Maths

At Caldecote, we aim to create independent, confident and resilient mathematicians who are well equipped to apply their knowledge to other school subjects, the wider world and their lives in the future. We will continually revisit and consolidate knowledge to ensure our pupils have a secure and deep understanding and the ability to make connections between mathematical ideas. As Caldecote pupils progress, they will become increasingly fluent in the fundamentals of maths, be able to reason mathematically and be able to solve progressively complex problems.

Our maths teaching is structured around:

- ✓ **Daily:** times tables and arithmetic
- ✓ **Every Lesson:** problem solving and reasoning
- ✓ **Termly Revisit:** number and place value, addition and subtraction, multiplication and division, fractions and decimals
- ✓ **All Year Groups:** Concrete – Pictorial – Abstract

Reception Overview

Number and place value	• Recognise numbers 0- 20 • Write numbers 0 -20 • Ordering numbers 0-20 • Count on and back to 20 • More than/less than	**Addition & subtraction**	• Recognise + - = • Recognise part part whole • Know number bonds to 10 • Add and subtract 2 single digit numbers to 10	**Calculation** **Pupils learn these strategies and use these resources for calculation in YR** • Concrete and pictorial representations of adding and subtracting 2 single digit numbers • Part part whole • Recording: use marks that they can interpret • Introduce + - = in simple number sentences • Number lines – count on and back • Ten frame • Grouping and sharing with objects and pictures
Multiplication and Division	• Count in 2s • Count in 5s • Count in 10s • Grouping and sharing	**Fractions**	• Understand half • Understand double	
Measurement	Everyday language to describe: • Weight • Capacity • Distance • Time • Money • Compare quantities and objects	**Geometry**	• Recognise 2D shapes • Recognise and create patterns Everyday language to describe: • Position • Direction	

<table>
<tr><th colspan="2">Our youngest mathematicians should be able to</th></tr>
<tr><td>Number and place value
- Count forwards /backwards from 0-20
- Recognise numerals 0-20
- Write numerals 0-20
- Correctly order numbers 0-20
- Correctly match numeral and quantity
- Correctly count more than 10 objects
- Compare two groups of objects - identifying which has less/more
- Find 1 more and 1 less than numbers up to 20</td><td>Addition & subtraction
- Find the total number of objects in two groups by counting them altogether
- Use language related to addition
- Use language related to subtraction
- Estimate how many objects are in a group
- Add two single digit numbers by counting the total number of objects
- Subtract smaller numbers from larger numbers by counting the number of objects that are left
- Add two single digit numbers by counting on
- Subtract smaller numbers from larger numbers by counting back</td></tr>
<tr><td>Multiplication and Division
- Share objects equally
- Make equal groups of objects
- Count in 2s up to 20
- Count in 5s up to 30
- Count in 10s up to 50</td><td>Fractions
- Find the double of a number to 10
- Solve problems involving halving numbers to 20</td></tr>
<tr><td>Measurement
- Use vocabulary related to money: cost, amount, pounds, pence
- Use vocabulary related to weight, length, capacity: size, long, short, heavy, light, full, empty
- Use comparative vocabulary: longer, shorter, heavier, lighter, bigger, smaller
- Use simple language related to time: minute, hour, day, week, year, days of the week</td><td>Geometry
- Identify common 2D shapes: square, circle, triangle, rectangle
- Describe the properties of these shapes: sides, corners, curved, straight
- Create patterns, including a repeated pattern
- Describe positions and directions: under, on top, next to, behind, in front</td></tr>
</table>

