Maths from the National Curriculum

MATHS: NUMBER AND PLACE VALUE		
KS1	**Y1**	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 numerals; count in multiples of twos, fives and tens
		Given a number, identify one more and one less
		Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least
		Read and write numbers from 1 to 20 in numerals and words.
	Y2	Count in 2, 3, and 5 from 0, and in tens from any number, forward, 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.
KS2	**Y3**	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
		Compare and order numbers up to 1000
		Identify, represent and estimate numbers using different representations
		Read and write numbers up to 1000 in numerals and in words
		Solve number problems and practical problems involving these ideas

MATHS: NUMBER AND PLACE VALUE		
KS2	**Y4**	Count in multiples of 6, 7, 9, 25 and 1000
		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
		Solve number and practical problems that involve all of the above and with Increasingly large positive numbers
		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
	Y5	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 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.
	Y6	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
		Solve number and practical problems that involve all of the above.

MATHS: ADDITION AND SUBTRACTION		
KS1	**Y1**	Read, write and interpret mathematical statements involving (+), (–) and (=) signs
		Represent and use number bonds and related subtraction facts within 20
		Add and subtract one-digit and two-digit numbers to 20, including zero
		Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems
	Y2	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 problem
KS2	**Y3**	Add and subtract numbers mentally, including: • a three-digit number and ones • a three-digit number and tens • a three-digit number and hundreds
		Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
		Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

MATHS: ADDITION AND SUBTRACTION		
KS2	**Y4**	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
		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.
	Y5	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 levels of accuracy
		Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
	Y6	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
		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.

MATHS: MULTIPICATION AND DIVISION		
KS1	**Y1**	Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.
	Y2	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 (×), (÷) and (=) signs
		Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
		Solve problems involving multiplication and division, using materials, arrays, repeated

		addition, mental methods, multiplication and division facts, and problems in contexts.
KS2	**Y3**	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.
	Y4	Recall multiplication and division facts for multiplication tables up to 12 × 12
		Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
		Recognise and use factor pairs and commutability in mental calculations
		Multiply two-digit and three-digit numbers by a one-digit number using formal written layout
		Solve problems involving multiplying and adding, including using the distributive law
		Multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

MATHS: MULTIPICATION AND DIVISION		
	Y5	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two 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 1000
		Recognise and use square numbers and cube numbers, and the notation (^{2}) and (^{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.
	Y6	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, f 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 four operations
		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

NUMBER: FRACTIONS, DECIMALS and PERCENTAGES		
KS1	**Y1**	Recognise, find and name a half as 1 of 2 equal parts of an object, shape, quantity
		Recognise, find, name a quarter as 1 of 4 equal parts of an object, shape or quantity.
	Y2	Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity
		Write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.
KS2	**Y3**	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
		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 within one whole

		Compare and order unit fractions, and fractions with the same denominators
		Solve problems that involve all of the above.
	Y4	Recognise and show, using diagrams, families of common equivalent fractions
		Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.
		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
		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 $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$
		Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
		Round decimals with one decimal place to the nearest whole number
		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 Place

NUMBER: FRACTIONS, DECIMALS and PERCENTAGES		
KS2	**Y5**	Compare and order fractions whose denominators are all multiples of same number
		Identify, name, write equivalent fractions of a given fraction, inc 1/10 and 1/100
		Recognise mixed numbers and improper fractions and convert from one 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 = $\frac{71}{100}$]
		Recognise / use thousandths, relate them to tenths, hundredths, decimal equivalents
		Round decimals with 2 decimal places to nearest whole and to 1 decimal place
		Read, write, order and compare numbers with up to three decimal places $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.
		Solve problems involving number up to three decimal places

		Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction and as a decimal
		Solve problems which require knowing percentage and decimal equivalents of
	Y6	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
		Divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
		Associate a fraction with division and calculate decimal fraction equivalents
		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
		Multiply one-digit numbers with up to two decimal places by whole numbers
		Use written division methods in cases where the answer has up to two 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.

MATHS: RATIO AND PROPORTION		
KS1	**Y1**	***No statutory content***
	Y2	***No statutory content***
KS2	**Y3**	***No statutory content***
	Y4	***No statutory content***
	Y5	***No statutory content***
	Y6	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 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.

MATHS: ALGEBRA		
KS1	**Y1**	***No statutory content***
	Y2	***No statutory content***
KS2	**Y3**	***No statutory content***
	Y4	***No statutory content***
	Y5	***No statutory content***
	Y6	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.

MATHS: MEASUREMENT: SHAPE		
KS1	**Y1**	Compare, describe and solve practical problems for lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
		Measure and begin to record lengths and heights
	Y2	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm)
KS2	**Y3**	Measure, compare, add and subtract: lengths (m/cm/mm)
		Measure the perimeter of simple 2-D shapes
	Y4	Convert between different units of measure [for example, kilometre to metre]
		Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
		Find the area of rectilinear shapes by counting squares
		Estimate, compare and calculate different measures
	Y5	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre)

		Understand and use approximate equivalences between metric units and common imperial units such as inches
		Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
		Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes
	Y6	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
		Use, read, write and convert between standard units, converting measurements of length from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to 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

