

Downs View  
Infant School  
Maths  
Overview  
Year 1

## Key maths concepts in Year 1

### **Using practical activities to reinforce concepts of number, place value and calculation**

In Year 1, children begin to extend their understanding of number, building on concrete, exploratory approaches used in the Foundation Stage. Practical activities and the physical exploration of concepts continue to play an important part in children's mathematical work in Year 1 and beyond. Children start to use more abstract approaches to mathematical problem solving, including using mathematical statements that involve symbols such as +, - and =.

### **Working with numbers to 100 and beyond**

It can be difficult for young children to grasp larger numbers. They will have learned to work with numbers and groups of objects up to 10, but envisaging numbers greater than this

can prove more challenging. Providing children with opportunities to see larger numbers in different contexts will help them to become more familiar with the names and relative values. For example, noticing house numbers as they walk along the street will help them to recognise that number 12 is a long way from number 78. They can also be encouraged to use numbers for practical purposes, such as recording and comparing the numbers of children at school on different days, or comparing the number of paint brushes in a pot to the number of writing pencils, for example.

### **Place value**

By comparing numbers, children will begin to see that it is helpful to look at the first digit in

two-digit numbers when comparing numbers for size - for example, 23 is less than 32, because

23 has the first digit 2, whereas 32 has the first digit 3. Using hundred squares and number lines to compare numbers will help children identify the decades that numbers belong to, and so build their understanding of how numbers compare in size. This will help build a firm foundation for the further work on place value which children will undertake in Year 2.

### **Addition and subtraction**

To help children remember the addition and subtraction number bonds to 20, provide them with opportunities to add and subtract in many different contexts, such as dice games, puzzles and differences in race times. Also, use addition and subtraction throughout the school day, for example - *Have we got enough pencils for this group? How many more pencils do we need? Yes, 6 take away 4 is 2. We need two more pencils.*

## Overview of progression in Year 1

### **Number and place value**

During the Foundation Stage, children counted and estimated groups of up to 10 objects. In Year 1, children extend their use of counting numbers to at least 100. They develop recognition of patterns in the number system (including odd and even numbers) by counting in ones, twos, fives and tens. Children use first, second, third for example when ordering items.

Children do not need to recognise the place value of each digit in a two-digit number as they will do this in Year 2. However, they should understand that they can tell whether a number is larger than another by looking at the first digit as well as the second digit.

### **Addition and subtraction**

During the Foundation Stage, children related addition to combining two groups and subtraction to *taking away* when doing practical activities. In Year 1, children use mathematical statements to record addition and subtraction. They read, interpret and write the symbols +, - and =.

Through practice of addition and subtraction, children learn the number trios for numbers to 20 ( $8 + 5 = 13$ ,  $13 - 8 = 5$ ,  $13 - 5 = 8$ ). They use different strategies to help them derive number facts, such as adding numbers in any order, or finding a difference by counting up.

### **Multiplication and division**

In Year 1, children are introduced to the concepts of multiplication and division, although they will not use the standard signs ( $\times$  and  $\div$ ) until Year 2. In practical activities, using arrays and physical objects such as blocks, children solve multiplication and division problems using small quantities. With support, children investigate the links between arrays, number patterns and their experience of counting in twos, fives and tens.

### **Fractions**

Children learn to identify halves and quarters by solving practical problems - for example, finding half of a set of ten blocks or a quarter of a square. They learn that the concepts of a half and a quarter apply to objects and quantities as well as to shapes. They link the idea of halves and quarters back to the concepts of sharing and grouping, which they use in their work on multiplication and division. They will build on this in Year 2 when they learn to write simple fractions.

### **Measurement**

In Year 1, children begin to use some common standard units, including measuring objects using rulers, weighing scales and jugs. They accurately use comparative language for length, weight, volume and time, such as

longer/shorter, heavier than/lighter than, more/less, and quicker/slower.

Children read the time on analogue clocks to the hour and half-hour, and they learn to recognise different coins and notes. In Year 2, children will use standard units more independently and gain experience in telling the time and doing simple calculations with money.

