



**Mathematics Planning**  
**National Curriculum**  
**2022**

**Year 4**

### Key Principles:

The curriculum builds on prior learning with progression throughout the school. Consideration is given to the order in which knowledge is taught so that children can relate their learning to previous learning. There are key concepts that children must know by the end of year 6 – these are the ‘nuggets’ of learning in this subject (sticky knowledge, components). Recall opportunities relating to the key concepts are built into the planning regularly so that children retain these ‘nuggets’ so that they ‘know more, remember more and can do more’.

### How to Use the Medium Term Planning

This planning document is intended to provide planning support to meet all statutory requirements of the National Curriculum and to aid teachers in planning a progressive learning journey for children within Year 4.

### Overview Documents

This document starts with the mathematics skills and the coverage of each strand across the entire year of planning. Teachers and TAs can use this to plan mixed starters in order to pre-teach, consolidate learning or as revision, as well as guidance for day-to-day planning, assessment (linked to ScholarPack) and establishing how long until a topic will next be revisited or if additional lessons to achieve the skill are necessary.

Number, number and place value	Coverage					
	Aut1	Aut2	Sp1	Sp2	Sum1	Sum2
(4N1) Count in multiples of 6, 7, 9, 25 and 1000			W1	W2	W3	W4
(4N2) Order and compare numbers beyond 1,000	W1		W2		W3	W4
(4N3) Find 1,000 more or less than a given number	W1		W2		W3	W4
(4N4) Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	W1		W2		W3	W4
(4N5) Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value			W1		W2	W3
(4N6) Identify, represent and estimate numbers using different representations	W1		W2		W3	W4
(4N7) Round any number to the nearest 10, 100 or 1,000	W1		W2		W3	W4
(4N8) Count backwards through zero to include negative numbers	W1		W2		W3	W4
(4N9) Solve number and practical problems that involve 4N1 - 4N5 and with increasingly large positive numbers	W1		W2		W3	W4

  

Number - addition and subtraction (calculations)	Coverage					
	Aut1	Aut2	Sp1	Sp2	Sum1	Sum2
(4C1) Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	W1		W2		W3	W4
(4C2) Estimate and use inverse operations to check answers to a calculation	W1		W2		W3	W4
(4C3) Solve addition and subtraction two-step problems in contexts, deciding which operations and ...	W1		W2		W3	W4

Year 4 Mathematics Yearly Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Week 1</b>	Place value	Mental multiplication incl. 6x and 9x tables	Place value Roman numerals Counting incl. negative numbers	Mental multiplication and written division incl. 7x and 11x tables	Counting and sequences (statistics)	Place value
<b>Week 2</b>	Place value - decimals	Mental division	Fractions and decimals	Place value	Fractions and decimals (measures)	Statistics
<b>Week 3</b>	Written addition and subtraction	Written multiplication	Fractions, decimals and division	Written multiplication	Fractions and written division	Addition and subtraction (statistics)
<b>Week 4</b>	Written addition and subtraction (problems and inverse)	Length incl. perimeter	Position and direction	2D shape and position	Measures Volume/capacity and mass	Multiplication and division
<b>Week 5</b>	2D shape	Statistics	Area	Addition and subtraction (statistics)	Position and area	Shape
<b>Week 6</b>	Time	Assess and review week	Multiplication (statistics, measures, money)	Assess and review week	Multiplication facts incl. 12x table and time	Assess and review week

This is followed by an overview document. This identifies six half termly blocks of six weeks with focus areas of mathematics for each week. The units are designed to be cohesive and allow for application of learning and skills across the mathematics curriculum. The ‘assess and review’ weeks can be used to gain information for teacher assessments or can be used to pick up elements that need further support. It is not designed to be used as an entire week of testing with no teaching. This is a suggested layout and teachers should adapt to meet the needs of their class as required.

‘Ctrl’ and clicking on each week will take you to the associated Half Termly Planning, outlining the focus area for each week in more detail.

### Half Termly Planning Documents

The half termly planning documents have been compiled to the following principles:

- Each half term is predominantly learning about number.
- Almost all weeks are focused on one area of mathematics, giving children time to focus on a single area for a longer amount of time.
- The 'knowledge' explains the understanding the child will need to achieve the skills. This also explains why specific skills have been put together and how to enhance the teaching and learning during that week, e.g. number work is often given a context of data, measures, money or problem solving.
- The skills are the end of year expectations and it is the decision of teachers whether to visit the whole objective more than once throughout the year or to organise progression within each objective.
- Every skill is covered at least twice within the year.

### Adaptive teaching

At Brettenham, we help children develop their conceptual understanding of mathematics by using concrete objects, pictorial representations and abstract thinking, therefore if a child is struggling with a particular abstract concept, we adapt and take a step back to concrete or pictorial, providing them with resources to enable them to understand. As the objectives in the yearly plans are based on age related expectations, children who may struggle to reach the objectives independently will be provided with scaffolds to provide extra support. Scaffolding supports mathematical understanding by providing the necessary support in applying new information. These approaches help children achieve in lessons which they would not be able to on their own.

### Progression

The planning documents are followed by a table showing skill progression from Early Years to Year 6. This can be used to establish and build upon previous knowledge, see where children’s learning is heading and to also easily identify and fill any gaps in their knowledge.

Addition, subtraction, multiplication and division (calculations)						
Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5
C1 Add/ subtract mentally		1C1 Represent and use number bonds and related subtraction facts within 20	2C1a Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	3C1 Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds		5C1 Add and subtract numbers mentally with increasingly large numbers
			2C1b Add and subtract numbers mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers			
	40 – 60 months To find the total of items in	1C2a Add and subtract one-digit	2C2 Add and subtract numbers	3C2 Add and subtract numbers	4C2 Add and subtract numbers	5C2 Add and subtract whole

### National Curriculum Documentation

At the end of this document is the National Curriculum programme of study for Year 4. This contains the skills for Year 4 along with the non-statutory guidance to help with interpretation.

