

Maths medium term planning document

Teagues Bridge Primary school

2021 – Year 6



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This document is to be used in conjunction with the long-term planning document for each year group. It is also supported by the CLIC maths program providing teaching and consolidation of mental strategies for mathematics and the white rose small steps for teaching sequences. Weeks are a guideline and should be adapted for the needs of the children. Time for consolidation is designed for recapping of previous units to ensure learning is committed to the long-term memory. This can also be used to teach areas of misconceptions.

Year 6: Autumn term

Resources including Nrich, White Rose and cross curricular	Specific Manipulatives	Non-negotiable end points	Mathematical aspect	Curriculum statements
	Place value charts Place value counters Base ten equipment	Knows how to read and write numbers with up to 8 digits using the comma separator. Knows how to work with negative numbers	Number and place value: properties of place value	<ul style="list-style-type: none"> • To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. • To round any whole number to a required degree of accuracy. • Use negative numbers in context, including across zero.
	Place value charts Place value counters Base ten equipment Numicon	Knows efficient mental methods applying knowledge of properties of number.	All four operations: inc addition and subtraction	<ul style="list-style-type: none"> • To perform mental calculations, including with mixed operations and large numbers. • To identify common factors, common multiples and prime numbers. • To solve problems involving addition, subtraction, multiplication and division.

				<ul style="list-style-type: none"> To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
	Place value charts Place value counters Base ten equipment Numicon	Knows the long algorithms for long multiplication and division.	Multiplication and division: long multiplication and long division	<ul style="list-style-type: none"> To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. To solve problems involving addition, subtraction, multiplication and division. To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
	Fraction tiles Cuisenaire rods Fractions circles Numicon	Knows how to add and subtract fractions with different denominators by identifying equivalent fractions with the same denominator.	Fractions: proper fractions, improper fractions and mixed numbers calculating	<ul style="list-style-type: none"> To use common factors to simplify fractions; use common multiples to express fractions in the same denomination To compare and order fractions, including fractions > To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions

		<p>Knows how to convert improper fractions and mixed numbers.</p> <p>Knows how to calculate with fractions.</p> <p>Knows that dividing by 2 is the same as multiplying by $\frac{1}{2}$</p>		<ul style="list-style-type: none"> • To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. • To multiply simple pairs of proper fractions, writing the answer in its simplest form. • To divide proper fractions by whole numbers.
	<p>Squared paper</p> <p>Tracing paper</p> <p>Mirror</p>	<p>Knows how to draw and label a pair of axes in all four quadrants with equal scaling, including the use of negative numbers.</p>	<p>Geometry: position and direction all four quadrants</p>	<ul style="list-style-type: none"> • To describe positions on the full co-ordinate grid (all four quadrants). • To draw and translate simple shapes on the co-ordinate plane and reflect them in the axes.

Year 6 Spring Term

Resources including Nrich, White Rose and cross curricular	Specific Manipulatives	Non-negotiable end points	Mathematical aspect	Curriculum statements
	Place value charts Place value counters Base ten equipment Numicon	Knows how to multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. Knows multiply decimals by whole numbers in practical contexts, such as measures and money.	Fractions: decimals	<ul style="list-style-type: none"> • To identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100, 1000 where the answers are up to three decimal places. • Multiply 1 digit with upto 2 decimal places by a whole number • Use written division method in cases where the answer has upto 2 decimal places

		Knows how to divide decimal numbers by one-digit whole number, in practical contexts involving measures and money. .		<ul style="list-style-type: none"> To solve problems which require answers to be rounded to specified degrees of accuracy.
	<p>Fraction tiles</p> <p>Cuisenaire rods</p> <p>Fractions circles</p> <p>Numicon</p>	<p>knows percentages are part of whole</p> <p>knows 100% = 1 whole</p> <p>knows how to build percentages using building blocks</p>	Fractions: Percentages	<ul style="list-style-type: none"> Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison. Recall and use equivalences between simple fractions, decimals and percentages including in different contexts.
	<p>Fraction tiles</p> <p>Cuisenaire rods</p> <p>Fractions circles</p> <p>Numicon</p>	<p>Knows how to use the arithmetic relationships to find unknowns or variables.</p> <p>Knows how to find the common difference for the nth term.</p> <p>Knows how to use formulae in mathematics and science</p>	Algebra: finding unknowns and variables, find linear sequences	<ul style="list-style-type: none"> To find pairs of numbers that satisfy number sentences involving two unknowns. To enumerate all possibilities of combinations of two variables. To generate and describe linear number sequences To use simple formulae
			Measurement:	

