



# Henleaze Infant School

## Our Mathematics Curriculum



### **Intent:**

At Henleaze Infant School the intention for our Mathematics curriculum is that all children enjoy and feel enthused about mathematics, which will foster future awareness and fascination. The children will view themselves as confident, able mathematicians with fluency in mathematical knowledge, concepts and skills. Through developing a child's ability to calculate, reason and problem solve, Mathematics teaches us how to make sense of the world around us. Therefore, we aim to ensure that our pupils develop the ability to use and apply mathematics across the curriculum and real-life scenarios, as well as developing the skill of mentally checking calculations for accuracy and reasonableness.

By the time children leave Henleaze Infant School they will have developed the ability to solve problems by applying their skills to a variety of routine and non-routine problems and to reason by thinking logically and working systematically and accurately. Our pupils learn to reason mathematically and explain relationships using specific, related mathematical language. We truly believe and make it explicit that every child is a mathematician, and this is mirrored in our consistent and engaging whole school approach. Our pupils persevere when working independently as well as cooperating with others to understand mathematics through a process of enquiry and experimentation. All of our staff work with the children to advance pupil outcomes in mathematics through quality first teaching, intervention and support groups.

### **Implementation:**

Our curriculum incorporates the coverage of the statutory outcomes outlined in the Early Years Foundation Stage and KS1 Mathematics Programme of Study – National Curriculum 2014. Our planning is based on the White Rose Maths Schemes of Learning to guarantee consistency, coherence and progression throughout the EYFS and KS1. These are used across EYFS and KS1 allowing children to be exposed to a variety of different types of learning and problems to solve. Teachers implement our schools' agreed Calculation Policy for progression in written and mental calculations. To learn mathematics effectively, some things have to be learned before others and this order of small step learning is factored into our planning (e.g. place value needs to be understood before working with addition). At Henleaze Infant School, we have an emphasis on number skills first, carefully ordered, throughout the curriculum. We support our children to become visualisers, describers and experimenters. Our pupils engage and enjoy using concrete resources to experiment and complete practical activities. We help our children to be visualisers through using the CPA (concrete, pictorial, abstract) approach. This helps pupils understand mathematics and to make connections between different representations. We encourage our pupils to become describers as we place a great emphasis on the mathematical language and questioning so pupils can discuss the mathematics they are doing. Sentence stems are regularly used during whole class discussions to support our younger children to learn mathematical language and develop their ability to reason. We support our children to become experimenters as we want pupils to love and learn more about mathematics.

Children take part in explicit daily mathematics lessons with a specific focus on either Number or Measure, Geometry or Statistics. All areas of the mathematics curriculum are continually revisited through planned short or longer in-depth teaching sequences to enable children to develop a depth of understanding.

At Henleaze Infant School, we regularly give our children opportunities to use and apply their mathematical learning in everyday situations, aiming to embed mathematical skills across the curriculum. Through the use of ELLI characters, our pupils persevere when working independently and cooperatively with others to understand mathematics through a process of enquiry and experiment during open tasks, as well as closed. At Henleaze Infant School, the children are given opportunities to work with computers as a mathematical tool. For example, our children use Number Gym in school and at home to develop fluency while using technology and having fun.

## Number (EYFS – Year 2) Learning Outcomes

### **EYFS outcomes for ELG in Number**

**Early Learning Goal:** Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

### **First hand experiences and pupil offer:**

Children start school with a variety of mathematical experiences. At Henleaze Infant School, we create opportunities for children to learn the key skills of problem solving, number and calculation through interactive practical activities and discussion. Children’s work is recorded in a range of ways using formal methods (e.g. writing number sentences) and informal methods (e.g. using mathematical graphics). Children are also provided with real life, meaningful activities to give them the opportunities to use and apply their skills and knowledge (e.g. spending money and giving change in a shop). In Reception at Henleaze Infant School, we teach explicit maths lessons daily where children learn the skills underpinning mathematical concepts. Our maths teaching is linked to other areas of the curriculum where possible to ensure hands-on, purposeful experiences. Children have access to a range of concrete resources (e.g. Numicon and multi-link cubes) in the environment, which they are able to use in their independent planning times. In each of our Reception classrooms, there is a well-resourced ‘maths area’ where children can independently access concrete resources and use them to develop their number and curiosity.

