UPPER KEY STAGE TWO MATHEMATICS LONG TERM PLAN 2017/18

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| **Term One** | **Term Two** | **Term Three** | **Term Four** | **Term Five** | **Term Six** |
| 7.5 weeks | 7 weeks | 6 weeks | 6 weeks | 5 weeks | 7.5 weeks |
| Week One: 5.9.19Number and Place Value | Week One: 4.11.19FDP | Week One: 6.1.20Number and Place Value | Week One: 24.2.20Measurement | Week One: 20.4.20Number and Place Value | Week One: 1.6.20Residential |
| Week Two: 9.9.19Number and Place Value | Week Two: 11.11.19FDP | Week Two: 13.1.20Addition and Subtraction | Week Two: 2.3.20Multiplication and Division | Week Two: 27.4.20Addition and Subtraction | Week Two: 8.6.20Addition and Subtraction |
| Week Three: 16.9.19Addition and Subtraction | Week Three: 18.11.19Properties of Shapes | Week Three: 20.1.20Multiplication and Division | Week Three: 9.3.20FDP | Week Three: 4.5.20Multiplication and Division | Week Three: 15.6.20Multiplication and Division |
| Week Four: 23.9.19Multiplication and Division | Week Four: 25.11.19Position and Direction | Week Four: 27.1.20FDP | Week Four: 16.3.20Ratio and Proportion | Week Four: 11.5.20Statistics –SATs Week | Week Four: 22.6.20Algebra |
| Week Five: 30.9.19FDP | Week Five: 2.12.19Algebra | Week Five: 3.2.20Investigations and Assessments  | Week Five: 23.3.20Properties of Shapes | Week Five: 18.5.20FDP | Week Five: 29.6.20FDP |
| Week Six: 7.10.19FDP | Week Six: 9.12.19Number and Place Value | Week Six: 10.2.20Measurement | Week Six: 30.3.20Position and Direction | Week Six: 25.5.20Measurement | Week Six: 6.7.20Ratio and Proportion |
| Week 7: 14.10.19Measurement | Week Seven: 16.9.19Statistics |  |  |  | Week Seven: 13.7.20Investigations |
| Week 8: 21.10.19Investigations and Assessments  |  |  |  |  | Week Eight: 20.7.20Term End |

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| **Focus** | **Year 5 Objectives** | **Year 6 Objectives** |
| **Number - Number and Place Value** | * read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit
* count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000
* interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0
* round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000
* solve number problems and practical problems that involve all of the above
* read Roman numerals to 1,000 (M) and recognise years written in Roman numerals
 | * 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 0
* solve number and practical problems that involve all of the above
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| **Number - Addition and Subtraction** | * 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 determine, in the context of a problem, levels of accuracy
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
 | * 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 method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
* 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
* 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 4 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
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| **Number – Multiplication and Division** | * identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
* know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
* establish whether a number up to 100 is prime and recall prime numbers up to 19
* 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
* multiply and divide numbers mentally, drawing 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 1,000
* 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
* 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 division, including scaling by simple fractions and problems involving simple rates
 | SEE OBJECTIVES ABOVE(Number – Addition, subtraction, multiplication and addition are together as one in year six) |
| **Number – Fractions / Decimals / Percentages****(FDP)** | * compare and order fractions whose denominators are 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 > 1 as a mixed number [for example, 2/5 + 4/5 =6/5 = 1 1/5 ]
* add and subtract fractions with the same denominator, and denominators that are multiples of the same number
* multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams
* read and write decimal numbers as fractions [for example, 0.71 = 71/100 ]
* recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
* round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
* read, write, order and compare numbers with up to 3 decimal places
* solve problems involving number up to 3 decimal places
* recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per 100’, and write percentages as a fraction with denominator 100, and as a decimal fraction
* solve problems which require knowing percentage and decimal equivalents of 1/2 , 1/4 , 1/5, 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25
 | * 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 [for example, 1/4 × 1/2 = 1/8 ]
* divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6 ]
* associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8 ]
* identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
* multiply one-digit numbers with up to 2 decimal places by whole numbers
* use written division methods in cases where the answer has up to 2 decimal places
* solve problems which require answers to be rounded to specified degrees of accuracy
* recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
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| **Ratio and Proportion (Y6)** |  | * solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts
* solve problems involving the calculation of percentages [for example, of measures and 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
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| **Algebra (Y6)** |  | * use simple formulae
* generate and describe linear number sequences
* express missing number problems algebraically
* find pairs of numbers that satisfy an equation with 2 unknowns
* enumerate possibilities of combinations of 2 variables
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| **Measurement** | * convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]
* understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
* measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
* calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes
* estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]
* solve problems involving converting between units of time
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
 | * solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate
* 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
* 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 cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]
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| **Geometry – Properties of Shapes** | * identify 3-D shapes, including cubes and other cuboids, from 2-D representations
* know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
* draw given angles, and measure them in degrees (°)
* identify:
	+ angles at a point and 1 whole turn (total 360°)
	+ angles at a point on a straight line and half a turn (total 180°)
	+ other multiples of 90°
	+ use the properties of rectangles to deduce related facts and find missing lengths and angles
	+ distinguish between regular and irregular polygons based on reasoning about equal sides and angles
 | * draw 2-D shapes using given dimensions and angles
* recognise, describe and build simple 3-D 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
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| **Geometry – Position and Direction** | * identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed
 | * describe positions on the full coordinate grid (all 4 quadrants)
* draw and translate simple shapes on the coordinate plane, and reflect them in the axes
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| **Statistics**  | * solve comparison, sum and difference problems using information presented in a line graph
* complete, read and interpret information in tables, including timetables.
 | * interpret and construct pie charts and line graphs and use these to solve problems
* calculate and interpret the mean as an average.
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| **Investigations and Assessments** |  |  |