# Yearly skills and coverage for Year 4 Mathematics

With links to the Content Domain

Number - number and place value	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(4N1) Count in multiples of 6, 7, 9, 25 and 1000			W1	W3	W1	
(4N2a) Order and compare numbers beyond 1,000	W1			W2		W1
(4N2b) Find 1,000 more or less than a given number	W1			W2		
(4N3a) Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)	W1			W2		W1
(4N3b) Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value			W1			
(4N4a) Identify, represent and estimate numbers using different representations	W1			W2		W1
(4N4b) Round any number to the nearest 10, 100 or 1,000	W1			W2		W1
(4N5) Count backwards through zero to include negative numbers			W1		W1	
(4N6) Solve number and practical problems that involve 4N1 - 4N5 and with increasingly large positive numbers	W1			W2		W1
Number - addition and subtraction (calculations)	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(4C2) Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	W3 W4		W6	W5		W3
(4C3) Estimate and use inverse operations to check answers to a calculation	W3 W4		W6			W3
(4C4) Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	W4		W6			W3
Number - multiplication and division (calculations)	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(4C6a) Recall multiplication and division facts for multiplication tables up to $12 \times 12$		W1 W2		W1	W6	
(4C6b) Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers		W1 W2		W1		W4
(4C6c) Recognise and use factor pairs and commutativity in mental calculations		W1		W1		W4
(4C7) Multiply two-digit and three-digit numbers by a one-digit number using formal written layout		W3		W3		W4
(4C8) Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects		W3		W3		W4
Number - fractions	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(4F1) Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	W2				W1	
(4F2) Recognise and show, using diagrams, families of common equivalent fractions			W2			
(4F4) Add and subtract fractions with the same denominator			W2			
(4F6a) Recognise and write decimal equivalents to $\frac{1}{4}$ , $\frac{1}{2}$ , $\frac{3}{4}$			W2		W2	
(4F6b) Recognise and write decimal equivalents of any number of tenths or hundredths			W2		W2	
(4F7) Round decimals with one decimal place to the nearest whole number			W2		W2	
(4F8) Compare numbers with the same number of decimal places up to two decimal places			W2		W2	
(4F9) Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths			W2		W2	
(4F10a) 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			W3			W3
(4F10b) Solve simple measure and money problems involving fractions and decimals to two decimal places			W3		W2	
Measurement	Coverage					
	Aut1	Aut2	Spr1	Spr2	Sum1	Sum2
(4M1) Compare different measures, including money in pounds and pence		W4			W4	
(4M2) Estimate different measures, including money in pounds and pence		W4			W4	
(4M4a) Read, write and convert time between analogue and digital 12-hour clocks	W6				W6	
(4M4b) Read, write and convert time between analogue and digital 24-hour clocks	W6				W6	
(4M4c) Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	W6				W6	
(4M5) Convert between different units of measure [for example, kilometre to metre; hour to minute]		W4			W2	
(4M7a) Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres		W4			W4	
(4M7b) Find the area of rectilinear shapes by counting squares			W5		W5	
(4M9) Calculate different measures, including money in pounds and pence		W4			W4	

<u>Geometry - properties of shapes</u>	<b>Coverage</b>					
	<u>Aut1</u>	<u>Aut2</u>	<u>Spr1</u>	<u>Spr2</u>	<u>Sum1</u>	<u>Sum2</u>
(4G2a) Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	W5			W4		W5
(4G2b) Identify lines of symmetry in 2-D shapes presented in different orientations	W5			W4		W5
(4G2c) Complete a simple symmetric figure with respect to a specific line of symmetry			W4		W5	W5
(4G4) Identify acute and obtuse angles and compare and order angles up to two right angles by size	W5			W4		W5
<u>Geometry – position and direction</u>	<b>Coverage</b>					
<u>Aut1</u>	<u>Aut2</u>	<u>Spr1</u>	<u>Spr2</u>	<u>Sum1</u>	<u>Sum2</u>	
(4P2) Describe movements between positions as translations of a given unit to the left/right and up/down			W4		W5	
(4P3a) Describe positions on a 2-D grid as coordinates in the first quadrant			W4	W4	W5	
(4P3b) Plot specified points and draw sides to complete a given polygon			W4	W4	W5	
<u>Statistics</u>	<b>Coverage</b>					
<u>Aut1</u>	<u>Aut2</u>	<u>Spr1</u>	<u>Spr2</u>	<u>Sum1</u>	<u>Sum2</u>	
(4S1) Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs		W5		W5		W2
(4S2) Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs		W5		W5		W2 W3

## Year 4 Mathematics Yearly Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Week 1	<a href="#">Place value</a>	<a href="#">Mental multiplication incl. 6x and 9x tables</a>	<a href="#">Place value</a> <a href="#">Roman numerals</a> <a href="#">Counting incl. negative numbers</a>	<a href="#">Mental multiplication and written division incl. 7x and 11x tables</a>	<a href="#">Counting and sequences (statistics)</a>	<a href="#">Place value</a>
Week 2	<a href="#">Place value - decimals</a>	<a href="#">Mental division</a>	<a href="#">Fractions and decimals</a>	<a href="#">Place value</a>	<a href="#">Fractions and decimals (measures)</a>	<a href="#">Statistics</a>
Week 3	<a href="#">Written addition and subtraction</a>	<a href="#">Written multiplication</a>	<a href="#">Fractions, decimals and division</a>	<a href="#">Written multiplication</a>	<a href="#">Fractions and written division</a>	<a href="#">Addition and subtraction (statistics)</a>
Week 4	<a href="#">Written addition and subtraction (problems and inverse)</a>	<a href="#">Length incl. perimeter</a>	<a href="#">Position and direction</a>	<a href="#">2D shape and position</a>	<a href="#">Measures Volume/capacity and mass</a>	<a href="#">Multiplication and division</a>
Week 5	<a href="#">2D shape</a>	<a href="#">Statistics</a>	<a href="#">Area</a>	<a href="#">Addition and subtraction (statistics)</a>	<a href="#">Position and area</a>	<a href="#">Shape</a>
Week 6	<a href="#">Time</a>	<a href="#">Assess and review week</a>	<a href="#">Multiplication (statistics, measures, money)</a>	<a href="#">Assess and review week</a>	<a href="#">Multiplication facts incl. 12x table and time</a>	<a href="#">Assess and review week</a>



## Year 4 Autumn 2

	Links to domain & progression	Skills	Knowledge
<b>Week 1</b> <i>Mental multiplication</i>	<a href="#">4C6a</a> <a href="#">4C6b</a> <a href="#">4C6c</a>	<ul style="list-style-type: none"> <li>Recall multiplication and division facts for the 6 times table and 9 times table.</li> <li>Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers.</li> <li>Recognise and use factor pairs and commutativity in mental calculations.</li> <li>Use partitioning to double or halve any number, including decimals to one decimal place.</li> <li>Select a mental strategy appropriate for the numbers involved in the calculation.</li> </ul>	<p>Children use their knowledge of the 3 times table to derive the 6 times table. When learning multiplication tables, children should experience a blend of practical, visual activities, pattern spotting, generalising as well as rote learning.</p> <p>Children learn that the commutative law applies to multiplication (but not division) i.e. <math>5 \times 3 = 3 \times 5</math>, and that factor pairs can support mental calculation e.g. to multiply by 6 it is possible to multiply by 2 and then by 3 as these are factor pairs for 6.</p> <p>Mental calculation is supported by practical equipment, pictures and jottings. When calculating, children should learn which methods suit the numbers involved and why.</p>
<b>Week 2</b> <i>Mental division</i>	<a href="#">4C6a</a> <a href="#">4C6b</a>	<ul style="list-style-type: none"> <li>Partition numbers in different ways (for example, <math>2.3 = 2 + 0.3</math> and <math>2.3 = 1 + 1.3</math>).</li> <li>Recall multiplication and division facts for the 6 times table and 9 times table.</li> <li>Use place value, known and derived facts to divide mentally, including dividing by 1.</li> <li>Select a mental strategy appropriate for the numbers involved in the calculation.</li> </ul>	<p>In preparation for mental division, children partition numbers in different ways to recognise multiples of the divisor when the dividend is partitioned e.g. when considering <math>96 \div 4</math> it is useful to think of 96 as <math>80 + 16</math> (both multiples of 4) rather than <math>90 + 6</math> (neither are multiples of 4).</p> <p>Children continue to develop their knowledge and confidence of the 6 and 9 times tables, including identifying rules of divisibility for multiples of 9 (digit sum is 9 when taken to a single digit).</p> <p>Mental calculation is supported by practical equipment, pictures and jottings. When calculating, children should learn which methods suit the numbers involved and why.</p>
<b>Week 3</b> <i>Written multiplication</i>	<a href="#">4C7</a> <a href="#">4C8</a>	<ul style="list-style-type: none"> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</li> <li>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</li> <li>Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, division (including remainders), integer scaling problems and harder correspondence problems such as which n objects are connected to m objects.</li> </ul>	<p>Children build on their understanding of place value and multiplication facts to develop a written method for multiplication.</p> <p>Correspondence problems in which n objects are connected to m objects include a team sports kit with a shirt, shorts and socks and three possible colours for each. How many different combinations could there be?</p> <p>When calculating, children should learn which methods suit the numbers involved and why.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 4</b> <i>Measures, length including perimeter</i>	<a href="#">4M1</a> <a href="#">4M2</a> <a href="#">4M9</a> <a href="#">4M7a</a> <a href="#">4M5</a>	<ul style="list-style-type: none"> <li>Estimate, compare and calculate different lengths.</li> <li>Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.</li> <li>Convert between different units of measure (e.g. kilometre to metre; hour to minute).</li> </ul>	<p>Children develop their estimating and measuring skills in the context of length. They relate length to distance including perimeter. The measures made could be used in the next unit as the context for handling data. Children relate their knowledge of multiplying and dividing by 10 and 100 to converting between different units of length.</p>
<b>Week 5</b> <i>Statistics</i>	<a href="#">4S1</a> <a href="#">4S2</a>	<ul style="list-style-type: none"> <li>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</li> <li>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</li> </ul>	<p>Children use the measures from the previous week to present and interpret in different forms. Children learn the difference between discrete and continuous data.</p> <p>Children apply their knowledge of mental and written calculations when answering questions about the data.</p>
<b>Week 6</b>		Assess and review week	It is useful at regular intervals for teachers to consider the learning that has taken place over a term (or half term), assess and review children's understanding of the learning and use this to inform where the children need to go next.