### **Geometry: properties of shapes**

In Year 1, children become familiar with a range of common 2D and 3D shapes, including rectangles, circles and triangles, cuboids, pyramids and spheres. They recognise these shapes in different orientations, sizes and contexts.

### **Geometry: position and direction**

Children continue to use positional language accurately when describing where people or objects are in the environment. They experience the differences between half, quarter and three-quarter turns by practising making these turns in a clockwise direction.

## Year 1 Long-term planning

Number and place value	Addition and subtraction
<ul style="list-style-type: none"> <li>Children should practise counting (1, 2, 3), ordering (first, second, third), or to indicate a quantity (3 apples, 2 centimetres), including solving simple concrete problems, until they are fluent.</li> </ul> <p>They should begin to recognise place value in numbers beyond 20 by reading, writing, counting and comparing numbers up to 100, supported by concrete objects and pictorial representations.</p> <p>They should practise counting as reciting numbers and counting as enumerating objects, and counting in ones, twos, fives and tens from different multiples to develop their recognition of patterns in the number system (odd and even numbers). They connect these patterns with objects and with shapes, including through varied and frequent practice of increasingly complex questions.</p> <p>They recognise and create repeating patterns with objects and with shapes.</p>	<ul style="list-style-type: none"> <li>Children should memorise and reason with number bonds to 10 and 20 in several forms (<math>9 + 7 = 16</math>; <math>16 - 7 = 9</math>; <math>7 = 16 - 9</math>). They should realise the effect of adding or subtracting zero. This establishes addition and subtraction as related operations.</li> <li>Children should combine and increase numbers, counting forwards and backwards.</li> <li>They should discuss and solve problems in familiar practical contexts, including using quantities. Problems should include the terms put together, add, altogether, total, take away, distance between, more than and less than, so that pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.</li> </ul>
Multiplication and division	Fractions
<ul style="list-style-type: none"> <li>Through grouping and sharing small quantities, children should begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.</li> <li>They should make connections between arrays, number patterns, and counting in twos, fives and tens.</li> </ul>	<p>Children should be taught half and quarter as 'fractions of' discrete and continuous quantities by solving problems using shapes, objects and quantities. For example, they could recognise and find half a length, quantity, set of objects or shape. Children connect halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole.</p>
Measurement	Geometry: position and direction
<ul style="list-style-type: none"> <li>The pairs of terms mass and weight, volume and capacity, are used interchangeably at this stage.</li> <li>Children should move from using and comparing different types of quantities and measures using non-standard units, including discrete (e.g. counting) and continuous (e.g. liquid) measures, to using manageable common standard units.</li> <li>In order to become familiar with standard measures, children begin to use measuring tools such as a ruler, weighing scales and containers.</li> <li>Children should use the language of time, including telling the time throughout the day, first using o'clock and then half past.</li> </ul>	<ul style="list-style-type: none"> <li>Children should 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.</li> <li>Children should make half, quarter and three-quarter turns and routinely make these turns in a clockwise direction.</li> </ul>
	Geometry: properties of shapes
	<ul style="list-style-type: none"> <li>Children should handle common 2D and 3D shapes, naming these and related everyday objects fluently. They should recognise these shapes in different orientations and sizes, and know that rectangles, triangles, cuboids and pyramids can be different shapes.</li> </ul>

