HILL WEST Primary FOUR OAKS

MATHEMATICS POLICY

Hill West Primary School is a member of the Arthur Terry Learning Partnership

The Teaching of Mathematics at Hill West

At Hill West, we are committed to ensuring that all children are mathematically proficient and confident in the use of maths in their everyday lives. As such we teach for maths mastery designed to ensure all children develop a deep and sustainable understanding of age-appropriate mathematical concepts, which can be built upon in the future.

When we plan our lessons and sequences of lessons we structure the learning so that all pupils work through new content together as a whole group. We do not differentiate the learning task by reducing the level of difficulty for certain groups. Tasks are set for all children of similar difficulty as the expectation is that "the majority of pupils will move through the programmes of study at broadly the same pace" (National Curriculum, 2014). Pupils are given time to fully understand, explore and apply ideas, rather than accelerate through new topics. This approach enables pupils to truly grasp a concept.

Those children that grasp concepts quickly benefit from deepening their conceptual understanding of mathematics through additional challenge. The additional challenge comes from investigating the concept being taught in new, alternative and more complex ways. As we do not set children by fixed, pre-determined ability groupings we ensure that children work in a range of different groups which are flexible and responsive to the needs of the class and individuals within the class. For example;

- sometimes rapid graspers will sit together; at other times they won't.
- Sometimes children can grasp some mathematical concepts quickly but others mathematical concepts may need further consolidation.

All children are supported in lessons by having the opportunity to make use of a range of resources, ensuring concrete visual and abstract methods are accessible to all.

HILL WEST PRIMARY SCHOOL

MATHEMATICS POLICY

LEGAL FRAMEWORK

This policy has due regard to statutory guidance including, but not limited to, the following:

- DfE (2013) 'National curriculum in England: Mathematics programmes of study'
- DfE (2017) 'Statutory framework for the Early Years Foundation Stage'

ROLES AND RESPONSIBILITIES

The subject leader is responsible for:

- Preparing policy documents, curriculum plans and schemes of work for the subject.
- Reviewing changes to the National Curriculum and advising on their implementation.
- Monitoring the learning and teaching of maths, providing support for staff where necessary.
- Ensuring the continuity and progression from year group to year group.
- Encouraging staff to provide effective learning opportunities for pupils.
- Helping to develop colleagues' expertise in the subject.
- Organising the deployment of resources and carrying out an annual audit of all maths-related resources.
- Liaising with teachers across all phases.
- Communicating developments in the subject to all teaching staff.
- Leading staff meetings and providing staff members with the appropriate training.
- Organising, providing and monitoring CPD opportunities in the subject.
- Ensuring common standards are met for recording and assessing pupils' performance against our mathematics progressive learning journeys.
- Advising on the contribution of maths to other curriculum areas, including cross-curricular and extra-curricular activities.
- Using assessment data in order to set new priorities for the development of maths in subsequent years.

The classroom teacher is responsible for:

- Acting in accordance with this policy.
- Ensuring progression of pupils' mathematical skills, with due regard to the National Curriculum.
- Planning lessons effectively, ensuring a range of teaching methods are used to cover the content of the National Curriculum.
- Liaising with the subject leader about key topics, resources and support for individual pupils.
- Monitoring the progress of pupils in their class and reporting this to parents.
- Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the senior leadership team (SLT).
- Undertaking any training that is necessary in order to effectively teach the subject.

The special educational needs coordinator (SENCO) is responsible for:

- Liaising with the subject leader in order to implement and develop maths throughout the school.
- Organising and providing training for staff regarding the maths curriculum for pupils with special educational needs and disabilities (SEND).
- Advising staff how best to support pupils' needs.
- Advising staff on the inclusion of mathematical objectives in pupils' continua and on progressive learning journeys.
- Advising staff on the effective deployment of teaching assistants in order to meet pupils' needs.

ENTITLEMENT

All our children, irrespective of age, disability, gender, ethnic origin, gender reassignment, race, religion or belief, sex or sexual orientation are entitled to participate fully in Mathematics, and benefit from a broad range of highly effective Mathematics teaching and learning activities at every stage of their education. We are committed to ensuring that children experience success in this subject.