## Year 4 Spring 1

	Links to domain & progression	Skills	Knowledge
<b>Week 1</b> Place value, counting, including negative numbers	<a href="#">4N3b</a>  <a href="#">4N1</a> <a href="#">4N5</a>	<ul style="list-style-type: none"> <li>• Read Roman numerals to 100 (I to C) and know that, over time, the numeral system changed to include the concept of zero and place value.</li> <li>• Count in multiples of 6, 8, 25 and 1000.</li> <li>• Count backwards through zero to include negative numbers.</li> <li>• Order temperatures including those below 0°C.</li> <li>• Describe and extend number sequences involving counting on or back in different steps, including sequences with multiplication and division steps.</li> </ul>	<p>Children learn about an alternative number system (Roman numerals) and relate this to our Base 10 system, appreciating the efficiency of place value and the concept of zero, including its use as a place holder.</p> <p>Children's understanding of the number system is extended to include negative numbers. It is useful to introduce these in ways children can easily identify, such as floors below ground level in a building or steps into a swimming pool some above and some below the surface of the water. This understanding can then be applied to more abstract concepts such as temperature.</p>
<b>Week 2</b> Fractions	<a href="#">4F4</a> <a href="#">4F2</a>  <a href="#">4F6b</a> <a href="#">4F6a</a>	<ul style="list-style-type: none"> <li>• Understand that a fraction is one whole number divided by another (for example, <math>\frac{3}{4}</math> can be interpreted as <math>3 \div 4</math>).</li> <li>• Add and subtract fractions with the same denominator.</li> <li>• Recognise and show, using diagrams, families of common equivalent fractions.</li> <li>• Recognise and write decimal equivalents of any number of tenths or hundredths.</li> <li>• Recognise and write decimal equivalents to <math>\frac{1}{4}</math>; <math>\frac{1}{2}</math>; <math>\frac{3}{4}</math>.</li> <li>• Count on and back in steps of unit fractions.</li> <li>• Compare and order unit fractions and fractions with the same denominator (including on a number line). (Year 3 objective)</li> </ul>	<p>The learning of fractions is an extension in understanding of the number system. Equivalent fractions should be learned through practical experiences and using pictorial representations.</p> <p>Children should use factors and multiples to recognise equivalent fractions and simplify where appropriate.</p> <p>Children learn that to convert a fraction into a decimal, an equivalent fraction with a denominator of 10 or 100 is required.</p> <p>Children relate the fractions tenths and hundredths to our Base 10 number system.</p>
<b>Week 3</b> Fractions and written and mental division	<a href="#">4F10a</a>  <a href="#">4F10b</a>	<ul style="list-style-type: none"> <li>• Recognise, find and write fractions of a discrete set of objects including those with a range of numerators and denominators.</li> <li>• Select a mental strategy appropriate for the numbers involved in the calculation.</li> <li>• Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>• 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.</li> <li>• Solve simple measure and money problems involving fractions and decimals to two decimal places.</li> </ul>	<p>Children build on their understanding of fractions of shapes, using these shapes when sharing items into equal groups. The link between finding fractions of amounts and division is made.</p> <p>When children are calculating fractions of amounts, this should be in a context e.g. length, money, time to consolidate previous learning. Children should learn that finding fractions is division by sharing and the activities should reflect this. Later, children should learn that grouping is a more efficient method of performing written division, even in contexts of sharing.</p> <p>When calculating, children should learn which methods suit the numbers involved and why.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 4</b> Position and direction	<a href="#">4P3a</a> <a href="#">4P2</a> <a href="#">4P3b</a> <a href="#">4G2c</a>	<ul style="list-style-type: none"> <li>• Describe positions on a 2-D grid as coordinates in the first quadrant.</li> <li>• Describe movements between positions as translations of a given unit to the left/right and up/down.</li> <li>• Plot specified points and draw sides to complete a given polygon.</li> <li>• Complete a simple symmetric figure with respect to a specific line of symmetry.</li> </ul>	<p>Children are introduced to coordinate grids and apply their knowledge of 2-D shapes when completing partly drawn polygons.</p> <p>Translations are introduced and children's learning of symmetry is extended from identifying lines of symmetry in shapes to completing symmetric figures using a specific line of symmetry. This could be vertical, horizontal or oblique, depending on children's ability.</p>
<b>Week 5</b> Area, counting in equal steps	<a href="#">4M7b</a>	<ul style="list-style-type: none"> <li>• Understand that area is a measure of surface within a given boundary.</li> <li>• Find the area of rectilinear shapes by counting squares.</li> </ul>	<p>Children are introduced to area as a measure of surface within a given boundary. They count the number of squares within rectilinear shapes, utilising their skills of counting in equal steps.</p> <p>NB –rectilinear shapes are ones made up of sides meeting at right angles.</p> <p>Children should relate area to arrays and multiplication.</p>
<b>Week 6</b> Written addition and subtraction in contexts of money and measures.	<a href="#">4C2</a>  <a href="#">4C3</a> <a href="#">4C4</a>	<ul style="list-style-type: none"> <li>• Add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate.</li> <li>• Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</li> <li>• Estimate and use inverse operations to check answers to a calculation.</li> <li>• Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>	<p>Children develop and rehearse the processes involved in written addition and subtraction. Practical and visual resources may be used to support understanding of these processes.</p> <p>Calculations are presented in different contexts of money and measures to consolidate these areas and support children in understanding when to use their calculation skills.</p> <p>When calculating, children should learn which methods suit the numbers involved and why.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>



