



# Mathematics: Knowledge Key and Skills Progression Overview

## Intent

Mathematics is an important creative discipline that helps us to understand and change the world. We want all pupils at Nicholas Hawksmoor Primary School to experience the beauty, power and enjoyment of Mathematics and develop a sense of curiosity about the subject with a clear understanding.

At Nicholas Hawksmoor we foster positive 'can do' attitudes and we promote the fact that 'We can all do Maths!' We believe all children can achieve in Mathematics and teach for secure and deep understanding of mathematical concepts through manageable steps. We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated problems.

At our school, the children will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways. We believe a pupil really understands a mathematical concept, idea or technique if they can describe it in their own words; represent it in a variety of ways; explain it to someone else; make up their own examples (and non-examples) of it; see connections between it and other facts or ideas; recognise it in new situations and contexts and make use of it in various ways, including in new situations

## **We aim for all pupils to:**

- become **fluent** in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- be able to **solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- **reason mathematically** by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.

## Implementation

We ensure that the Teaching for Mastery approach (coherence, variation, mathematical thinking, careful use of representations and structures) is fully embedded in our Maths teaching. Our progression framework (taken from White Rose Maths) ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children. Maths lessons are broken down into small, sequenced learning steps that gradually expose the mathematical concept; ensuring learning is accessible to all children. We use varied concrete, pictorial and abstract representations alongside each other to carefully expose the mathematical structure and ensure our children can move flexibly between different representations and mathematical ideas. Each lesson will provide opportunities for the children to reason and solve mathematical problems. Challenge is visible throughout the whole session, where children are asked to reason and prove their understanding at a deeper secure level.

Independent learning activities will include three main elements: Do it! Twist it! and Deepen it!

- **Do it!** activities focus on 'What it is'. The children will solve standard and non-standard examples.
- **Twist it!** activities focus on 'What it is not' in order to address misconceptions.
- **Deepen it!** activities focus on solving problems, applying knowledge and making connections.

	1	2	3	4	5	6
<b>EYFS</b>	-Match, Sort and Compare -Talk About Measure and Patterns	-Find, subitise and represent 1, 2 and 3 - 1 more/1 less -Circles and Triangles -Find, subitise and understand composition of 4 and 5 -Shapes with 4 sides	-Find, subitise and represent 0 to 5. -Composition -Mass and Capacity Find, represent and subitise 6, 7 and 8. -Odd/even -Double to 8 and combine 2 groups	- Length, height and weight -Find and represent 9 and 10. -Make bonds, doubles and compare numbers to 10 -Explore 3-D shapes	-Build numbers and continue patterns to 20 -How many did I add? How many did I take away? -Manipulate, compose and decompose shapes	- Sharing and grouping -Visualise build and map -Make connections
<b>Year 1</b>	-Numbers to 10 -Part-whole within 10 -Addition within 10	-Subtraction within 10 -2D and 3D shapes	-Numbers to 20 -Addition and Subtraction within 20	-Numbers to 50 -Length and Height -Weight and Volume	-Multiplication and Division -Halves and Quarters -Position and Direction	-Numbers to 100 -Money -Time
<b>Year 2</b>	-Number to 100 -Addition and Subtraction	-Addition and Subtraction -Properties of Shape	-Money -Multiplication and Division	-Length and Height -Mass, Capacity and Temperature	-Statistics -Fractions	-Position and Direction -Time -Problem Solving
<b>Year 3</b>	-Place Value within 1000 -Addition and Subtraction	-Addition and Subtraction -Multiplication and Division	-Multiplication and Division -Length and Perimeter	- Fractions - Mass - Capacity	- Fractions - Money - Time	-Angles and Properties of Shapes -Statistics
<b>Year 4</b>	-Place Value: 4 digit numbers -Addition and Subtraction	-Area -Multiplication and Division	-Multiplication and Division -Perimeter	-Fractions -Decimals	-Decimals -Money -Time	-Geometry – angles and 2D shapes -Statistics -Geometry - Position and Direction
<b>Year 5</b>	-Place value within 1,000,000 -Addition and Subtraction	-Multiplication and Division -Fractions	-Multiplication -Fractions	-Decimals and Percentages -Measure – Perimeter and Area -Graphs and Tables	-Geometry – Properties of Shape -Geometry – Position and Direction -Decimals	-Negative Numbers -Measure – Converting Units -Measure – Volume and Capacity
<b>Year 6</b>	-Place value within 10,000,000 -Four Operations	-Fractions -Imperials and Metric Measurements	-Ratio and Proportion -Algebra -Decimals	-Percentages -Measure – Perimeter, Area and Volume	-Statistics -Geometry – Properties of Shape -Geometry - Position and Direction	-Problem Solving