All children are entitled to:

- Have access to the full range of activities involved in learning Mathematics.
- Provision of suitable learning challenges that respond to each child's different needs.
- Differentiation, additional or different action to enable the child to learn more effectively.
- Intervention, through the setting of small targets identified following assessment against their Progressive Learning Journey.

EARLY YEARS PROVISION

Activities and experiences for pupils will be based on the seven areas of learning and development, as outlined in the DfE's 'Statutory framework for the Early Years Foundation Stage'.

As children enter Reception Year, teachers adopt a mastery approach to the teaching of Maths. This means the central belief is that all children can achieve mastery of this subject and are therefore taught to think deeply and with sophistication about content over elongated periods of time. A maths mastery approach is taken to the curriculum, in which fluency comes from deep knowledge and practice. This means that structured questioning is used to ensure that pupils develop fluent technical proficiency and think deeply about the underpinning mathematical concepts. Focus is placed on the development of deep structural knowledge and the ability to make connections, with the aim of ensuring that what is learnt is sustained over time.

All learners are exposed to the same content and rapid graspers are not accelerated on through additional content but through application to different contexts. Activities will provide pupils with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems, and describing shapes, spaces and measurements.

All activities will adhere to the objectives set out in the framework.

During the Early Years Foundation Stage, pupils will be taught to:

- Count with numbers from 1 to 20, placing them in order and naming the number that is one more or less than a given number.
- Use quantities and objects to add and subtract two single-digit numbers, and count forwards or backwards to find the answer.
- Solve problems, including doubling, halving and sharing.
- Use everyday language to talk about size, weight, capacity, position, distance, time and money in order to compare quantities and objects, and solve problems.
- Recognise, create and describe patterns.
- Use mathematical language to describe everyday objects and shapes.

THE NATIONAL CURRICULUM

As children leave the Foundation Stage and enter Year 1, the maths mastery approach continues. The National Curriculum is followed and provides a full breakdown of the statutory content to be taught within each unit.

In Year 1, pupils will be taught to:

- **Number and place value**
  - Count to 100, forwards and backwards, beginning with 0 or 1, from any number.
  - Count, read, and write numbers from 1 to 100.
  - Count in multiples of 2, 5, and 10.
  - Identify one more and one less from a number.
  - Identify and represent numbers using objects and pictures (using a number line) and use language of: equal to, more than, less than (fewer), most, least.
  - Read and write numbers from 1 to 20 in numerals and words.

- **Addition and subtraction**
  - Read, write, and interpret statements involving addition, subtraction, and equals signs.
  - Represent and use number bonds and related subtraction facts within 20.
  - Add and subtract one-digit and two-digit numbers to 20, including 0.
  - Solve one-step problems that involve addition and subtraction.

- **Multiplication and division**
  - Solve one-step problems using multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays.

- **Fractions**
  - Recognise, find and name a half as 1 of 2 equal parts.
  - Recognise, find and name a quarter as 1 of 4 equal parts.

- **Measurement**
  - Compare, describe and solve practical problems for lengths and heights, weight, time, capacity and volume.
  - Measure and begin to record lengths and heights, weight, time, capacity and volume.
  - 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, including days of the week, weeks, months, and years.
  - Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

- **Properties of shapes**

- Recognise and name common 2D and 3D shapes.

- **Position and direction**

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

In Year 2, pupils will be taught to:

- **Number and place value**

  - Count in steps of two, three and five from 0, and in 10s 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 depictions, including a number line.
  - Compare and order numbers from 0 to 100, using <, > and = signs.
  - Read and write numbers 1 to 100 in numerals and words.
  - Use place value and number facts to solve problems.

- **Addition and subtraction**

  - Solve problems with addition and subtraction using concrete objects and pictorial representations.
  - Apply increasing knowledge of mental and written methods.
  - Recall and use addition and subtraction facts to 20, 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, a two-digit number and tens, two two-digit numbers, and three one-digit numbers.
  - Show that the addition of two numbers can be done in any order 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 solve missing number problems.