Year 4 Spring 2			
	Links to domain & progression	Skills	Knowledge
<b>Week 1</b> <i>Multiplication facts, mental multiplication and written division</i>	<a href="#">4C6a</a> <a href="#">4C6b</a>  <a href="#">4C6c</a>	<ul style="list-style-type: none"> <li>Recall multiplication and division facts for the 7 times table and 11 times table.</li> <li>Use place value, known and derived facts to multiply and divide mentally, including:               <ul style="list-style-type: none"> <li>- multiplying by 0 and 1;</li> <li>- dividing by 1;</li> <li>- multiplying together three numbers.</li> </ul> </li> <li>Recognise and use factor pairs and commutativity in mental calculations.</li> <li>Use <i>partitioning to double or halve any number, including decimals to one decimal place.</i></li> <li>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</li> <li>Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>Select a mental strategy appropriate for the numbers involved in the calculation.</li> <li>Continue to understand division as sharing and grouping and use each appropriately.</li> <li>Divide numbers up to 3 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.</li> </ul>	<p>When learning multiplication tables, children should experience a blend of practical, visual activities, pattern spotting, generalising as well as rote learning. Children should apply their learning of the 7 and 11 times tables when calculating mentally. When calculating, children should learn which methods suit the numbers involved and why.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 2</b> <i>Place value</i>	<a href="#">4N3a</a> <a href="#">4N2a</a> <a href="#">4N4a</a>  <a href="#">4N2b</a> <a href="#">4N4b</a> <a href="#">4N6</a>	<ul style="list-style-type: none"> <li>Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones).</li> <li>Order and compare numbers beyond 1000.</li> <li>Identify, represent and estimate numbers using different representations, including the number line.</li> <li>Identify the value of each digit to two decimal places.</li> <li>Find 0.1, 1, 10, 100 or 1000 more or less than a given number.</li> <li>Round any number to the nearest 10, 100 or 1000.</li> <li>Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</li> </ul>	<p>Children develop their understanding of the size of numbers, and use a variety of models and images (such as Base 10 equipment, bundles of straws, arrow cards, number lines) to compare, order, round and estimate numbers. Many of these place value objectives can be applied through the context of data, realising that the one axis on a bar chart is a number line.</p>
<b>Week 3</b> <i>Written multiplication</i>	<a href="#">4N1</a> <a href="#">4C7</a>  <a href="#">4C8</a>	<ul style="list-style-type: none"> <li>Count in multiples of 7.</li> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</li> <li>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</li> <li>Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, division (including remainders), integer scaling problems and harder correspondence problems such as which n objects are connected to m objects.</li> </ul>	<p>Children develop and rehearse the processes involved in written multiplication. Practical and visual resources may be used to support understanding of these processes. Calculations are presented in different contexts to support children in understanding when to use their calculation skills. Converting between weeks and days allows children to rehearse their 7 times table knowledge. When calculating, children should learn which methods suit the numbers involved and why.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 4</b> <i>Shape and position</i>	<a href="#">4G2a</a>  <a href="#">4G4</a> <a href="#">4G2b</a> <a href="#">4P3a</a> <a href="#">4P3b</a>	<ul style="list-style-type: none"> <li>Use a variety of sorting diagrams to compare and classify numbers and geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</li> <li>Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</li> <li>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</li> <li>Identify lines of symmetry in 2-D shapes presented in different orientations.</li> <li>Describe positions on a 2-D grid as coordinates in the first quadrant.</li> <li>Plot specified points and draw sides to complete a given polygon.</li> </ul>	<p>Children apply their developing understanding of the properties of shapes to classify and name them. The terms regular and irregular should be used to describe shapes that have equal sides and angles and those that do not. They draw 2-D shapes on coordinate grids, combining their knowledge of properties of shapes and coordinate principles.</p>
<b>Week 5</b> <i>Calculations in the context of statistics</i>	<a href="#">4C2</a>  <a href="#">4S1</a> <a href="#">4S2</a>	<ul style="list-style-type: none"> <li>Add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate.</li> <li>Interpret discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</li> <li>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</li> </ul>	<p>Children develop and rehearse the processes involved in written addition and subtraction. Practical and visual resources may be used to support understanding of these processes. Calculations are presented in different contexts of data.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 6</b>		Assess and review week.	It is useful at regular intervals for teachers to consider the learning that has taken place over a term (or half term), assess and review children's understanding of the learning and use this to inform where the children need to go next.



## Year 4 Summer 2

	Links to domain & progression	Skills	Knowledge
<b>Week 1</b> Place value	<a href="#">4N3a</a> <a href="#">4N2a</a> <a href="#">4N4a</a> <a href="#">4N4b</a> <a href="#">4N6</a>	<ul style="list-style-type: none"> <li>Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones).</li> <li>Order and compare numbers beyond 1000.</li> <li>Identify, represent and estimate numbers using different representations, including the number line.</li> <li>Round any number to the nearest 10, 100 or 1000.</li> <li>Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</li> </ul>	<p>Understanding of the number system is necessary pre-requisite knowledge for any number work.</p> <p>Children should understand the Base 10 notion in which there are 10 numerals (0-9) and these can be organised in different ways to form any number. This is based on grouping in tens i.e. ten 1s are the same as one 10; ten 10s are the same as one 100; ten 100s are the same as one 1000 and so on. And vice versa.</p>
<b>Week 2</b> Statistics	<a href="#">4S1</a> <a href="#">4S2</a>	<ul style="list-style-type: none"> <li>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</li> <li>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</li> </ul>	<p>Children understand the difference between discrete and continuous data.</p> <p>Children apply their knowledge of mental and written calculations when answering questions about the data. They should discuss the value of presenting information in tables, pictograms, bar charts and line graphs and evaluate the effectiveness of each type of presentation.</p>
<b>Week 3</b> Addition and subtraction in context of statistics	<a href="#">4C2</a> <a href="#">4C3</a> <a href="#">4C4</a> <a href="#">4S2</a>	<ul style="list-style-type: none"> <li>Add and subtract numbers with up to 4 digits and decimals with one decimal place using the efficient written methods of columnar addition and subtraction where appropriate.</li> <li>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</li> <li>Select a mental strategy appropriate for the numbers involved in the calculation.</li> <li>Estimate and use inverse operations to check answers to a calculation.</li> <li>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</li> <li>Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.</li> </ul>	<p>Children should secure their knowledge and understanding of mental and written calculation skills in a variety of contexts. The learning should include decision making around which method is most efficient (mental or written) given the numbers involved.</p> <p>The context of data allows children to experience interpreting all the forms of data mentioned across the previous week and this week.</p> <p>When calculating, children should learn which methods suit the numbers involved and why.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 4</b> Mental and written multiplication and mental division.	<a href="#">4C6b</a> <a href="#">4C6c</a> <a href="#">4C7</a> <a href="#">4C8</a>	<ul style="list-style-type: none"> <li>Partition numbers in different ways (for example, <math>2.3 = 2 + 0.3</math> and <math>2.3 = 1 + 1.3</math>).</li> <li>Use place value, known and derived facts to multiply and divide mentally, including: <ul style="list-style-type: none"> <li>- multiplying by 0 and 1;</li> <li>- dividing by 1;</li> <li>- multiplying together three numbers.</li> </ul> </li> <li>Recognise and use factor pairs and commutativity in mental calculations.</li> <li>Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).</li> <li>Select a mental strategy appropriate for the numbers involved in the calculation.</li> <li>Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.</li> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</li> <li>Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, division (including remainders), integer scaling problems and harder correspondence problems such as which n objects are connected to m objects.</li> </ul>	<p>In preparation for mental division, children partition numbers in different ways to recognise multiples of the divisor when the dividend is partitioned e.g. when considering <math>96 \div 4</math> it is useful to think of 96 as <math>80 + 16</math> (both multiples of 4) rather than <math>90 + 6</math> (neither are multiples of 4).</p> <p>Children experience mental and written calculations in a variety of contexts, including money and measures.</p> <p>When calculating, children should learn which methods suit the numbers involved and why.</p> <p>Written methods should be agreed by the school and shared in the progression in written calculations policy. Efficient written methods are required to be taught by the end of Key Stage 2.</p>
<b>Week 5</b> Shape	<a href="#">4G2a</a> <a href="#">4G4</a> <a href="#">4G2b</a> <a href="#">4G2c</a>	<ul style="list-style-type: none"> <li>Use a variety of sorting diagrams to compare and classify numbers and geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.</li> <li>Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines.</li> <li>Identify acute and obtuse angles and compare and order angles up to two right angles by size.</li> <li>Identify lines of symmetry in 2-D shapes presented in different orientations.</li> <li>Complete a simple symmetric figure with respect to a specific line of symmetry.</li> </ul>	<p>Children apply their developing understanding of the properties of shapes to classify and name them.</p> <p>The terms regular and irregular should be used to describe shapes that have equal sides and angles and those that do not.</p> <p>The learning of symmetry develops further to include symmetry in vertical, horizontal and oblique lines.</p>
<b>Week 6</b>		Assess and review week	It is useful at regular intervals for teachers to consider the learning that has taken place over a term (or half term), assess and review children's understanding of the learning and use this to inform where the children need to go next.