Year 1 Overview

Number and place value	• Numbers to 10 • Numbers to 20 • Numbers up to 50 • Numbers up to 100 • 2 digit numbers; Tens and ones • 0-20 in words • Odd and even numbers	**Addition & subtraction**	• Addition and subtraction within 10 • Addition and subtraction within 20 • Addition and subtraction within 50	**Calculation** **Pupils learn these strategies and use these resources for calculation in Y1** • Part part whole • + - x ÷ = used to record number sentences • Ten frame • Draw number lines – count on and back • Tens and ones – partitioning to add • Pictorial – subtraction by crossing out • Multiplication as repeated addition – adding equal groups • Grouping and sharing objects • Arrays • 100 square
Multiplication and Division	• 2 x tables • 5 x tables • 10 x tables • Introduction to multiplication and division X ÷ • Grouping and sharing • Arrays	**Fractions**	• Introduction to fractions • Introduction to halves and quarters • Half and quarter of a shape and group of objects • ½ and ¼ notation	
Measurement	• Introduction to time • Introduction to length and height • Introduction to coins and notes • Introduction to mass • Introduction to capacity and volume • Sequencing events • Dates, days of week, months and years	**Geometry**	• Recognising and naming 2D and 3D shapes • Turns • Left/right • Ordinal numbers • Positions: in front, above, etc	

Our Year 1 mathematicians should be able to

Number and place value

- Count to and across 100, forward and backward, beginning with 0, or from any given number
- Read and write numbers to 100 in numerals
- Recognise the place value (tens and ones) of each digit in a 2 digit number 0-50
- Identify 1 more or 1 less than any given number
- Read and write numbers from 1-20 in words
- Identify odd and even numbers

Addition & subtraction

- Read, write and interpret mathematical statements involving + - = signs
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract 1-digit and 2-digit numbers to 50
- Solve one step problems involving addition and subtraction, using concrete objects and pictorial representations and missing number problems

Multiplication and Division

- Count in multiples of 2s, 5s and 10s
- Quickly recall x2, x5 and x10 facts
- Solve one step problems involving multiplication and division, by calculating using concrete objects, pictorial representations and arrays

Fractions

- Recognise, find and name a half of an object or group of objects, shape or quantity
- Recognise, find and name a quarter of an object or group of objects, shape or quantity

Measurement

- Compare, describe and solve practical problems for lengths and heights: non-standard units and cm
- Compare, describe and solve problems for mass/weight: non-standard units
- Read a simple scale: ruler, weighing scale, measuring jug
- Compare, describe and solve problems for capacity and volume: non-standard units
- Recognise and know the value of different denominations of coins and notes
- Sequence events in chronological order using language: before, after, today, yesterday, morning, etc
- Recognise and use language relating to dates, including days of the week, weeks, months and years
- Tell the time using o'clock and half past

Geometry

- Identify, name and describe common 2D shapes: square, circle, triangle, rectangle, pentagon, hexagon
- Identify and name common 3D shapes: cube, cuboid, sphere, cylinder, pyramid
- Describe position, direction and movement including half, quarter and three quarter turns, first, second, in-front, under, etc
- Identify right and left turns

Year 2 Overview

Number and place value	• Compare and order 0-100 • > < = • 0-100 numerals and words	**Addition & subtraction**	• 2 digit addition and subtraction • Adding 3 1-digit numbers • Inverse	**Calculation** **Pupils learn these strategies and use these resources for calculation in Y2** • Column addition and subtraction • Part part whole • Draw number lines • Arrays • 100 square • Counting in multiples • Inverse to check calculations
Multiplication and Division	• 2 x tables • 5 x tables • 10 x tables • 3 x tables • 4 x tables • Count in 2,3,5 and 10s • Multiply 1 digit by 1 digit • Divide 2 digit by 1 digit	**Fractions**	• Introduction to comparing, ordering and equivalent fractions • Half and quarter of a number 0-50	
Measurement	• Units of length and height • Exploring mass • Understanding pounds and pence • Telling the time, compare and sequence time • Capacity, volume and temperature	**Geometry**	• Properties of 2D and 3D shapes • Compare and sort shapes • Rotation • Order and arrange patterns and sequences • Right angle turns • Clockwise/ anticlockwise	
		Statistics	• Introduction to graphs • Pictograms, tally charts, block diagrams and tables	

Our Year 2 mathematicians should be able to

Number and place value

- Count in steps of 2 , 3 and 5 from 0, and in tens from any given number, forward and backward
- Read and write numbers to 100 in numerals and words
- Compare and order numbers from 0 up to 100 and use < > and = signs
- Recognise the place value (tens and ones) of each digit in all 2 digit numbers

Addition & subtraction

- Recall and use addition and subtraction facts to 20 and derive related facts up to 100
- Add and subtract numbers mentally, including 2-digit numbers and ones, 2-digit numbers and tens, two 2 –digit numbers; adding three 1-digit numbers
- Understand that addition of any 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 missing number problems.

