



Mathematics Medium Term Plan – Year 6

Unit	National Curriculum End of Year 6 Statutory Requirements	Learning Objectives	Small Steps
Autumn Term			
Place Value	<ul style="list-style-type: none"> To be able to read, write, order and compare numbers up to 10 000 000 and determine the value of each digit To be able to round any whole number to a required degree of accuracy To be able to use negative numbers in context, and calculate intervals across zero To be able to solve number and practical problems that involve all of the above. 	<ol style="list-style-type: none"> To be able to understand the place value of numbers up to 1,000,000 To be able to understand the place value of numbers up to 10,000,000 To be able to read and write numbers to 10,000,000 To be able to use powers of 10 to identify integers To be able to place, read and order numbers to 10,000,000 on a number line To be able to compare and order any integers To be able to round any integer To be able to read and calculate with negative numbers 	<ol style="list-style-type: none"> Numbers to 1,000,000 Numbers to 10,000,000 Read and write numbers to 10,000,000 Powers of 10 Number line to 10,000,000 Compare and order any integers Round any integer Negative numbers
Addition, Subtraction, Multiplication and Division	<ul style="list-style-type: none"> To be able to multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication To be able to 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 To be able to divide numbers up to 4 digits by a two-digit number using the formal written method of short division where 	<ol style="list-style-type: none"> To be able to add and subtract integers To be able to identify common factors To be able to identify common multiples To be able to use rules of divisibility to solve problems To be able to identify prime numbers to 100 To be able to identify square and cube numbers To be able to multiply up to a 4-digit number by a 2-digit number To be able to solve problems with multiplication To be able to divide using short division To be able to use factors to solve division problems To be able to divide using long division 	<ol style="list-style-type: none"> Add and subtract integers Common factors Common multiples Rules of divisibility Primes to 100 Square and cube numbers Multiply up to a 4-digit number by a 2-digit number Solve problems with multiplication Short division Division using factors Introduction to long division

	<p>appropriate, interpreting remainders according to the context</p> <ul style="list-style-type: none"> • To be able to perform mental calculations, including with mixed operations and large numbers • To be able to identify common factors, common multiples and prime numbers • To be able to use their knowledge of the order of operations to carry out calculations involving the four operations • To be able to solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • To be able to solve problems involving addition, subtraction, multiplication and division • To be able to use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. 	<ol style="list-style-type: none"> 12. To be able to divide using long division including with remainders 13. To be able to solve problems with division 14. To be able to solve multi-step problems 15. To be able to use order of operations to solve problems 16. To be able to use mental calculation and estimation to solve problems 	<ol style="list-style-type: none"> 12. Long division with remainders 13. Solve problems with division 14. Solve multi-step problems 15. Order of operations 16. Mental calculations and estimation
Fractions A	<ul style="list-style-type: none"> • To be able to use common factors to simplify fractions; use common multiples to express fractions in the same denomination • To be able to compare and order fractions, including fractions > 1 • To be able to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • To be able to recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. 	<ol style="list-style-type: none"> 1. To be able to simplify, and find equivalent, fractions 2. To be able to find equivalent fractions on a number line 3. To be able to compare and order fractions 4. To be able to compare and order fractions 5. To be able to add and subtract simple fractions 6. To be able to add and subtract any two fractions 7. To be able to add mixed numbers 8. To be able to subtract mixed numbers 9. To be able to solve multi-step problems involving fractions 	<ol style="list-style-type: none"> 1. Equivalent fractions and simplifying 2. Equivalent fractions on a number line 3. Compare and order (denominator) 4. Compare and order (numerator) 5. Add and subtract simple fractions 6. Add and subtract any two fractions 7. Add mixed numbers 8. Subtract mixed numbers 9. Multi-step problems

