than...? How much more is...?</p>	<p>addition, columnar addition. add, more, and, makes, sum, total (of), addend, count on, altogether, increased by, double, near double, one more, two more...ten more..., one hundred more, inverse, commutative law, how many more to make? How many more is...than...? How much more is...?</p>	<p>addition, columnar addition. add, more, and, makes, sum, addend, total (of), count on, altogether, extra, in all, combined, increased by, double, near double, one more, two more...ten more..., inverse, commutative law, one hundred more, how many more to make? How many more is...than...? How much more is...?</p>	<p>addition, columnar addition. add, more, and, makes, sum, addend, total (of), count on, altogether, extra, in all, combined, increased by, double, near double, one more, two more...ten more..., one hundred more, inverse, commutative law, how many more to make? How many more is...than...? How much more is...?</p>	<p>addition, columnar addition. add, more, and, makes, sum, addend, total (of), count on, altogether, extra, in all, combined, increased by, double, near double, one more, two more...ten more..., one hundred more, inverse, commutative law, how many more to make? How many more is...than...? How much more is...?</p>

Subtraction	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Written Method</p>	<p>Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs</p> <p>To represent and use number bonds and related subtraction facts within 20.</p>	<p>To recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100.</p> <p>To show that subtraction of two numbers can not be done in any order.</p> <p>To recognise and use the inverse relationship between addition and subtraction and to use this to solve missing number problems.</p>	<p>To subtract numbers with up to three digits, using formal written methods of columnar subtraction.</p> <p>To estimate the answer to a calculation and use inverse operations to check answers.</p>	<p>To subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate.</p> <p>To estimate and use inverse operations to check answers.</p>	<p>To subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction).</p> <p>To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To use their knowledge of the order of operations to carry out calculations involving the four operations.</p>
<p>Concrete, pictorial and abstract</p> <p>(Examples, this is not designed to be an exhaustive list nor are teachers limited to only use examples from their year group. We trust our teachers as professionals to use their judgement.)</p>	 <p>Number bonds (Ten frame) Difference between 7 and 10</p> <p>6 less than 10 is 4</p> <p>Count out, then count how many are left.</p> <p>$7 - 4 = 3$</p> <p>Count back on a number track, then number line: $15 - 6 = 9$</p> <p>Difference between 13 and 8: $13 - 8 = 5$, $8 - 3 = 5$</p>	 <p>Number track / Number line – jumps of 1 then efficient jumps using number bonds $23 - 5 = 18$</p> <p>Using a number line, $73 - 46 = 26$</p> <p>Difference between $73 - 58$ by counting up, $58 + \dots = 73$</p> <p>Taking away and exchanging, $73 - 46$</p> <p>Where's the forty and six? Exchange to create forty three!</p> <p>Twenty seven</p> <p>Now take away the forty and six!</p>	 <p>435</p> <p>$273 \quad ?$</p> <p>$\begin{array}{r} 2\ 3\ 1 \\ 435 \\ - 187 \\ \hline 157 \end{array}$</p> <p>$435$</p> <p>$273 \quad ?$</p> <p>Hundreds Tens Ones</p> <p>$\begin{array}{r} 3\ 4\ 5 \\ 435 \\ - 273 \\ \hline 262 \end{array}$</p>	 <p>$4,357$</p> <p>$2,735 \quad ?$</p> <p>$\begin{array}{r} 3\ 1 \\ 4357 \\ - 2735 \\ \hline 1622 \end{array}$</p> <p>Thousands Hundreds Tens Ones</p> <p>$\begin{array}{r} 3\ 4\ 5 \\ 4357 \\ - 2735 \\ \hline 1622 \end{array}$</p>	 <p>HTh TTh Th H T O</p> <p>$294,382$</p> <p>$182,501 \quad ?$</p> <p>$\begin{array}{r} 2\ 3\ 1 \\ 52344 \\ - 1187 \\ \hline 51157 \end{array}$</p> <p>$294,382$</p> <p>$182,501 \quad ?$</p>	 <p>$294,382$</p> <p>$182,501 \quad ?$</p> <p>$\begin{array}{r} 2\ 9\ 3\ 1\ 3\ 8\ 2 \\ - 1\ 8\ 2\ 5\ 0\ 1 \\ \hline 1\ 1\ 1\ 8\ 8\ 1 \end{array}$</p>
<p>With jottings or in your head Abstract/mental</p>	<p>To subtract one-digit and two-digit numbers to 20 including 0.</p> <p>To solve one-step problems that involve subtraction using concrete objects and pictorial representations, and missing number problems such as $7 = ? - 9$</p>	<p>To subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> a two-digit number and ones a two-digit number and tens two two-digit numbers <p>To solve problems with subtraction using concrete objects and pictorial representations.</p>	<p>To subtract numbers mentally, including:</p> <ul style="list-style-type: none"> a three-digit number and ones a three-digit number and tens a three-digit number and hundreds <p>To solve problems including missing number problems, using number facts, place value, and more complex subtraction.</p>	<p>To solve two-step subtraction problems in contexts, deciding which operations and methods to use and why.</p>	<p>To subtract numbers mentally with increasingly large numbers.</p> <p>To solve multi-step problems involving subtraction in contexts, deciding which operations and methods to use and why including understanding the meaning of the equals sign.</p>	<p>To solve multi-step subtraction problems in contexts, deciding which operations and methods to use and why.</p>
<p>Foundations of mathematics</p>	<ul style="list-style-type: none"> 1 less Count back Number bonds, Subtract 10. Teens subtract 10. Difference between 	<ul style="list-style-type: none"> Number bonds, subtraction (to 10 & within 10) Subtract 1 digit from 2 digit by bridging Partition numbers and subtract count back in 10s then 1s Subtract 10 and multiples of 10; Difference between 	<ul style="list-style-type: none"> Subtract multiples of 10 and 100 Subtract single digit by bridging through boundaries Partition second number to subtract Difference between Subtract near multiples of 10 and 100 by rounding and adjusting 	<ul style="list-style-type: none"> Subtract multiples of 10s, 100s, 1000s Fluency of 2 digit subtract 2 digit Partition second number to subtract Decimal subtraction from 10 or 1 Difference between Subtract near multiples by rounding and adjusting 	<ul style="list-style-type: none"> Subtract multiples of 10s, 100s, 1000s, tenths, Fluency of 2 digit - 2 digit including with decimals Partition second number to subtract Difference between Adjust numbers to subtract 	<ul style="list-style-type: none"> Subtract multiples of 10s, 100s, 1000s, tenths, hundredths Fluency of 2 digit - 2 digit including with decimals Partition second number to subtract Use number facts bridging and place value Adjust numbers to subtract Difference between

