

# Year 6 Maths Intent

Autumn													
Autumn	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	Wk11	Wk12	Wk13
	Place Value		Addition, Subtraction, Multiplication and Division				Fractions				Measure - converting units	Assessment week	GAPS
Spring													
Spring	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	Wk11	Wk12	
	Measures - Perimeter, Area and Volume		Decimals and Percentages			Statistics		Number - Ratio & Algebra		Geometry - Properties of Shape Position and Direction	Assessment Week	Revision	
Summer													
Summer	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	Wk11	Wk12	Wk13
	Revision		SATS	Problem Solving		Investigations				Transition Activities			

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Autumn														
Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk7	Wk8	Wk9	Wk10	Wk11	Wk1 2	Wk1 3		
Place Value		Addition, Subtraction, Multiplication and Division				Fractions				Measure - Converting Units		<b>Assessment Week</b>	<b>GAPS</b>	
<b>NC Objectives</b>														
Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.		Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.				Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.				Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate.				
Round any whole number to a required degree of accuracy		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.				Compare and order fractions, including fractions $>1$				Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places.				
Use negative numbers in context, and calculate intervals across 0.		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.				Generate and describe linear number sequences (with fractions)				Convert between miles and kilometres.				
Solve number and practical problems that involve all of the above.		Perform mental calculations, including with mixed operations and large numbers.				Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.				Pupils connect conversion (for example, from kilometres to miles) to a graphical representation as preparation for				

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			understanding linear/proportional graphs.		
Pupils use the whole number system, including saying, reading and writing numbers accurately	Identify common factors, common multiples and prime numbers.	Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ]	They know approximate conversions and are able to tell if an answer is sensible		
	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	Divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$ ]	Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature.		
	Use their knowledge of the order of operations to carry out calculations involving the 4 operations.	Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$ ]	Pupils could be introduced to compound units for speed, such as miles per hour, and apply their knowledge in science or other subjects as appropriate.		
	Solve problems involving addition, subtraction, multiplication and division.	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts			
	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Pupils should practise, use and understand the addition and subtraction of fractions with different denominators by identifying equivalent fractions with the same denominator. They should start with fractions where the denominator of one fraction is a multiple of the other (for example, $2 \frac{1}{8} + \frac{1}{8} = \frac{5}{8}$ ) and progress to varied and increasingly complex problems.			
	Pupils practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division	Pupils should use a variety of images to support their understanding of multiplication with fractions. This follows earlier work about fractions as operators (fractions of), as numbers, and as equal parts of objects, for example as parts of a rectangle.			
	They undertake mental calculations with increasingly large numbers and more complex calculations.	Pupils use their understanding of the relationship between unit fractions and division to work backwards by multiplying a quantity that represents a unit fraction to find the whole			

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		quantity (for example, if 4 1 of a length is 36cm, then the whole length is $36 \times 4 = 144\text{cm}$ ).			
	Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.	They practise calculations with simple fractions and decimal fraction equivalents to aid fluency, including listing equivalent fractions to identify fractions with common denominators			
	Pupils round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures.				
	Pupils explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$				
	Common factors can be related to finding equivalent fractions.				
<b>SEND Priority</b>					
Can read, write and order whole numbers up to 10 000 000	Can use mental methods of computation for addition	Can identify, name and write equivalent fractions of a given fraction represented visually	Can convert between units of metric measure		
Can round any whole number to the nearest 10, 100, 1000 etc	Can use mental methods of computation for subtraction	Can use common factors to simplify fractions			
	Can use efficient written methods of addition including column addition	Can compare and order fractions			
	Can use efficient written methods of subtraction including column subtraction	Can add and subtract fractions			
	Can recall multiplication facts up to 12x12 and quickly derive corresponding division facts	Can multiply fractions by whole numbers			
	Can use tables and place value calculations with multiples of 10				
	Can use mental methods of computation for multiplication				
	Can use mental methods of computation for division				
	Can use efficient written methods of multiplication including short and long multiplication				
	Can use efficient written methods of division including short and long division				

