

**Bedfield and Wetheringsett C of E Primary Schools: Progression of Knowledge and Skills**

**Subject: Mathematics**

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| **Reception** |  |
|  | * Count objects, actions and sounds
* Subitise
* Link the number symbol (numeral) with its cardinal number value
* Count beyond 10
* Compare numbers
* Understand the ‘one more than/one less than’ relationship between consecutive numbers
* Explore the composition of numbers to 10
* Automatically recall number bonds for numbers 0 – 5 and some to 10
* Select, rotate and manipulate shapes to develop spatial reasoning skills
* Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can
* Continue, copy and create repeating patterns
* Compare length, weight and capacity

**Mathematics ELG: Number*** 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

**ELG: Numerical Patterns*** 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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| **Years 1&2** | **Year 1** | **Year 2** |
|  | **Counting*** Count to and across 100, forwards and backwards, beginning with 0 or 1, from any given number
* Count, read and write numbers to 100 in numerals
* Count in multiples of twos, fives and tens
* **Representing Number**
* Identify and represent numbers using objects and pictorial representations including number lines
* Use the language of equal to, more than/less than, most and least
* Read and write numbers from one to twenty in numerals and words

**Number Facts (addition and subtraction)*** Identify one more or one less from a given number
* Read, write and interpret mathematical statements involving addition, subtraction and equals signs
* Represent and use number bonds and related subtraction facts within 20

**Mental addition and subtraction*** Add and subtract one and two digit numbers to 20, including zero

**Addition and subtraction problems*** Solve one step problems using addition and subtraction using concrete objects and pictorial representations
* Solve missing number problems

**Multiplication and division problems*** Solve one step problems using multiplication and division by calculating the answer using concrete objects, pictorial representations and arrays with support from the teacher

**Recognising 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

**Measures** * Compare, describe and solve practical problems involving length/heights/weights/mass/

 capacity/volume/time* Measure and begin to record length/height/mass/weight/capacity/volume/time

**Money** * Recognise and know the value of different denominations of coins and notes

**Time*** Sequence events in chronological order
* Recognise and use language relating to dates, including days of the week, weeks, months and years
* Tell the time t the hour and half past the hour and draw the hands on a clock face to show these times

**Properties of 2D shape*** Recognise and name common 2D shapes including squares, rectangles, triangles and circles

**Properties of 3D shape*** Recognise and name common 3D shapes including cubes, cuboids, pyramids and spheres

**Position and direction*** Describe position, direction and movement, including whole, half and three quarter turns
 | **Counting*** Count in 2s,3s 5 from zero and 10s from any number forwards and backwards

**Place Value*** Recognise place value in a 2 digit number
* Compare and order numbers 0-100
* Use <, > and = signs
* Read and write numbers 0-100 in numerals and words

**Representing Number*** Identify, estimate and represent numbers using different representations including the number

**Number Facts (addition and subtraction)*** Use place value and number facts to solve problems
* Recall and use addition and subtraction number facts to 20 fluently
* Derive and use related facts up to 100

**Mental addition and subtraction*** Add and subtract numbers using concrete objects, pictorial representations, and mentally, including two digit number and ones, a two digit number and tens, two 2 digit numbers and adding three 1 digit numbers
* Show that additona can be done in any order (commutative) and subtraction of one number from another cannot

**Addition and subtraction problems*** Solve problems with addition and subtraction using concrete objects and pictorial representations
* Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

**Number facts (Multiplication and division)*** Recognise and use multiplication and division facts for the 2, 5 and 10 times table, recognising odd and even numbers

**Mental multiplication and division*** Calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication, 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

**Multiplication and division problems*** Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts

**Recognising fractions*** Recognise, name, find, read and write fractions 1/3. ¼, 2/4 and ¾ of a length, shape, set of objects or a quantity

**Calculating fractions*** Write simple fractions eg ½ of 6 =3 and write the equivalence of ½ = 2/4

**Measures** * Choose and use appropriate standard units to estimate and measure length, height, mass, temperature and capacity to the nearest appropriate unit using rulers, scales, thermometers and measuring vessels
* Compare and order lengths, mass and volume, capacity and record the results using <,> and +

