Number: Multiplication and Division

MULTIPLICATION & DIVISION FACTS							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100	count in multiples of 6, 7, 9, 25 and 1000	count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000	count forwards or backwards in steps of powers of 10 for any given number up to 10,000,000
	explore odd and evens in numbers to 10		recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables 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		
	recall doubles to 5	derive and recall doubles of all numbers to 10	derive and recall all odd and even numbers up to 100 derive and recall of doubles and corresponding halves to 20 derive and recall all doubles of multiples of 10 to 100 and corresponding halves	derive and recall doubles of all multiples of 10 to 100 and corresponding halves	derive and recall all doubles of all numbers from 1 – 100 and corresponding halves. derive and recall doubles of all multiples 10 and 100 and corresponding halves		

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MENTAL CALCULATION							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	explore even distribution of quantities	show understanding of doubles through equipment, pictures and sentence stems make and add equal groups using equipment and pictures make simple arrays using equipment, pictures and sentence stems show grouping using practical equipment and pictures share equally using 1 to 1 correspondence with equipment and pictures	double any multiple of 5 up to 50 halve any multiple of 10 up to 100 find half of even numbers up to 40	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 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	double any multiple of 5 to 100 halve any multiple of 10 to 200 multiply whole numbers by 10 divide multiples of 10 by 10 recognise that tenths arise from dividing an object into 10 equal parts and dividing 1-digit numbers or quantities by 10	double any 2-digit number double any multiple of 10 or 100 and halve the corresponding multiples halve any even number to 200 multiply whole numbers by 100 divide multiples of 100 by 100 recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 double any 3-digit multiple of 10 up to 500 and find corresponding halves multiply and divide two digit numbers by 4, 8, 5 and 20. multiply by 25 and 50 multiply pairs of multiples of 10	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)* double decimals to one place and find corresponding halves divide by 25 and 50 multiply pairs of multiples of 10 and 100 multiply numbers by 10, 100 and 1000

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					find the effect of dividing a 1 or 2-digit number by 10 find the effect of dividing a 1 or 2-digit number by 100		where the answers are up to 3dp divide numbers by 10, 100 and 1000 where the answers are up to 3dp
WRITTEN CALCULATION							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		represent adding equal groups through a number sentence	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs show multiplication as repeated addition	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 progressing to formal written methods multiply 2-digit numbers by a 1-digit using an informal layout multiply 2-digit numbers by a 1-digit number	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 multiply 1-digit numbers with up to 2dp by whole numbers

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				progressing to a formal layout			
					divide a 2-digit number by a single digit	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 divide 1-digit numbers with up to 2dp by whole numbers

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PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					recognise and use factor pairs and commutativity in mental calculations	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	identify common factors, common multiples and prime 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	
						recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	

ORDER OF OPERATIONS							
Nursery	Reception	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

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INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

PROBLEM SOLVING							
Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	solve problems involving doubling and sharing quantities evenly	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
						solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	

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						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