



# ALDINGBOURNE PRIMARY SCHOOL PROGRESSION MAP



## SUBJECT: MATHS - NUMBER

### INTENT

Our maths curriculum endeavours to ensure that children are equipped with a powerful set of tools this subject provides whilst immersing the children in creative, ALPS style learning. Through our innovative approach to maths, we provide the skills for the children to become fluent in the fundamentals of maths by developing a conceptual understanding and ability to recall and apply knowledge rapidly and accurately. The children will have the tools to make rich connections across mathematical ideas to develop fluency, reasoning and competence in solving increasingly sophisticated problems. Maths at Aldingbourne is designed to be fun and exciting as well as accessible to all learners so they can access this highly inter-connected discipline that has been developed over centuries.

AUTUMN	EYFS	KEY STAGE ONE		KEY STAGE TWO			
	YEAR R	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<b>NUMBER AND PLACE VALUE</b>	<p>Have a deep understanding of number to 10, including the composition of each number.</p> <p>Subitise (recognise quantities without counting) up to 5.</p> <p>Compare quantities up to 10 in different contexts, recognising when one quantity is</p>	<p>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</p> <p>Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.</p> <p>Given a number, identify one more and one less.</p>	<p>Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.</p> <p>Recognise the place value of each digit in a two-digit number (tens, ones).</p> <p>Identify, represent and estimate numbers using different representations,</p>	<p>Recognise the place value of each digit in a three-digit number (hundreds, tens, ones).</p> <p>Compare and order numbers up to 1000.</p> <p>Identify, represent and estimate numbers using different representations.</p> <p>Read and write numbers up to</p>	<p>Count backwards through zero to include negative numbers.</p> <p>Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).</p> <p>Order and compare numbers beyond 1000.</p> <p>Identify, represent and estimate numbers</p>	<p>Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit.</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.</p> <p>Interpret negative numbers in context, count</p>	<p>Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.</p> <p>Round any whole number to a required degree of accuracy.</p> <p>Use negative numbers in context, and calculate intervals across zero.</p>

	greater than, less than or the same as the other quantity.		including the number line. Compare and order numbers from 0 up to 100; use and = signs. Read and write numbers to at least 100 in numerals and in words. Use place value and number facts to solve problems.	1000 in numerals and in words. Solve number problems and practical problems involving these ideas.	using different representations. Round any number to the nearest 10, 100 or 1000. Solve number and practical problems that involve all of the above and with increasingly large positive numbers. Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	forwards and backwards with positive and negative whole numbers, including through zero. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Solve number problems and practical problems that involve all of the above.	Solve number and practical problems that involve all of the above.
<b>ADDITION AND SUBTRACTION</b>		Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Represent and use number bonds and related subtraction facts within 20. Add and subtract one-digit and two-digit	Solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures. * applying their increasing knowledge of mental and written methods.	Add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds. Add and subtract numbers with up to three digits, using formal written methods of columnar	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate. Estimate and use inverse operations to check answers to a calculation.	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction). Add and subtract numbers mentally with increasingly large numbers. Use rounding to check answers to calculations and	Perform mental calculations, including with mixed operations and large numbers. Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.

		<p>numbers to 20, including zero. Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = - 9</math>.</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> <li>* a two-digit number and ones</li> <li>* a two-digit number and tens</li> <li>* two two-digit numbers</li> <li>* adding three one-digit numbers.</li> </ul> <p>Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.</p> <p>Recognise and use the inverse relationship between addition and subtraction</p>	<p>addition and subtraction. Estimate the answer to a calculation and use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>	<p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>determine, in the context of a problem, levels of accuracy.</p>	<p>Solve problems involving addition, subtraction, multiplication and division. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p>
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			and use this to check calculations and solve missing number problems.				
<b>MULTIPLICATION AND DIVISION</b>				<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.</p> <p>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.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence</p>	<p>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math>.</p> <p>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.</p> <p>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems</p>	<p>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 composite (nonprime) numbers. Establish whether a number up to 100 is prime and recall prime numbers up to 19.</p> <p>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.</p> <p>Multiply and divide numbers mentally drawing</p>	<p>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.</p> <p>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>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders</p>

				problems in which n objects are connected to m objects.	and harder correspondence problems such as n objects are connected to m objects.	upon known facts. 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. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 recognise and use square numbers and cube numbers, and the notation for squared ( 2 ) and cubed ( 3 ). Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes.	according to the context. Perform mental calculations, including with mixed operations and large numbers. Solve problems involving addition, subtraction, multiplication and division. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
<b>FRACTIONS INCLUDING DECIMALS AND PERCENTAGES</b>					Find the effect of dividing a one- or two-digit number by 10 and	Compare and order fractions whose denominators are	Use common factors to simplify fractions; use