**Money** * Recognise and use symbols for pounds and pence
* Combine amounts to make a particular value
* Solve simple problems in a practical context involving addition and subtraction of money in the same units, including giving change

**Time*** Compare and sequence units of time
* Tell and write the time to the nearest five minutes, including a quarter past and to the hour. Draw the hands of a clock face to show these times
* Know the number of minutes in an hour and the number of hours in a day

**Properties of 2D shape*** Identify and describe the properties of 2D shapes, including the number of sides and vertical line symmetry
* Compare and sort common 2D and 3D shapes and everyday objects

**Properties of 3D shape*** 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

**Position and direction*** Order and arrange combinations of mathematical objects in patterns and sequences
* Use mathematical vocabulary to describe position, direction and movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for a quarter, half and three-quarter turns, clockwise and anti-clockwise

**Interpreting data*** Construct and interpret simple pictograms, tally charts, block diagrams and simple tables

**Extracting information from data*** 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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| **Years 3&4** | **Year 3** | **Year 4** |
|  | **Counting*** Count from 0 in multiples of 4,8,50 and 100
* Find 10 or 100 more or less than a given number

**Place Value*** Recognise the place value of each digit in a three -digit number (hundreds, tens and ones)
* Compare and order numbers up to 1000
* Read and write in numerals and words numbers up to 1000

**Representing Number*** Identify, represent and estimate numbers up to 1000 using different representations

**Mental addition and subtraction*** Add and subtract numbers mentally including three- digit numbers and ones, three- digit numbers and tens and three-digit numbers and hundreds

**Written addition and subtraction*** Add and subtract numbers with up to three-digits, using formal methods of column addition and subtraction

**Addition and subtraction problems*** Estimate the answer to a calculation and use the inverse to check answers
* Solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction

**Number facts (Multiplication and division)*** Use and recall multiplication and division facts for the 3, 4 and 9 multiplication tables

**Mental multiplication and division*** Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including two -digit numbers times one- digit numbers, including mental methods

**Written multiplication and division*** Progress to using formal written methods to multiply two-digit numbers by one-digit numbers

**Multiplication and division problems*** Solve problems, including missing number problems involving multiplication and division, including positive integer scaling problems and correspondence problems

**Recognising fractions*** Count up and down in 1/10s
* Recognise that tenths arise from dividing an object into ten equal parts and in dividing one-digit numbers or quantities by ten

**Comparing fractions*** Compare and order unit fractions and fractions with the same denominator
* Recognise and show, using diagrams, equivalent fractions with small denominators

**Finding fractions of quantities*** 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

**Calculating fractions*** Add and subtract fractions with the same denominator within one whole

**Fraction problems*** Solve problems using all fraction knowledge

**Measures*** Measure, compare, add and subtract lengths/mass/volume/capacity

**Money** * Add and subtract amounts of money to give change, using both pounds and pence in different contexts

**Time*** Tell and write the time from an analogue clock, including Roman numerals and 12 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, 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 duration of events

**Perimeter*** Measure the perimeter of simple 2D shapes

**Properties of 2D shape*** Draw 2D shapes

**Properties of 3D shape*** Make 3D shapes using modelling materials
* Recognise 3D shapes in different orientations and describe them

**Angles*** Recognise angles as a property of a shape or the position of a turn
* Identify right angles
* Identify whether angles are more or less than a right angle
* Recognise that two right angles make a half turn, three make three quarters and four a complete turn
* Identify horizontal and vertical lines and pairs of perpendicular and parallel lines

**Interpreting data*** Interpret and present data using bar charts, pictograms and tables

**Extracting information from data*** Solve one and two step questions (eg how many fewer/how many more?) using information presented in scaled bar charts, pictograms and tables
 | **Counting*** 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

**Place Value*** Recognise the place value of each digit in a 4-digit number (thousands, hundreds, tens and ones)
* Compare and order numbers beyond 1000
* Round any number to the nearest 10, 100 and 1000

**Representing Number*** Identify, represent and estimate numbers up to 1000 using different representations
* Read Roman Numerals to 100 (I – C) and know that over time, the numeral system changed to unclude zero and place value