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Number and Place Value	<p>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</p> <p>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number</p> <p>Given a number, identify one more and one less</p> <p>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number (to 20)</p>	<p>Recognise the place value of each digit in a two-digit number (tens, ones)</p> <p>Identify, represent and estimate numbers using different representations, including the number line</p> <p>Compare and order numbers from 0 up to 100; use and = signs</p> <p>Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward</p>	<p>Compare and order numbers up to 1,000</p> <p>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</p> <p>Identify, represent and estimate numbers using different representations</p> <p>Recognise the place value of each digit in a three-digit number (100s, 10s, 1s),</p> <p>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number</p>	<p>Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s)</p> <p>Count in multiples of 6, 7, 9, 25 and 1,000</p> <p>Identify, represent and estimate numbers using different representations</p> <p>Find 1,000 more or less than a given number</p> <p>Order and compare numbers beyond 1,000</p> <p>Round any number to the nearest 10, 100 or 1,000</p>	<p>Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.</p> <p>Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit</p> <p>Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</p> <p>Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000</p> <p>Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero</p>	<p>Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit</p> <p>Round any whole number to a required degree of accuracy</p> <p>Use negative numbers in context, and calculate intervals across zero</p>

Number – Addition and Subtraction

Represent and use number bonds and related subtraction facts within 20

Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs

Represent and use number bonds and related subtraction facts within 20

Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as  $7 = \square - 9$ .

Add and subtract one-digit and two-digit numbers to 20, including zero

Represent and use number bonds and related subtraction facts within 20 (within 10)

Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100

Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:  
 -a two-digit number and ones  
 -two two-digit numbers  
 -adding three one-digit  
 -a two-digit number and tens  
 -two two-digit numbers

Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures

Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward

Use place value and number facts to solve problems

Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

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  
 -Add/subtract 1s  
 -Add/subtract 10s  
 -Add/subtract 100  
 -Add/subtract 1s across 10  
 -Add/subtract 10s across 100  
 -Add/subtract across 10/100  
 -Add a 3-digit and a 2-digit number  
 -Subtract a 2-digit number from a 3- digit number

Solve problems, including missing number problems, using number facts, place value, and more complex 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.

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

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

Estimate and use inverse operations to check answers to a calculation

Solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why

Solve addition and subtraction multi- step problems in contexts, deciding which operations and methods to use and why

Use their knowledge of the order of operations to carry out calculations involving the four operations

Perform mental calculations, including with mixed operations and large numbers

Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Number – Multiplication and Division

Count, read and write numbers to 100 in numerals; 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

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

Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs

Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers

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

- Equal groups
- Arrays
- Multiples of 2, 5 and 10
- Share and group
- Multiply 2-digits by 1-digit (exchange/no exchange)
- Expanded written method
- Divide 2-digits by 1-digit with remainders

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which  $n$  objects are connected to  $m$  objects

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

- multiples of 10
- Related calculations
- Reasoning about multiplication

Recall multiplication and division facts for multiplication tables up to  $12 \times 12$

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

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

Multiply two-digit and three-digit numbers by a one-digit number using formal written layout

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

Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)

Multiply and divide whole numbers and those involving decimals 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 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

Identify common factors, common multiples and prime numbers

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 number using the formal written method of short division where appropriate, interpreting remainders according to the context

Use their knowledge of the order of operations to carry out calculations involving the four operations

Perform mental calculations, including with mixed operations and large numbers

Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Number Fractions (including Percentages and Decimals)