- **Multiplication and division**

  - Recall and use multiplication and division facts for the 2, 5, and 10 multiplication tables.
  - Recognise odd and even numbers.
  - Calculate mathematical statements for multiplication and division within the multiplication tables and write these using x, ÷, and = signs.
  - Show that multiplication of two numbers can be done in any order and division of one number by another cannot.

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

- **Fractions**

  - Recognise, find, name, and write fractions of a length, shape, set of objects or quantity.
  - Write simple fractions and recognise their equivalence, e.g. $\frac{1}{2}$ and $\frac{2}{4}$.

- **Measurement**

  - Choose and use appropriate standard units to estimate and measure length/height in any direction, mass, temperature, and capacity to the nearest appropriate unit.
  - Compare and order lengths, heights, mass, volume/capacity, and record the results using >, < and =.
  - Recognise and use symbols for pounds (£) and pence (p), and 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, e.g. giving change.
  - Compare and order intervals of time.
  - Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.
  - Know the number of minutes in an hour and the number of hours in a day.

- **Properties of shapes**

  - Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line.
  - Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces.
  - Identify 2D shapes on the surfaces of 3D shapes.
  - Compare and sort common 2D and 3D shapes using 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, 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.

- **Statistics**

  - Interpret and construct simple pictograms, tally charts, block diagrams and 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 totalling and comparing data.

In Year 3, pupils will be taught to:

- **Number and place value**

  - Count from 0 in multiples of 4, 8, 50 and 100, finding 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 1,000.
  - Identify, represent and estimate numbers using different representations.
  - Read and write numbers up to 1,000 in numerals and in words.
  - Solve number problems and practical problems involving these concepts.

- **Addition and subtraction**

  - Add and subtract numbers mentally, including a three-digit number and ones, a three-digit number and tens, and a three-digit number and hundreds.
  - Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction.
  - Estimate the answer to a calculation and reverse operations to check answers.
  - Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

- **Multiplication and division**

  - Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
  - Write and calculate mathematical statements for multiplication and division using the multiplication tables, including for two-digit numbers times one-digit numbers, using mental maths and progressing to formal written methods.
  - 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.

- **Fractions**

  - Recognise that tenths arise from dividing an object into tent equal parts.
  - Count up and down in tenths.
  - 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.
  - Recognise and show, using diagrams, equivalent fractions with small denominators.
  - Add and subtract fractions with the same denominator within one whole.
  - Compare and order unit fractions and fractions with the same denominators.
  - Solve problems that involve all of the above.

Measurement

- Measure, compare, add and subtract lengths, mass, volume/capacity.
- Measure the perimeter of simple 2D shapes.
- Add and subtract amounts of money to give change.
- Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.
- Estimate, record, compare and read times, with increasing accuracy to the nearest minute.
- 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.

- **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 shape or a description of a turn.
- Identify right angles and know 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.
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.

- **Statistics**

- Show data using bar charts, pictograms and tables.
- Solve one and two-step data using bar charts, pictograms and tables.

In Year 4, pupils will be taught to:

- **Number and place value**

- Count in multiples of 6, 7, 9, 25 and 1,000.
- Find 1,000 more or less than a chosen number.
- Count negative numbers from 0.
- Recognise place value of each digit of a four-digit number.
- Recognise, represent and estimate numbers using different representations.
- Round any number to the nearest 10, 100 or 1,000.
- Solve number and practical problems that involve all of the above, and with increasingly large positive numbers.
- Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value.

- **Addition and subtraction**

- Add and subtract numbers with up to four digits using formal written methods and columnar addition and subtraction where necessary.
- Estimate and use inverse operations to check the answers to a calculation.
- Solve addition and subtraction two-step problems in different contexts, deciding which operations to use and why.

- **Multiplication and division**

  - Use multiplication and division facts for tables up to 12 x 12.
  - Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and one; dividing by one; multiplying together three numbers.
  - Recognise and use factor pairs and commutativity in mental calculations.
  - Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.
  - Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems, and harder correspondence problems such as 'n' objects connected to 'm' objects.

