

## Cavendish Close Infant and Nursery School

*A rich, relevant, broad and balanced curriculum contributes to outstanding learning and achievement, significant growth in pupils' knowledge, and excellent attitudes to learning*

### Subject area: Mathematics

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

End of Early Years Foundation Stage expectation	National Curriculum End of Key Stage 1 expectation
<p><b>ELG –Numbers-</b> Children count reliably with numbers from 1-20, 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.</p> <p><b>ELG- Shape, Space and Measure-</b> 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.</p>	<p>Count and calculate in a range of practical contexts.</p> <ul style="list-style-type: none"> <li>• Use and apply mathematics in everyday activities and across the curriculum.</li> <li>• Repeat key concepts in many different practical ways to secure retention.</li> <li>• Explore numbers and place value up to at least 100.</li> <li>• Add and subtract using mental and formal written methods in practical contexts.</li> <li>• Multiply and divide using mental and formal written methods in practical contexts.</li> <li>• Explore the properties of shapes.</li> <li>• Use language to describe position, direction and movement.</li> <li>• Use and apply in practical contexts a range of measures, including time.</li> <li>• Handle data in practical contexts.</li> </ul>

	<u>EYFS 1 (30-50 months)</u>	<u>EYFS 2 (40-60 months)</u>	<u>Year 1</u>	<u>Year 2</u>
<b>Number</b>	<p><b><u>Numbers &amp; the number system</u></b></p> <ul style="list-style-type: none"> <li>• Uses some number names and number language spontaneously</li> <li>• Uses some number names accurately in play</li> <li>• Recites numbers in order to 10</li> <li>• Knows that numbers identify how many objects are in a set</li> <li>• Beginning to represent numbers using fingers, marks on paper or pictures</li> <li>• Sometimes matches numeral and quantity correctly</li> <li>• Shows curiosity about numbers by offering comments or asking questions</li> <li>• Shows an interest in numerals in the environment</li> <li>• Shows an interest in representing numbers</li> </ul> <p><b><u>Calculation- addition &amp; subtraction</u></b></p> <ul style="list-style-type: none"> <li>• Compares two groups of objects, saying when they have the same number</li> <li>• Shows an interest in number problems</li> <li>• Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same</li> <li>• Realises not only objects, but anything can be counted,</li> </ul>	<p><b><u>Numbers &amp; the number system</u></b></p> <ul style="list-style-type: none"> <li>• Recognises some numerals of personal significance</li> <li>• Recognises numerals 1 to 5</li> <li>• Counts up to three or four objects by saying one number name for each item</li> <li>• Counts actions or objects which cannot be moved</li> <li>• Counts objects up to 10 and beginning to count beyond 10</li> <li>• Counts out up to six objects from a larger group</li> <li>• Selects the correct numeral to represent 1 to 5, then 1 to 10 objects.</li> <li>• Counts an irregular arrangement of up to ten objects</li> <li>• Estimates how many objects they can see and checks by counting them</li> </ul> <p><b><u>Calculation- addition &amp; subtraction</u></b></p> <ul style="list-style-type: none"> <li>• Uses the language of 'more' and 'fewer' to compare two sets of objects</li> <li>• Finds the total number of items in two groups by counting all of them</li> <li>• Says the number that is one more than a given number</li> <li>• Finds one more or one less from</li> </ul>	<p><b><u>Numbers &amp; the number system</u></b></p> <ul style="list-style-type: none"> <li>• Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</li> <li>• Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.</li> <li>• Given a number, identify one more and one less.</li> <li>• Identify and represent numbers using objects &amp; pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least.</li> <li>• Read and write numbers from 1 to 20 in numerals and words.</li> </ul> <p><b><u>Calculation- addition &amp; subtraction</u></b></p> <ul style="list-style-type: none"> <li>• Read, write &amp; interpret mathematical statements involving addition (+), subtraction (-) &amp; equals (=) signs</li> <li>• Represent and use number bonds and related subtraction facts within 20</li> <li>• Add and subtract one-digit</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>Numbers &amp; the number system</u></b></li> <li>• Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward.</li> <li>• Recognise the place value of each digit in a two-digit number (tens, ones).</li> <li>• Identify, represent and estimate numbers using different representations, including the number line.</li> <li>• Compare and order numbers from 0 up to 100; use <math>&lt;</math>, <math>&gt;</math> and <math>=</math> signs.</li> <li>• Read and write numbers to at least 100 in numerals and in words.</li> <li>• Use place value and number facts to solve problems.</li> </ul> <p><b><u>Calculation~ addition &amp; subtraction</u></b></p> <ul style="list-style-type: none"> <li>• Solve problems with addition &amp; subtraction: <ul style="list-style-type: none"> <li>• using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>• applying their increasing knowledge of mental and written methods.</li> </ul> </li> <li>• Recall and use addition and subtraction facts to 20</li> </ul>

