Maths - Curriculum

Maths						
Number and Place Value Algebra	**Calculation**			**Fractions**	**Geometry**	**Measure**	**Statistics**
	Number Facts Ratio and Proportion	Addition and Subtraction	Multiplication and Division	Fractions Decimals Percentages	Properties of shape: 2D, 3D Angles and Lines Position and Direction Co-ordinates Perimeter Area and scaling	Time Length/Height Mass Capacity/Volume Money	

As stated in the National Curriculum: Mathematics programmes of study: key stages 1 and 2 (See Page 4 – School Curriculum)

'Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study.'

As such, please see yellow and blue highlights, to represent changes in the curriculum order. These changes have been made to improve coherence across units (and year groups) and match the sequence of learning suggested in the NCETM Prioritisation Oak Academy Materials.

EYFS	
Strand	**Objectives**
Number and Place Value	**ELG: Number** **Children at the expected level of development will:** - Have a deep understanding of number to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5. - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. *See Mastering Number Reception Overview for specific break down of learning steps.*
Calculation	
Fractions **Geometry** **Measure** **Statistics**	**LG: Numerical Patterns** **Children at the expected level of development will:** -Verbally count beyond 20, recognising the pattern of the counting system; -Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity; - Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally

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YEAR 1	
Strand	**Objectives**
Number and Place Value	Count to and across 100, forwards and backwards, beginning with 0 or 1 or from any given number. Count, read and write numbers to 100 in digits (numerals). Count forwards in 1s, 2s, 5s and 10s up to 100. Count backwards in 1s, 2s, 5s and 10s up to 100. Find one more and one less of a given number. Find and show numbers using objects and pictures and make numbers on a number line. Use the language of equal to, more than, less than (fewer), most and least. Read and write numbers from 1 to 20 in digits (numerals) and words.
Calculation	Read, write and interpret mathematical symbols and statements involving adding (+), subtracting (-) and equals (=), and understand the words add, total, sum and find the difference. Add 2 single digits up to 10, including 0. Add a single digit number to a 2-digit number up to 20, including 0. Add 3 single digits up to 20. Subtract a single digit from a 2-digit number up to 20. Answer addition number bonds to 20 very quickly. Answer subtraction number bonds to 20 very quickly. Solve one-step problems that involve addition up to 100 using objects and pictures. Solve missing number problems that involve addition up to 100 using objects and pictures. Solve one-step problems that involve subtraction up to 100 using objects and pictures. Solve missing number problems that involve subtraction up to 100 using objects and pictures. Solve one-step times table and division problems up to using objects, pictures, charts and arrays with my teacher's help. Understand the x and ÷ sign. Say what halving and doubling are.

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Fractions	Recognise, find and name a half as one of two equal parts of an object, shape or amount. Say what happens if you add two equal halves of a shape together. Recognise, find and name a quarter as one of four equal parts of an object, shape or amount. Tell you what happens if you add four equal quarters of a shape together.
Geometry	Recognise and name common 2D shapes (rectangles – including squares, circles and triangles). Recognise and name common 3D shapes (cuboids – including cubes, pyramids and spheres). Describe things which are either top, bottom, middle, next to and directions. Describe things which have made half, quarter and three-quarter turns.
Measure	Compare and measure lengths and heights to solve practical problems involving: long/short, longer/shorter, tall/short, double/half. Compare and measure mass/weight to solve practical problems involving: heavy/light, heavier than, lighter than. Compare and measure capacity and volume to solve practical problems involving: full/empty, more than/less than, half full, quarter full, quarter. Compare and measure time to solve practical problems involving: hours, minutes, seconds, quicker, slower, earlier, later. Recognise and use words relating to dates, including days of the week, weeks, months and years. Use words to sequence events in time order, e.g. before, after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. Recognise and say the value of different coins and notes.
Statistics	N/A

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YEAR 2	
Strand	**Objectives**
Number and Place Value	Count in steps of 2, 3, and 5 from 1, 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. (begun in Y1) Read and write numbers to at least 100 in numerals and in words. Use place value and number facts to solve problems.
Calculation	Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures. Solve problems with addition and subtraction: 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. Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (X), division (÷) and equals (=) signs. Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Solve problems using multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.
Fractions	Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity. Write simple fractions, e.g. ½ of 6 = 3 and recognise the equivalence of 2/4 and ½
Geometry	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. Order and arrange combinations of mathematical objects in patterns and sequences. Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise).