Multiplication and Division

- Recall and use multiplication and division facts for the 2, 5, 10, 3 and 4 times tables
- Use the x ÷ and = symbols accurately
- Understand that multiplication of two numbers can be done in any order (commutative) and division cannot.
- Recognize that division is the inverse of multiplication and use this to check calculations

Fractions

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

Statistics

- Interpret and construct pictograms, tally charts, block diagrams and simple tables
- Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- Ask and answer questions about totaling and compare categorical data

Geometry

- Identify and describe the properties of 2D shapes including the number of sides and lines of symmetry
- 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
- 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 distinguishing between rotation as a turn and in terms of right angles for quarter, half and three quarter turns (clockwise and anti-clockwise)

Measurement

- Compare and order lengths and mass and record the results using > < =
- Recognise and use symbols for pounds (£) and pence (p)
- Combine amounts of money to make particular values
- Tell, draw (the hands) and write the time: quarter to and quarter past the hour, and all times to 5 minutes
- Compare and order volume/capacity and record the results using > < =
- Solve simple problems in a practical context involving addition and subtraction of money of the same unit – including giving change
- Choose and use appropriate standard units to estimate and measure: length/height cm/m, mass kg/g, temperature ºC, capacity l/ml using rulers, scales, thermometers and measuring vessels
- Compare and sequence intervals of time

Year 3 Overview

Number and place value	• 3 digit numbers • Roman numerals I to XII • Compare and order 0- 1000 • 0-1000 numerals and words	**Addition & subtraction**	• Three-digit addition and subtraction	**Calculation** **Pupils learn these strategies and choose the most efficient methods for their calculation in Y3**
Multiplication and Division	• 2 x tables • 5 x tables • 10 x tables • 3 x tables • 4 x tables • 6 x tables • 8 x tables • Count in 3s, 4s, 8s, 50s and 100s • Multiply 2 digit by 1 digit number • Divide 2 digit by 1 digit number	**Fractions and decimals**	• Introduction to adding and subtracting fractions • Tenths	• Column addition and subtraction • Bar modelling • Long multiplication • Long division 'bus stop' method • Estimation and inverse to check calculations
Measurement	• Add and subtract money • Length and perimeter • Analogue and digital time • Compare durations • Angles • Length, weight, capacity and volume – add, subtract and compare	**Geometry**	• Draw and make 2D and 3D shapes • Recognise angles in shapes • Horizontal and vertical lines • Perpendicular and parallel lines • Right angle = quarter turn • Half, three quarter and whole turn	
		Statistics	• Interpret and present data using bar charts, pictograms and tables	

Our Year 3 mathematicians should be able to

Number and place value

- Count from 0 in multiples of 4, 8, 50 and 100
- Find 10 or 100 more or less than any given number
- Read and write numbers to 1000 in numerals and words
- Compare and order numbers to 1000
- Recognise the place value (ones, tens and hundreds) of each digit in a 3-digit number

Addition & subtraction

- Add and subtract numbers mentally including: 3-digit number and ones, 3-digit number and tens, 3-digit number and hundreds.
- Add and subtract numbers with up to 3-digits using formal written column methods
- Estimate the answer and use the inverse to check
- Add and subtract measures (length, mass, volume) with up to 3-digits using formal column methods
- Solve word problems including missing number problems, number facts, place value and more complex addition and subtraction

Measurement

- Measure the perimeter of simple 2D shapes
- Estimate and read time to the nearest minute
- Tell and write the time on an analogue clock including Roman numerals from I to XII
- Measure, compare, add and subtract lengths (m,cm,mm), mass (kg,g), volume/capacity (l,ml)
- Read 12 hour and 24 hour clocks
- Record and compare time – 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 durations of events – calculate the time taken by particular events or tasks

Multiplication and Division

- Recall and use multiplication and division facts for the 2, 3, 4, 5, 6, 8 and 10 tables
- Write and calculate multiplication and division problems mentally using known X Tables and using formal methods, including 2-digit X 1-digit
- Calculate multiplication and division problems including use of money and length