Fractions B	<ul style="list-style-type: none"> To be able to multiply simple pairs of proper fractions, writing the answer in its simplest form To be able to divide proper fractions by whole numbers To be able to associate a fraction with division and calculate decimal fraction equivalents for a simple fraction To be able to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions 	<ol style="list-style-type: none"> To be able to multiply fractions by integers To be able to multiply fractions by fractions To be able to divide a fraction by an integer To be able to divide any fraction by an integer To be able to solve fraction problems using the four operations To be able to find a fraction of an amount To be able to find the whole when given a fraction 	<ol style="list-style-type: none"> Multiply fractions by integers Multiply fractions by fractions Divide a fraction by an integer Divide any fraction by an integer Mixed questions with fractions Fraction of an amount Fraction of an amount – find the whole
Measurement - Converting Units	<ul style="list-style-type: none"> To be able to solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate To be able 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 To be able to convert between miles and kilometres 	<ol style="list-style-type: none"> To be able to solve problems involving metric measures To be able to convert metric measures To be able to calculate with metric measures To be able to order, compare and convert miles and kilometres To be able to convert and solve problems involving imperial measures 	<ol style="list-style-type: none"> Metric measures Convert metric measures Calculate with metric measures Miles and kilometres Imperial measures
Spring Term			
Ratio	<ul style="list-style-type: none"> To be able to solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts To be able to solve problems involving similar shapes where the scale factor is known or can be found To be able to solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. 	<ol style="list-style-type: none"> To be able to express the relationship between numbers additively and multiplicatively To be able to use ratio language to describe a multiplicative relationship To be able to express a range of ratios to represent a multiplicative relationship between numbers To be able to explore the similarities and differences between ratios and fractions To be able to use ratios when scale drawing To be able to use scale factors to describe changes in shapes 	<ol style="list-style-type: none"> Add or multiply? Use ratio language Introduction to the ratio symbol Ratio and fractions Scale drawing Use scale factors Similar shapes Ratio problems Proportion problems

		<ol style="list-style-type: none"> 7. To be able to identify the scale factor in similar shapes 8. To be able to solve ratio problems 9. To be able to solve proportion problems 10. To be able to apply ratio and proportion when solving problems involving recipes 	10. Recipes
Algebra	<ul style="list-style-type: none"> • To be able to use simple formulae • To be able to generate and describe linear number sequences • To be able to express missing number problems algebraically • To be able to find pairs of numbers that satisfy an equation with two unknowns • To be able to enumerate possibilities of combinations of two variables. 	<ol style="list-style-type: none"> 1. To be able to use 1-step function machines to answer algebra problems 2. To be able to use 2-step function machines to answer algebra problems 3. To be able to form algebraic expressions 4. To be able to use substitution to find values of expressions 5. To be able to use simple algebraic formulae 6. To be able to form algebraic equations 7. To be able to solve 1-step equations 8. To be able to solve 2-step equations 9. To be able to find pairs of values to satisfy an equation 10. To be able to solve problems with two unknowns 	<ol style="list-style-type: none"> 1. 1-step function machines 2. 2-step function machines 3. Form expressions 4. Substitution 5. Formulae 6. Form equations 7. Solve 1-step equations 8. Solve 2-step equations 9. Find pairs of values 10. Solve problems with two unknowns
Decimals	<ul style="list-style-type: none"> • To be able to 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 • To be able to multiply one-digit numbers with up to two decimal places by whole numbers • To be able to use written division methods in cases where the answer has up to two decimal places • To be able to solve problems which require answers to be rounded to specified degrees of accuracy • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. 	<ol style="list-style-type: none"> 1. To be able to represent and identify the value of numbers within 1, to three decimal places 2. To be able to represent and identify the value of numbers greater than 1, to three decimal places 3. To be able to round numbers with up to three decimal places 4. To be able to add and subtract decimals 5. To be able to multiply by 10, 100 and 1000 6. To be able to divide by 10, 100 and 1000 7. To be able to multiply decimals by integers 8. To be able to divide decimals by integers 9. To be able to multiply and divide decimals in context 	<ol style="list-style-type: none"> 1. Place value within 1 2. Place value – integers and decimals 3. Round decimals 4. Add and subtract decimals 5. Multiply by 10, 100 and 1000 6. Divide by 10, 100 and 1000 7. Multiply decimals by integers 8. Divide decimals by integers 9. Multiply and divide decimals in context
Fractions, decimals and percentages	<ul style="list-style-type: none"> • To be able to use common factors to simplify fractions; use common multiples 	<ol style="list-style-type: none"> 1. To be able to find decimal and fraction equivalents 2. To be able to use division to convert fractions to decimals 3. To be able to explore, read and find percentages 	<ol style="list-style-type: none"> 1. Decimal and fraction equivalents 2. Fractions as division