## Whole School Domain Progression

### Number and place value; approximation and estimation / rounding (KS2)

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
<b>N1</b> Counting (in multiples)	<u>Nursery Outcomes</u> Recite numbers past 5. Say one number name for each item from 1-5. Know that the last number reached when counting a set of objects tells you how many there is in total.  <u>Reception Outcomes (ELG)</u> Verbally count beyond 20, recognising the pattern of the counting system.	<b>1N1a</b> Count to and across 100, forward and backwards, beginning with 0 or 1, or from any given number	<b>2N1</b> Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward		<b>4N1</b> Count in multiples of 6, 7, 9, 25 and 1000	<b>5N1</b> Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
		<b>1N1b</b> Count in multiples of twos, fives and tens		<b>3N1b</b> Count from 0 in multiples of 4, 8, 50 and 100			
<b>N2</b> Read, write, order and compare numbers	<u>Nursery Outcomes</u> Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. Experiment with their own symbols and marks as well as numerals.  <u>Reception Outcome</u> Link the number symbol (numeral) with its cardinal number value. (1-10)	<b>1N2a</b> Count, read and write numbers to 100 in numerals	<b>2N2a</b> Read and write numbers to at least 100 in numerals and in words	<b>3N2a</b> Compare and order numbers up to 1000 Read and write numbers to 1000 in numerals and in words	<b>4N2a</b> Order and compare numbers beyond 1000	<b>5N2</b> Read, write, order and compare numbers to at least 1 000 000	<b>6N2</b> Read, write, order and compare numbers up to 10 000 000
	<u>Nursery Outcomes</u> Compare quantities saying 'lots' 'more' and 'same'.  <u>Reception Outcomes (ELG)</u> Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.	<b>1N2b</b> Given a number, identify one more and one less	<b>2N2b</b> Compare and order numbers from 0 up to 100; use <, > and = signs	<b>3N2b</b> Find 10 or 100 more or less than a given number	<b>4N2b</b> Find 1000 more or less than a given number		
		<b>1N2c</b> Read and write numbers from 1 to 20 in numerals and words					
<b>N3</b> Place value; Roman numerals			<b>2N3</b> Recognise the place value of each digit in a two-digit number (tens, ones)	<b>3N3</b> Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	<b>4N3a</b> Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens and ones)	<b>5N3a</b> Determine the value of each digit in numbers up to 1 000 000	<b>6N3</b> Determine the value of each digit in numbers up to 10 000 000
					<b>4N3b</b> Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the	<b>5N3b</b> Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	

					concept of zero and place value		
<b>N4</b> Identify, represent and estimate; rounding	<u>Nursery Outcomes</u> Show 'finger numbers' up to 5. Subitise up to 3 objects. Link numerals and amounts: for example, showing the right number of objects up to 5.	<b>1N4</b> 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	<b>2N4</b> Identify, represent and estimate numbers using different representations, including the number line	<b>3N4</b> Identify, represent and estimate numbers using different representations	<b>4N4a</b> Identify, represent and estimate numbers using different representations	<b>5N4</b> Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	<b>6N4</b> Round any whole number to a required degree of accuracy
	<u>Reception Outcome (ELG)</u> Link numeral with cardinal number value (1-10) Subitise (recognise quantities without counting) up to 5				<b>4N4b</b> Round any number to the nearest 10, 100 or 1000		
<b>N5</b> Negative numbers					<b>4N5</b> Count backwards through zero to include negative numbers	<b>5N5</b> Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	<b>6N5</b> Use negative numbers in context, and calculate intervals across zero
<b>N6</b> Number problems			<b>2N6</b> Use place value and number facts to solve problems	<b>3N6</b> Solve number problems and practical problems involving <b>3N1–3N5</b>	<b>4N6</b> Solve number and practical problems that involve <b>4N1–4N5</b> and with increasingly large positive numbers	<b>5N6</b> Solve number problems and practical problems that involve <b>5N1–5N5</b>	<b>6N6</b> Solve number problems and practical problems that involve <b>6N2–6N5</b>

### Addition, subtraction, multiplication and division (calculations)

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
<b>C1</b> Add / subtract mentally	<u>Reception Outcome (ELG)</u> Automatically recall number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	<b>1C1</b> Represent and use number bonds and related subtraction facts within 20	<b>2C1a</b> Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	<b>3C1</b> Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds		<b>5C1</b> Add and subtract numbers mentally with increasingly large numbers	
			<b>2C1b</b> Add and subtract numbers mentally, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers				
		<b>1C2a</b>	<b>2C2</b>	<b>3C2</b>	<b>4C2</b>	<b>5C2</b>	

<b>C2</b> Add / subtract using written methods		Add and subtract one-digit and two-digit numbers to 20, including zero	Add and subtract numbers using concrete objects and pictorial representations, including: - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
		<b>1C2b</b> Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs					
<b>C3</b> Estimate, use inverses and check			<b>2C3</b> To recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems	<b>3C3</b> Estimate the answer to a calculation and use inverse operations to check answers	<b>4C3</b> Estimate and use inverse operations to check answers to a calculation	<b>5C3</b> Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	<b>6C3</b> Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
<b>C4</b> Add/subtract to solve problems		<b>1C4</b> Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	<b>2C4</b> Solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods	<b>3C4</b> Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	<b>4C4</b> Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	<b>5C4</b> Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	<b>6C4</b> Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
<b>C5</b> Properties of number (multiples, factors, primes, squares and cubes)						<b>5C5a</b> Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers	<b>6C5</b> Identify common factors, common multiples and prime numbers
						<b>5C5b</b> Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	
						<b>5C5c</b> Establish whether a number up to 100 is prime and recall prime numbers up to 19	
						<b>5C5d</b> Recognise and use square numbers and cube numbers, and the notation for squared ( <sup>2</sup> ) and cubed ( <sup>3</sup> )	
<b>C6</b>			<b>2C6</b> Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables,	<b>3C6</b> Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	<b>4C6a</b> Recall multiplication and division facts for multiplication tables up to $12 \times 12$	<b>5C6a</b> Multiply and divide numbers mentally drawing upon known facts	<b>6C6</b> Perform mental calculations, including with mixed operations and large numbers