Fractions and decimals

- Count up and down in tenths and recognise that tenths arise from dividing an object, number or quantity into ten equal parts
- Recognise and show, using diagrams, equivalent fractions with small denominators
- Recognise, find and write fractions of a discrete set of objects; unit fractions and non-unit fractions
- Compare and order unit fractions, and fractions with the same denominators
- Add and subtract fractions with the same denominator within one whole

Geometry

- Make 3D shapes using modelling materials
- Recognise 3D shapes in different orientations and describe them
- Draw 2D shapes
- Recognise angles are 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 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

Statistics

- Interpret and present data using bar charts, pictograms and tables
- Solve 1-step and 2-step questions such as: 'How many more? How many fewer?' using information presented in scaled bar charts, pictograms and other graphs.

Year 4 Overview

Number and place value	•4 digit numbers •Introduction to negative numbers •Roman numerals to 100 (C) •Numbers beyond 1000 •Rounding numbers	**Addition & subtraction**	• Four-digit addition and subtraction	**Calculation** **Pupils learn these strategies and choose the most efficient methods for their calculation in Y4** • Column addition and subtraction • Bar modelling • Long multiplication • Long division 'bus stop' method • Estimation and inverse to check calculations
Multiplication and Division	•All X tables •Count in 6s, 7s, 9s, 25s and 1,000s •Factor pairs •Multiply 3 digit by 1 digit number •Divide 3 digit by 1 digit number including remainders	**Fractions and decimals**	•Common equivalent fractions •Add and subtract fractions with the same denominator •Introduction to decimals •Hundredths •Rounding decimals •Comparing decimal numbers	
Measurement	•Area of rectangles by counting squares •Converting between units of measure •Solving problems involving money •Converting between different units of time – 12hr and 24hr •Comparing angles •Perimeter of rectangles	**Geometry**	•Compare and classify (including congruence) geometric shapes (including quadrilaterals, triangles, trapeziums and rhombus) •Acute and obtuse angles •Lines of symmetry in 2D shapes •Coordinates in the first quadrant •Translations	
		Statistics	•Discrete and continuous data •Bar charts, time graphs and tables	

Our Year 4 mathematicians should be able to

Number and place value

- Count backwards through zero to include negative numbers
- Count in multiples of 6, 7, 9, 25 and 1000
- Read Roman numerals to 100
- Find 1000 more or less than any given number
- Compare and order numbers beyond 1000
- Round numbers to the nearest 10, 100 or 1000

Addition & subtraction

- Add and subtract 4-digit numbers using formal column methods
- Estimate and use inverse to check answers to calculations
- Solve addition and subtraction two step problems in a variety of contexts deciding which operations and methods to use and why.

Multiplication and Division

- Recall and use multiplication and division facts for all tables up to X12
- Recognise and use factor pairs and commutativity in mental calculations
- Multiply 2-digit and 3-digit numbers by 1-digit numbers using formal written method
- Divide 2-digit and 3-digit numbers by a 1-digit number using formal written method beginning to use remainders
- Use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1 and multiplying three numbers together
- Find the effect of multiplying a number with up to 2 decimal places by 10 and 100, identifying the value of the digits in the answer as ones, tenth and hundredths.

Fractions and decimals

- Recognise and show, using diagrams, families of common equivalent fractions
- Add and subtract fractions with the same denominator
- Divide a 1-digit or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- Count up and down in hundredths and recognise that hunderedths arise from dividing an object, number or quantity into 100 equal parts
- Recognise and write decimal equivalents of any number of tenths or hundredths
- Recognise and write decimal equivalents to ¼, ½ and ¾
- 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.