## Medium Term Plans: Autumn 1

W	Topic	Curriculum objective
1	Counting	<ul style="list-style-type: none"> <li>• To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</li> <li>• To 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.</li> </ul>
2	Addition and subtraction to 5 or more (part 1)	<ul style="list-style-type: none"> <li>• To read and write numbers from 1 to 20 in numerals and words.</li> <li>• When given a number, identify one more and one less.</li> <li>• To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</li> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> </ul>
3	Addition and subtraction to 5 or more (part 2)	<ul style="list-style-type: none"> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve simple one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>
4	Addition totals to 10	<ul style="list-style-type: none"> <li>• To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</li> <li>• To represent and use number bonds and related subtraction facts within 20.</li> <li>• To add and subtract one-digit and two-digit numbers to 20 (<math>9 + 9</math>, <math>18 - 9</math>), including zero.</li> </ul>
5	Properties of shape	<ul style="list-style-type: none"> <li>• To recognise and name common 2D and 3D shapes, including:               <ul style="list-style-type: none"> <li>• 2D shapes (rectangles (including squares), circles and triangles)</li> <li>• 3D shapes (cuboids (including cubes), pyramids and spheres).</li> </ul> </li> </ul>
6	Addition and subtraction to 10	<ul style="list-style-type: none"> <li>• To represent and use number bonds and related subtraction facts within 20.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \quad - 9</math></li> </ul>

## Medium Term Plans: Autumn 2

W	Topic	Curriculum objective
<b>1</b>	Counting and number order	<ul style="list-style-type: none"> <li>• To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</li> <li>• To count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens.</li> <li>• To 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.</li> <li>• To read and write numbers from 1 to 20 in numerals and words.</li> </ul>
<b>2</b>	Place value and comparing quantities and numbers	<ul style="list-style-type: none"> <li>• When given a number, identify one more and one less.</li> <li>• To 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.</li> <li>• To read and write numbers from 1 to 20 in numerals and words.</li> </ul>
<b>3</b>	Developing mental strategies for addition	<ul style="list-style-type: none"> <li>• To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</li> <li>• To represent and use number bonds and related subtraction facts within 20.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>
<b>4</b>	Subtraction as difference	<ul style="list-style-type: none"> <li>• To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</li> <li>• To represent and use number bonds and related subtraction facts within 20.</li> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>
<b>5</b>	Measures	<ul style="list-style-type: none"> <li>• To compare, describe and solve practical problems for:               <ul style="list-style-type: none"> <li>• lengths and heights (long/short, longer/shorter, tall/short, double/half)</li> <li>• mass or weight (heavy/light, heavier than, lighter than)</li> <li>• capacity/volume (full/empty, more than, less than, quarter)</li> <li>• time (quicker, slower, earlier, later).</li> </ul> </li> <li>• To recognise and know the value of different denominations of coins and notes.</li> </ul>
<b>6</b>	Addition and subtraction using money	<ul style="list-style-type: none"> <li>• To read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.</li> <li>• To represent and use number bonds and related subtraction facts within 20.</li> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>

## Medium Term Plans: Spring 1

W	Topic	Curriculum objective
1	Counting, reading and writing number patterns	<ul style="list-style-type: none"> <li>• To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</li> <li>• To count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens.</li> <li>• When given a number, identify one more and one less.</li> <li>• To read and write numbers from 1 to 20 in numerals and words.</li> </ul>
2	Doubles and near doubles	<ul style="list-style-type: none"> <li>• To represent and use number bonds and related subtraction facts within 20.</li> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>
3	Grouping and sharing	<ul style="list-style-type: none"> <li>• To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</li> </ul>
4	Fractions	<ul style="list-style-type: none"> <li>• To recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li> </ul>
5	Measures, including time	<ul style="list-style-type: none"> <li>• To sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.</li> <li>• To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</li> <li>• To measure and begin to record the following:               <ul style="list-style-type: none"> <li>• lengths and heights</li> <li>• mass/weight</li> <li>• capacity and volume</li> <li>• time (hours, minutes, seconds).</li> </ul> </li> </ul>
6	Addition and subtraction to 15	<ul style="list-style-type: none"> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve one-step problems that involve addition and subtraction, using objects and pictorial representations, and missing number problems.</li> </ul>

