Mathematics Planning
National Curriculum

Year 3

Year 3 Mathematics Yearly Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Focus 1	Place value	Counting and multiplication facts	Place value Mental addition and subtraction	Addition and subtraction (statistics)	Multiplication facts (statistics)	Place value (measures)
Focus 2	Mental calculation	Written and mental multiplication	Fractions	2D and 3D shape incl. angles	Addition and subtraction (measures)	Mental calculation
Focus 3	Written addition	Written and mental division	Multiplication facts	Fractions	Multiplication and division (measures)	Fractions
Focus 4	Written subtraction		Multiplication in other contexts		Addition and subtraction (decimals)	Measures
Time		Time		Time		
Cross-curricular	Statistics	3D shape		Position and direction	3D shape	Statistics
Starter activities	2D shape and Length incl. perimeter		Volume and capacity Mass		2D shape	

Year 3 - Autumn 1	
Starter suggestions for Number	**Starter suggestions for Measurement, Geometry and Statistics**
• Read and write numbers to 1000 in figures and words. • Count on and back in 1s, 10s or 100s from any two- or three-digit number. • Count on and back in multiples of 4 or 8 from 0. • Describe and extend number sequences involving counting on or back in different steps. • Order a set of random numbers to 1000. • Recall addition and subtraction facts for each number up to 20. • Recall pairs of multiples of 100 that make 1000. • Recall multiplication facts for 2, 3, 4, 5 and 10 times tables and derive associated division facts. • Double any number up to 50. • Halve any even two-digit number up to 100.	• Identify and describe 2-D shapes, considering sides, corners and symmetry. • Identify and describe 3-D shapes, considering faces, edges and vertices. • Compare and sort common 2-D and 3-D shapes and everyday objects. • Order and arrange combinations of mathematical objects in patterns and sequences. • Describe position, direction and movement. • Recognise quarter, half, three-quarter and full turns, including clockwise and anti-clockwise. • Interpret and answer questions based on simple pictograms, tally charts, block diagrams and simple tables.

	Main learning	**Rationale**
FOCUS 1 *Place value*	• Read and write numbers to at least 1000 in numerals and in words. • Recognise the place value of each digit in a three-digit number (hundreds, tens and ones). • *Partition numbers in different ways.* • Identify, represent and estimate numbers using different representations, *including the number line.* • Compare and order numbers up to 1000. • *Round numbers to at least 1000 to the nearest 10 or 100.* • Solve number problems and practical problems involving these ideas.	Understanding of the number system is necessary pre-requisite knowledge for any number work. 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. Partitioning numbers in different ways is an objective from Year 2, but requires consolidating to support later work on calculations. When comparing and ordering numbers, children should use a variety of resources, including the number line.
FOCUS 2 *Mental calculation*	• Find 1, 10 or 100 more or less than a given number. • Add numbers mentally, including: a three-digit number and ones; and tens; and hundreds. • Subtract numbers mentally, including: a three-digit number and ones; and tens; and hundreds. • *Add and subtract mentally combinations of two-digit numbers.* • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.*	Children apply their knowledge of place value to mentally calculate using addition and subtraction, recognising which digits will change and which will stay the same and why. Children should continue to count in ones, tens and hundreds. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
FOCUS 3 *Written addition*	• Add numbers with up to three digits, using formal written method of columnar addition. • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • Estimate the answer to a calculation and use inverse operations to check the answers. • Solve problems, including missing number problems, using number facts, place value, and more complex addition.	Children build on their understanding of place value and skills in mental calculation to develop a written method for addition. 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.
FOCUS 4 *Written subtraction*	• Subtract numbers with up to three digits, using formal written method of columnar subtraction. • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • Estimate the answer to a calculation and use inverse operations to check the answers. • Solve problems, including missing number problems, using number facts, place value, and more complex subtraction.	Children build on their understanding of place value and skills in mental calculation to develop a written method for subtraction. 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.