**Written addition and subtraction*** Add and subtract numbers with up to 4 digits using the formal written methods of column addition and subtraction where appropriate

**Addition and subtraction problems*** Estimate and use the inverse operation to check answers to calculations
* Solve addition and subtraction two-step problems in contexts, deciding what operations and methods to use and why

**Number facts (Multiplication and division)*** Recall multiplication and division facts for multiplication tables up to 12x 12

**Mental multiplication and division*** 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

**Written multiplication and division*** Multiply two-digit and three-digit numbers by a one -digit number using formal written layout

**Multiplication and division problems*** 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

**Recognising fractions*** Count up and down in hundredths
* Recognise that hundredths occur when dividing an object by one hundred or tenths by ten

**Comparing fractions*** Recognise and show, using diagrams, families of common equivalent fractions

**Finding fractions of quantities*** 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

**Calculating fractions*** Add and subtract fractions with the same denominator

**Decimals as fractional amounts*** Recognise and write decimal numbers equivalent to any number of tenths or hundredths
* Recognise and write decimal equivalents of ½, ¼, ¾
* 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

**Ordering decimals*** 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

**Fraction and decimal problems*** Solve simple measures and money problems involving fractions and decimals to two decimal places

**Measures*** Convert between different units of measure, for example, kilometres to metres and hours to minutes
* Estimate, compare and calculate different measures, including money in pounds and pence

**Time*** Convert between different units of measures, for example hours to minutes
* Read, write and convert time between analogue and digital 12 and 24 hour clocks
* Solve problems including converting hours to minutes; minutes to seconds; years to months and weeks to days

**Area, perimeter and volume*** Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
* Find the area of rectilinear shapes by counting squares

**Properties of 2D shape*** 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

**Angles*** Identify acute and obtuse angels and compare and order angles up to two right angles by size

**Position and direction*** Describe position and direction 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

**Interpreting data*** Interpret and present discrete and continuous data using appropriate graphical methods including bar charts and time graphs

**Extracting information from data*** Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs
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| **Years 5&6** | **Year 5** | **Year 6** |
|  | **Counting*** Count forwards and backwards in steps of powers of 10 from any given number up to 1,000,000
* Count forwards and backwards with positive and negative whole numbers, including through zero

**Place Value*** Read, write, order and compare, and identify the value of each digit in any number up to at least 1,000,000
* Interpret negative numbers in context
* Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000

**Representing Number*** Read Roman numerals up to 1000 (M) and identify and recognise years in Roman numerals

**Mental addition and subtraction*** Add and subtract mentally with increasingly high numbers

**Written addition and subtraction*** Add and subtract whole numbers with more than 4-digits using a range of formal written methods

**Addition and subtraction problems*** Use rounding to check answers to calculations and determine, in the context of problems, accuracy of answers
* Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

**Number facts (Multiplication and division)*** 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 a prime and recall prime numbers up to 19
* Recognise and use square numbers and cube numbers, and the notation for squared and cubed

**Mental multiplication and division*** Multiply and divide numbers mentally drawing on known facts
* Multiply and divide whole numbers and those with decimals by 10, 100 and 1000

**Written multiplication and division*** Multiply numbers up to 4 digits by a one or two-digit number using a formal method, including long multiplication for two-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

**Multiplication and division problems*** Solve problems using knowledge of addition, subtraction multiplication and division, including using knowledge of factors and multiples, squares and cubes
* Solve problems using knowledge of addition, subtraction multiplication and division and a combination of these, showing understanding of the meaning of the equals sign
* Solve problems using knowledge of addition, subtraction multiplication and division, including scaling by simple fractions and problems involving simple rates

**Recognising fractions*** Recognise mixed numbers and improper fractions and convert one form to the other and write mathematical statements >1 as a mixed number
* Compare and order fraction when denominators are all multiples of the same number
* Identify, name and write equivalent fractions of a given fraction represented visually, including tenths and hundredths

**Calculating fractions*** 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

**Decimals as fractional amounts*** Read and write decimal numbers as fractions

**Ordering decimals*** 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
* Read, write, order and compare numbers with up to three decimal places