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	Can solve problems choosing an appropriate mental or written strategy (all four operations)												
	Can solve two-step problems choosing appropriate operations (all four operations)												
	Can use inverse operations to find missing numbers, including decimals												
	Can 'undo' a two-step problem												
<b>Spring</b>													
<b>Wk1</b>	<b>Wk2</b>	<b>Wk3</b>	<b>Wk4</b>	<b>Wk5</b>	<b>Wk6</b>	<b>Wk7</b>	<b>Wk8</b>	<b>Wk9</b>	<b>Wk10</b>	<b>Wk11</b>	<b>Wk12</b>		
Measures - Perimeter, Area and Volume		Decimals and Percentages			Statistics		Number - Ratio & Algebra		Geometry - Properties of Shape Position and Direction	<b>Assessment Week</b>	<b>Revision</b>		
<b>NC Objectives</b>													
Recognise that shapes with the same areas can have different perimeters and vice versa.		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			Interpret and construct pie charts and line graphs and use these to solve problems		Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.		Describe positions on the full coordinate grid (all four quadrants)				
Recognise when it is possible to use formulae for area and volume of shapes.		Multiply one-digit numbers with up to two decimal places by whole numbers			Calculate and interpret the mean as an average.		Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison		Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.				
Calculate the area of parallelograms and triangles.		Use written division methods in cases where the answer has up to two decimal places			Pupils connect their work on angles, fractions and percentages to the interpretation of pie charts..		Solve problems involving similar shapes where the scale factor is known or can be found		Pupils draw and label a pair of axes in all four quadrants with equal scaling. This extends				

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				their knowledge of one quadrant to all four quadrants, including the use of negative numbers.		
Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units [for example, mm <sup>3</sup> and km <sup>3</sup> ].	Solve problems which require answers to be rounded to specified degrees of accuracy	Pupils both encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects	Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.	Pupils draw and label rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes. These might be expressed algebraically for example, translating vertex (a, b) to (a - 2, b + 3); (a, b) and (a + d, b + d) being opposite vertices of a square of side d		
They relate the area of rectangles to parallelograms and triangles, for example, by dissection, and calculate their areas, understanding and using the formulae (in words or symbols) to do this.	Recall and use equivalences between simple fractions, decimals and percentages, including in different context	They should connect conversion from kilometres to miles in measurement to its graphical representation.	Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes and recipes).	Draw 2-D shapes using given dimensions and angles		
	Pupils can explore and make conjectures about converting a simple fraction to a decimal fraction (for example, $3 \div 8 = 0.375$ ). For simple fractions with recurring decimal equivalents, pupils learn about rounding the decimal to three decimal places, or other appropriate approximations depending on the context. Pupils multiply	Pupils know when it is appropriate to find the mean of a data set.	Pupils link percentages or 360° to calculating angles of pie charts.	Recognise, describe and build simple 3-D shapes, including making nets		

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	and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. Pupils multiply decimals by whole numbers, starting with the simplest cases, such as $0.4 \times 2 = 0.8$ , and in practical contexts, such as measures and money.				
	Pupils are introduced to the division of decimal numbers by one-digit whole number, initially, in practical contexts involving measures and money. They recognise division calculations as the inverse of multiplication.		Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. They might use the notation a:b to record their work.	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons	
	Pupils also develop their skills of rounding and estimating as a means of predicting and checking the order of magnitude of their answers to decimal calculations. This includes rounding answers to a specified degree of accuracy and checking the reasonableness of their answers		Pupils solve problems involving unequal quantities, for example, 'for every egg you need three spoonfuls of flour', '5/3 of the class are boys'. These problems are the foundation for later formal approaches to ratio and proportion	Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius	
			Use simple formulae	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.	
			Generate and describe linear number sequences	Pupils draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles.	
			Express missing number problems algebraically	These relationships might be expressed	

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				algebraically for example, $d = 2 \times r$ ; $a = 180 - (b + c)$		
			Find pairs of numbers that satisfy an equation with two unknowns	Pupils describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements.		
			Enumerate possibilities of combinations of two variables			
			Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as: -missing numbers, lengths, coordinates and angles - formulae in mathematics and science -equivalent expressions (for example, $a + b = b + a$ ) - generalisations of number patterns -number puzzles (for example, what two numbers can add up to).			
<b>SEND Priority</b>						
Can interpret, with appropriate accuracy, numbers on scales and a range of measuring instruments	Can read, write and order numbers up to 3 decimal places			Can compare and classify shapes according to their properties		
	Can round decimals to the nearest whole number and to one or two decimal places					