<p>Recognise, find and name a half as one of two equal parts of an object, shape or quantity</p> <p>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</p>	<p>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</p> <p>Write simple fractions for example, <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</p> <p>(Non-Statutory Guidance) Count in fractions up to 10, starting from any number and using the <math>\frac{1}{2}</math> and <math>\frac{2}{4}</math> equivalence on the number line (for example, <math>1\frac{1}{4}</math>, <math>1\frac{2}{4}</math> (or <math>1\frac{1}{2}</math>), <math>1\frac{3}{4}</math>, 2).</p>	<p>Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators</p> <p>Compare and order unit fractions, and fractions with the same denominators</p> <p>Recognise and show, using diagrams, equivalent fractions with small denominators</p> <p>Add and subtract fractions with the same denominator within one whole [for example, <math>\frac{5}{7} + \frac{1}{7} = \frac{6}{7}</math>]</p> <p>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators</p> <p>Solve problems that involve all of the above</p>	<p>Count using simple fractions and decimals, both forwards and backwards</p> <p>Reason about the location of mixed numbers in the linear number system</p> <p>Convert mixed numbers to improper fractions and vice versa</p> <p>Recognise and show, using diagrams, families of common equivalent fractions</p> <p>Add and subtract fractions with the same denominator</p> <p>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</p> <p>Recognise and write decimal equivalents of any number of tenths or hundredths</p> <p>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</p> <p>Recognise and write decimal equivalents of any number of tenths or hundredths</p> <p>Compare numbers with the same number of decimal places up to two decimal places</p> <p>Round decimals with one decimal place to the nearest whole number</p> <p>Recognise and write decimal equivalents to <math>\frac{1}{4}</math>, <math>\frac{1}{2}</math>, <math>\frac{3}{4}</math></p>	<p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</p> <p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number [for example, <math>\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}</math>]</p> <p>Compare and order fractions whose denominators are all multiples of the same number</p> <p>Add and subtract fractions with the same denominator and denominators that are multiples of the same number</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p> <p>Read, write, order and compare numbers with up to three decimal places</p> <p>Read and write decimal numbers as fractions [for example, 0.71 = <math>\frac{71}{100}</math>]</p> <p>Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>Round decimals with two decimal places to the nearest whole number and to one decimal place</p> <p>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</p> <p>Solve problems involving number up to three decimal places</p>	<p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination</p> <p>Compare and order fractions, including fractions <math>&gt; 1</math></p> <p>Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions</p> <p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</p> <p>Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, <math>\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}</math>]</p> <p>Divide proper fractions by whole numbers [for example, <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>]</p> <p>Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places</p> <p>Solve problems which require answers to be rounded to specified degrees of accuracy</p> <p>Multiply one-digit numbers with up to two decimal places by whole numbers</p> <p>Use written division methods in cases where the answer has up to two decimal places</p> <p>Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, <math>\frac{3}{8}</math>]</p>
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Percentages

Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Compare and order fractions, including fractions  $> 1$

Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison

Geometry – Properties of Shape

<p>Recognise and name common 2D and 3D shapes, including: 3D shapes [for example, cuboids (including cubes), pyramids and spheres].</p> <p>Recognise and name common 2D and 3D shapes, including: 2D shapes [for example, rectangles (including squares), circles and triangles].</p>	<p>Compare and sort common 2D and 3D shapes and everyday objects.</p> <p>Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line</p> <p>Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line</p> <p>Compare and sort common 2-D and 3-D shapes and everyday objects</p> <p>Order and arrange combinations of mathematical objects in patterns and sequences</p> <p>Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces</p> <p>Order and arrange combinations of mathematical objects in patterns and sequences</p>	<p>Draw 2D shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them</p> <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines</p> <p>Recognise angles as a property of shape or a description of a turn</p> <p>Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle</p>	<p>Identify acute and obtuse angles and compare and order angles up to two right angles by size</p> <p>Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</p> <p>Identify lines of symmetry in 2D shapes presented in different orientations</p> <p>Complete a simple symmetric figure with respect to a specific line of symmetry</p>	<p>Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p> <p>Draw given angles, and measure them in degrees (o)</p> <p>Identify: -angles at a point and one whole turn (total 360°) - angles at a point on a straight line and 1/2 a turn (total 180°) -other multiples of 90°</p> <p>Use the properties of rectangles to deduce related facts and find missing lengths and angles</p> <p>Distinguish between regular and irregular polygons based on reasoning about equal sides and angles</p> <p>Identify horizontal and vertical lines and pairs of perpendicular and parallel lines (Year 3)</p> <p>Identify 3D shapes, including cubes and other cuboids, from 2D representations</p>	<p>Draw 2D shapes using given dimensions and angles</p> <p>Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</p> <p>Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <p>Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p> <p>Draw 2D shapes using given dimensions and angles</p> <p>Recognise, describe and build simple 3D shapes, including making nets</p>
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**Measurement – Length, Area, Volume, Mass and 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 the following: lengths and heights