Multiply / divide mentally			including recognising odd and even numbers				
					<b>4C6b</b> Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	<b>5C6b</b> Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	
					<b>4C6c</b> Recognise and use factor pairs and commutativity in mental calculations		
<b>C7</b> Multiply / divide using written methods			<b>2C7</b> Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs	<b>3C7</b> Write and calculate mathematical statements for multiplication and division using the multiplication tables that children know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	<b>4C7</b> Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	<b>5C7a</b> Multiply numbers up to 4 digits by a one-or two-digit number using a formal written method, including long multiplication for two-digit numbers	<b>6C7a</b> Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
						<b>5C7b</b> Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	<b>6C7b</b> Divide numbers up to 4 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
							<b>6C7c</b> Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
<b>C8</b> Solve problems (commutative, associative, distributive and all four operations)	<b>Nursery Outcomes</b> Solve some real-world mathematical problems with numbers up to 5, <b>Reception Outcomes (ELG)</b> Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.	<b>1C8</b> 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	<b>2C8</b> Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	<b>3C8</b> Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects	<b>4C8</b> Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	<b>5C8a</b> Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	<b>6C8</b> Solve problems involving addition, subtraction, multiplication and division
						<b>5C8b</b>	

						Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	
						<b>5C8c</b> Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates	
<b>C9</b> Order of operations			<b>2C9a</b> Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				<b>6C9</b> Use their knowledge of the order of operations to carry out calculations involving the four operations
			<b>2C9b</b> Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot				

### Fractions, decimals and percentages

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
<b>F1</b> Recognise, find, write, name and count fractions	<b>Reception Outcomes</b> Halving and sharing objects practically.	<b>1F1a</b> Recognise, find and name a half as one of two equal parts of an object, shape or quantity	<b>2F1a</b> Recognise, find, name and write fractions $\frac{1}{3}$ , $\frac{1}{4}$ , $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity	<b>3F1a</b> Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	<b>4F1</b> Count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten		
		<b>1F1b</b> Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	<b>2F1b</b> Write simple fractions [e.g.: $\frac{1}{2}$ of 6 = 3]	<b>3F1b</b> Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators			
				<b>3F1c</b> Recognise and use fractions as numbers:			



				unit fractions and non-unit fractions with small denominators			
<b>F2</b> Equivalent fractions			<b>2F2</b> Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	<b>3F2</b> Recognise and show, using diagrams, equivalent fractions with small denominators	<b>4F2</b> Recognise and show, using diagrams, families of common equivalent fractions	<b>5F2a</b> Recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements $>1$ as a mixed number [e.g.: $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1 \frac{1}{5}$ ]	<b>6F2</b> Use common factors to simplify fractions; use common multiples to express fractions in the same denomination
						<b>5F2b</b> Identify name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	
<b>F3</b> Comparing and ordering fractions				<b>3F3</b> Compare and order unit fractions and fractions with the same denominators		<b>5F3</b> Compare and order fractions whose denominators are all multiples of the same number	<b>6F3</b> Compare and order fractions, including fractions $>1$
<b>F4</b> Add / subtract fractions				<b>3F4</b> Add and subtract fractions with the same denominator within one whole [e.g.: $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$ ]	<b>4F4</b> Add and subtract fractions with the same denominator	<b>5F4</b> Add and subtract fractions with the same denominator and denominators that are multiples of the same number	<b>6F4</b> Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
<b>F5</b> Multiply / divide fractions						<b>5F5</b> Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	<b>6F5a</b> Multiply simple pairs of proper fractions, writing the answer in its simplest form [e.g.: $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ ]
							<b>6F5b</b> Divide proper fractions by whole numbers [e.g.: $\frac{1}{3} \div 2 = \frac{1}{6}$ ]
<b>F6</b> Fractions / decimals equivalence					<b>4F6a</b> Recognise and write decimal equivalents to $\frac{1}{4}$ , $\frac{1}{2}$ , $\frac{3}{4}$	<b>5F6a</b> Read and write decimal numbers as fractions [e.g.: $0.71 = \frac{71}{100}$ ]	<b>6F6</b> Associate a fraction with division to calculate decimal fraction equivalents (e.g.: 0.375) for a simple fraction [e.g.: $\frac{3}{8}$ ]
					<b>4F6b</b> Recognise and write decimal equivalents of any number of tenths or hundredths	<b>5F6b</b> Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	
<b>F7</b> Rounding decimals [KS2]					<b>4F7</b> Round decimals with one decimal place to the nearest whole number	<b>5F7</b> Round decimals with two decimal places to the nearest whole number and to one decimal place	

<b>F8</b> Compare and order decimals					<b>4F8</b> Compare numbers with the same number of decimal places up to two decimal places	<b>5F8</b> Read, write, order and compare numbers with up to three decimal places	
<b>F9</b> Multiply / divide decimals					<b>4F9</b> Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths		<b>6F9a</b> Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
							<b>6F9b</b> Multiply one-digit numbers with up to two decimal places by whole numbers
							<b>6F9c</b> Use written division methods in cases where the answer has up to two decimal places
<b>F10</b> Solve problems with fractions and decimals				<b>3F10</b> Solve problems that involve 3F1–3F4	<b>4F10a</b> 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	<b>5F10</b> Solve problems involving numbers up to three decimal places	<b>6F10</b> Solve problems which require answers to be rounded to specified degrees of accuracy
					<b>4F10b</b> Solve simple measure and money problems involving fractions and decimals to two decimal places		
<b>F11</b> Fractions / decimal / percentage equivalence						<b>5F11</b> Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'; write percentages as a fraction with denominator hundred, and as a decimal	<b>6F11</b> Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
<b>F12</b> Solve problems with percentages						<b>5F12</b> 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	

### Ratio and proportion

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
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Enumerate all possibilities of combinations of							Enumerate possibilities of combinations of two variables
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## Measurement

