

MULTIPLICATION & DIVISION FACTS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count in multiples of twos, fives and tens (copied from Number and Place Value)	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)	Count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)	Count in multiples of 6, 7, 9, 25 and 1 000 (copied from Number and Place Value)	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)	Count in decimal steps
	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	Recall multiplication and division facts for multiplication tables up to 12×12	Use multiplication and division facts (12×12) to be able to multiply and divide multiples of 10.	Use multiplication and division facts (12×12) to derive decimal multiplication and division facts.
MENTAL CALCULATION					
		Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Written Methods)	Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	Multiply and divide numbers mentally drawing upon known facts	Perform mental calculations, including with mixed operations and large numbers
	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	Recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$) (copied from Fractions)

WRITTEN CALCULATION

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods)	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	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	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
	<p>To represent division as repeated subtraction</p> <p>To record division calculations with remainders using a number line ($TO \div O$)</p>	<p>To record division calculations with remainders using a number line ($TO \div O$) ($HTO \div O$)</p>	<p>To record division calculations using formal written method with remainders ($HTO \div O$)</p>	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	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 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><i>Use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))</i></p>

PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Recognise and use factor pairs and commutativity in mental calculations (repeated)	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19	Identify common factors, common multiples and prime numbers <i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i> (copied from Fractions)
				Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	<i>Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3</i> (copied from Measures)

ORDER OF OPERATIONS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Use their knowledge of the order of operations to carry out calculations involving the four operations
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
		<i>Estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)</i>	<i>Estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)</i>	<i>Estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)</i>	Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

Year 1 Number - Multiplication and Division

Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Can group objects into equal groups and share an amount into equal groups.

Derive and recall doubles and halves amounts up to 20.

Link doubles to making 2 equal groups.

Link halves and quarters to sharing

Make different arrays with the same amount of objects.

Year 2 Number - Multiplication and Division

<p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.</p>	<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs</p>	<p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p>	<p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>
<p>Counting in steps of 2, 5 and 10</p> <p>Combining and counting equal groups</p> <p>Make links to repeated addition</p> <p>Representing as arrays and jumps on a number line. Recall 2, 10 and 5 \times tables</p> <p>Understand the terms 'groups of' / 'grouping'</p> <p>Make links to repeated subtraction (or addition)</p> <p>Facts about multiples of 2, 5, 10</p> <p>Say multiples and pick out multiples from a set (recognise pattern of last digits)</p>	<p>To be able to use the symbols \times, = and \div when working with objects</p> <p>To be able to use the symbols \times, = and \div when interpreting and recording number sentences involving multiplication and division.</p>	<p>Describe an array in 2 ways such as</p> <p style="text-align: center;">* * * *</p> <p style="text-align: center;">* * * *</p> <p style="text-align: center;">$2 \times 4 = 8$</p> <p style="text-align: center;">$4 \times 2 = 8$</p> <p>Recognise from arranging arrays that multiplication can be done in any order. Introduce the word commutative.</p>	<p>To be able to represent repeated addition as an array (or via Numicon/Cuisenaire)</p> <p>To be able to represent division as repeated subtraction (or addition) through use of a no. line or Cuisenaire.</p> <p>To use practical resources to explain strategy used for multiplication and division</p> <p>To be able to use informal written methods for multiplication and division</p> <p>To record division calculations with remainders ($TU \div U$)</p> <p>To demonstrate understanding of how to calculate the value of an unknown number in a \times or \div number sentence.</p> <p>Use \times knowledge to solve problems.</p>

Year 3 Number - Multiplication & Division

<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</p>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods</p>	<p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.</p>	<p>Estimate the answer to a calculation and inverse operations to check.</p>
<p>Understand that division is the inverse of multiplication and vice versa</p> <p>Recall and use multiplication and division facts for the 2 times table</p> <p>Recognise odd and even numbers</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p>	<p>Use the multiplication (\times), division (\div) and equals (=) signs</p> <p>To partition two digit numbers</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p> <p>To use a number line ($TO \div O$)</p> <p>($HTO \div O$) with Remainder</p>	<p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p> <p>Understanding vocabulary associated with multiplication and division</p>	<p>Understand inverse operation and be confident in giving sensible answer.</p> <p>Be able to use appropriate written calculation strategies.</p>