## Medium Term Plans: Spring 2

W	Topic	Curriculum objective
1	Counting and place value	<ul style="list-style-type: none"> <li>• To count, read and write numbers to 100 in numerals, count in different multiples including ones, twos, fives and tens.</li> <li>• When given a number, identify one more and one less.</li> <li>• To 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.</li> </ul>
2	Addition and subtraction beyond totals of 10	<ul style="list-style-type: none"> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>
3	Grouping and sharing	<ul style="list-style-type: none"> <li>• To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</li> </ul>
4	Shape, position and movement	<ul style="list-style-type: none"> <li>• To recognise and name common 2D and 3D shapes, including:               <ul style="list-style-type: none"> <li>• 2D shapes (rectangles (including squares), circles and triangles)</li> <li>• 3D shapes (cuboids (including cubes), pyramids and spheres).</li> </ul> </li> <li>• To describe position, directions and movements, including half, quarter and three- quarter turns.</li> </ul>
5	Measuring and time	<ul style="list-style-type: none"> <li>• To compare, describe and solve practical problems for:               <ul style="list-style-type: none"> <li>• lengths and heights (long/short, longer/shorter, tall/short, double/half)</li> <li>• mass or weight (heavy/light, heavier than, lighter than)</li> <li>• capacity/volume (full/empty, more than, less than, quarter)</li> <li>• time (quicker, slower, earlier, later).</li> </ul> </li> <li>• To measure and begin to record the following:               <ul style="list-style-type: none"> <li>• lengths and heights</li> <li>• mass/weight</li> <li>• capacity and volume</li> <li>• time (hours, minutes, seconds).</li> </ul> </li> <li>• To sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening.</li> </ul>
6	Addition and subtraction totals to 10	<ul style="list-style-type: none"> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>

## Medium Term Plans: Summer 1

W	Topic	Curriculum objective
1	Addition to totals to 10	<ul style="list-style-type: none"> <li>• To count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</li> <li>• To count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens.</li> <li>• To 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.</li> <li>• To read and write numbers from 1 to 20 in numerals and words.</li> </ul>
2	Addition and subtraction to 20	<ul style="list-style-type: none"> <li>• To represent and use number bonds and related subtraction facts within 20.</li> <li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li> </ul>
3	Fractions	<ul style="list-style-type: none"> <li>• To recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li> <li>• To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>
4	Multiplication and division	<ul style="list-style-type: none"> <li>• To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</li> </ul>
5	Measuring	<ul style="list-style-type: none"> <li>• To measure and begin to record the following:               <ul style="list-style-type: none"> <li>• lengths and heights</li> <li>• mass/weight</li> <li>• capacity and volume</li> <li>• time (hours, minutes, seconds).</li> </ul> </li> </ul>
6	Moving and turning	<ul style="list-style-type: none"> <li>• To describe position, directions and movements, including half, quarter and three- quarter turns.</li> </ul>

## Medium Term Plans: Summer 2

W	Topic	Curriculum objective
1	Number and place value	<ul style="list-style-type: none"><li>• When given a number, identify one more and one less.</li><li>• To 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.</li></ul>
2	Addition and subtraction	<ul style="list-style-type: none"><li>• To add and subtract one-digit and two-digit numbers to 20, including zero.</li><li>• To solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems.</li></ul>
3	Fractions	<ul style="list-style-type: none"><li>• To recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li><li>• To recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li></ul>
4	Multiplication and division	<ul style="list-style-type: none"><li>• To solve one-step problems involving multiplication and division, calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.</li></ul>
5	Time and using standard units	<ul style="list-style-type: none"><li>• To measure and begin to record the following:<ul style="list-style-type: none"><li>• lengths and heights</li><li>• mass/weight</li><li>• capacity and volume</li><li>• time (hours, minutes, seconds).</li></ul></li><li>• To recognise and use language relating to dates, including days of the week, weeks, months and years.</li><li>• To tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</li></ul>
6	Addition to totals to 10	<ul style="list-style-type: none"><li>• To order and arrange combinations of objects and shapes in patterns.</li><li>• To recognise and name common 2D and 3D shapes, including:<ul style="list-style-type: none"><li>• 2D shapes (rectangles (including squares), circles and triangles)</li><li>• 3D shapes (cuboids (including cubes), pyramids and spheres).</li></ul></li></ul>