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
<b>M1</b> Compare, describe and order measures	<u>Reception Outcomes</u> Make comparisons between 2 objects relating to their size, length, weight and capacity.  <u>Reception Outcomes</u> Compare length, weight and capacity.	<b>1M1</b> Compare, describe and solve practical problems for: <ul style="list-style-type: none"> <li>- lengths and heights [e.g.: long/short, longer/ shorter, tall/short, double/half ]</li> <li>- mass/weight [e.g.: heavy/light, heavier than, lighter than]</li> <li>- capacity and volume [e.g.: full/empty, more than, less than, half, half full, quarter]</li> <li>- time [e.g.: quicker, slower, earlier, later]</li> </ul>	<b>2M1</b> Compare and order lengths, mass, volume/ capacity and record the results using >, < and =	<b>3M1a</b> Compare lengths(m/cm/mm)	<b>4M1</b> Compare different measures, including money in pounds and pence		
				<b>3M1b</b> Compare mass (kg/g)			
				<b>3M1c</b> Compare volume / capacity (l/ml)			
<b>M2</b> Estimate, measure and read scales		<b>1M2</b> 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>	<b>2M2</b> 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	<b>3M2a</b> Measure lengths (m/cm/mm)	<b>4M2</b> Estimate different measures, including money in pounds and pence		
				<b>3M2b</b> Measure mass (kg/g)			
				<b>3M2c</b> Measure volume / capacity (l/ml)			
<b>M3</b> Money	<u>Reception Outcome</u> To use everyday language related to money.	<b>1M3</b> Recognise and know the value of different denominations of coins and notes	<b>2M3a</b> Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value				
			<b>2M3b</b> Find different combinations of coins that equal the same amounts of money				
<b>M4</b>	<u>Reception Outcome</u> To use everyday language related to time.	<b>1M4a</b> Tell the time to the hour and half past the hour and draw	<b>2M4a</b> Tell and write the time to five minutes, including quarter	<b>3M4a</b>	<b>4M4a</b>		

Telling time, ordering time, duration and units of time		the hands on a clock face to show these times	past/to the hour and draw the hands on a clock face to show these times	Tell and write the time from an analogue clock; 12-hour clocks	Read, write and convert time between analogue and digital 12-hour clocks			
		<b>1M4b</b> Sequence events in chronological order using language [e.g.: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	<b>2M4b</b> Compare and sequence intervals of time	<b>3M4b</b> Tell and write the time from an analogue clock; 24-hour clocks	<b>4M4b</b> Read, write and convert time between analogue and digital 24-hour clocks			
		<b>1M4c</b> Recognise and use language relating to dates, including days of the week, weeks, months and years	<b>2M4c</b> Know the number of minutes in an hour and the number of hours in a day	<b>3M4c</b> Tell and write the time from an analogue clock, including using Roman numerals from I to XII	<b>4M4c</b> Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days	<b>5M4</b> Solve problems involving converting between units of time		
				<b>3M4d</b> Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock/a.m./p.m., morning, afternoon, noon and midnight				
				<b>3M4e</b> Know the number of seconds in a minute and the number of days in each month, year and leap year				
				<b>3M4f</b> Compare durations of events, [e.g.: to calculate the time taken by particular events or tasks]				
<b>M5</b> Convert between metric units					<b>4M5</b> Convert between different units of measurement [e.g.: kilometre to metre; hour to minute]	<b>5M5</b> Convert between different units of metric measure [e.g.: kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]	<b>6M5</b> 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 of up to three decimal places	
<b>M6</b> Convert metric/imperial						<b>5M6</b> Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints	<b>6M6</b> Convert between miles and kilometres	
<b>M7</b> Perimeter, area				<b>3M7</b> Measure the perimeter of simple 2-D shapes	<b>4M7a</b> Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	<b>5M7a</b> Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	<b>6M7a</b> Recognise that shapes with the same areas can have different perimeters and vice versa	

					<b>4M7b</b> Find the area of rectilinear shapes by counting squares	<b>5M7b</b> Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ) and estimate the area of irregular shapes	<b>6M7b</b> Calculate the area of parallelograms and triangles
							<b>6M7c</b> Recognise when it is possible to use the formulae for the area of shapes
<b>M8</b> Volume						<b>5M8</b> Estimate volume [e.g.: using 1cm <sup>3</sup> blocks to build cuboids (including cubes)] and capacity [e.g.: using water]	<b>6M8a</b> Calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm <sup>3</sup> ) and cubic metres (m <sup>3</sup> ), and extending to other units [e.g.: mm <sup>3</sup> and km <sup>3</sup> ]
							<b>6M8b</b> Recognise when it is possible to use the formulae for the volume of shapes
<b>M9</b> Solve problems (a: money; b: length; c: mass / weight; d: capacity / volume)			<b>2M9</b> Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	<b>3M9a</b> Add and subtract amounts of money to give change, using both £ and p in practical contexts	<b>4M9</b> Calculate different measures, including money in pounds and pence	<b>5M9a</b> Use all four operations to solve problems involving measure [money] using decimal notation, including scaling	<b>6M9</b> Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
				<b>3M9b</b> Add and subtract lengths (m/cm/mm)		<b>5M9b</b> Use all four operations to solve problems involving measure [e.g.: length] using decimal notation, including scaling	
				<b>3M9c</b> Add and subtract mass (kg/g)		<b>5M9c</b> Use all four operations to solve problems involving measure [e.g.: mass] using decimal notation, including scaling	
				<b>3M9d</b> Add and subtract volume / capacity (l/ml)		<b>5M9d</b> Use all four operations to solve problems involving measure [e.g.: volume] using decimal notation, including scaling	

**Geometry: properties of shape**

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
<b>G1</b> Recognise and name common shapes	Beginning to talk about the shapes of everyday objects, e.g. 'round' and 'tall'.  Shows interest in shape by sustained construction activity or by talking about shapes or arrangements.  Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat'.	<b>1G1a</b> Recognise and name common 2-D shapes [e.g.: rectangles (including squares), circles and triangles]	<b>2G1a</b> Compare and sort common 2-D shapes and everyday objects				
		<b>1G1b</b> Recognise and name common 3-D shapes [e.g.: cuboids (including cubes), pyramids and spheres]	<b>2G1b</b> Compare and sort common 3-D shapes and everyday objects				
<b>G2</b> Describe properties and classify shapes			<b>2G2a</b> Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line	<b>3G2</b> Identify horizontal, vertical lines and pairs of perpendicular and parallel lines	<b>4G2a</b> Compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes	<b>5G2a</b> Use the properties of rectangles to deduce related facts and find missing lengths and angles	<b>6G2a</b> Compare and classify geometric shapes based on their properties and sizes
			<b>2G2b</b> Identify and describe the properties of 3-D shapes including the number of edges, vertices and faces		<b>4G2b</b> Identify lines of symmetry in 2-D shapes presented in different orientations	<b>5G2b</b> Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	<b>6G2b</b> Describe simple 3-D shapes
					<b>4G2c</b> Complete a simple symmetric figure with respect to a specific line of symmetry		
<b>G3</b> Draw and make shapes and relate 2-D to 3-D shapes (including nets)			<b>2G3</b> Identify 2-D shapes on the surface of 3-D shapes, [e.g.: a circle on a cylinder and a triangle on a pyramid]	<b>3G3a</b> Draw 2-D shapes			<b>6G3a</b> Draw 2-D shapes using given dimensions and angles
				<b>3G3b</b> Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them		<b>5G3b</b> Identify 3-D shapes including cubes and other cuboids, from 2-D representations	<b>6G3b</b> Recognise and build simple 3D shapes, including making nets
<b>G4</b> Angles – measuring and properties				<b>3G4a</b> Recognise that angles are a property of shape or a description of a turn	<b>4G4</b> Identify acute and obtuse angles and compare and order angles up to two right angles by size	<b>5G4a</b> Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	<b>6G4a</b> Find unknown angles in any triangles, quadrilaterals and regular polygons
				<b>3G4b</b> Identify right angles, recognise that two right		<b>5G4b</b> Identify:	<b>6G4b</b> Recognise angles where they meet at a point, are on a