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

Measurement

- Read and write and convert between analogue and digital 12 and 24 hour clocks
- Measure and calculate the perimeter of rectangles (including squares) in cm and m
- Find the area of rectangles by counting squares
- Convert between different units of measure (km to m, hour to min)

Geometry

- Compare and classify (including congruence) geometric shapes, including quadrilaterals, triangles, trapeziums and rhombus based on their properties and sizes.
- Describe positions on a 2D grid as coordinates in the first quadrant
- 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 movements between positions as translations of a given unit to the left/right/up/down
- Plot specified points and draw sides to complete a given polygon
- Identify acute and obtuse angles and compare and order angles up to two right angles by size

Year 5 Overview

Number and place value	• Numbers to at least a million • Negative numbers • Roman numerals to 1,000 (M) • Rounding	**Addition & subtraction**	• Addition and subtraction of numbers with more than 4 digits • Four operations with decimals	**Calculation** **Pupils consolidate these strategies and choose the most efficient methods for their calculation in Y5** • Column addition and subtraction • Bar modelling • Short multiplication • Short division 'bus stop' method • Grid method multiplication • Rounding, estimation and inverse to check calculations
Multiplication and Division	• All X tables • Count in 10s, 100s, 1000s... • Combining addition, subtraction, multiplication and division • Factors, multiples, prime numbers, prime factors and composite numbers • Square² numbers • Cube³ numbers • Multiply 4 digit by 1 or 2 digit numbers • Divide 4 digit by 1 digit including remainders	**Fractions and decimals**	• Compare, order and simplify fractions • Compare, order and find equivalent fractions • Introduction to adding and subtracting fractions with different denominations • Multiply proper fractions and mixed numbers by whole numbers • Rates and scaling by fractions • Introduction to Percentages • Thousandths	
Measurement	• Converting metric and simple imperial units • Further converting between units of time • Perimeter and area • Exploring capacity and volume • Use approximate equivalences and estimation	**Geometry**	• Exploring 2D representations of 3D shapes • Drawing, measuring, comparing and finding angles • Acute, obtuse and reflex angles • Angles around a point 360º and on a straight line 180º • Regular and irregular polygons • Reflection and translation • Coordinates in 2 quadrants	
Statistics	• Line graphs and tables and timetables			

Our Year 5 mathematicians should be able to

Number and place value

- Count forward and backwards in steps of powers of 10 for any given number up to 1,000,000
- Interpret negative numbers in context, count forwards and backwards with positive and negative numbers, including through zero
- Read Roman numerals to 1000 and recognise years written in Roman numerals
- Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit
- Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 or 100,000

Addition & subtraction

- Add and subtract numbers mentally with increasingly large numbers
- Add and subtract whole numbers with more than 4 digits, including using formal column methods
- Use rounding to check answers and determine, in the context of the problem, levels of accuracy
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Multiplication and Division

- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- Multiply and divide numbers mentally drawing upon known facts
- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers and establish whether a number up to 100 is prime and recall prime numbers to 19
- Multiply numbers up to 4-digits by a 1-digit or 2-digit number using a formal written method, including short multiplication for 2-digit numbers
- Divide numbers up to 4-digits by a 1-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
- Solve problems involving addition, subtraction, multiplication and a combination of these, including understanding of the equals sign
- Solve problems involving multiplication and division using knowledge of factors and multiples, squares and cubes
- Recognise and use square and cube numbers and use notation squared^2 and cubed^3
- Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates

Fractions and decimals

- Count up and down in thousandths and recognise that thousandths arise from dividing an object, number or quantity into 1000 equal parts
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- Read and write decimal numbers as fractions eg, 0.71 = 71/100
- Recognise mixed numbers and improper fractions and convert from one form to the other
- Compare and order fractions whose denominators are all multiples of the same number
- 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
- Recognise the percent symbol (%) and understand that percent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal

Statistics

- Complete, read and interpret information in tables, including timetables
- Solve comparison, addition and difference problems using information presented in a line graph

Measurement	Geometry
- Measure and calculate the perimeter of composite rectangular shapes in cm and m - Calculate and compare the area of rectangles (including squares), and including using standard units, square cm (cm^2) and square m (m^2) and estimate the area of irregular shapes - Estimate volume (eg, using 1cm^3 blocks to build cuboids) and capacity (eg, using water) - Convert between different units of metric measure – km/m, cm/m, cm/mm, g/kg, l/ml - Solve problems involving converting between units of time - Use approximate equivalences between metric units and common imperial units such as inches, pounds and pints	- Know angles are measured in degrees - Estimate and compare acute, obtuse and reflex angles - Identify angles at a point on a straight line and ½ a turn as 180º - Identify angles at a point and one whole turn as 360º - Identify multiples of 90º - Draw given angles and measure them in degrees - 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 - Distinguish between regular and irregular polygons based on reasoning about equal sides and angles - Identify 3D shapes, including cubes and other cuboids, from their 2D representations - Use the properties of rectangles to deduce related facts and find missing lengths and angles