	<p>to express fractions in the same denomination</p> <ul style="list-style-type: none"> To be able to compare and order fractions, including fractions > 1 To be able to associate a fraction with division and calculate decimal fraction equivalents for a simple fraction To be able to recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. To be able to solve problems involving the calculation of percentages and the use of percentages for comparison 	<ol style="list-style-type: none"> To be able to convert fractions to percentages To be able to find equivalent fractions, decimals and percentages To be able to order fractions, decimals and percentages To be able to find a percentage of an amount using one step To be able to find percentages of an amount using multi-steps To be able to find a whole number from a given percentage 	<ol style="list-style-type: none"> Understand percentages Fractions to percentages Equivalent fractions, decimals and percentages Order fractions, decimals and percentages Percentage of an amount – one step Percentage of an amount – multi-step Percentages – missing values
Area, perimeter and volume	<ul style="list-style-type: none"> To be able to recognise that shapes with the same areas can have different perimeters and vice versa To be able to recognise when it is possible to use formulae for area and volume of shapes To be able to calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3]. 	<ol style="list-style-type: none"> To be able to find shapes with the same area To be able to find the area and perimeter of rectangles and rectilinear shapes To be able to find the area of a triangle by counting squares To be able to calculate the area of a right-angled triangle To be able to calculate the area of any triangle To be able to calculate the area of a parallelogram To be able to find the volume by counting cubes To be able to calculate the volume of a cuboid 	<ol style="list-style-type: none"> Shapes – same area Area and perimeter Area of a triangle – counting squares Area of a right-angled triangle Area of any triangle Area of a parallelogram Volume – counting cubes Volume of a cuboid
Statistics	<ul style="list-style-type: none"> To be able to interpret and construct pie charts and line graphs and use these to solve problems To be able to calculate and interpret the mean as an average. 	<ol style="list-style-type: none"> To be able to draw, read and interpret line graphs To be able to read and interpret dual bar charts To be able to read and interpret pie charts To be able to read and interpret pie charts involving percentages To be able to draw pie charts To be able to calculate the mean 	<ol style="list-style-type: none"> Line graphs Dual bar charts Read and interpret pie charts Pie charts with percentages Draw pie charts The mean

<p>Shape</p>	<ul style="list-style-type: none"> • To be able to draw 2-D shapes using given dimensions and angles • To be able to recognise, describe and build simple 3-D shapes, including making nets • To be able to compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • To be able to illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • To be able to recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. 	<ol style="list-style-type: none"> 1. To be able to measure and classify angles 2. To be able to calculate angles 3. To be able to calculate vertically opposite angles 4. To be able to calculate angles in a triangle 5. To be able to calculate angles in a triangle 6. To be able to calculate missing angles in a triangle 7. To be able to calculate angles in a quadrilateral 8. To be able to find angles in polygons 9. To be able to illustrate and name parts of a circle 10. To be able to draw shapes accurately when given specific dimensions 11. To be able to make nets of 3-D shapes 	<ol style="list-style-type: none"> 1. Measure and classify angles 2. Calculate angles 3. Vertically opposite angles 4. Angles in a triangle 5. Angles in a triangle – special cases 6. Angles in a triangle – missing angles 7. Angles in a quadrilateral 8. Angles in polygons 9. Circles 10. Draw shapes accurately 11. Nets of 3-D shapes
<p>Position and direction</p>	<ul style="list-style-type: none"> • To be able to describe positions on the full coordinate grid (all four quadrants) • To be able to draw and translate simple shapes on the coordinate plane, and reflect them in the axes. 	<ol style="list-style-type: none"> 1. To be able to read and plot coordinates on a coordinate grid 2. To be able to read and plot points in four quadrants 3. To be able to solve problems with coordinates 4. To be able to translate points and shapes on a coordinate grid 5. To be able to reflect points and shapes on a coordinate grid 	<ol style="list-style-type: none"> 1. The first quadrant 2. Read and plot points in four quadrants 3. Solve problems with coordinates 4. Translations 5. Reflections
<p><i>Themed projects, consolidation and problem solving</i></p>			