				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		<ul style="list-style-type: none"> <li>- angles at a point and one whole turn (total 360°)</li> <li>- angles at a point on a straight line and ½ a turn (total 180°)</li> <li>- other multiples of 90°</li> </ul>	straight line, or are vertically opposite, and find missing angles
						<b>5G4c</b> Draw given angles and measure them in degrees (°)	
<b>G5</b> Circles							<b>6G5</b> Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

### Geometry: position and direction

Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
<b>P1</b> Patterns	Talk about patterns in the environment. For example, stripes on clothes. Use informal language like 'pointy', 'spotty'.  Continue, copy and create repeating patterns.		<b>2P1</b> Order and arrange combinations of mathematical objects in patterns and sequences				
<b>P2</b> Describe position, direction and movement	Understand positional language with focus on under, over, behind, in front, forwards, backwards.	<b>1P2</b> Describe position, directions and movement, including half, quarter and three-quarter turns	<b>2P2</b> 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 (clock-wise and anti-clockwise)		<b>4P2</b> Describe movements between positions as translations of a given unit to the left/right and up/down	<b>5P2</b> 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	<b>6P2</b> Draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes
<b>P3</b> Coordinates					<b>4P3a</b> Describe positions on a 2-D grid as co-ordinates in the first quadrant		<b>6P3</b> Describe positions on the full co-ordinate grid (all four quadrants)
					<b>4P3b</b> Plot specified points and draw sides to complete a given polygon		

### Statistics



Strand	Early Years outcomes	National Curriculum reference Year 1	National Curriculum reference Year 2	National Curriculum reference Year 3	National Curriculum reference Year 4	National Curriculum reference Year 5	National Curriculum reference Year 6
<b>S1</b> Interpret and represent data			<b>2S1</b> Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	<b>3S1</b> Interpret and present data using bar charts, pictograms and tables	<b>4S1</b> Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	<b>5S1</b> Complete, read and interpret information in tables, including timetables	<b>6S1</b> Interpret and construct pie charts and line graphs and use these to solve problems
<b>S2</b> Solve problems involving data			<b>2S2a</b> Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	<b>3S2</b> Solve one-step and two step questions [e.g.: 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts, pictograms and tables	<b>4S2</b> Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	<b>5S2</b> Solve comparison, sum and difference problems using information presented in a line graph	
			<b>2S2b</b> Ask and answer questions about totalling and comparing categorical data				
<b>S3</b> Mean average							<b>6S3</b> Calculate and interpret the mean as an average

# **National Curriculum**

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/381344/Master\\_final\\_national\\_curriculum\\_28\\_Nov.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/381344/Master_final_national_curriculum_28_Nov.pdf)

## **Year 4 programme of study**

### **Number – number and place value**

#### **Statutory requirements**

Pupils should be taught to:

- count in multiples of 6, 7, 9, 25 and 1000;
- find 1000 more or less than a given number;
- count backwards through zero to include negative numbers; (*from Year 5*)
- recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones);
- order and compare numbers beyond 1000;
- identify, represent and estimate numbers using different representations;
- round any number to the nearest 10, 100 or 1000;
- 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 zero and place value.

#### **Notes and guidance (non-statutory)**

Using a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice.

They begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far.

They connect estimation and rounding numbers to the use of measuring instruments.

Roman numerals should be put in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time.

### **Number – addition and subtraction**

#### **Statutory requirements**

Pupils should be taught to:

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate;
- estimate and use inverse operations to check answers to a calculation;
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.

#### **Notes and guidance (non-statutory)**

Pupils continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency (see Mathematics Appendix 1).

## Number – multiplication and division

### Statutory requirements

Pupils should be taught to:

- recall multiplication and division facts for multiplication tables up to  $12 \times 12$ ;
- use place value, known and derived facts to multiply and divide mentally, including:
  - multiplying by 0 and 1;
  - dividing by 1;
  - multiplying together three numbers;
- recognise and use factor pairs and commutativity in mental calculations;
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout; (*from Year 5*)
- solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

### Notes and guidance (non-statutory)

Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency.

Pupils practise mental methods and extend this to three-digit numbers to derive facts, (for example  $600 \div 3 = 200$  can be derived from  $2 \times 3 = 6$ ).

Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers (see Mathematics Appendix 1).

Pupils write statements about the equality of expressions (for example, use the distributive law  $39 \times 7 = 30 \times 7 + 9 \times 7$  and associative law  $(2 \times 3) \times 4 = 2 \times (3 \times 4)$ ). They combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations for example,  $2 \times 6 \times 5 = 10 \times 6 = 60$ .

Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the numbers of choices of a meal on a menu, or three cakes shared equally between 10 children.

## Number – fractions (including decimals)

### Statutory requirements

Pupils should be taught to:

- 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 one hundred and dividing tenths by ten;
- 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;
- recognise and write decimal equivalents to  $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$ ;
- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths;
- round decimals with one decimal place to the nearest whole number; (*from Year 5*)
- 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.

### Notes and guidance (non-statutory)

Pupils should connect hundredths to tenths and place value and decimal measure.

They extend the use of the number line to connect fractions, numbers and measures.

Pupils understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths.

Pupils make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example,  $\frac{6}{9} = \frac{2}{3}$  or

$$\frac{1}{4} = \frac{2}{8}).$$

Pupils continue to practise adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole.

Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions.

Pupils' understanding of the number system and decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimal notation to division of whole number by 10 and later 100.

They practise counting using simple fractions and decimals, both forwards and backwards.

Pupils learn decimal notation and the language associated with it, including in the context of measurements. They make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places. They should be able to represent numbers with one or two decimal places in several ways, such as on number lines.

## Measurement

### Statutory requirements

Pupils should be taught to:

- convert between different units of measure [for example, kilometre to metre; hour to minute]; (*from Year 5*)
- measure and calculate the perimeter of a rectilinear figure (including squares) 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; (*from Year 5*)
- solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

### Notes and guidance (non-statutory)

Pupils build on their understanding of place value and decimal notation to record metric measures, including money.

They use multiplication to convert from larger to smaller units.

Perimeter can be expressed algebraically as  $2(a + b)$  where  $a$  and  $b$  are the dimensions in the same unit.

They relate area to arrays and multiplication.

## Geometry – properties of shapes

### Statutory requirements

Pupils should be taught to:

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

### Notes and guidance (non-statutory)

Pupils continue to classify shapes using geometrical properties, extending to classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium).

Pupils compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular.

Pupils draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape.

## Geometry – position and direction

### Statutory requirements

Pupils should be taught to:

- describe positions on a 2-D grid as coordinates in the first quadrant; *(from Year 5)*
- describe movements between positions as translations of a given unit to the left/right and up/down; *(from Year 5)*
- plot specified points and draw sides to complete a given polygon. *(from Year 6)*

### Notes and guidance (non-statutory)

Pupils draw a pair of axes in one quadrant, with equal scales and integer labels. They read, write and use pairs of coordinates, for example  $(2, 5)$ , including using coordinate-plotting ICT tools.

## Statistics

### Statutory requirements

Pupils should be taught to:

- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs; (*line graphs from Year 5*)
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. (*line graphs from Year 5*)

### Notes and guidance (non-statutory)

Pupils understand and use a greater range of scales in their representations.

Pupils begin to relate the graphical representation of data to recording change over time.