CROSS-CURRICULAR
Statistics
	• Interpret and present data using bar charts and tables.
	• Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts and tables.
	• *Derive and use addition and subtraction facts for 100..*
	• *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:*
	  - a 2-digit number and ones
	  - a 2-digit number and tens
	  - two 2-digit numbers
	  - adding three 1-digit numbers (from Year 2).
	• *Select a mental strategy appropriate for the numbers involved in the calculation.*
	• *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.*
		The tables and bar charts can be created from measurements taken the previous week. Children are applying their knowledge of place value and mental calculation in the context of tables and bar charts.

| STARTER ACTIVITIES
2-D shape and length including perimeter | • Draw 2-D shapes and describe them
• Recognise angles as a property of shape
• Measure, compare, add and subtract: lengths (m/cm/mm).
• *Understand that perimeter is a measure of distance around the boundary of a shape.*
• Measure the perimeter of simple 2-D shapes.
• *Derive and use addition and subtraction facts for 100..*
• *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:*
 - a 2-digit number and ones
 - a 2-digit number and tens
 - two 2-digit numbers
 - adding three 1-digit numbers (from Year 2).
• *Select a mental strategy appropriate for the numbers involved in the calculation.*
• *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* | Children measure distances using a variety of tools and units and record these measurements in preparation for the following week. They measure and draw 2-D shapes. This gives children the opportunity to apply their place value and mental calculation knowledge in the context of length. Perimeter is a measure of distance linking length with mental addition and the opportunity to problem solve in context.
Children should use mixed units e.g. 4m and 34cm and know simple equivalence between units. |

	Year 3 - Autumn 2	

Starter suggestions for Number
- Read and write numbers to 1000 in figures and words.
- Count on and back in 1s, 10s or 100s from any two- or three-digit number.
- Count on and back in multiples of 4 or 8 from 0.
- Describe and extend number sequences involving counting on or back in different steps.
- Order a set of random numbers to 1000.
- Recall addition and subtraction facts for each number up to 20.
- Recall addition and subtraction facts for 100 (multiples of 5 and 10).
- Recall pairs of multiples of 100 that make 1000.
- Recall multiplication facts for 2, 3, 4, 5 and 10 times tables and derive associated division facts.
- Double any number up to 50.
- Halve any even two-digit number up to 100.

Starter suggestions for Measurement, Geometry and Statistics
- Choose and use appropriate standard units to estimate length and height, mass and volume/capacity.
- Read scales to nearest whole unit.
- Order lengths, masses and volumes/capacities and use < > signs.
- Know the number of minutes in an hour and the number of hours in a day.
- Tell and write the time to the nearest five minutes, including quarter past/to the hour.
- Combine amounts of money to make a given value.
- Find different combinations of coins that equal the same amounts of money.

