Maths Curriculum Objectives to show progression across the different areas of Maths

EYFS

Number

- Deep understanding of numbers 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)
- To recall some number bonds to 10, including double facts

Numerical patterns

- To 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

Year 1

Number – place value, addition and subtraction, multiplication and division, fractions

- Count to and across 100, forwards and backwards, beginning with 0, 1 or any given number.
- Count, read and write numbers to 100
- Count in multiples of 2, 5 and 10
- Identify 1 more or less than a given number
- Identify and represent numbers using concrete and pictorial representations including a number line
- Read and write numbers from 1-20 in numerals and words
- Read, write and interpret mathematical statements involving addition, subtraction and equals signs
- Represent and use number bonds to 20 and related subtraction facts
- Add and subtract one and two-digit numbers to 20
- Solve one-step problems involving addition and subtractions using concrete and pictorial representations
- Solve missing number problems using addition and subtraction
- Solve one-step problems involving multiplication and division, using concrete and pictorial representations and arrays with support
- 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

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Measurement

- Compare, describe and solve practical problems for lengths and heights, mass and weight, capacity and volume and time
- Measure and begin to record lengths and heights, mass and weight, capacity and volume and time
- Recognise and know the value of different denominations of coins and notes
- Sequence events in chronological order using language
- Recognise and use language relating to dates – days, weeks, months, years
- Tell the time to the hour and half past, draw the hands on the clock to show the time

Geometry – properties of shapes, position and direction

- Recognise and name common 2D and 3D shapes
- Describe position, direction and movement, including whole, half, quarter and three-quarter turns

Year 2

Number – place value, addition and subtraction, multiplication and division, fractions

- Count in steps of 2, 3 and 5 from 0, forwards and backwards
- Count in steps of 10 from any number, forwards and backwards
- Recognise the place value of each digit in a two-digit number
- Identify, represent and estimate numbers using different representations, including a number line
- Compare and order numbers from 0-100
- Read and write number to at least 100 in numerals and words
- Use place value and number facts to solve problems
- Solve problems with addition and subtraction using concrete and pictorial representations and mental and written methods
- Recall and use number bonds to 20 fluently
- Derive and use number bonds to 100
- Add and subtract mentally (2-digit and ones, 2-digit and tens, two 2-digit numbers and three 1-digit numbers)
- Show that addition is commutative but subtraction is not
- Recognise and use the inverse relationship between addition and subtraction, use to check calculations and solve missing number problems
- Recall and use multiplication and division facts for the 2, 5 and 10 times tables, recognising odd and even numbers
- Calculate and write multiplication and division statements for the 2, 5 and 10 times tables, using relevant signs
- Show that multiplication is commutative but division is not
- Solve multiplication and division problems using concrete resources, arrays, repeated addition, mental methods and times table facts

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- Recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantity
- Write simple fractions and recognise equivalence of 2/4 = ½

Measurement

- Choose and use appropriate standard units to estimate and measure length/height (m/cm), mass (kg/g), temperature (°C) and capacity (L/ml) to the nearest unit, using rulers, scales, thermometers and containers
- Compare and order lengths, mass, volume/capacity and record using greater than, less than and equals signs
- Recognise and use symbols for pounds and pence, combine amounts to make a particular value
- Find different combinations of coins that equal the same amounts of money
- Solve simple problems involving addition and subtraction of money in the same unit, including giving change
- Compare and sequence intervals of time
- Tell and write the time to 5 minutes, including quarter past/to and draw the hands on to show the time
- Know the number of minutes in an hour and the number of hours in a day

Geometry – properties of shapes, position and direction

- Identify and describe the properties of 2D shapes (sides, lines of symmetry in vertical line)
- Identify and describe the properties of 3D shapes (faces, vertices, edges)
- Identify 2D shapes on the surface of 3D shapes
- Compare and sort common 2D and 3D 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 a straight line and distinguishing between rotation as a turn and right angles

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 categories and sorting categories by quantity
- Ask and answer questions about totalling and comparing categorical data

Year 3

Number – place value, addition and subtraction, multiplication and division, fractions

- 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 3-digit number
- Compare and order numbers up to 1000