					<p>100, identifying the value of the digits in the answer as ones, tenths and hundredths. Round decimals with one decimal place to the nearest whole number. Compare numbers with the same number of decimal places up to two decimal places.</p>	<p>all multiples of the same number. Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number [for example, <math>2/5 + 4/5 = 6/5 = 1 1/5</math>]. Read, write, order and compare numbers with up to three decimal places. Solve problems involving number up to three decimal places.</p>	<p>common multiples to express fractions in the same denomination. Compare and order fractions, including fractions <math>&gt; 1</math>. Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.</p>
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SPRING	EYFS	KEY STAGE ONE		KEY STAGE TWO			
	YEAR R	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<b>NUMBER AND PLACE VALUE</b>	<p>Have a deep understanding of number to 10, including the composition of each number. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.</p>	<p>Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. Read and write numbers from 1 to 20 in numerals and words.</p>		<p>Count from 0 in multiples of 4, 8, 50 and 100.</p>	<p>Count in multiples of 6, 7, 9, 25 and 1000. Find 1000 more or less than a given number. Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</p>	<p>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p>	
<b>ADDITION AND SUBTRACTION</b>	<p>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Represent and use number bonds and related</p>				<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p>	<p>Perform mental calculations, including with mixed operations and large numbers. Use their knowledge of the order of operations to carry out calculations</p>

		<p>subtraction facts within 20. Add and subtract one-digit and two-digit numbers to 20, including zero. Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math>.</p>					<p>involving the four operations solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition, subtraction, multiplication and division. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p>
<b>MULTIPLICATION AND DIVISION</b>		<p>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.</p>	<p>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Calculate mathematical statements for multiplication and</p>	<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication</p>	<p>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math>. Recognise and use factor pairs and commutativity in mental calculations. Solve problems involving</p>	<p>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</p>	<p>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 two-digit whole number using the formal written</p>

			<p>division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (<math>=</math>) signs.</p> <p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p>	<p>tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</p> <p>Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which <math>n</math> objects are connected to <math>m</math> objects.</p>	<p>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 <math>n</math> objects are connected to <math>m</math> objects.</p>	<p>division, including scaling by simple fractions and problems involving simple rates.</p>	<p>method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.</p> <p>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.</p> <p>Perform mental calculations, including with mixed operations and large numbers.</p> <p>Use their knowledge of the order of operations to carry out calculations involving the four operations.</p>
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							<p>Solve problems involving addition, subtraction, multiplication and division.</p> <p>Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</p>
<p><b>FRACTIONS INCLUDING DECIMALS AND PERCENTAGES</b></p>		<p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</p>	<p>Recognise, find, name and write fractions <math>\frac{3}{4}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity.</p> <p>Write simple fractions for example, <math>\frac{2}{4}</math> of <math>\frac{1}{3}</math> and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</p>	<p>Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10.</p> <p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non unit fractions with small denominators.</p> <p>Recognise and use fractions as numbers: unit fractions and</p>	<p>Recognise and show, using diagrams, families of common equivalent fractions.</p> <p>Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</p> <p>Solve problems involving increasingly harder fractions to calculate quantities, and fractions to</p>	<p>Add and subtract fractions with the same denominator and denominators that are multiples of the same number.</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</p> <p>Read and write decimal numbers as fractions [for example, <math>0.71 = \frac{71}{100}</math>].</p> <p>Recognise and use thousandths and relate them to</p>	<p>Multiply one-digit numbers with up to two decimal places by whole numbers.</p> <p>Use written division methods in cases where the answer has up to two decimal places.</p> <p>Solve problems which require answers to be rounded to specified degrees of accuracy.</p>

				<p>non-unit fractions with small denominators. Recognise and show, using diagrams, equivalent fractions with small denominators. Add and subtract fractions with the same denominator within one whole [for example, <math>5/7 + 1/7 = 6/7</math>]. Compare and order unit fractions, and fractions with the same denominators. Solve problems that involve all of the above.</p>	<p>divide quantities, including non-unit fractions where the answer is a whole number. Add and subtract fractions with the same denominator. Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math>. Solve simple measure and money problems involving fractions and decimals to two decimal places.</p>	<p>tenths, hundredths and decimal equivalents. Round decimals with two decimal places to the nearest whole number and to one decimal place. Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.</p>	
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SUMMER	EYFS	KEY STAGE ONE		KEY STAGE TWO			
	YEAR R	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
NUMBER AND PLACE VALUE	Have a deep understanding of number to 10,	Given a number, identify one more and one less.		Find 10 or 100 more or less than a given number.			

	<p>including the composition of each number. Verbally count beyond 20, recognising the pattern of the counting system. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</p>						
<p><b>ADDITION AND SUBTRACTION</b></p>	<p>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.</p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. Add and subtract one-digit and two-digit numbers to 20, including zero.</p>	<p>Solve problems with addition and subtraction:          *using concrete objects and pictorial representations, including those involving numbers, quantities and measures          * applying their increasing knowledge of mental and written methods. Recall and use addition and subtraction facts</p>				

to 20 fluently, and derive and use related facts up to 100.

Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

- \* a two-digit number and ones
- \* a two-digit number and tens
- \* two two-digit numbers
- \* adding three one-digit numbers.

Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot.

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

<p><b>MULTIPLICATION AND DIVISION</b></p>		<p>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.</p>					<p>Identify common factors, common multiples and prime numbers.</p>
<p><b>FRACTIONS INCLUDING DECIMALS AND PERCENTAGES</b></p>					<p>Solve simple measure and money problems involving fractions and decimals to two decimal places.</p>	<p>Solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math> and those fractions with a denominator of a multiple of 10 or 25.</p>	<p>Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>]. Divide proper fractions by whole numbers [for example, <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>]. Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, <math>\frac{3}{8}</math>].</p>

# IMPACT (END POINTS)

EYFS	KEY STAGE ONE		KEY STAGE TWO			
YEAR R	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<p>A Reception class mathematician is able to count confidently, have a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. They can count beyond 20 and have a solid understanding of early number bonds. Children will have developed a secure base of knowledge and vocabulary from which mastery of mathematics is built.</p>	<p>A Year 1 mathematician can count to and across 100 from any given number. They begin to recognise the place value of numbers to 100. They can count in twos, fives and tens from different multiples and are proficient in number bonds to 10 and 20. They can add and subtract one and two digit numbers to 20. Children are beginning to understand simple multiplication and division. They can double and half numbers to 20 and understand half and quarter as fractions of shapes, objects and quantities.</p>	<p>A Year 2 mathematician is confident in counting, reading, writing and comparing numbers to at least 100 and solve a variety of related problems to develop fluency. They can count in multiples of 3 and can partition numbers in different ways. Children are beginning to understand zero as a place holder and can use their number bonds to check calculations. They are beginning to record their addition and subtraction in columns and are fluent in two, five and ten multiplication tables. Pupils can solve</p>	<p>A Year 3 mathematician can use multiples of 2, 3, 4, 5, 8, 10, 50 and 100. They can partition numbers to at least 1000 and are fluent in the order and place value of numbers to 1000. Children use columnar addition and subtraction with increasingly large numbers up to 3 digit and practise solving varied addition and subtraction questions. They can mentally recall multiplication and division facts of 2, 3, 4, 5, 8 and 10 times tables. Children develop reliable written methods for multiplication and</p>	<p>A Year 4 mathematician is fluent in the order and place value of numbers beyond 1000 and use multiples of 6, 7, 9, 25 and 1000. They can round numbers and count backwards through zero. Children use both mental methods and columnar addition and subtraction with increasingly larger numbers. They know multiplication and division facts up to <math>12 \times 12</math> and become fluent in the formal written method of short multiplication and division with exact answers. They solve two step problems in contexts, choosing the appropriate</p>	<p>A Year 5 mathematician can work with numbers to at least 1,000,000. They are confident with rounding numbers and are proficient in mental calculations and formal methods with increasingly larger numbers across all four operations. They are confident with terms factor, multiple, prime, square and cube numbers. They have extended knowledge and make connections between percentages, decimals and fractions. Children are confident when working with both improper and mixed fractions. They can add and subtract</p>	<p>A Year 6 mathematician uses the whole number system confidently, including saying, reading and writing numbers accurately. They are proficient in more complex mental calculations as well as formal written methods with larger numbers using addition, subtraction, multiplication and division. They understand and use the order of operations when using brackets. Children can confidently add and subtract fractions with different denominators. They use knowledge and understanding of fractions to work</p>

		<p>problems by finding simple fractions of shapes, objects and quantities. They can count in fractions up to 10 using halves and quarters.</p>	<p>division including the formal written method for two digit by one digit. They can solve simple problems in context, deciding which of the four operations to use and why. They continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape and unit fractions as a division of a quantity. Children can add and subtract fractions with the same denominator.</p>	<p>operation, working with increasingly harder numbers. They are beginning to extend their knowledge of the number system to include decimal numbers and fractions. They use factors and multiples to recognise equivalent fractions and simplify where appropriate. Children can add and subtract fractions with the same denominator beyond one whole. Children's understanding of decimal place value is extended to tenths and hundredths and they can make comparisons and order decimal amounts.</p>	<p>fractions with different denominators that are multiples of the same number. They are confident in checking the reasonableness of their answers to problems.</p>	<p>backwards when calculating answers. They can round decimals to 3 decimal places or appropriate approximations depending on the context. They can multiply and divide decimals by whole numbers.</p>
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All knowledge and skills are recapped and applied to ensure embedding through morning maths jobs. This happens every Tuesday - Friday for 30 minutes in the junior classes. This happens on Tuesday - Thursday on alternate weeks for the infant classes.