Compare, describe and solve practical problems for: mass/weight [for example, heavy/light, heavier than, lighter than]

Measure and begin to record the following: mass/weight

Compare, describe and solve practical problems for: capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]

Measure and begin to record the following: capacity and volume

Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels

Compare and order lengths, mass, volume/capacity and record the results using >, < and =

Solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures

Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Measure the perimeter of simple 2D shapes

Find the area of rectilinear shapes by counting squares

Convert between different units of measure [for example, kilometre to metre; hour to minute]

Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres

Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm<sup>2</sup>) and square metres (m<sup>2</sup>) and estimate the area of irregular shapes

Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)

Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling

Estimate volume [for example, using 1 cm<sup>3</sup> blocks to build cuboids (including cubes)] and capacity [for example, using water]

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 three decimal places

Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate

Convert between miles and kilometres

Recognise that shapes with the same areas can have different perimeters and vice versa

Calculate the area of parallelograms and triangles

Recognise when it is possible to use formulae for area and volume of shapes

Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm<sup>3</sup>) and cubic metres (m<sup>3</sup>), and extending to other units [for example, mm<sup>3</sup> and km<sup>3</sup>]

Measurement - Money

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

Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value

Find different combinations of coins that equal the same amounts of money

Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change

Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value

Add and subtract amounts of money to give change, using both £ and p in practical contexts

Estimate, compare and calculate different measures, including money in pounds and pence

<b>Measurement - Time</b>	<p>Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]</p> <p>Recognise and use language relating to dates, including days of the week, weeks, months and years</p> <p>Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times</p>	<p>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</p> <p>Know the number of minutes in an hour and the number of hours in a day</p>	<p>Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks</p> <p>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</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year</p> <p>Compare durations of events [for example to calculate the time taken by particular events or tasks].</p>	<p>Convert between different units of measure:          -Years, months, weeks and days          -Hours, minutes and seconds          -Convert between analogue and digital times          -Convert to the 24 hour clock          -Problem solving – converting time</p>	<p>Solve problems involving converting between units of time</p>	
<b>Statistics</b>		<p>Interpret and construct simple pictograms, tally charts, block diagrams and simple tables</p> <p>Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</p>	<p>Interpret and present data using bar charts, pictograms and tables</p>	<p>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</p> <p>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</p>	<p>Solve comparison, sum and difference problems using information presented in a line graph</p> <p>Complete, read and interpret information in tables, including timetables</p>	<p>Interpret and construct pie charts and line graphs and use these to solve problems</p> <p>Calculate and interpret the mean as an average</p>

**Geometry – Position and Direction**

Describe position, direction and movement, including whole, half, quarter and three-quarter turns

Pupils use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside.

Pupils practise counting (1, 2, 3...), ordering (for example, first, second, third...), and to indicate a quantity (for example, 3 apples, 2 centimetres), including solving simple concrete problems, until they are fluent.

Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).

Describe positions on a 2D grid as coordinates in the first quadrant

Plot specified points and draw sides to complete a given polygon

Describe movements between positions as translations of a given unit to the left/right and up/down

Identify lines of symmetry in 2D shapes presented in different orientations

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

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

<b>Ratio and Proportion</b>						<p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</p> <p>Solve problems involving similar shapes where the scale factor is known or can be found</p> <p>Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</p>
<b>Algebra</b>						<p>Generate and describe linear number sequences</p> <p>Express missing number problems algebraically</p> <p>Use simple formulae</p> <p>Find pairs of numbers that satisfy an equation with two unknowns</p> <p>Enumerate possibilities of combinations of two variables</p>