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- Identify, represent and estimate numbers using different representations
- Read and write numbers up to 1000 in numerals and words
- Solve number and practical problems using these concepts
- Add and subtract mentally (3-digit number and units/tens/hundreds)
- Add and subtract numbers up to 3-digits using formal written methods
- Estimate answers to calculations, use the inverse to check
- Solve problems, including missing number problems, using number facts, place value and more complex calculations
- Recall and use times table facts for 3, 4 and 8 times tables
- Write and calculate statements for multiplication and division using times table facts, mental and written methods, including 2-digit x 1-digit
- Solve problems using multiplication and division, including missing number problems
- Count up and down in tenths
- Recognise, find and write fractions of a set of objects, using unit and non-unit fractions
- Recognise and use fractions as numbers, unit and non-unit fractions
- Recognise and show equivalent fractions
- Add and subtract fractions with the same denominator within 1 whole
- Compare and order unit fractions and those with the same denominator
- Solve problems including the above

Measurement

- Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (L/ml)
- Measure the perimeter of simple 2D shapes
- Add and subtract amounts of money to give change, using pounds and pence
- Tell and write the time from an analogue clock, including Roman numerals, 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
- Know the number of seconds in a minute and the number of days in each month, year and leap year
- Compare durations of events

Geometry – properties of shapes

- Draw 2D shapes and make 3D shapes using modelling materials
- Recognise 3D shapes in different orientations and describe them
- Recognise angles as a property of a shape or a description of a turn
- Identify right angles, recognise the two right angles make a half-turn, three make a three-quarter turn and four a whole turn
- Identify whether angles are greater than or less than a right angle

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- Identify horizontal and vertical lines and pairs of parallel and perpendicular lines

Statistics

- Interpret and present data using bar charts, pictograms and tables
- Solve 1-step and 2-step questions using data presented in scaled bar charts, pictograms and tables

Year 4

Number – place value, addition and subtraction, multiplication and division, fractions and decimals

- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a number
- Count backwards through 0 to include negative numbers
- Recognise the place value of each digit in a 4-digit number
- Order and compare numbers beyond 1000
- Identify, represent and estimate numbers using different representations
- Round any number to the nearest 10, 100, 1000
- Read Roman numerals to 100 and how the numeral system has changes to include 0 and place value
- Add and subtract numbers up to 4-digits using written methods
- Estimate and use inverse operations to check answers
- Solve addition and subtraction 2-step problems, considering operations and methods to use and why
- Recall times table facts up to 12 x 12
- Use place value and times table facts to multiply and divide mentally (including multiplying by 0, multiplying/dividing by 1, multiplying 3 numbers)
- Recognise and use factor pairs and commutativity
- Multiply using written methods (2-digit x 1-digit, 3-digit x 1digit)
- Solve problems involving multiplying and adding – distributive law and scaling problems
- Recognise and show common equivalent fractions
- Count up and down in hundredths, dividing by 100
- Recognise and write decimal equivalents of tenths and hundredths
- Solve problems using harder fractions to calculate quantities and fractions to divide quantities
- Add and subtract fractions with the same denominator
- Recognise and write decimal equivalents of ¼, ½, ¾
- Find the effect of dividing numbers by 10 and 100, identifying the units/ones, tenths and hundredths
- Round decimals with 1 decimal place to the nearest whole number
- Compare numbers with the same number of decimal places up to 2 decimal places

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- Solve simple measure and money problems up to 2 decimal places

Measurement

- Convert between different units of measure
- Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m
- Find the area of rectilinear shapes by counting the squares
- Estimate, compare and calculate different measures, including money
- Read, write and convert time between analogue and digital 12-hour and 24-hour clocks
- Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days

Geometry – properties of shapes, position and direction

- Compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and size
- Identify acute and obtuse angles and compare and order up to two right angles by size
- Identify lines of symmetry in 2D shapes presented in different orientations
- Complete a simple symmetric figure with respect to a specific line of symmetry
- Describe positions on a 2D grid as coordinates in the first quadrant
- Describe movements between positions as translations to the left/right and up/down
- Plot specified points and draw sides to complete a 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

Year 5

Number – place value, addition and subtraction, multiplication and division, fractions, decimals and percentages

- Read, write, order and compare numbers to at least 1,000,000 and identify place value
- Count forwards or backwards in steps of 10 for any given number up to 1,000,000
- Interpret negative numbers in context, count forwards/backwards in positive/negative numbers through 0
- Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000, 100000
- Solve number and practical problems using the above
- Read Roman numerals to 1000 and recognise years
- Add and subtract whole numbers with more than 4 digits using written methods
- Add and subtract numbers mentally
- Use rounding the check answers and determine level of accuracy
- Solve addition and subtraction multi-step problems, considering operations and methods to use and why

