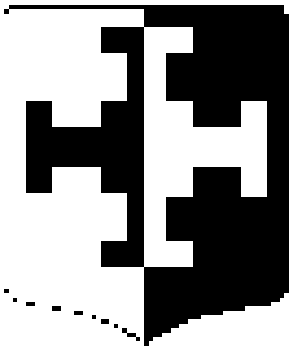
St.Chad's Church of England Primary School



Scheme of Work

Mathematics

2016-2017

KS1 Mathematics

Year 1

	Taught	Mostly achieved	Revisit
Place Value			
• Count to ten, forwards and backwards, beginning with 0 or 1, or from any given number. • Count, read and write numbers to 10 in numerals and words. • 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. • Given a number, identify one more or one less. • Count in multiples of twos. • Count forwards and backwards, beginning with 0 or 1, from any given number. • Count, read and write numbers from 1 to 100 in numerals and words. • 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 • Count in multiples of twos and fives • Count to 40 forwards and backwards, beginning with 0 or 1, or from any number. • Count, read and write numbers from 1 – 40 in numerals and words. • Identify and represent numbers using objects and pictorial drawings. • Given a number, identify 1 more or 1 less.			

Number - Addition and Subtraction			
• Represent and use number bonds and related subtraction facts (within 10) • Add and subtract one digit numbers (to 10), including zero. • Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. • Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations and missing number problems. • Represent and use number bonds and related subtraction facts within 20. • Add and subtract one digit and two digit numbers to 20, including zero. • Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs. • Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7= ? – 9 • Add and subtract one digit and two digit numbers to 40, including zero. • 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 digit numbers. • Add and subtract one digit and two digit numbers to 100, including zero.			

Number – multiplication and division			
• Count in multiples of twos, fives and tens. • 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.			
Number - Fractions			
• Recognise, find and name a half as one of two equal parts of an object, shape or quantity. • Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.			
Geometry – Shape			
• Recognise and name common 2D and 3D shapes, including rectangles, squares, circles and triangles, cuboids, pyramids and spheres. • Describe position, direction and movement, including whole, half, quarter and three quarter turns			
Measures – money			
• Recognise and know the value of different denominations of coins and notes. • Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.			
Measures – length, height, weight, capacity			
• 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. • Compare, describe and solve practical problems for mass/weight [for example, heavy/light, heavier than, lighter than]; capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] • Measure and begin to record mass/weight, capacity and volume.			

Time			
• 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 use language relating to dates, including days of the week, weeks, months and years. • Compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later] and measure and begin to record time (hours, minutes, seconds). • Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening].			

KS1 Mathematics

Year 2

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 to 100 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 words. • Use place value and number facts to solve problems.		
Number – Addition and Subtraction		
• Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100. • Show that the addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. • 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. • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. • 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.		
Number – 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 (x), division (÷) and equals (=) sign. • 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.		
Number - 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 for example, 1/2 of 6 = 3 • Recognise the equivalence of 1/2 and 2/4.		
Geometry		
• Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. • Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. • Identify 2D shapes on the surface of 3D shapes, [for example, a circle on a cylinder and a triangle on a pyramid.] • Compare and sort common 2D and 3D shapes and everyday objects. • Order and arrange combinations of mathematical objects in patterns and sequences.		
Measures		
• Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) and mass (kg/g) to the nearest appropriate unit, using rulers and scales. • Compare and order length and mass and record the results using >, < and =. • Choose and use appropriate standard units to estimate and measure capacity (litres/ml) and temperature (oC) to the nearest appropriate unit, using thermometers and measuring vessels. • Compare and order volume/capacity and record the results using >, < and =.		
Measures - Money		
• Recognise and use symbols of 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.		
Graphs		
• Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. • Ask+ 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		
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. • Compare and sequence intervals of time.		

KS2 Mathematics

Year 3

Place Value		
• Identify, represent and estimate numbers using different representations. • 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, ones). • Compare and order numbers up to 1000 • Read and write numbers up to 1000 in numerals and in words. • Solve number problems and practical problems involving these ideas. • Count from 0 in multiples of 50 and 100		
Number –Addition and Subtraction		
• 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.		
Number- Multiplication and Division		
• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), 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 context. • Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. • 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 objectives.		

• Write and calculate mathematical statements for multiplication and division using the multiplication tables they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods		
Number - Fractions		
• 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 • 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.		
Geometry		
• Recognise angles as a property of shape or a description of a turn. • Identify right angles, recognise that two right angles make a half-term, 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 2-D shapes and make 3-D shapes using modelling materials. • Recognise 3-D shapes in different orientations and describe them.		
Measure		
• Measure the perimeter of simple 2D shapes. • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).		

• Continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm).		
Measure - Time		
• Tell and write the time from an analogue clock, including using Roman numerals 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 of 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 onestep and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts and pictograms and tables.		

KS2 Mathematics

Year 4

Place Value		
• 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		
Number – Addition and Subtraction		
• 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.		
Number – Multiplication and Division		
• 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 and 1; dividing by 1; multiplying together three numbers. • Recognise and use factor pairs and commutativity 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 to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.		
Fractions		
• 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.		
Decimals		
• Recognise and write decimal equivalents of any number of tenths or hundredths. • Recognise and write decimal equivalents to □, □, □ • 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 • 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.		
Measures – Area and Perimeter		
• Find the area of rectilinear shapes by counting square • Convert between different units of measure eg kilometre to metre. • Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m		
Measures – Time		
• Convert between different units of measure eg hour to minute.		

• 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 days		
Measures – Money		
• Solve simple measure and money problems involving fractions and decimals to two decimal places. • Estimate, compare and calculate different measures, including money in pounds and pence		
Geometry		
• 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 an 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.		
Statistics		
• 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.		

KS2 Mathematics

Year 5

Place Value		
• Read, write, order and compare numbers to at least 1000000 and determine the value of each digit. • Count forwards or backwards in steps of powers of 10 for any given number up to 1000000. • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero. • Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000 • 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.		
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 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 • 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 per cent symbol (%) and understand that per cent 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		
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		
Geometry		
• 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 a turn (total 180o) other multiples of 90o • 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. • 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.		
Measures		
• 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 and pints. • Solve problems involving converting between units of time. • 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 shapes. • 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		
Statistics		
• Solve comparison, sum and difference problems using information presented in a line graph. • • Complete, read and interpret information in tables including timetables		

KS2 Mathematics

Year 6

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. • Solve number and practical problems that involve all of the above		
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. • Use estimation to check answers to calculations and determine in the context of a problem, an appropriate degree of accuracy.		
Number – 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 • Associate a fraction with division and calculate decimal fraction equivalents • Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.		
Number – Decimals		
• Identify the value of each digit in numbers given to three decimal places 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 two decimal places. • Solve problems which require answers to be rounded to specified degrees of accuracy		
Number - Percentages		
• Solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison. • Recall and use equivalence s between simple FDP including in different contexts.		
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		
• 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. • Describe positions on the full coordinate grid (all four quadrants). • Draw and translate simple shapes on the coordinate plane, and reflect them in the axe		
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		
Measures		
• 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, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3dp. • 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		