**Percentages*** Recognise the percent symbol and understand that percent relates to the number of parts per hundred
* Write percentages as a fraction with a denominator 100 and as a decimal

**Fraction and decimal problems*** Solve problems involving numbers with up to three decimal places
* Solve problems which require percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5, and fractions with a denominator of a multiple of 10 or 25

**Measures** * Convert between different units of metric measure (km/m, cm/mm, g/kg, l/ml)
* Understand and use approximate equivalence between metric units and common imperial units such as inches, pounds and pints
* Use all four operations to solve problems involving measure, using decimal notation, including scaling

**Time*** Solve problems converting between units of time

**Area, perimeter and volume*** 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 and square metres
* Estimate the area of irregular shapes
* Estimate volume and capacity

**Properties of 2D shape*** 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

**Properties of 3D shape*** Identify 3D shapes eg cubes and cuboids from 2D representations

**Angles*** Know angles are measured in degrees
* Estimate and compare acute, obtuse and reflex angles
* Know angles are measured in degrees
* Draw given angels and measure them in degrees
* Identify angels at a point and one whole turn; angels at a point on a straight line and half a turn and other multiples of 90 degrees

**Position and direction*** Identify, describe and represent the position of a shape following a reflective translation, using the appropriate language and know the shape has nit changed

**Interpreting data*** Complete, read and interpret information in tables, including timetables

**Extracting information from data*** Solve comparison, sum and difference problems using information presented in a line graph
 | **Counting*** Use negative numbers in context and calculate intervals through zeros

**Place Value*** Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit
* Round any number to the required degree of accuracy

**Mental addition and subtraction*** Perform mental calculations, including mixed operations and large numbers

**Addition and subtraction problems*** To solve multi-step problems involving addition and 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 facts (Multiplication and division)*** Identify common factors, common multiples and prime numbers

**Mental multiplication and division*** Perform mental calculations, including with mixed operations and large numbers

**Written multiplication and division*** Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
* Divide numbers up to 4-digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions or by rounding , as appropriate for the context
* Divide numbers up to 4 digits by two-digit numbers using the formal written method of short division, where appropriate interpreting remainders according to the context

**Multiplication and division problems*** Use knowledge of the order of operations to carry out calculations involving four operations
* Solve problems involving addition, subtraction, multiplication and division
* Use estimation to check the answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

**Comparing fractions*** Use common factors to simplify fractions
* Use common multiples to express fractions in the same denomination
* Compare and order fractions, including fractions >1

**Calculating fractions*** Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
* Simplify simple pairs of proper fractions writing the answer in its simplest form
* Divide proper fractions by whole numbers

**Decimals as fractional amounts*** Associate a fraction with division and calculate fraction equivalents for a simple fraction
* Identify the value of each digit in numbers with three decimal places

**Calculating with decimals*** Multiply and divide numbers by 10, 100 and 1000 giving answers of 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

**Percentages*** Solve problems involving the calculation of percentages and use the percentage for comparison

**Fraction and decimal problems*** Solve problems which require answers to be rounded to specified degree of accuracy
* Recall and use equivalences between simple fractions, decimals and percentages including in different contexts

**Ratio and proportion*** 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

**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

**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, suing decimal notation, up to three decimal places
* Convert between miles and kilometres

**Area, perimeter and volume*** Recognise that shapes with the same areas can have different perimeters and vice versa
* Recognise when it is possible to use formulae for area and volume of shapes
* Calculate the area of parallelograms and triangles
* Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres and cubic metres and extending to other units

**Properties of 2D shape*** Draw 2D shapes using given dimensions and angles
* Compare and classify geometric shapes based on their properties and sizes
* Find unknown angels in any triangles, quadrilaterals and regular polygons
* Illustrate and name pats of circles, including radius, diameter and circumference and know the diameter is twice the radius

**Properties of 3D shape*** Recognise, describe and build simple 3D shapes including making nets

**Angles*** Recognise angles where they meet at a point, are on a straight line, or are vertically opposite and find missing angles

**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

**Interpreting data*** Interpret and construct pie charts and line graphs
* Calculate and interpret the mean as an average

**Extracting information from data*** Use pie charts and line graphs to solve problems
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