### **Year 1 Outcomes**

#### **Number and place value**

- I can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number
- I can count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
- I can be given a number and identify one more and one less
- I can 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
- I can read and write numbers from 1 to 20 in numerals and words.

### **Year 2 Outcomes**

#### **Number and place value**

- I can count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- I can recognise the place value of each digit in a two-digit number (tens, ones)
- I can identify, represent and estimate numbers using different representations, including the number line
- I can compare and order numbers from 0 up to 100; use <, > and = signs
- I can read and write numbers to at least 100 in numerals and in words
- I can use place value and number facts to solve problems

<p><b><u>Addition and subtraction</u></b></p> <ul style="list-style-type: none"> <li>● I can read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs</li> <li>● I can represent and use number bonds and related subtraction facts within 20</li> <li>● I can add and subtract one-digit and two-digit numbers to 20, including zero</li> <li>● I can solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \_ - 9</math>.</li> </ul>	<p><b><u>Addition and subtraction</u></b></p> <ul style="list-style-type: none"> <li>● I can solve problems with addition and subtraction: <ul style="list-style-type: none"> <li>○ using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>○ applying my increasing knowledge of mental and written methods</li> </ul> </li> <li>● I can recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</li> <li>● I can add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> <li>○ a two-digit number and ones; a two-digit number and tens; two two-digit numbers; adding three one-digit numbers</li> </ul> </li> <li>● I can show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</li> <li>● I can recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul>
<p><b><u>Multiplication and division</u></b></p> <ul style="list-style-type: none"> <li>● I can 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.</li> </ul>	<p><b><u>Multiplication and division</u></b></p> <ul style="list-style-type: none"> <li>● I can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li> <li>● I can calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs</li> <li>● I can show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</li> <li>● I can solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</li> </ul>
<p><b><u>Fractions</u></b></p> <ul style="list-style-type: none"> <li>● I can recognise, find and name a half as one of two equal parts of an object, shape or quantity</li> <li>● I can recognise, find and name a quarter as one of four equal parts of an object, shape or quantity</li> </ul>	<p><b><u>Fractions</u></b></p> <ul style="list-style-type: none"> <li>● I can 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</li> <li>● I can write simple fractions for example, <math>\frac{1}{2}</math> of <math>6 = 3</math> and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math>.</li> </ul>

# Shape, Space and Measure (EYFS)/Measurement, Geometry and Statistics (KS1) Learning Outcomes

## EYFS outcomes for ELG in Shape, Space and Measures

**Early Learning Goal:** Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.

### First hand experiences and pupil offer:

At Henleaze Infant School, we create opportunities for children to learn about Shape, Space and Measure through many topic-based experiences. The children at our school are provided with real life, meaningful activities to give them the opportunities to use and apply their skills and knowledge e.g. weighing out food when they are cooking. Shape, Space and Measure is taught through our daily maths lessons where children learn the mathematical language and key skills they need to start to develop concepts. Where possible, our learning is linked to other areas of the curriculum to ensure purposeful experiences. Each classroom and outdoor area are well resourced to allow children to continually access and explore the resources and concepts they are learning about, as well as continuing to foster their mathematical interests. Resources include a range of 3D shapes that can be used for building and stacking, water trays with containers to explore capacity, money and a range of other everyday objects that can be used to explore pattern.