	<p>Converting formula for measurements</p> <p>Place value charts</p> <p>Place value counters</p> <p>Conversions between metric and imperial measures</p>	<p>Knows that approximately 5 miles = 8 kilometres.</p> <p>Knows the approximate conversions and are able to tell if an answer is sensible.</p>	<p>conversion of units</p>	<ul style="list-style-type: none"> • To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate. • To 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 three decimal places. • To convert between miles and kilometres.
	<p>Volume blocks</p> <p>2 D and 3 D shapes</p>	<p>Knows how to recognise that shapes with the same area can have different perimeters and vice versa.</p> <p>Knows the formula for volume $l \times b \times h$</p>	<p>Measurement: area, perimeter and volume</p>	<ul style="list-style-type: none"> • To recognise that shapes with the same area can have different perimeters and vice versa. • To calculate the area of parallelograms and triangles. • To recognise when it is necessary to use the formulae for area and volume of shapes. • To calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3) and extending to other units such as mm^3 and km^3.
	<p>Bar models</p>			

	<p>Part whole models</p> <p>Cuisenaire rods</p>	<p>Knows that proportions relate to the whole and ratios are part to part.</p>	<p>Ratio and proportion: FDP to represent the whole, $a:b$ ratio</p>	<ul style="list-style-type: none"> • To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. • To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
	<p>Bar models</p> <p>Part whole models</p> <p>Cuisenaire rods</p>	<p>Knows ratios compares quantities.</p> <p>Knows the notation $a:b$ to record a ratio.</p> <p>Knows how to use multiplication/division to find a scale factor.</p>	<p>Ratio and proportion: ratio, scaling and scale factors</p>	<ul style="list-style-type: none"> • To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • To solve problems involving similar shapes where the scale factor is known or can be found. • To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Year 6 – Summer term

Resources including Nrich, White Rose and cross curricular	Specific Manipulatives	Non-negotiable end points	Mathematical aspect	Curriculum statements
	Protractor	Knows how unknown angles and lengths can be derived from known measurements.	Geometry: angles	<ul style="list-style-type: none"> To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
	Example nets 3D shapes	<p>Knows how to describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements.</p> <p>Knows how to visualise 3D shapes from nets.</p>	<p>Geometry: properties of shape, including circles</p> <p>properties of shape, 3D nets</p>	<ul style="list-style-type: none"> To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

				<ul style="list-style-type: none"> • To recognise, describe and build simple 3D shapes, including making nets
		<p>Knows how to solve problems with ratio and proportion.</p> <p>Knows how to calculate with FDP with accuracy.</p>	<p>Solving problems</p>	<ul style="list-style-type: none"> • To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • To solve problems involving similar shapes where the scale factor is known or can be found. • To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. • To solve problems which require answers to be rounded to specified degrees of accuracy. • To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
		<p>Knows how to interpret and draw graphs relating two variables, arising from their own enquiry and in other subjects.</p> <p>Knows the arithmetic for finding the mean average.</p>	<p>Statistics: line graphs, mean average</p>	<ul style="list-style-type: none"> • To interpret and construct pie charts and line graphs and use these to solve problems. • To calculate and interpret the mean as an average.

		<p>Knows how to connect conversion to a graphical representation as preparation for understanding linear/proportional graphs.</p> <p>Knows approximate conversions of imperial/metric units.</p> <p>Knows how to use a number line to add and subtract positive and negative integers for measures such as temperature.</p>	<p>Investigations/maths project work.</p>	<ul style="list-style-type: none"> • To solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. • To 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 three decimal places