	Main learning	**Rationale**
FOCUS 1 *Counting, sequences, multiplication facts*	• Count from 0 in multiples of 4. • Recall and use multiplication and division facts for the 3 and 4 times tables. • Describe and extend number sequences involving counting on or back in different steps • Use sorting diagrams to compare and sort numbers.	Children need time to experience counting in equal steps, and multiplication and division facts and relationships so that they understand and can use this knowledge in a variety of situations. Children should be using Venn and Carroll diagrams to sort numbers according to their properties. The learning in this week is in preparation for the next week.
FOCUS 2 *Written and mental multiplication*	• Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • Select a mental strategy appropriate for the numbers involved in the calculation. • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • Solve problems involving money and measures • Solve problems, including missing number problems involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Children build on their understanding of place value and multiplication facts to develop mental strategies for multiplication and begin developing a written method. Children should learn when to use mental methods and when to use written methods. 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. Integer scaling problems support children in understanding multiplication as making amounts a number of times larger, which is different to understanding as repeated addition. Correspondence problems, such as, 3 different coloured hats and 3 different coloured coats would give how many different possible combinations, allow children to spot patterns and generalise using their knowledge of multiplication facts.
FOCUS 3 *Written and mental division*	• Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to formal written methods. • Select a mental strategy appropriate for the numbers involved in the calculation. • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • Solve problems involving money and measures • Solve problems, including missing number problems, involving division (and interpreting remainders) and correspondence problems in which n objects are connected to m objects.	Children build on their understanding of place value and multiplication facts to develop mental strategies for division and begin developing a written method. Children should learn when to use mental methods and when to use written methods. 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. Correspondence problems, such as, 12 sweets shared equally between 4 children.
TIME	• Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate 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. • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Solve simple problems involving passage of time.	Children learn the relationships between the units of time, and other key vocabulary involving time. Children learn to tell the time (including on clocks where the numbers are Roman numerals) and on digital clocks, using 12 and 24 hour clock notation. The learning in this week requires regular revisiting through natural daily activities and routines.
CROSS-CURRICULAR *3-D shape*	• Make 3-D shapes using modelling materials. • Recognise 3-D shapes in different orientations and describe them • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines • Compare and sort common 3-D shapes and everyday objects	Children further develop their knowledge of 3-D shapes. When making shapes, children are experiencing what faces, edges and vertices 'feel' like and should be encouraged to use this vocabulary as they work. The vocabulary develops to include parallel and perpendicular, relating their knowledge of right angles to describing the position of lines or edges relative to each other. The development of new vocabulary should be applied when sorting and comparing shapes.

Year 3 - Spring 1	

Starter suggestions for Number
- Count on and back in 1s, 10s or 100s from any two- or three-digit number.
- Partition three-digit numbers in different ways, *(e.g. 325 = 300 + 20 + 5 but is also 200 + 125 etc)*
- Order a set of random numbers to 1000.
- Recall addition and subtraction facts for each number up to 20.
- Recall addition and subtraction facts for 100 (multiples of 5 and 10).
- State the addition fact that links to a subtraction fact and vice versa.
- Recall multiplication facts for 2, 3, 4, 5 and 10 times tables and derive associated division facts.
- Describe and extend number sequences involving counting on or back in different steps.
- State the multiplication fact that links to a division fact and vice versa.
- Double any number up to 100.
- Double any multiple of 50 up to 500.
- Halve any number up to 100.
- Count in fraction steps, *e.g.* $^1/_5$, $^2/_5$, $^3/_5$ …

Starter suggestions for Measurement, Geometry and Statistics
- Read scales to nearest whole unit.
- Use vocabulary of time including o'clock, a.m./p.m., morning, afternoon, noon and midnight.
- Tell and write time from an analogue clock and 12-hour and 24-hour clocks.
- Identify and describe 2-D shapes, considering sides, corners and symmetry.
- Identify and describe 3-D shapes, considering faces, edges and vertices.
- Compare and sort common 2-D and 3-D shapes and everyday objects.
- Interpret and answer questions based on pictograms, tally charts, block diagrams and tables.

