

Tower Hill Primary School Mathematics Progression Framework – Year 6

Y6	Number and Place Value	Addition, Subtraction, Multiplication and Division and Algebra	Fractions	Ratio and Proportion	Measurement	Geometry		Statistics
						Properties of Shape	Position and Direction	
Problem Solving		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.	solve problems which require answers to be rounded to specified degrees of accuracy	solve problems involving the relative sizes of two quantities where missing values can be using integer multiplication and division facts solve problems involving the calculation of percentages eg: of measures such as 15% of 360 and the use of percentages for comparison	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate			
Year 6, Phase 1 – Sept – Nov	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. *round any whole number to a required degree of accuracy 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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 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. *perform mental calculations, including with mixed operations and large numbers *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. <p>Algebra</p> <ul style="list-style-type: none"> *use simple formulae *generate and describe linear number sequences 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *use common factors to simplify fractions; use common multiples to express fractions in the same denomination. *compare and order fractions including fractions > 1 *add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. *multiply simple pairs of proper fractions, writing the answer in its simplest form eg: $\frac{1}{4} \times \frac{1}{2} = 1/8$ *associate a fraction with division and calculate decimal fraction equivalents eg: 0.375 for a simple fraction eg: 3/8 *identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places. *multiply one digit numbers with up to two decimal places by whole numbers. *recall and use equivalences between simple fractions, decimals and percentages including in different contexts. 	Pupils should be taught to:	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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 up to three decimal places *recognise that shapes with the same areas can have different perimeters and vice versa *recognise when it is possible to use formulae for area and volume of shapes 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *draw 2D shapes using given dimensions and angles *compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons *illustrate and name parts of circles including radius, diameter and circumference and know that the diameter is twice the radius *recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *describe positions on the full coordinate grid (all four quadrants) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *calculate and interpret the mean as average

Y6	Number and Place Value	Addition, Subtraction, Multiplication and Division and Algebra	Fractions	Ratio and Proportion	Measurement	Geometry		Statistics
						Properties of Shape	Position and Direction	
Problem Solving	solve number and practical problems that involve all of the statements below	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.	solve problems which require answers to be rounded to specified degrees of accuracy	solve problems involving the relative sizes of two quantities where missing values can be using integer multiplication and division facts solve problems involving the calculation of percentages eg: of measures such as 15% of 360 and the use of percentages for comparison solve problems involving similar shapes where the scale factor is known or can be found solve problems involving unequal sharing and grouping using knowledge of fractions and multiples	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate			
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">*read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.*round any whole number to a required degree of accuracy*use negative numbers in context and calculate intervals across zero	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">*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 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.*perform mental calculations, including with mixed operations and large numbers*identify common factors, common multiples and prime numbers*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. <p>Algebra</p> <ul style="list-style-type: none">*use simple formulae*generate and describe linear number sequences*express missing number problems algebraically*find pairs of numbers that satisfy number sentences involving two unknowns*enumerate all possibilities of combinations of two variables	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">*use common factors to simplify fractions; use common multiples to express fractions in the same denomination.*compare and order fractions including fractions > 1*add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.*multiply simple pairs of proper fractions, writing the answer in its simplest form eg: $\frac{1}{4} \times \frac{1}{2} = 1/8$ <ul style="list-style-type: none">*divide proper fractions by whole numbers eg: $1/3 \div 2 = 1/6$ <p>decimal fraction equivalents eg: 0.375 for a simple fraction eg: 3/8</p> <ul style="list-style-type: none">*identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places.*multiply one digit numbers with up to two decimal places by whole numbers. <ul style="list-style-type: none">*use written division methods in cases where the answer has up to two decimal places <ul style="list-style-type: none">*recall and use equivalences between simple fractions, decimals and percentages including in different contexts.	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">*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 up to three decimal places*convert between miles and kilometres*recognise that shapes with the same areas can have different perimeters and vice versa*recognise when it is possible to use formulae for area and volume of shapes*calculate the area of parallelograms and triangles*calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed and cubic metres and extending to other units such ass mm³ and km³	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">*draw 2D shapes using given dimensions and angles*recognise, describe and build simple 3D shapes including making nets*compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons*illustrate and name parts of circles including radius, diameter and circumference and know that the diameter is twice the radius*recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles.	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">*describe positions on the full coordinate grid (all four quadrants)*draw and translate simple shapes on the coordinate plane and reflect them in the axes	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">*interpret and construct pie charts and line graphs and use these to solve problems*calculate and interpret the mean as average	