- **Fractions (including decimals)**

  - Recognise and show, using diagrams, families of common equivalent fractions.
  - Count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10.
  - Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.
  - Add and subtract fractions with the same denominator.
  - Recognise and write decimal equivalents of any number of tenths or hundredths.
  - Identify and write decimal equivalents to $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$
  - Explain 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.
  - 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.
  - Solve simple measure and money problems, involving fractions and decimals, to two decimal places.

- **Measurement**

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

- **Properties of shapes**

- Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.
- Recognise acute and obtuse angles and compare and order angles – up to two right angles – by size.
- Recognise lines of symmetry in 2D shapes presented in different orientations.
- Complete a simple symmetric figure with respect to a specific line of symmetry.

- **Position and direction**

  - Describe positions on a 2D grid as coordinates in the first quadrant.
  - Describe movements between positions as translations of a given unit to the left/right and up/down.
  - Plot specified points and draw sides to complete a given polygon.

- **Statistics**

  - Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.
  - Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.

In Year 5, pupils will be taught to:

- **Number and place value**

  - Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit.
  - Count forwards or 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 whole numbers, including through 0.
  - Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000.
  - Solve number problems and practical problems that involve all of the above.
  - Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.

- **Addition and subtraction**

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

- **Multiplication and division**

  - Recognise 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 non-prime numbers.
  - Establish whether a number up to 100 is prime and recall prime numbers up to 19.
  - Multiply numbers up to four digits by a one or two-digit number using a formal written method, including long multiplication for two-digit numbers.
  - Multiply and divide numbers mentally.
  - Divide numbers - up to four digits by a one-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 1,000.
  - Identify and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}).
  - Solve problems involving multiplication and division, including using knowledge of factors and multiples, squares and cubes.
  - Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.
  - Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

- **Fractions (including decimals and percentages)**

  - Compare and order fractions whose denominators are all multiples of the same number.
  - Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.
  - Recognise mixed numbers and improper fractions, know how to convert from one form to the other and write mathematical statements greater than one as a mixed number.
  - Add and subtract fractions with the same denominator, and denominators that are multiples of the same number.
  - Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
  - Read and write decimal numbers as fractions.
  - 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.
  - Solve problems involving numbers with up to three decimal places.
  - Recognise the percent symbol (%) and understand that percent relates to 'number of parts per 100,' writing percentages as a fraction with a denominator of 100, and as a decimal fraction
  - Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.

- **Measurement**

  - Convert between different units of metric measurement.
  - Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints.
  - Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.
  - Calculate and compare the area of, including using standard units, square centimetres (cm^2) and square metres (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.

- **Properties of shapes**

  - Identify 3D shapes, including cubes and other cuboids, from 2D representations.
  - Know that angles are measured in degrees and estimate and compare acute, obtuse and reflex angles.
  - Draw given angles, and measure them in degrees (°).
  - Identify angles at a point and 360° (one whole turn), angles at a point on a straight line and 180° (half a turn), and other multiples of 90°.
  - 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.

- **Position and direction**

  - 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.

- **Statistics**

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

In Year 6, pupils will be taught to:

- **Number and place value**

  - Read, write, order and compare numbers up to 10,000,000 and determine the value of each digit.
  - Round any whole number to a required degree of accuracy.
  - Use negative numbers in context, and calculate intervals across 0.

- Solve numerical and practical problems that involve all of the above.

- **Addition, subtraction, multiplication and division**

  - Multiply multi-digit numbers of up to four digits by a two-digit whole number using the formal written method of long multiplication.
  - Divide numbers of up to four 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 of up to four digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.
  - Perform mental calculations, including with mixed operations and large numbers.
  - Identify common factors, common multiples and prime numbers.
  - Use knowledge of the order of operations to carry out calculations involving the four operations.
  - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
  - Solve problems involving addition, subtraction, multiplication and division.
  - Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