## Year 1 Outcomes

### Measurement

- I can compare, describe and solve practical problems for:
  - lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
  - mass/weight [for example, heavy/light, heavier than, lighter than]
  - capacity and volume [for example, full/empty, more than, less than, half, half full, quarter]
  - time [for example, quicker, slower, earlier, later]
- I can measure and begin to record the following:
  - lengths and heights
  - mass/weight
  - capacity and volume
  - time (hours, minutes, seconds)
- I can recognise and know the value of different denominations of coins and notes
- I can sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]
- I can recognise and use language relating to dates, including days of the week, weeks, months and years; I can tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

## Year 2 Outcomes

### Measurement

- I can 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
- I can compare and order lengths, mass, volume/capacity and record the results using >, < and =
- I can recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- I can find different combinations of coins that equal the same amounts of money
- I can solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
- I can compare and sequence intervals of time
- I can 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
- I can know the number of minutes in an hour and the number of hours in a day.

<p><b><u>Geometry - Properties of shapes</u></b></p> <ul style="list-style-type: none"> <li>● I can recognise and name common 2-D and 3-D shapes, including: <ul style="list-style-type: none"> <li>○ 2-D shapes [for example, rectangles (including squares), circles and triangles]</li> <li>○ 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].</li> </ul> </li> </ul>	<p><b><u>Geometry – Properties of shape</u></b></p> <ul style="list-style-type: none"> <li>● I can identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</li> <li>● I can identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li> <li>● I can identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</li> <li>● I can compare and sort common 2-D and 3-D shapes and everyday objects.</li> </ul>
<p><b><u>Geometry – position and direction</u></b></p> <ul style="list-style-type: none"> <li>● I can describe position, direction and movement, including whole, half, quarter and three-quarter turns.</li> </ul>	<p><b><u>Geometry – Position and direction</u></b></p> <ul style="list-style-type: none"> <li>● I can order and arrange combinations of mathematical objects in patterns and sequences</li> <li>● I can 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 anticlockwise).</li> </ul>
	<p><b><u>Statistics</u></b></p> <ul style="list-style-type: none"> <li>● I can interpret and construct simple pictograms, tally charts, block diagrams and simple tables</li> <li>● I can ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</li> <li>● I can ask and answer questions about totalling and comparing categorical data.</li> </ul>

## Reception

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Autumn	<p style="text-align: center;"><i>Home visits</i></p> <p style="text-align: center;"><i>Induction</i></p> <p style="text-align: center;"><i>Assessment</i></p>			<p><b>Addition and Subtraction (Sorting)</b></p> <p>Sorting into groups.</p>	<p><b>Number and Place Value (Comparing groups)</b></p> <p>Comparing quantities of identical/non identical objects.</p>	<p><b>Number and place value (Numbers to 5)</b></p> <p>One, two, three. Four. Five. a</p> <p><b>Addition and Subtraction (Change within 5)</b></p> <p>One more. One less.</p>		<p><b>Measurement (Time)</b></p> <p>My day.</p> <p><b>Term 1 Assessment</b></p>	<p><b>Addition and Subtraction (Numbers to 5)</b></p> <p>Introducing zero. Number bonds to 5.</p>		<p><b>Number and Place Value (Numbers to 10)</b></p> <p>Counting to 6, 7 and 8. Counting to 9 and 10. Comparing groups up to 10.</p>		<p><b>Consolidation</b></p> <p><i>Key facts assessment</i></p> <p><i>Christmas maths</i></p>	
				<p><b>Geometry (Shape and Space)</b></p> <p>3D shapes. Making simple patterns (From summer term SoL).</p>										
Spring	<p><b>Addition and Subtraction (Addition to 10)</b></p> <p>Combining two groups to find the whole. Number bonds to 10 – ten frame. Number bonds to 10 – part-whole model.</p>			<p><b>Addition and Subtraction (Count on and back)</b></p> <p>Adding by counting on. Taking away by counting back.</p>	<p><b>Consolidation</b></p> <p><i>Term 3 Assessment</i></p>			<p><b>Number and Place Value (Counting to 20)</b></p> <p>Counting to 20.</p>	<p><b>Multiplication and Division (Numerical patterns)</b></p> <p>Doubling.</p>	<p><b>Multiplication and Division (Numerical patterns)</b></p> <p>Halving and sharing.</p>	<p><b>Consolidation</b></p> <p><i>Key facts assessment</i></p>			
	<p><b>Geometry (Shape and Space)</b></p> <p>Spatial awareness. 2D shapes.</p>			<p><b>Geometry (Exploring patterns)</b></p> <p>Exploring more complex patterns.</p>				<p><b>Measurement (Measure)</b></p> <p>Length, height and distance. Weight. Money.</p>						
Summer	<p><b>Multiplication and Division (Numerical patterns)</b></p> <p>Odds and evens.</p>	<p><b>Number and Place Value (Estimation)</b></p> <p>Estimate and check by counting.</p>	<p><b>Multiplication and Division (Numerical patterns)</b></p> <p>Combining groups of 2, 5 or 10.</p>	<p><b>Consolidation</b></p> <p><i>End of EYFS profile assessment/Term 5 Assessment</i></p>				<p>Recap and consolidation based on gaps before data due.</p>		<p>Recap – Addition and subtraction</p>	<p>Recap – Shape, space and measure</p>	<p>Recap – Multiplication and division</p>	<p><b>Consolidation</b></p> <p><i>Key facts assessment</i></p>	
	<p><b>Measurement (Measure)</b></p> <p>Capacity.</p>	<p><b>Measurement (Comparing)</b></p> <p>Comparing and ordering objects.</p>												