Year 6 Overview

Number and place value	•Positive integers •Negative numbers •Numbers to 10million	**Addition & subtraction**	•Addition and subtraction of numbers of any size •Calculating with decimals	**Calculation** **Pupils consolidate these strategies and choose the most efficient methods for their calculation in Y6** • Column addition and subtraction • Bar modelling • Short multiplication • Short division 'bus stop' method • Rounding, estimation and inverse to check calculations
Multiplication and Division	•All X tables •Calculations with four operations •Common factors and multiples and prime numbers •Multiply 4 digit by 2 digit number •Divide 4 digit by 2 digit including remainders as decimals	**Fractions and decimals**	•Adding and subtracting fractions with different denominators and mixed numbers •Multiply and divide fractions •Calculating with percentages •Rounding •Improper fractions •Problems with fractions, decimals and percentages	
Measurement	•Solving problems involving converting between units of measure •Area and volume and perimeter – formulae •Units of measure up to 3 decimal places •Area of parallelograms and triangles	**Geometry**	•Circles – radius, diameter and circumference •Building and drawing 2D and 3D shapes and nets •Classifying shapes •Missing angles and lengths •Coordinates – all 4 quadrants •Translation and reflection	
Statistics	•Pie charts and line graphs •The mean average •Mode and median			
Ratio and proportion	•Solving problems involving ratio and proportion •Relative sizes •Missing values •Scale factors	**Algebra**	•Simple formulae •Linear number sequences •Express missing numbers algebraically •Equations with 2 unknowns •Brackets (BIDMAS)	

Our Year 6 mathematicians should be able to

Number and place value
- Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit
- Use negative numbers in context and calculate intervals across zero
- Round any whole number to the required degree of accuracy
- Solve number and practical problems that involve all other year group number and place value objectives

Addition & subtraction
- Perform mental calculations including with mixed operations and large numbers
- Use knowledge of the order of operations to carry out calculations involving the four operations
- Use estimation 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.

Multiplication and Division
- Identify common factors, common multiples and prime numbers
- Perform mental calculations, including with mixed numbers and large numbers
- Multiply multi-digit numbers up to 4-digits by a 2-digit whole number using the formal written method for short multiplication
- Divide numbers up to 4-digits by a 2-digit whole numbers using the formal written method of short division and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
- Solve multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why

Fractions and decimals
- Compare and order fractions including mixed number and improper fractions
- Use common factors to simplify fractions, use common multiples to express fractions in the same denomination
- Recall and use equivalences between simple fractions, decimals and percentages, including different contexts
- 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 the simplest form
- Divide proper fractions by whole numbers
- Associate a fraction with division to calculate decimal fraction equivalents, for simple fractions

Geometry
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons
- Draw 2D shapes given dimensions and angles
- Describe positions on the full coordinate grid – all four quadrants
- Draw and translate simple shapes on the coordinate grid and reflect them in the axes
- Recognise, describe and build simple 3D shapes, including making nets
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

Statistics
- Interpret and construct pie charts and line graphs and use them to solve problems
- Calculate and interpret the mean, mode and median averages

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 the calculation of percentages of whole numbers or measures such as 15% of 360 and the use of percentages for comparison

Algebra
- Express missing number problems algebraically and use simple formulae
- Find pairs of numbers that satisfy number sentences with two unknowns
- Solve calculations with brackets using (BIDMAS)

Measurement

- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cm^3 and m^3, and extending to other units such as mm^3 and km^3
- Convert between miles and km
- Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from smaller units of measure to a larger unit, and vice versa, using decimal notation to three decimal places
- Solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate
- Recognise when it is possible to use formulae for area and volume of shapes
- Recognise that shapes with the same areas can have different perimeters and vice versa
- Calculate the area of parallelograms and triangles