- **Fractions (including decimals and percentages)**

  - Use common factors to simplify fractions, and use common multiples to express fractions in the same denomination.
  - Compare and order fractions, including fractions greater than one.
  - Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
  - Multiply simple pairs of proper fractions, writing the answer in its simplest form.
  - Divide proper fractions by whole numbers.
  - Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction.
  - Identify the value of each digit in numbers given to three decimal places, and multiply and divide numbers by 10, 100 and 1,000 giving answers 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.
  - Solve problems which require answers to be rounded to specified degrees 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 the calculation of percentages and the 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 three decimal places where appropriate.
  - Use, read, write and convert between standard units – converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places.
  - Convert between miles and kilometres.
  - Recognise that shapes with the same areas can have different perimeters and vice versa.
  - Recognise when it is possible to use formulae for area and volume of shapes.
  - Calculate the area of parallelograms and triangles.
  - Calculate, estimate and compare the volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extend to other units.

- **Properties of shapes**

  - 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 their properties and sizes, and find unknown angles in any triangles, quadrilaterals, and regular polygons.
  - Illustrate and name parts of circles, including radius, diameter and 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.

- **Position and direction**

  - Describe positions on the full coordinate grid.
  - Draw and translate simple shapes on the coordinate grid, and reflect them in the axes.

- **Statistics**

  - Interpret and construct pie charts and line graphs, and use these to solve problems.

- Calculate and interpret the mean as an average.

IMPLEMENTATION

To support the teaching of the National Curriculum, teachers work from a long term overview as outlined below:

Year 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Autumn	Place Value			Addition and Subtraction			Shape and Data		Money		Addition and Subtraction		Time	Consolidation	
Spring	Place Value		Money	Addition and Subtraction			Place Value	Fractions	Measures		Multiplication				
Summer	Addition and Subtraction		Measures and Shape	Addition and Subtraction	Money		Addition and Subtraction		Time	Multiplication, Division, Fractions		Data			