Year 4 Number - Multiplication and Division

<p>Recall multiplication and division facts for multiplication tables up to 12 x 12</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by zero and 1; dividing by 1; multiplying together three numbers</p>	<p>Recognise and use factor pairs and commutatively in mental calculations</p>	<p>Multiply 2 digit and 3-digit numbers by a 1 digit number using formal written layout</p>	<p>Solve problems involving multiplying and adding, using the distributive law to multiply 2 digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects</p>	<p>Use inverse to estimate/check answers to a calculation</p>
<p>Know times tables up to 12x12</p> <p>Know related division facts for each table</p> <p>Use arrays to develop skills with a visual link</p>	<p>Use known facts to calculate mentally larger multiplication and division calculations e.g. $20 \times 3 = 60$ or $20 \times 30 = 600$ derived from $2 \times 3 = 6$; $600 \div 3 = 200$ derived from $6 \div 3 = 2$</p> <p>know multiplying by zero = 0</p> <p>know that $n \times 1 = n$</p>	<p>Understand that \times and \div are inverse and use in calculating</p> <p>Derive all linked \times and \div facts for a set of numbers, e.g., $6 \times 5 = 30$, $5 \times 6 = 30$, $30 \div 5 = 6$, $30 \div 6 = 5$ - blockbuster games and arithmagons</p> <p>Use arrays and diagrams to derive \times facts and secure understanding of \times</p>	<p>Refer to calculation policy of school To use formal written layout to divide $TO \div O$ $HTO \div O$ With remainders</p>	<p>Refer to calculation policy of school</p> <p>Simple one step problems involving \times and \div, where answers are not always whole numbers</p>	<p>Understand inverse operation and be confident in giving sensible answer.</p> <p>Be able to use appropriate written calculation strategies</p>

Year 5 Number - Multiplication and Division

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	Establish whether a number up to 100 is prime and recall prime numbers up to 19	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	Multiply and divide numbers mentally drawing upon known facts	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
<p>To understand the vocabulary for multiple and factor and what this means.</p> <p>To know tables to 12x12 and inverse operations - division</p> <p>To use knowledge of tables to identify multiples of any number.</p> <p>To be able to identify factor pairs and what this means.</p> <p>To work</p>	<p>To know that a prime number only has two factors, 1 and itself.</p> <p>To find and investigate prime numbers by applying knowledge of factors.</p> <p>To know that a prime factor is a factor of a number that is also a prime number.</p> <p>To know that any</p>	<p>Apply knowledge of factors to find prime numbers. To work systematically</p> <p>Be able to recite the prime number pattern up to 19.</p>	<p>Apply knowledge of place value to multiplication e.g. $2 \times 4 = 8$ $20 \times 4 = 80$ $200 \times 4 = 800$ $2000 \times 4 = 8000$</p> <p>Apply the above knowledge to formal written methods. Short Multiplication: $TO \times O$ $HTO \times O$ $ThHTO \times O$</p> <p>Long Multiplication $TO \times TO$</p>	<p>To know tables to 12x12 and inverse operations - division</p> <p>Apply knowledge of multiplication and division facts.</p> <p>Apply place value to support mental calculation with larger numbers.</p>	<p>Be able to apply knowledge of division strategies.</p> <p>Apply knowledge of mental methods to support formal written methods.</p> <p>Short Division: $TO \div O$ $HTO \div O$ $ThHTO \div O$ $TO \div TO$ $HTO \div TO$</p> <p>Long Division: $TO \div TO$ $HTO \div TO$</p>

<p>systematically to find all factors of a number.</p> <p>Be able to understand what makes a common factor.</p> <p>Find common factors of 2 or more numbers.</p>	<p>number other than 1 is either a prime number or a composite number (not a prime)</p>		<p>$H \times T \times O$ $T \times H \times O \times T \times O$</p>		<p>$T \times H \times T \times O \div T \times O$</p> <p>Understand what is meant by a remainder.</p> <p>Understand the role of a remainder within a context, whether to round up or down.</p>
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Year 6 Number – Multiplication and Division

<p>Count in decimal steps.</p>	<p>Use multiplication and division facts (12x12) to derive decimal multiplication and division facts.</p>	<p>Perform mental calculations, including with mixed operations and large numbers.</p>	<p>Solve problems involving addition, subtraction, multiplication and division.</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.</p>	<p>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 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>
<p>Apply knowledge of previous counting in multiples to decimal steps eg 6, 12, 18 0.6, 1.2, 1.8 0.06, 0.12, 0.18 0.006, 0.012, 0.018</p>	<p>Apply knowledge of multiplication and division facts to decimals eg $0.7 \times 3 = 2.1$ $0.07 \times 3 = 0.21$ and apply inverse operation.</p>	<p>To apply mental strategies confidently in all four operations and work on developing increasing complexity.</p>	<p>Apply methods for all four operations to a range of multi-step problems.</p> <p>Make decisions to reason why they have chosen a particular method.</p> <p>Develop the use of efficient methods.</p>	<p>Apply knowledge of different strategies of multiplication accurately.</p>	<p>Choose appropriate division method.</p> <p>Know and use formal written methods of division.</p> <p>Understand remainders within context of the problem.</p> <p>Be able to convert remainders into fractions and round if necessary.</p>

<p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p>	<p>Use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>	<p>Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$). (copied from Fractions)</p>	<p>Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3. (copied from Measures)</p>	<p>Solve problems involving similar shapes where the scale factor is known or can be found. (copied from Ratio and Proportion)</p> <p>Use written division methods in cases where the answer has up to two decimal places. (copied from Fractions (including decimals))</p>	<p>Identify common factors, common multiples and prime numbers. Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. (copied from Fractions)</p>
<p>BODMAS Brackets, orders, division, multiplication, addition, subtraction.</p> <p>Apply this to a range of examples and contexts.</p>	<p>Use knowledge of rounding and approximation to understand what a reasonable answer would be for a given problem.</p>				<p>Know what a common factor, common multiple and prime number is and be able to find them.</p>