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>take away, difference between, how many are left/ left over? How many are gone?, one less, two less, ten less. How many fewer is...than...? How much less is...? minuend, subtrahend, difference</p>	<p>subtract, take away, difference between, how many are left/ left over? How many are gone? One less, two less, ten less. How many fewer is...than...? How much less is...? minuend, subtrahend, difference.</p>	<p>subtract, take away, difference between, how many are left/ left over? How many are gone? one less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, minuend, subtrahend, difference.</p>	<p>subtract, take away, difference between, how many are left/ left over? How many are gone?, one less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, minuend, subtrahend, difference.</p>	<p>subtract, take away, difference between, how many are left/ left over? How many are gone? One less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, inverse, minuend, subtrahend, difference.</p>	<p>subtract, take away, difference between, how many are left/ left over? How many are gone? One less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, one boundary, tenths boundary, inverse, minuend, subtrahend, difference.</p>	<p>subtract, take away, difference between, how many are left/ left over? How many are gone?, one less, two less, ten less, hundred less. How many fewer is...than...? How much less is...? tens boundary, hundreds boundary, one boundary, tenths boundary, inverse, minuend, subtrahend, difference</p>

Multiplication	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Written Method</p>		<p>To calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (x) and equals (=) signs</p>	<p>To write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods.</p>	<p>To multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p>	<p>To multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two digit numbers</p>	<p>To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p>
<p>Concrete, pictorial and abstract</p> <p>(Examples, this is not designed to be an exhaustive list nor are teachers limited to only use examples from their year group. We trust our teachers as professionals to use their judgement.)</p>	<p>2 frogs on each lily pad.</p> 					<p>Grid method linked to formal written method</p> 
<p>With jottings or in your head</p> <p>Abstract/ mental</p>	<p>To solve one-step problems involving multiplication by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</p>	<p>To show that multiplication of two numbers can be done in any order (commutative)</p> <p>To solve problems involving multiplication using materials, arrays, repeated addition, mental methods, and multiplication facts, including problems in contexts</p>	<p>To recall and use multiplication facts for the 3, 4 and 8 multiplication tables.</p> <p>To solve problems including missing number problems involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.</p>	<p>To use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers</p> <p>To recognise and use factor pairs and commutativity in mental calculations.</p> <p>To solve problems involving multiplying and adding including the distributive law.</p>	<p>To multiply numbers mentally drawing upon known facts</p> <p>To multiply whole numbers and those involving decimals by 10, 100 and 1000</p> <p>To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</p>	<p>To perform mental calculations, including with mixed operations and large numbers.</p> <p>To use your knowledge to solve problems and calculations involving the four operations.</p> <p>To identify common factors, common multiples and prime numbers.</p>
<p>Foundations of mathematics</p>	<ul style="list-style-type: none"> Doubles up to 10 Double multiples of 10 Count in 2s, 5s and 10s 	<ul style="list-style-type: none"> Doubles up to 20 and multiples of 5 & 10 Count in 3s 2 x, 5 x and 10 x tables 	<ul style="list-style-type: none"> Review 2x, 5x and 10x 4x table Double two digit numbers 8 x table 3 x table 6 x table or review others 	<ul style="list-style-type: none"> 4x, 8x tables 10 times bigger 3x, 6x and 12x tables Double larger numbers and decimals 3x, 9x tables 11x, 7 x tables 6x, 12 x tables 	<ul style="list-style-type: none"> 100, 1000 times bigger 10, 100, 1000 times smaller Double larger numbers and decimals Partition to multiply mentally Multiplication facts up to 12 x 12 	<ul style="list-style-type: none"> Multiplication facts up to 12 x 12 Partition to multiply mentally Double larger numbers and decimals