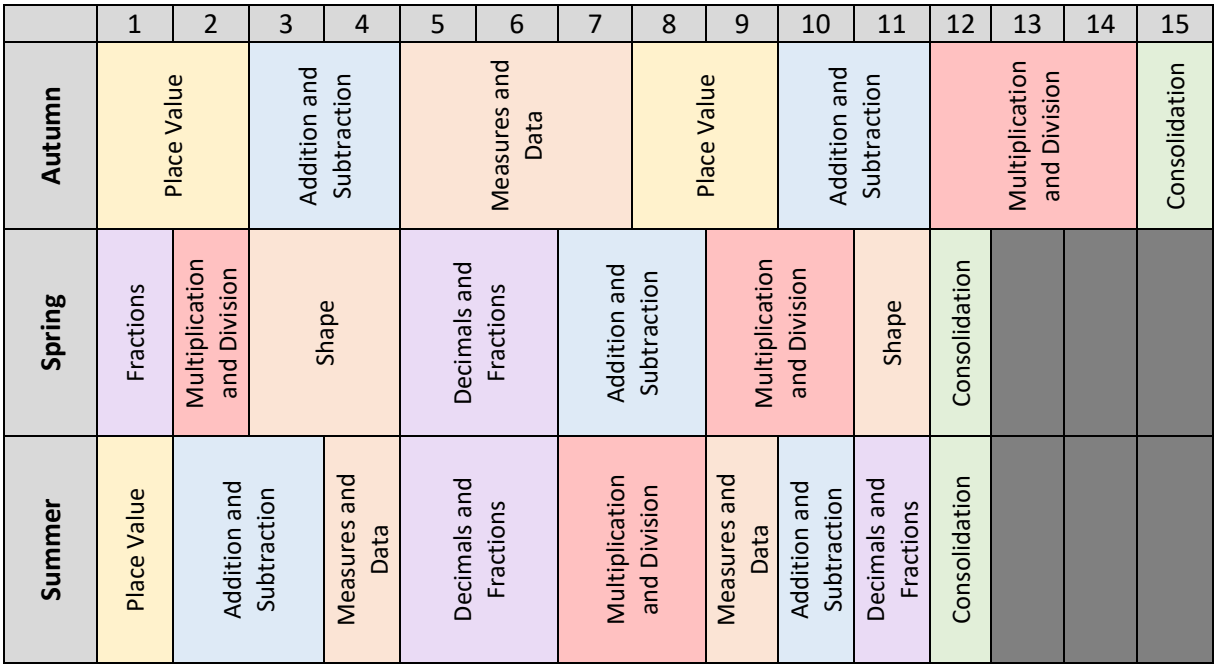
Year 2

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Autumn	Place Value		Addition and Subtraction		Measures		Addition and Subtraction		Multiplication and Division	Addition and Subtraction		Shape and Data	Measure	Shape and Data	Consolidation
Spring	Place Value	Addition and Subtraction		Fractions	Addition and Subtraction	Multiplication and Division		Addition and Subtraction		Time	Multiplication and Division				
Summer	Number, Fractions, Money		Addition and Subtraction	Consolidation		Puzzles and Games		Investigations	Fractions and Time	Number	Consolidation				

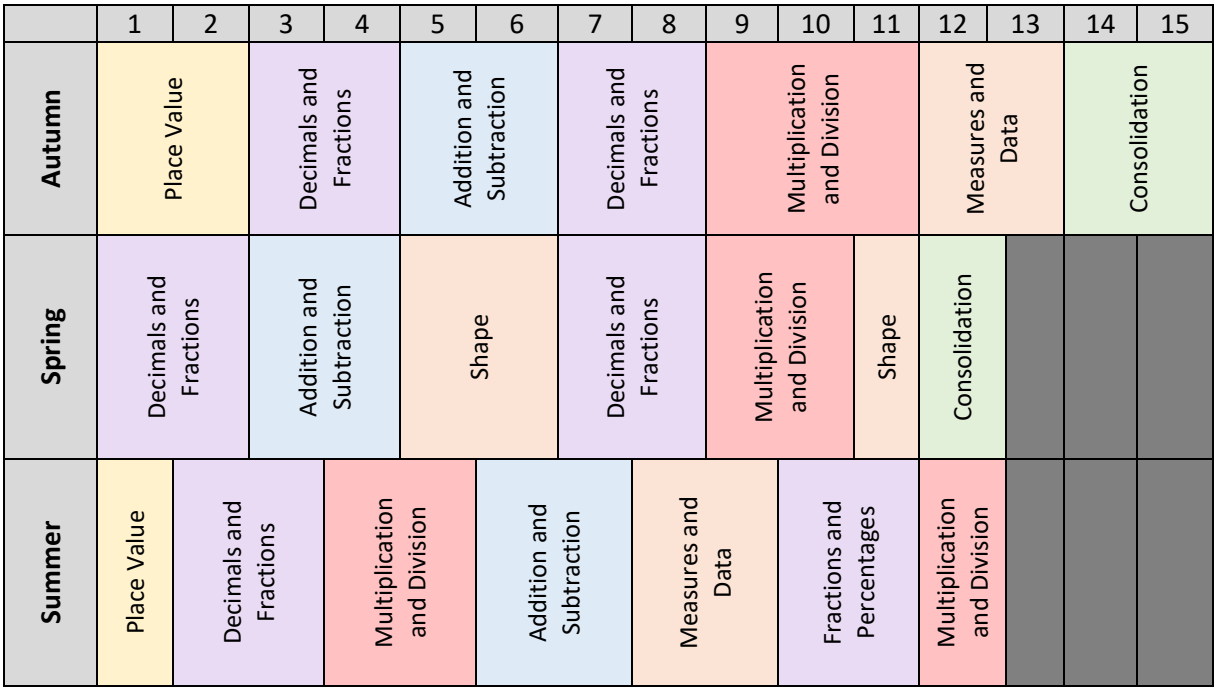
Year 3

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Autumn	Place value		Addition and Subtraction		Multiplication and Division		Measures		Addition and Subtraction		Multiplication and Division		Place Value	Consolidation	
Spring	Place Value	Addition and Subtraction		Fractions		Time and data	Place Value and Money		Addition and Subtraction		Fractions	Time			
Summer	Place Value	Addition and Subtraction		Multiplication and Division		Shape	Addition and Subtraction		Multiplication and Division	Shape	Fractions				

