Hartford Manor Primary School

Maths Long term plan

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|  | Autumn term: | Spring term: | Summer term: |
| EYFS |  |  |  |
| Year 1 | **Place Value 0-10**   * Sort objects * Counts objects * Count and read forward and   backwards numbers 0 to 10   * Count one more one less * One to one correspondence to   start to compare groups   * Compare numbers * Order groups of objects * Ordinal Number * The number line   **Addition and Subtraction**   * Part – Whole Model * Addition symbol * Fact Families – Addition facts * Find number bonds within 10 * Systematic methods for number bonds   within 10   * Number bonds to 10 * Compare number bonds * Addition – adding together * Addition – adding more * Finding a part * Subtraction – takeaway, how many left? * Subtraction – finding a part, breaking   apart   * Fact families- the 8 facts * Subtraction – Counting back   **Shape**   * Recognise and name 3-D shapes * Sort 3-D shapes * Recognise and name 2-D shapes * Sort 2-D shapes * Patterns with 3-D and 2-D shapes   **Place value (within 20)**   * Count forwards and backwards and   write number to 20 in numerals and words   * Number from 11 to 20 * Count one more and one less * Compare numbers * Order groups of objects * Order numbers | **Addition and Subtraction**   * Add by counting on * Find and make number bonds * Subtraction – Not crossing 10 * Subtraction – crossing 10 * Related facts * Compare number sentences   **Place Value (within 50)**   * Number to 50 * Tens and Ones * Represent numbers to 50 * One more one less * Compare objects within 50 * Compare numbers within 50 * Order numbers within 50 * Count in 2s * Count in 5s   **Measurement – Length and Height**   * Compare lengths and heights * Measure length   **Measurement – Weight and Volume**   * Introduce weight and mass * Measure mass * Compare mass * Introduce capacity and volume * Measure capacity * Compare capacity | **Multiplication and division.**   * Count in 10s * Make equal groups * Add equal groups * Make doubles   **Fractions**   * Find a half * Find a half * Find a quarter * Find a quarter   **Geometry**   * Describe turns * Describe positions * Describe positions   **Place value**   * Counting to 100 * Partitioning numbers * Comparing numbers * Ordering numbers * One more, one less   **Money**   * Recognising coins * Recognising notes * Counting coins   **Time**   * Before and after * Dates * Time to the hour * Time to the half hour * Writing time   Comparing time |
| Year 2 | **Number and Place Value**   * count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward * recognise the place value of each digit in a two-digit number (tens, ones) * identify, represent and estimate numbers using different representations, including the number line * compare and order numbers from 0 up to 100; use and = signs * read and write numbers to at least 100 in numerals and in words * use place value and number facts to solve problems.   **Addition and Subtraction**   * solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods * recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 * add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers * show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot * recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.   **Money**   * recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value * find different combinations of coins that equal the same amounts of money * solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change   **Shape**   * Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. * Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. * Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid.]   Compare and sort common 2-D and 3-D shapes and everyday objects. | **Multiplication and division**   * Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers. * Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs. * Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts. * Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.   **Statistics**   * Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. * Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. * Ask and answer questions about totalling and comparing categorical data.   **Fractions**   * Recognise, find, name and write fractions 12, 13, 14, 24and 34 of a length, shape, set of objects or quantity. * Write simple fractions for example, 12 of 6 = 3 and recognise the equivalence of 24 and 12   **Measure: Length and Height**   * choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels   compare and order lengths, mass, volume/capacity and record the results using >, < and = | **Multiplication and division.**   * Count in 10s * Make equal groups * Add equal groups * Make doubles   **Fractions**   * Find a half * Find a half * Find a quarter * Find a quarter   **Geometry**   * Describe turns * Describe positions * Describe positions   **Place value**   * Counting to 100 * Partitioning numbers * Comparing numbers * Ordering numbers * One more, one less   **Money**   * Recognising coins * Recognising notes * Counting coins   **Time**   * Before and after * Dates * Time to the hour * Time to the half hour * Writing time   Comparing time |
| Year 3 | * Recall and use multiplication and division facts for the 3, 4 and 8 x table. * Read and write numbers to 1000 in numerals and words. * Recognise the place value of each digit in a three-digit number. * Partition numbers in different ways. * Identify, represent and estimate numbers using different representations. * Compare and order numbers up to 1000. * Find 1, 10 or 100 more or less than a given number. * Count from 0 in multiples of 4, 8, 50 and 100. * Add and subtract numbers mentally, including: a three-digit number and ones; and tens; and hundreds. * Add and subtract numbers with up to three digits using formal written methods. * Estimate answers to calculations and use inverse operations to check answers. * Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction, multiplication and division. * Calculate mathematical statements for multiplication and division using multiplication tables they know including 2 digit numbers x 1 digit number, using mental and progressing to formal written method and write them using the appropriate operation signs. * Solve problems involving multiplication and division using materials, arrays, repeated addition and mental methods.   .  Assess and review week. | * Recall and use multiplication and division facts for the 3, 4 and 8 x table. * Solve problems including missing number problems involving multiplication and division, positive integer scaling problems and correspondence problems in which n objects are connected to m objectives. * Measure, compare add and subtract: lengths (mm, cm, m); mass kg/g); volume/ capacity (l/ml). * Draw 2-Dshapes and measure the perimeter of simple 2-Dshapes. * Write and calculate mathematical statements for multiplication and division using multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. * Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. * Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. * Count up and down in tenths. * Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. * Solve problems that involve all of the above * Interpret and present data using bar charts, pictograms and tables. * Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables. * Add and subtract amounts of money to give change using pounds and pence in practical contexts   Assess and review week. | * Recall and use multiplication and division facts for the 3, 4 and 8 x table. * Recognise and show, using diagrams, equivalent fractions with small denominators. * Add and subtract fractions with the same denominator within one whole. * Compare and order unit fractions with the same denominators. * Solve problems that involve all of the above * Recognise angles as a property of shape or a description of a turn. * Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle. * Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. * Draw 2D shapes and make 3D shapes using modelling materials * Recognise 3D shapes in different orientations and describe them * Estimate and read time with increasing accuracy to the nearest minute. * Record and compare time in terms of seconds, minutes and hours. * Use vocabulary such as o’clock, am/pm, morning, afternoon, noon and midnight. * Know the number of seconds in a minute and the number of days in each month, year and leap year. * Compare durations of events * Tell and write the time from an analogue clock, including using Roman numerals and 12-hour and 24-hour clocks. * Measure, compare add and subtract: lengths (mm, cm, m); mass kg/g); volume/ capacity (l/ml).   Assess and review week. |
| Year 4 | * Count in multiples of 6, 7, 9. 25 and1000. * Find 1000 more or less than a given number. * Count backwards through zero to include negative numbers. * Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones) * Order and compare numbers beyond 1000. * Identify, represent and estimate numbers using different representations. * Round any number to the nearest 10,100 or 1000. * Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. * Add and subtract numbers with up to 4 digits using the written methods. * Estimate and use inverse operations to check answers to a calculation. * Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why. * Multiply and divide by 10 and 100. * Recall and use multiplication and division facts for multiplication tables up to 12 x 12. * Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and1; dividing by 1; multiplying together three numbers. * Measure and calculate the   perimeter of a rectilinear figure  (including squares) in cm and m | * Recall and use multiplication and division facts for multiplication tables up to 12 x 12. * Recognise and use factor pairs and commutatively in mental calculations. * Multiply two digit and three digit numbers by a one digit number using written layout. * Recognise and show, using diagrams, families of common equivalent fractions. * Solve problems involving fractions to calculate quantities. * Add and subtract fractions with the same denominator * Recognise and write decimal equivalents of any number of tenths or hundredths. * Recognise and write decimal equivalents to ¼, ½, ¾ * Count up and down in hundredths; recognise that   hundredths arise when dividing an object by one hundred and dividing tenths by ten.   * Measurement- Area Find the area of rectilinear shapes by counting squares. * Round decimals with one decimal place to the nearest whole number and compare numbers with the same number of decimal places up to two decimal places. * Solve simple measure and money problems involving fractions and decimals to two decimal places. * Read, write & convert time between analogue and digital 12 and 14 hour clocks.   Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to years. | * Estimate, compare and, calculate different measures, including money in pounds and pence and solve simple measure and money   problems .   * Identify acute and obtuse   angles and compare and order  angles up to two right angles by size.   * Compare and classify geometric   shapes, including quadrilaterals  and triangles, based on their properties and sizes.   * Identify lines of symmetry in 2D shapes presented in different orientations. * Complete a simple symmetric figure with respect to a specific line of symmetry. * Describe positions on a 2D   grid as coordinates in the first quadrant.   * Describe movements between positions as translations of a given unit to the left/ right and up/ down. * Plot specified points and draw sides to complete a given polygon. * Interpret and present discrete and continuous data using appropriate   graphical methods, including bar charts and time graphs.   * Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and   other graphs.   * Consolidate four number operations and written methods.   Solve problems involving the four number operations. |