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>multiplication, multiply, multiplied by, multiple, grouping, doubling, array, times.</p>	<p>multiplication, multiply, multiplied by multiple, grouping, doubling, array, times</p>	<p>multiplication, multiply, multiplied by, multiple, times, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact.</p>	<p>multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact, multiplicand, multiplier.</p>	<p>multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each...ten each, equal groups of, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, distributive law, multiplicand, multiplier.</p>	<p>multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, distributive law, multiplicand, multiplier.</p>	<p>multiplication, multiply, multiplied by, multiple, factor, product, grouping, doubling, array, row, column, groups of, times once, twice, three times ... ten times, repeated addition, one each, two each, three each ... ten each, equal groups of, multiplication table, multiplication fact, inverse, square, squared, cube, cubed, multiplicand, multiplier.</p>

Division	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Written Method		To calculate mathematical statements for division within the multiplication tables and write them using the division (+) and equals (=) signs	To write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods.		To divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	To divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context
Concrete, pictorial and abstract	<p>$6 \div 2 = 3$ by sharing into 2 groups and by grabbing groups of 2</p> <p>2 frogs on each lily pad.</p> 	<p>$15 \div 3 = 5$ in each group (sharing)</p> <p>Use language of division linked to tables</p> 				<p>To divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.</p> 
(Examples, this is not designed to be an exhaustive list nor are teachers limited to only use examples from their year group. We trust our teachers as professionals to use their judgement.)						
With jottings or in your head Abstract/mental	To solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	To show that division of two numbers can not be done in any order. To solve problems involving division, using materials, arrays, repeated addition, mental methods, and division facts, including problems in contexts	To write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers, one-digit numbers and by using mental methods.	To recall division facts for multiplication tables up to 12x12 To use place value, known and derived facts to divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers To recognise and use factor pairs in mental calculations.	To divide numbers mentally drawing upon known facts To divide whole numbers and those involving decimals by 10, 100 and 1000	To perform mental calculations, including with mixed operations and large numbers
Foundations of mathematics	<ul style="list-style-type: none"> Count back in 2s, 5s and 10s Halves up to 10 Halve multiples of 10 	<ul style="list-style-type: none"> Division facts (2, 5 and 10 x table) Halves up to 20 Count back in 3s 	<ul style="list-style-type: none"> Review division facts (2x, 5x, 10x table) Division facts (4, 8 and 3 x table) Halve two digit numbers 	<ul style="list-style-type: none"> Division facts (4, 8, 3, 6, 12, 9, 11, 7 x tables) 10 times smaller Halve larger numbers and decimals 	<ul style="list-style-type: none"> 100, 1000 times smaller Division facts (up to 12 x 12) Halve larger numbers and decimals Partition decimals to divide mentally 	<ul style="list-style-type: none"> Division facts (up to 12 x 12) Partition to divide mentally Halve larger numbers and decimals

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>sharing, halving, number patterns</p>	<p>division, dividing, grouping, sharing, doubling, halving, array, number pattern, equal grouping, equal sharing</p>	<p>groups of, times, repeated subtraction, division, dividing, divide, divided by, divided into left, left over, grouping, sharing, share, share, equally, two each, three each ... ten each group in pairs, threes ... tens equal groups of, halving, array row, column, number patterns, division fact</p>	<p>groups of, times, repeated subtraction, division, dividing, divide, divided by, divided into left, left over, remainder grouping sharing, share, share equally one each, two each, three each ... ten each group in pairs, threes ... tens equal groups of, halving, array row, column, number patterns, division fact, dividend, divisor, quotient</p>	<p>factors, multiples, groups of, share, share equally, equal groups, division, divide, divided by, divided into, left, left over, remainder, array, dividend, divisor, quotient.</p>	<p>factors, multiples, groups of, share, share equally, equal groups, division, divide, divided by, divided into, left, left over, remainder, array, prime numbers, composite numbers, dividend, divisor, quotient.</p>	<p>factors, multiples, groups of, share, share equally, equal groups, division, divide, divided by, divided into, left, left over, remainder, array, dividend, divisor, quotient, prime numbers.</p>