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Measure	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 =. 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. Compare and sequence intervals of time. Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. Know the number of minutes in an hour and the number of hours in a day.
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.

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YEAR 3	
Strand	**Objectives**
Number and Place Value	Count from 0 in multiples of 4, 8, 50 and 100. Find 10 or 100 more or less than a given number. Recognise the place value of each digit in a three-digit number (hundreds, tens and ones). Compare and order numbers up to 1000. Identify, represent and estimate numbers using different representations. Read, and write numbers to 1000 in numerals and words. Solve problems involving these ideas.
Calculation	Mentally add and subtract a 3-digit number and ones. Mentally add and subtract a 3-digit number and tens. Mentally add and subtract a 3-digit number and hundreds. Add numbers with up to 3-digits, using the column method with resources to regroup units, tens and hundreds. Subtract numbers with up to 3-digits, using the column method with resources to regroup units, tens and hundreds. Estimate the answer to a calculation. Use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction. Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

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Fractions	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 (Taught again in Year 5 to aid coherence) Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Recognise and show, using diagrams, equivalent fractions with small denominators. Add and subtract fractions with the same denominator up to one whole, e.g. 5/7+1/7 = 6/7. Compare and order unit fractions, and fractions with the same denominator. Solve fraction problems that involve all of the above.
Geometry	Draw 2-D shapes and make 3-D shapes using modelling materials. Recognise 3-D shapes in different orientations and describe them. Recognise angles as a property of shape or 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 complete a 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.
Measure	Measure, compare, add and subtract: lengths (m/cm/mm), mass (kg/g) and volume/capacity (l/ml). Measure the perimeter of simple 2-D shapes (Taught in Year 4 to aid coherence) Add and subtract amounts of money to give change, using both £ and in practical contexts. Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. 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, a.m./p.m., 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 or events (for example to calculate the time taken by particular events or tasks).
Statistics	Interpret and present data using bar charts, pictograms and tables. Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.

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YEAR 4	
Strand	**Objectives**
Number and Place Value	Count in multiples of 6, 7, 9, 25 and 1000. Find 1000 more or less than a number. Count backwards through zero and understand that -2 is greater than -3. (Taught in Year 5 to aid coherence) Recognise thousands, hundreds, tens and units and order and compare numbers beyond 1000. Find, show and estimate numbers using different representations, e.g. 15 could be 15 cm. Round any number to the nearest 10, 100 or 1000. Read Roman numerals to 100.
Calculation	Add up to 4-digits using the column method. Subtract up to 4-digits using the column method. Mentally add or subtract numbers up to 2 digits. Make a sensible estimate and check the answer using the inverse operation. Solve 2-step problems by deciding which operation to use and why. (Taught in Year 3 to aid coherence) Recall multiplication and division facts for multiplication tables up to 12X12. Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; dividing by 1; multiplying three numbers together. Recognise and use factor pairs and commutivity in mental calculations. Multiply two-digit and three-digit numbers by a one-digit number using formal written layout (Taught in Year 5 to aid coherence) Divide a 2-digit number by 2, 3, 4, 5, 6, 7 and 8 using an informal method. Solve problems using partitioning, e.g. 39 X 7 = 30 X 7 + 9 X 7 or using other number facts, e.g. 10 X 6 = 2 X 6 X 5. Solve two step problems in a context.
Fractions	Recognise and show families of equivalent fractions using diagrams. (Taught in Year 5 to aid coherence) Count up and down in hundredths and make hundredths by dividing an object by a hundred and dividing tenths by ten. (Taught in Year 5 to aid coherence) Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. (Find fractions of amounts using unit and non-unit fractions e.g. 1/5 and 2/5.) (Taught in Year 5 to aid coherence) Add and subtract fractions with the same denominator. Recognise and write decimal equivalents of any number of tenths or hundredths. (Taught in Year 5 to aid coherence) Recognise and write decimal equivalents to 1/4, 1/2 and 3/4. (Taught in Year 5 to aid coherence)