	<p>including steps, claps or jumps</p>	<p>a group of up to five objects, then ten objects</p> <ul style="list-style-type: none"> <li>• In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting.</li> <li>• Records, using marks that they can interpret and explain</li> <li>• Begins to identify own mathematical problems based on own interests and fascinations</li> </ul>	<p>&amp; two-digit numbers to 20, including zero.</p> <ul style="list-style-type: none"> <li>• Solve one-step problems that involve addition and subtraction, using concrete objects &amp; pictorial representations, and missing number problems such as</li> </ul> $7 = [ ] - 9.$ <p><u>multiplication &amp; division</u></p> <ul style="list-style-type: none"> <li>• 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><u>Fractions, Decimals &amp; Percentages</u></p> <ul style="list-style-type: none"> <li>• Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li> <li>• Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>	<p>fluently, and derive and use related facts up to 100.</p> <ul style="list-style-type: none"> <li>• 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,</li> <li>• a two-digit number and tens,</li> <li>• two two-digit numbers,</li> <li>• adding three one-digit numbers,</li> </ul> </li> <li>• Show that addition of two numbers can be done in any order and subtraction of one number from another cannot.</li> <li>• Recognise and use the inverse relationship between addition &amp; subtraction and use this to check calculations and missing number problems.</li> </ul> <ul style="list-style-type: none"> <li>• <u>multiplication &amp; division</u></li> <li>• Recall &amp; use multiplication &amp; division facts for 2, 5 &amp; 10 tables, including recognising odd and even numbers</li> <li>• Calculate mathematical statements for multiplication and division within the multiplication tables; write them using multiplication (x), division (÷) &amp; equals (=) signs.</li> <li>• Show that multiplication of two numbers can be done in any order (commutative) and</li> </ul>
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				<p>division of one number by another cannot.</p> <ul style="list-style-type: none"><li>• 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><u>Fractions, Decimals &amp; Percentages</u></p> <ul style="list-style-type: none"><li>• Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> &amp; <math>\frac{3}{4}</math> of a length, shape, set of objects or quantity</li><li>• Write simple fractions e.g. <math>\frac{1}{2}</math> of 6 = 3 and recognise the equivalence of <math>\frac{2}{4}</math> and <math>\frac{1}{2}</math></li></ul>
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**Shape space and measures**

- Shows an interest in shape and space by playing with shapes or making arrangements with objects
- Shows awareness of similarities of shapes in the environment
- Uses positional language
- Shows interest in shape by sustained construction activity or by talking about shapes or arrangements
- Shows interest in shapes in the environment
- Uses shapes appropriately for tasks
- Beginning to talk about the shapes of everyday objects, e.g. 'round' and 'tall'

**Shape space and measures**

- Beginning to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes and mathematical terms to describe shapes
- Selects a particular named shape
- Can describe their relative position such as 'behind' or 'next to'
- Orders two or three items by length or height
- Orders two items by weight or capacity
- Uses familiar objects and common shapes to create and recreate patterns and build models
- Uses everyday language related to time
- Beginning to use everyday language related to money
- Orders and sequences familiar events
- Measures short periods of time in simple ways

**Measures**

- Compare, describe and solve practical problems for:
  - lengths and heights [ e.g. long/short, longer/shorter, tall/short, double/half ]
  - mass or weight [ e.g. heavy/light, heavier than, lighter than ]
  - capacity/volume [ full/ empty, more than, less than, half, half full, quarter ]
  - time [ e.g. quicker, slower, earlier, later ]
- Measure and begin to record the following: lengths and heights; mass/weight; capacity & volume; time (hours, minutes, seconds)
- Recognise and know the value of different denominations of coins and notes.
- Sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.
- 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.

**Measures**

- 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 =
- 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.
- Compare and sequence 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.

			<p><b>Shape &amp; Space</b> <b><u>Geometry: Properties of shapes</u></b></p> <ul style="list-style-type: none"><li>• Recognise and name common 2-D and 3-D shapes, including:</li><li>• 2-D shapes (e.g. rectangles (including squares), circles and triangles)</li><li>• 3-D shapes (e.g. cuboids (including cubes), pyramids and spheres).</li><li>• Position and direction</li><li>• Describe position, directions and movements, including whole, half, quarter and three-quarter turns.</li></ul>	<p><b>Shape &amp; Space</b></p> <ul style="list-style-type: none"><li>• Identify &amp; describe the properties of 2-D shapes, including the number of sides &amp; line symmetry in a vertical line</li><li>• Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces</li><li>• Identify 2-D shapes on the surface of 3-D shapes, [e.g. a circle on a cylinder &amp; a triangle on a pyramid.]</li><li>• Compare and sort common 2-D and 3-D shapes and everyday objects.</li><li>• Order and arrange combinations of mathematical objects in patterns and sequences.</li><li>• Use mathematical vocabulary to describe position, direction and movement including movement in a straight line, distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)</li></ul>
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### Statistics

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

