

# Progression in Multiplication and Division



	Multiplication and Division Facts	Mental Calculations	Written Calculations
R			
Y1	<ul style="list-style-type: none"> <li>count in multiples of twos, fives and tens (See Number and Place Value)</li> </ul>		
Y2	<ul style="list-style-type: none"> <li>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (See Number and Place Value)</li> <li>recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li> </ul>	<ul style="list-style-type: none"> <li>show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</li> </ul>	<ul style="list-style-type: none"> <li>calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs</li> </ul>
Y3	<ul style="list-style-type: none"> <li>count from 0 in multiples of 4, 8, 50 and 100 (See Number and Place Value)</li> <li>recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables</li> </ul>	<ul style="list-style-type: none"> <li>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 (See also Written Methods)</li> <li>show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot (Consolidation from Year 2)</li> </ul>	<ul style="list-style-type: none"> <li>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 (See also Mental Methods)</li> </ul>
Y4	<ul style="list-style-type: none"> <li>count in multiples of 6, 7, 9, 25 and 1 000 (See Number and Place Value)</li> <li>recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>recognise and use factor pairs and commutativity in mental calculations (See also Properties of numbers)</li> </ul>	<ul style="list-style-type: none"> <li>multiply two-digit and three-digit numbers by a one-digit number using formal written layout</li> </ul>
Y5	<ul style="list-style-type: none"> <li>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (See Number and Place Value)</li> <li>recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math> (Consolidation from Year 4)</li> </ul>	<ul style="list-style-type: none"> <li>multiply and divide numbers mentally drawing upon known facts</li> <li>multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>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</li> </ul>
Y6	<ul style="list-style-type: none"> <li>recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math> (Consolidation from</li> </ul>	<ul style="list-style-type: none"> <li>perform mental calculations, including with mixed operations and large numbers (Children to be taught</li> </ul>	<ul style="list-style-type: none"> <li>multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal</li> </ul>

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	<p>Year 4)</p>	<p>when to use a mental or written method depending on the calculation)</p> <ul style="list-style-type: none"> <li>associate a fraction with division and calculate decimal fraction equivalents (e.g 0.375) for a simple fraction (e.g. <math>\frac{3}{8}</math>) (See Fractions)</li> </ul>	<p>written method of long multiplication</p> <ul style="list-style-type: none"> <li>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</li> <li>use written division methods in cases where the answer has up to two decimal places (See Fractions (including decimals))</li> </ul>
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Properties of Numbers: Multiples, Factors, Primes , Squares and Cubed Numbers	
R	
Y1	
Y2	
Y3	
Y4	<ul style="list-style-type: none"> <li>recognise and use factor pairs and commutativity in mental calculations (repeated)</li> </ul>
Y5	<ul style="list-style-type: none"> <li>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</li> <li>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</li> <li>establish whether a number up to 100 is prime and recall prime numbers up to 19</li> <li>recognise and use square numbers and cube numbers, and the notation for squared (<math>^2</math>) and cubed (<math>^3</math>)</li> </ul>
Y6	<ul style="list-style-type: none"> <li>identify common factors, common multiples and prime numbers</li> <li>use common factors to simplify fractions; use common multiples to express fractions in the same denomination (See Fractions)</li> <li>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (<math>cm^3</math>) and cubic metres (<math>m^3</math>), and extending to other units such as <math>mm^3</math> and <math>km^3</math> (See Measures)</li> </ul>

# Progression in Multiplication and Division



	Order of Operation	Inverse Operation, Estimating and Checking Answers	Problem Solving
R			
Y1			<ul style="list-style-type: none"> <li>solve one-step problems involving multiplication and division, by calculating the answer <b>first</b> using concrete objects, <b>then</b> pictorial representations and arrays with the support of the teacher</li> </ul>
Y2			<ul style="list-style-type: none"> <li>solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts <b>and previous years learning.</b></li> </ul>
Y3		<ul style="list-style-type: none"> <li><i>estimate the answer to a calculation and use inverse operations to check answers</i> (See Addition and Subtraction)</li> </ul>	<ul style="list-style-type: none"> <li>solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which objects are connected to m objects <b>and previous years learning.</b></li> </ul>
Y4		<ul style="list-style-type: none"> <li><i>estimate and use inverse operations to check answers to a calculation</i> (See Addition and Subtraction)</li> </ul>	<ul style="list-style-type: none"> <li>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 <b>and previous years learning.</b></li> </ul>
Y5		<ul style="list-style-type: none"> <li><i>estimate and use inverse operations to check answers to a calculation</i> (See Addition and Subtraction) (<b>Consolidation from Year 4</b>)</li> </ul>	<ul style="list-style-type: none"> <li>solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</li> <li>solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</li> <li>solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</li> </ul>

# Progression in Multiplication and Division



Y6

- use their knowledge of the order of operations to carry out calculations involving the four operations
- use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve problems involving addition, subtraction, multiplication and division
- *solve problems involving similar shapes where the scale factor is known or can be found (See Ratio and Proportion)*