Number: Multiplication and Division

MULTIPLICATION & DIVISION FACTS						
FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers	*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)	
recall some number bonds to 10, including doubling facts (from place value) Explore and represent patterns within numbers up to 10, including evens and odds (from place value)		recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number	recall multiplication and division facts for multiplication tables up to 12 × 12 and recognise products in multiplication tables as multiples of the corresponding number	secure fluency in multiplication table facts, and corresponding division facts, through continued practice	
MENTAL CALCULATION						
Explore how quantities can be			write and calculate mathematical statements for	use place value, known and derived	multiply and divide numbers mentally	perform mental calculations, including

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distributed equally			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)	facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	drawing upon known facts	with mixed operations and large numbers
				multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size	Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	
		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. $^3/_8$)* (copied from Fractions)
			Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify	Know that 10 hundreds are equivalent to 1 thousand, and that	Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1.	Understand the relationship between powers of 10 from 1 hundredth to 10

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			and work out how many 10s there are in other three-digit multiples of 10.	1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100	Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01 (linked with above)	million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000)
			Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10).	Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100)	Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).	
				Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.		
				Understand and apply the distributive property of multiplication.		

WRITTEN CALCULATION

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	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 (×), division (÷) 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
				solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context	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
						use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))

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	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)	Find factors and multiples of positive whole numbers, including factor pairs, common factors and common multiples, and express a given number as a product of 2 or 3 factors.	identify common factors, common multiples and prime numbers
					know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	*use common factors to simplify fractions; use common multiples to express fractions in the same denomination* (copied from Fractions)
					establish whether a number up to 100 is prime and recall prime numbers up to 19	
					recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	*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)

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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					
		estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)	*estimate and use inverse operations to check answers to a calculation* (copied from Addition and Subtraction)		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

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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 Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).	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 Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive (grouping) and partitive (sharing) division.	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
				solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	
				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)