

Strand – Multiplication and division					
Rationale					
<p>The multiplication and division strand runs throughout primary school. It is split into six sections: multiplication and division facts; mental calculations; written calculations; Properties of numbers: multiples, factors, primes, square and cube numbers; order of operations; problem solving. Multiplication and division are introduced in its most basic form at the earliest opportunity so that children can begin to familiarise themselves with these key operations. As children handle money, share items between friends and cut food into portions they are beginning to build up their division and multiplication skills as part of their everyday life. Being introduced to these ideas at an early age will mean that as well as gaining confidence in the subject, they will be able to utilise these skills in the wider world.</p>					
Learning					
Multiplication and division facts					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<i>count in multiples of twos, fives and tens (copied from Number and Place Value)</i>	<i>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)</i>	<i>count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)</i>	<i>count in multiples of 6, 7, 9, 25 and 1000 (copied from Number and Place Value)</i>	<i>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)</i>	Knowledge is built on from previous year.
	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	<i>Recall multiplication and division facts for multiplication tables 12x12.</i>		
Mental calculation					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		write and calculate mathematical statements for multiplication and division using the multiplication tables that they know,	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1;	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers

		including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Written Methods)	multiplying together three numbers		
	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.	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	<i>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)</i> (χοπιεδ φρομ Φραχτιονσ)
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 multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written 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

				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.
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	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>

				composite (non-prime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19	(copied from Fractions)
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
Problem Solving					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	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	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	solve problems involving addition, subtraction, multiplication and division

				solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion)
Key Vocabulary					
lots of, groups of times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition array, row, column double, halve	share, share equally one each, two each, three each... group in pairs, threes... tens equal groups of divide, division, divided by, divided into remainder factor, quotient, divisible by inverse				