MATHS: MEASUREMENT: MASS, WEIGHT		
KS1	**Y1**	Compare, describe and solve practical problems for mass/weight [eg: heavy/light, heavier]
		Measure and begin to record mass/weight
	Y2	Choose and use appropriate standard units to estimate and measure mass (kg/g)
		Compare and order mass and record the results using >, < and =
KS2	**Y3**	Measure, compare, add and subtract mass (kg/g)
	Y4	Convert between different units of measure [for example, kilometre to metre
	Y5	Convert between different units of metric measure (for example, gram and kilogram)
		Understand / use approximate equivalences between metric and imperial units
	Y6	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
		Use, read, write and convert between standard units, converting mass from a smaller unit of measure to a larger unit, and vice versa, using notation to up to three places

MATHS: MEASUREMENT: CAPACITY AND VOLUME		
KS1	**Y1**	Compare, describe and solve practical problems for capacity and volume
		Measure and begin to record capacity and volume
	Y2	Choose and use appropriate standard units to estimate and measure capacity (litres/ml) to the nearest appropriate unit, using measuring vessels
		Compare and order volume/capacity and record the results using >, < and =
KS2	**Y3**	Measure, compare, add and subtract volume/capacity (l/ml)
	Y4	Convert between different units of measure
	Y5	Convert between different units of metric measure (for example, litre and millilitre)
		Understand and use approximate equivalences between metric units and common imperial units such as pints
		Estimate volume – eg using 1 cm^3 blocks to build cuboids and capacity – eg water
	Y6	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
		Use, read, write and convert between standard units, converting measurements of volume from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
		Recognise when it is possible to use formulae for volume of shape
		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

MATHS: MEASUREMENT: TEMPERATURE		
KS1	**Y1**	***No statutory content***
	Y2	Choose and use appropriate standard units to estimate temperature (°C) to the nearest appropriate unit using thermometers
KS2	**Y3-5**	***No statutory content***
	Y6	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

MATHS: MEASUREMENT: TIME		
KS1	**Y1**	Compare, describe and solve practical problems for time
		Measure and begin to record time (hours, minutes, seconds)
		Sequence events in chronological order using language [eg before and after, next]
		Recognise / use language relating to dates, inc days, weeks, months, years
		Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.
	Y2	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.
KS2	**Y3**	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 seconds, minutes and hours; use vocabulary eg o'clock, a.m.
		Know the number of seconds in a minute and the number of days in each month, year and leap year
		Compare durations of events [eg calculate time taken by particular events].
	Y4	Convert between different units of measure [for example, hour to minute
		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.
	Y5	Solve problems involving converting between units of time
	Y6	Use, read, write, convert between standard units of time from a smaller unit of measure to a larger unit, using decimal to up to three decimal places.

MATHS: MEASUREMENT: MONEY		
KS1	**Y1**	Recognise and know the value of different denominations of coins and notes
	Y2	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
KS2	**Y3**	***No statutory content***
	Y4	Estimate, compare and calculate different measures, including money in pounds and pence
	Y5	Use all four operations to solve problems involving money using decimal notation, including scaling.
	Y6	Solve problems involving the calculation and conversion of units of money, using decimal notation up to three decimal places where appropriate

MATHS: GEOMETRY: PROPERTIES OF SHAPE		
KS1	**Y1**	Recognise and name common 2-D and 3-D shapes, inc 2-D and 3-D shapes
	Y2	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
		Identify and describe properties of 3-D shapes, including number of edges, vertices and faces
		Identify 2-D shapes on the surface of 3-D shapes [eg, circle on cylinder, triangle on pyramid)
		Compare and sort common 2-D and 3-D shapes and everyday objects.
KS2	**Y3**	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 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.

MATHS: GEOMETRY: PROPERTIES OF SHAPE		
KS2	**Y4**	Compare and classify geometric shapes based on their properties and sizes
		Identify acute and obtuse angles and compare and order angles up to 2 right angles by size
		Identify lines of symmetry in 2-D shapes presented in different orientations
		Complete a simple symmetric figure with respect to a specific line of symmetry.
	Y5	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations
		Know angles are measured in degrees: estimate, compare acute, obtuse and reflex
		Draw given angles, and measure them in degrees (^{o})
		Identify: • angles at a point and one whole turn (total 360^o) • angles at a point on a straight line and $\frac{1}{2}$ a turn (total 180^o) • other multiples of 90^o • use properties of rectangles to deduce related facts and find missing lengths, angles • distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
	Y6	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

MATHS: GEOMETRY: POSITION AND DIRECTION		
KS1	**Y1**	Describe position, direction and movement, including whole, half, quarter, three-quarter turns
	Y2	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 anti-clockwise).
KS2	**Y3**	***No statutory content***
	Y4	Describe positions on a 2-D grid as coordinates in the first quadrant
		Describe movements bet 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
	Y5	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.
	Y6	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.

MATHS: STATISTICS		
KS1	**Y1**	***No statutory requirements***
	Y2	Interpret and construct simple pictograms, tally charts, block diagrams and 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.
KS2	**Y3**	Interpret and present data using bar charts, pictograms and tables
		Solve 1 and 2step questions using info in scaled bar charts and pictograms and tables.
	Y4	Interpret and present discrete and continuous data using apt graphical methods,
		Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.
	Y5	Solve comparison, sum, difference problems using info presented in line graph
		Complete, read and interpret information in tables, including timetables.

	Y6	Interpret and construct pie charts and line graphs and use these to solve problems
		Calculate and interpret the mean as an average.