Year 4


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Autumn
Place Value
Addition and Subtraction
Measures and Data
Place Value
Addition and Subtraction
Multiplication and Division
Consolidation
Spring
Fractions
Multiplication and Division
Shape
Decimals and Fractions
Addition and Subtraction
Multiplication and Division
Shape
Consolidation
Summer
Place Value
Addition and Subtraction
Measures and Data
Decimals and Fractions
Multiplication and Division
Measures and Data
Addition and Subtraction
Decimals and Fractions
Consolidation

Year 5


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Autumn
Place Value
Decimals and Fractions
Addition and Subtraction
Decimals and Fractions
Multiplication and Division
Measures and Data
Consolidation
Spring
Decimals and Fractions
Addition and Subtraction
Shape
Decimals and Fractions
Multiplication and Division
Shape
Consolidation
Summer
Place Value
Decimals and Fractions
Multiplication and Division
Addition and Subtraction
Measures and Data
Fractions and Percentages
Multiplication and Division

Year 6

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Autumn	Place Value, Addition and Subtraction			Decimals and Fractions		Algebra		Multiplication and Division			Decimals and Fractions		Shape		Place Value, Addition and Subtraction
Spring	Decimals and Fractions			Data		Multiplication and Division		Decimals and Fractions		Measures	Multiplication and Division		Revision Unit		
Summer	Revision Unit			KS2 SATs Week		Exploration in Maths				Maths Around Us			Puzzles and Patterns		

In addition to following the long-term plan outlined above for implementation, staff also build in additional teaching sequences to ensure that children have had access to all content required for termly assessments.

At Hill West, we use Hamilton Trust as our Maths scheme. Sometimes staff draw on materials from the White Rose Maths Hub to support with concrete, pictorial and abstract subject-specific planning.

TEACHING AND LEARNING

- Pupils will be taught to describe key characteristics and associated processes in common language, as well as understand and use technical terminology and specialist vocabulary.
- Pupils will undertake independent work, and have the opportunity to work in groups and discuss work with fellow classmates.
- Lessons will allow for a wide range of mathematical, enquiry-based research activities, including the following:
    - Questioning, predicting and interpreting
    - Pattern seeking
    - Collaborative work
    - Problem-solving activities

- Classifying and grouping

- Lessons will involve the use of a variety of sources, including data, statistics, graphs and charts.

- Teachers ensure that the needs of all pupils are met by:

  - Setting tasks which can have a variety of responses.

  - Utilising teaching assistants to ensure that pupils are effectively supported.

  - Ensuring that all maths lessons include a focus on mental calculation.

  - Setting appropriate homework on a weekly basis via Mathletics and other means as necessary

ASSESSMENT AND RECORDING

The progress and development of pupils within the EYFS is assessed against the early learning goals outlined in the 'Statutory framework for the early year's foundation stage'.

Throughout the year, teachers will plan on-going creative assessment opportunities in order to gauge whether pupils have achieved the key learning objectives as outlined in our progressive learning journey for Mathematics. Assessments will be undertaken in various forms, including

- Talking to pupils and asking questions
- Discussing pupils' work with them
- Marking work against the learning objective
- Pupils' self-evaluation of their work

Teacher assessments are informed by standardised test outcomes on a termly basis (with the exception of Reception).

Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils' understanding of Mathematics and inform their immediate lesson planning. In terms of summative assessments, the results of end-of-year assessments will be passed to relevant members of staff, such as pupils' future teachers, in order to demonstrate where pupils are at a given point in time.

At parents evenings/consultations parents will be informed about the attainment and progression in Mathematics alongside other subjects and teachers will express any celebrations or concerns they may have about this. Parents will be provided with a written report about their child's progress during the Summer term every year. These will include information on pupil's end of year attainment in Mathematics and may include any areas of strength or areas for development that the teacher may wish to highlight.

MONITORING AND REVIEW

This policy will be reviewed on an annual basis by the subject leader. The subject leader will monitor teaching and learning in the subject at Hill West primary school, ensuring that the content of the national curriculum is covered across all phases of pupils' education.