## Year 1

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>A u t u m n</b>	<b>Number work and Place value within 10</b> Counting Ordering numbers and ordinal numbers Number formation Comparing quantities & numbers with the symbols < > = 1 more/less Representing numbers in a variety of ways		<b>Addition and Subtraction (within 10)</b> Addition and subtraction number stories Recording number sentences with the symbols +, - and = Solving addition and subtraction number stories with physical apparatus Addition and subtraction as inverse Odd and even numbers Fact families Number bonds to 10				<b>Consolidation and assessment</b>	<b>Place value to 20</b> Partition numbers 11-20 into '10 and a bit' 1 more/less Compare numbers using symbols < > = Ordering numbers within 20		<b>Addition and Subtraction within 20</b> Add by counting on Recall of fact families Number bonds to 10 and 20		<b>Position and Direction</b>	<b>2D &amp; 3D Shape</b>	<b>Days, weeks, months &amp; seasons</b> <b>Consolidation &amp; Assessment</b>
<b>S p r i n g</b>	<b>Addition and subtraction within 20</b> Mixed addition and subtraction recap Add by spotting number bonds to 10 Adding 3 single-digit numbers Missing number problems		<b>Place value to 100</b> Partition numbers into tens and ones Ordering non-consecutive 2-digit numbers.		<b>Number within 100:</b> Counting in 2s, 5s and 10s 1 more/less 10 more/less	<b>Assessment &amp; Consolidation</b>	<b>Measurement : Money</b> Coin recognition Making amounts	<b>Addition and subtraction within 20</b> Word problems Problem solving		<b>Measure: Weight</b>	<b>Measure: Length</b> Length & height	<b>Assessment &amp; Consolidation</b>		
<b>S u m m e r</b>	<b>Multiplication</b> Make and add equal groups Repeated addition Arrays Counting equal groups in 2s, 5s and 10s		<b>Division</b> Sharing into equal groups	<b>Measurement: Time</b> Telling o'clock and half past times on an analogue clock		<b>Assessment &amp; Consolidation</b>	<b>Place value to 100</b> Partitioning into tens and ones	<b>Number and Fractions</b> Doubling and halving numbers Halving and quartering of 2D shapes		<b>Measure: Capacity</b>	<b>Measurement: Mixed problem solving</b>	<b>Consolidation &amp; Problem solving</b>		

## Year 2

	Week 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Autumn	Number: Place value				Number: Addition and subtraction				Measurement: Money			Number: Multiplication and division			
Spring	Statistics		Geometry: Properties of shape		Measurement: Length and height		Number: Fractions			Measurement: Time			Measurement: Mass capacity and temperature		
Geometry: Position and direction															
Summer	Calculation and Problem Solving				Number: Place value		Number: Addition and subtraction		Number: Multiplication and division			Measurement			