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	Find the effect of dividing a one- or two-digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths. (Taught in Year 5 to aid coherence) Round decimals with one decimal place to the nearest whole number. (Taught in Year 5 to aid coherence) Compare numbers with the same number of decimal places up to 2 decimal places (Taught in Year 5 to aid coherence) Solve simple measure and money problems using fractions and decimals to 2 decimal places. (Taught in Year 5 to aid coherence)
Geometry	Describe and compare 2-D shapes, including quadrilaterals and triangles, based on their properties and sizes. Identify acute and obtuse angles and compare and order angles up to two right angles by size. (Taught in Year 5 to aid coherence) Identify lines of symmetry in 2-D shapes drawn in different orientations. Complete a simple symmetric figure by using a given line of symmetry. Describe positions on a 2-D grid as co-ordinates in the first quadrant. Describe translations to the left / right and up / down. Plot specific points and draw sides to complete a polygon.
Measure	Convert between units of measure (km to m and hour to minute). Know the formula for measuring the perimeter of a square or rectangle in cm or m. Find the area of a rectangle or rectilinear shape by counting squares. (Taught in Year 5 to aid coherence) Estimate, compare and calculate different measures, including money in pounds and pence. (Taught in Year 5 to aid coherence) Read, write and convert time between analogue and digital 12- and 24-hour clocks. Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
Statistics	Present and interpret data using different scales on bar charts or time graphs. Compare information and solve total and difference problems using information presented in bar charts, pictograms, tables and other graphs.

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YEAR 5	
Strand	**Objectives**
Number and Place Value	Read, write order and compare numbers to 1,000,000. Count forward and backwards in steps of 1,000 and 100,000 from any number up to 1,000,000. Use negative numbers in a context and count forwards and backwards with positive and negative numbers through zero. Round any number up to 1,000,000 to the nearest 100,000 10,000, 1000, 100 and 10. (Taught in Year 6 to aid coherence) Read Roman numerals to 1000(M) and recognise years written in Roman numerals. Solve number problems and practical problems that involve all of the above.
Calculation	Mentally add and subtract large numbers (e.g. 12,462 – 2,300 = 10,162). Add and subtract numbers with more than 4-digits using the column method. Use rounding to check answers to calculations. Sole multi-step problems in contexts, deciding which operations and methods to use and why (problems involving measure and decimals). Identify multiples and be able to find all factor pairs. Identify prime numbers, prime factors and composite (non-prime) numbers and investigate whether a number up to 100 is prime. Multiply 4-digit numbers by 1- or 2-digit numbers using short or long multiplication. Multiply and divide numbers mentally using known facts. Divide numbers 4-digit numbers by 1-digit numbers using short division and interpret remainders for the context. Multiply and divide whole numbers and those involving decimals by 10, 100 or 1000. Recognise and use square numbers (^{2}) and cube numbers (^{3}) and the correct notation. Solve X and ÷ problems using factors, multiples, squares and cubes, e.g. 4 X 35 = 2 X 2 X 35. Solve problems involving all 4 operations and a combination of these. Solve problems including scaling by simple fractions and problems involving simple rates.

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Fractions	Compare and order fractions whose denominators are all multiples of the same number. Identify, name and write equivalent fractions and represent them visually, including tenths and hundredths. Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5, 1/10 and 1/25. Recognise mixed numbers and improper fractions and convert from one form to the other. (Taught in Year 4 to aid coherence) Add and subtract fractions with the same denominator and denominators that are multiples of the same number, e.g. 2/8 + 5/16. Multiply proper fractions and mixed numbers by whole numbers up to 10, supported by materials and diagrams. Read and write decimal numbers as fractions e.g. 0.7 = 7/10. Recognise and use thousandths and relate them to tenths and hundredths. Round decimals with two decimal places to the nearest whole number and to one decimal place. Read, write, order and compare numbers with up to three decimal places and solve problems with numbers up to 3 decimal places. Recognise and understand the percent symbol (%) and write percentages as a fraction with the denominator as 100, and also as a decimal. (Taught in Year 6 to aid coherence) Know percentage and decimal equivalents of ½, ¼, 1/5, 2/5 and 4/5, and fractions with a denominator of a multiple of 10 or 25. (Taught in Year 6 to aid coherence)
Geometry	Identify 3-D shapes, including cubes and cuboids, from 2-D representations. (Taught in Year 6 to aid coherence) Know angles are measured in degrees; estimate and compare acute, obtuse and reflect angles. Draw given angles and measure them in degrees. Identify multiples of 90°; angles at a point on a straight line and ½ a turn (total 180°); angles at a point and one whole turn (total 360°); reflex angles and compare different angles. State and use the properties of a rectangle (including squares) to find missing lengths and angles. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. (Taught in Year 4 to aid coherence) Identify, describe and represent the position of a shape following a reflection or translation in all four quadrants, using the appropriate language, and know that the shape has not changed. (Taught in Year 4/6 to aid coherence)
Measure	Convert between different units of measure (km/m; m/cm; cm/mm; kg/g; l/ml). Convert metric to common imperial units and imperial to metric. Measure and calculate the perimeter of composite rectilinear shapes in cm and m. Calculate and compare the area of rectangles in cm^2 and m^2. Recognise and estimate volume using cubes and capacity using water. Solve problems involving converting between units of time.
Statistics	Solve problems using information presented in line graphs. Complete, read and interpret information in tables, including timetables.

