

Number: Multiplication and Division

Key of text colours

EYFS Development Matters (DM) Objectives & NC Objectives

Key concepts that create solid foundations in EYFS to build upon for the NC Objectives

NC Objective appears elsewhere within the same topic progression document

NC Objective also appears in another topic progression document

MULTIPLICATION & DIVISION FACTS							
EYFS	ELG	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>To be introduced to the concepts of sharing equally and doubling.</p> <p>To understand concept of odd and even numbers.</p>	<p>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally</p>	<p>count in multiples of twos, fives and tens (NC objective from Number and Place Value)</p>	<p>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (NC objective from Number and Place Value)</p>	<p>count from 0 in multiples of 4, 8, 50 and 100 (NC objective from Number and Place Value)</p>	<p>count in multiples of 6, 7, 9, 25 and 1 000 (NC objective from Number and Place Value)</p>	<p>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (NC objective from Number and Place Value)</p>	
			<p>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</p>	<p>recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</p>	<p>recall multiplication and division facts for multiplication tables up to 12×12</p>		
MENTAL CALCULATION							
<p>automatically recall number bonds for numbers 0-10</p>	<p>automatically recall number bonds up to 5 and some number bonds to 10 including double facts</p>	<p>solve one-step problems involving multiplication and division, calculating the answer using concrete objects,</p>		<p>write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times</p>	<p>use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by</p>	<p>multiply and divide numbers mentally drawing upon known facts</p>	<p>perform mental calculations, including with mixed operations and large numbers</p>

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		pictorial representations and arrays with the support of the teacher (Objective also shown in Problem Solving)		one-digit numbers, using mental and progressing to formal written methods (appears also in Written Methods)	1; 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 (appears also in Properties of Numbers)	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> (NC Objective from Fractions)
WRITTEN CALCULATION							
begin to represent mathematical statements with appropriate symbols			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

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						<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</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><i>use written division methods in cases where the answer has up to two decimal places (NC objective from Fractions (including decimals))</i></p>

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

					<p>recognise and use factor pairs and commutativity in mental calculations (NC objective Mental Calculations)</p>	<p>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>establish whether a number up to 100 is prime and recall prime numbers up to 19</p>	<p>identify common factors, common multiples and prime numbers</p> <p><i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i> NC Objective from Fractions)</p>
						<p>recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³)</p>	<p><i>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³), and extending to other units such as mm³ and km³</i> (NC objectives from Measures)</p>

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ORDER OF OPERATIONS

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 (NC objective from Addition and Subtraction)

estimate and use inverse operations to check answers to a calculation (NC objective 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							
		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	
						solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	<i>solve problems involving similar shapes where the scale factor is known or can be found (NC objective from Ratio and Proportion)</i>