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- Identify multiples and factors (all factor pairs of a number and common factors of 2 numbers)
- Know and use the vocabulary of prime numbers, prime factors and composite numbers
- Establish whether a number up to 100 is prime and recall prime numbers to 19
- Multiply numbers up to 4-digit by a 1- or 2-digit number using written methods, including long multiplication
- Multiply and divide numbers mentally
- Divide numbers up to 4 digits by a 1-digit number using short division and interpret remainders
- Multiply and divide whole numbers and decimals by 10, 100, 1000
- Recognise and use square and cube numbers, including symbols
- Solve problems involving multiplication and division using knowledge of factors, multiples, squares and cubes, including scaling
- Solve problems using all or variety of operations
- Compare and order fractions whose denominators are all multiples of the same number
- Identify, name and write equivalent fractions of a given fraction, including tenths and hundredths
- Recognise and convert between mixed numbers and improper fractions
- Add and subtract fractions with the same denominator and multiples of the same number
- Multiply proper fractions and mixed numbers by whole numbers, supported by concrete/pictorial resources
- Read and write decimal numbers as fractions
- Recognise and use thousandths and relate to tenths, hundredths and decimal equivalents
- Round decimals with 2 decimal places to the nearest whole number and 1 decimal place
- Read, write order and compare numbers with up to 3 decimal places
- Solve problems involving numbers up to 3 decimal places
- Recognise the per cent symbol, relate to number of parts per 100, write percentages as a fraction over 100 and as a decimal
- Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25

Measurement

- Convert between different units of metric measure (km and m, cm and m, cm and mm, g and kg, L and ml)
- Understand and use approximate equivalences between metric and imperial units (inches, pounds, pints)
- Measure and calculate the perimeter of composite rectilinear shapes in cm and m
- Calculate and compare the area of rectangles (including squares) using standard units (cm^2, m^2) and estimate the area of irregular shapes
- Estimate volume and capacity
- Solve problems involving converting between units of time
- Use all four operations to solve problems involving measure using decimal notation, including scaling

Geometry – properties of shapes, position and direction

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- Identify 3D shapes from 2D representations
- 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
- Identify angles at a point on a straight line and half a turn
- Identify other multiples of 90°
- Use the 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
- Identify, describe and represent the position of a shape following a reflection or translation, knowing the shape has not changed

Statistics

- Solve comparison, sum and difference problems using information presented in line graphs
- Complete, read and interpret information in tables, including timetables

Year 6

Number – place value, addition and subtraction, multiplication and division, fractions, decimals and percentages

- Read, write, order and compare numbers up to 10,000,000 and identify place value accurately
- Round any whole number to a required degree of accuracy
- Use negative numbers in context and calculate intervals across 0
- Solve number and practical problems that involve the above
- Multiply multi-digit numbers up to 4-digits by a 2-digit whole number using long multiplication
- Divide numbers up to 4-digits by a 2-digit whole number using long division and interpret remainders as whole numbers, fractions or by rounding
- Divide numbers up to 4-digits by a 2-digit whole number using short division and interpret remainders as whole numbers, fractions or by rounding
- Perform mental calculations, including mixed operations and large numbers
- Identify common factors, common multiples and prime numbers
- Use knowledge of order of operations to solve calculations involving up to the 4 operations
- Solve addition and subtraction multi-step problems, considering which operations and methods to use and why
- Solve problems involving all operations
- Use estimation to check answers and determine level of accuracy
- Use common factors to simplify fractions
- Use common multiples to express fractions in the same denomination
- Compare and order fractions, including fractions greater than 1
- Add and subtract fractions with different denominators and mixed numbers, using equivalent fractions

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- 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
- Identify the place value of numbers up to 3 decimal places
- Multiply and divide numbers by 10, 100, 1000
- Multiply 1-digit numbers with up to 2 decimal places by whole numbers
- Use written division methods where the answer has up to 2 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

Ratio and Proportion

- Solve problems involving the relative sizes of two quantities where missing values can be found using times table facts
- Solve problems involving the calculation of percentages and 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

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

Measurement

- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places
- Use, read, write and convert between standard units, using decimal notation up to 3 decimal places
- Convert between miles and kilometres
- Recognise the 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 (cm^3, m^3) and extending to other units (mm^3, km^3)

Geometry – properties of shapes, position and direction

- Draw 2D shapes using given dimensions and angles
- Recognise, describe and build simple 3D shapes, including making nets
- Compare and classify geometric shapes based on properties and size and find unknown angles in any triangles, quadrilaterals and regular polygons

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- Illustrate and name parts of a circle (radius, diameter, 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
- Describe positions on the full coordinate grid
- Draw and translate simple shapes on the coordinate plane and reflect them in the axes

Statistics

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

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