| Year 5 | **Number – 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 zero. * Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. * Solve number problems and practical problems that involve all of the above. * Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.   **Number – addition and subtraction**   * Add and subtract numbers mentally with increasingly large numbers. * Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) * 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.   **Number – multiplication and division**   * Multiply and divide numbers mentally drawing upon known facts. * Multiply and divide whole numbers by 10, 100 and 1000. * Multiply numbers up to 4 digits by a one or two digit number using a formal written method, including long multiplication for 2 digit numbers. * 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. * Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. * 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 and subtraction, multiplication and division and a combination of these, including understanding the use of the equals sign.   **Statistics**   * Solve comparison, sum and difference problems using information presented in a line graph. * Complete, read and interpret information in tables including timetables. | **Number: Fractions**   * Compare and order fractions whose denominators are 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 on form to the other and write mathematical statements >1 as a mixed number. * 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 = ] * Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.   **Number: Decimals**   * Read, write, order and compare numbers with up to three decimal places. * Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. * Round decimals with two decimal places to the nearest whole number and to one decimal place. * Solve problems involving number up to three decimal places. * Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. * Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.   **Number: Percentages**   * Recognise the percent symbol (%) and understand that percent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal. * Solve problems, which require knowing percentage and decimal equivalents of common fractions and those fractions with a denominator of a multiple of 10 or 25. * Time at the beginning or end of the term for consolidation, * Gap filling, seasonal activities, assessments, etc. | **Geometry- Angles**   * 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 one whole turn (total 360o), angles at a point on a straight line and 1⁄2 a turn (total 180o) other multiples of 90o   **Geometry- Shapes**   * Identify 3D shapes, including cubes and other cuboids, from 2D representations. * 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.   **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.   **Measurement- converting units**   * Convert between different units of metric measure (for example, km and m; cm and m; cm and mm; g and kg; l and ml) * Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds an pints. * Solve problems involving converting between units of time.   **Number- Prime 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   **Perimeter and Area**   * Measure and calculate the perimeter of composite rectilinear shapes in cm and m. * Calculate and compare the area of rectangles (including squares), and including using standard units, cm2,m2 estimate the area of irregular   **Measures Volume**   * Estimate volume [for example using 1cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water] * Use all four operations to solve problems involving measure   Time at the beginning or end of the term for consolidation,  gap filling, seasonal activities, assessments, etc. |
| Year 6 | **Number: place value**   * 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.   **Number: addition subtraction, multiplication and division**   * Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why. * Multiply multi-digit number up to 4 digits by a 2 digit number using the formal written method of long multiplication. * Divide numbers up to 4 digits by a 2 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 2 digit number using the formal written method of short division, interpreting remainders according to 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. * Solve problems involving addition, subtraction, multiplication and division.   **Fractions**   * Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. * Compare and order fractions, including fractions > 1 * Generate and describe linear number sequences (with fractions) * Add and subtract fractions with different denominations and mixed numbers, using the concept of equivalent fractions. * Multiply simple pairs of proper fractions, writing the answer in its simplest form * Divide proper fractions by whole numbers [for example * Associate a fraction with division and calculate decimal fraction equivalents * Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.   **Geometry: Position and Direction**   * 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. | **Number: Decimals**   * Identify the value of each digit in numbers given to 3dp and multiply numbers by 10, 100 and 1000 giving answers up to 3dp * Multiply one digit numbers with up to 2dp by whole numbers * Use written division methods in cases where the answer has up to 2dp * Solve problems which require answers to be rounded to specified degrees of accuracy   **Number: Percentages**   * Solve problems involving the calculation of percentages * Recall and use equivalences between simple FDP including in different contexts   **Measurement**   * Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3dp 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 up to 3dp * Convert between miles and km * 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 cm³, m³ and extending to other units.   **Number: Algebra**   * Use simple formulae * Generate and describe linear number sequences * Express missing number problems algebraically * Find pairs of numbers that satisfy an equation with two unknowns * Enumerate possibilities of combinations of two variables   **Number: Ratio**   * Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts * 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   **Geometry and Statistics**   * Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius * Interpret and construct pie charts and line graphs and use these to solve problems * Calculate the mean as an average | **Geometry: Properties of Shapes**   * 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. * Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.   **Post SATs project work**   * Handling money – the business project * Planning a trip to London – money, percentages, discounts, working within a budget |