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YEAR 6	
Strand	**Objectives**
Number and Place Value	Read, write, order and compare numbers up to 10,000,000. Round any whole number to a required degree of accuracy and solve problems that involve rounding (KPI place value and fractions). Add and subtract negative numbers and use them in a context. (Taught in Year 5 to aid coherence)
Algebra	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 e.g. what is 2a+3b if a=2 and b=3. Work out all possibilities of combinations of two variables.
Calculation **Ratio and Proportion**	Perform mental calculations, including with mixed operations and large numbers. Solve addition and subtraction multi-step problems, deciding which operations and methods to use. Multiply numbers up to 4 digits by a 2-digit whole number using an efficient written method. Divide numbers up to 4-digits by a 2-digit whole numbers using short or long division and interpret remainders as whole number remainders, fractions or by rounding where needed. Solve multi-step problems involving the 4 rules. Use estimations to check answers to calculations. Use my knowledge of the order of operations to carry out calculations involving the 4 operations. Identify common factors, multiples and prime numbers. Solve problems involving the relative sizes of 2 quantities. Find a percentage of any given number, e.g. 15% of 360. Solve problems involving unequal sharing and grouping e.g. ‘for every egg you need three spoonful’s of flour’. Solve problems involving similar shapes where the scale factor is known or can be found.

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Fractions	Recall and use equivalences between simple fractions, decimals and percentages in different contexts. Use common factors to simplify fractions and 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 idea of equivalent fractions. Multiply simple pairs of proper fractions writing the answer in its simplest form (e.g. 1/4 x 1/2); Divide proper fractions by whole numbers (e.g. 1/3 ÷ 2 = 1/6). Identify the value of each digit to three decimal places and X and / numbers by 10, 100 and 1000 to give answers up to 3 decimal places. Multiply 1-digit numbers with up to 2 decimal places by whole numbers. (Taught in Year 5 to aid coherence) Use written division methods in cases where the answer has up to 2 decimal places. Find decimal fractions by using division, e.g. 3/8 as 0.375.
Geometry	Draw 2D shapes using given dimensions and angles. Recognise, describe and build simple 3-D shapes including making nets. 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. Recognise angles where they meet at a point, are on a straight line or are vertically opposite and find unknown angles, e.g. in a parallelogram, rhombus or trapezium by working out opposite angles. (Taught in Year 5 to aid coherence) Describe positions on the full co-ordinates grid (all four quadrants). Draw and translate simple shapes on the co-ordinate plane, reflect them in the axes.
Measure	Solve problems by converting measurements of length, mass, volume and time using decimal notation to three decimal places. (Taught in Year 5 to aid coherence) Convert between miles and kilometres. (Taught in Year 5 to aid coherence) Recognise that shapes with the same areas can have different perimeters and vice versa. Calculate the area of parallelograms and triangles and be able to use the correct formulae. Calculate the volume of cubes and cuboids using centimetre^3 and cubic metres and extending to other units, such as mm^{3}and km^3. (Taught in Year 5 to aid coherence)
Statistics	Interpret and construct pie charts and use these to solve problems using my knowledge of angles, fractions and percentages. Interpret and construct line graphs and use these to solve problems (conversion of units for measures). Calculate and interpret the mean, as an average.