	Main learning	**Rationale**
FOCUS 1 *Place value, counting and mental addition and subtraction*	• Find 1, 10 or 100 more or less than a given number. • Count from 0 in multiples of 50 and 100. • Describe and extend number sequences involving counting on or back in different steps. • Add and subtract mentally: a three-digit number and ones; a three-digit number and tens; a three digit number and hundreds. • Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a 2-digit number and ones; a 2-digit number and tens; two 2-digit numbers • Select a mental strategy appropriate for the numbers involved in the calculation. • Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context. • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.	It is useful to begin a term with learning related to place value, as further learning in the term will be reliant on secure understanding of the number system. The place value work in this week is in the context of sequences and calculation. Children should continue to count in ones, tens and hundreds. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
FOCUS 2 *Fractions*	• Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • Understand that finding a fraction of an amount relates to division. • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • Show practically or pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as 3 ÷ 4). • Understand that finding a fraction of an amount relates to division. • Understand how division statements can be represented using arrays. • Understand division as sharing and grouping and use each appropriately. • Select a mental strategy appropriate for the numbers involved in the calculation. • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to formal written methods.	The learning of fractions is an extension in understanding of the number system. Learning how to calculate fractions of amounts by sharing in practical contexts, is a valuable experience before making the link to division. Children's understanding of fractions should go beyond the 0-1 interval. 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. When children are calculating fractions of amounts, this should be in a context e.g. length, money, time to consolidate previous learning. When finding fractions of amounts, children need to understand that this is division by sharing.
FOCUS 3 *Multiplication facts*	• Count from 0 in multiples of 8. • Recall and use multiplication and division facts for the 8 multiplication tables. • *Use sorting diagrams to compare and sort numbers.* • *Describe and extend number sequences involving counting on or back in different steps.* • Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.*	Children build on their knowledge of the 4 times table to derive the 8 times table, recognising the relationship between the answers in both. 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.

FOCUS 4 *Multiplication in other contexts*	• Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures.* • Solve problems, including missing number problems involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	Children are introduced to pictograms in which each symbol is worth more than 1. They use their knowledge of multiplication and counting in equal steps to calculate in the context of pictograms. Other opportunities to consolidate measurement and money should be taken when asking children to calculate. 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.
STARTER ACTIVITIES *Measures and calculation in the context of volume and capacity and mass*	• Measure, compare, add and subtract volumes and capacities. • Measure, compare, add and subtract masses. • Solve problems involving and measures.	Children gain valuable practical experience of volume and capacity, and learn to understand the difference between the two. At this stage, volume refers to the amount of liquid within a container, and capacity is the maximum amount of liquid a container can hold. Both therefore are measured in l and ml. Children should develop an understanding of a 'benchmark' for estimating volume/capacity e.g. a can of fizzy drink is 330ml. Practical experiences should also further children's knowledge and understanding of mass, including the units of gram (g) and kilogram (kg), and they should develop an understanding of a 'benchmark' mass of a common familiar object e.g. a bag of sugar having a mass of 1kg. Children should call upon their knowledge of place value and calculations in the context of measurement.

Year 3 - Spring 2

<table>
<tr><td>Starter suggestions for Number
• Count on and back in 1s, 10s or 100s from any two- or three-digit number.
• Partition three-digit numbers in different ways, (e.g. 325 = 300 + 20 + 5 but is also 200 + 125 etc)
• Order a set of random numbers to 1000.
• Recall addition and subtraction facts for each number up to 20.
• Recall addition and subtraction facts for 100 (e.g. 37+63 = 100, 63+37=100, 100-63=37, 100-37=63).
• State the addition fact that links to a subtraction fact and vice versa.
• Recall multiplication facts for 2, 3, 4, 5 and 10 times tables and derive associated division facts.
• Describe and extend number sequences involving counting on or back in different steps.
• State the multiplication fact that links to a division fact and vice versa.
• Double any number up to 100.
• Double any multiple of 50 up to 500.
• Halve any number up to 100.
• Count in fraction steps, e.g. $^1/_5$, $^2/_5$, $^3/_5$ …</td>
<td>Starter suggestions for Measurement, Geometry and Statistics
• Identify right angles in different orientations and angles that are less than or greater than a right angle.
• Estimate length in m, cm and mm.
• Calculate perimeter of 2-D shapes.
• Read scales to nearest whole unit.
• Use vocabulary of time including o'clock, a.m./p.m., morning, afternoon, noon and midnight.
• Tell and write time from an analogue clock and 12-hour and 24-hour clocks.
• Identify and describe 2-D shapes, considering sides, corners and symmetry.
• Identify and describe 3-D shapes, considering faces, edges and vertices.
• Compare and sort common 2-D and 3-D shapes and everyday objects.
• Interpret and answer questions based on pictograms, tally charts, block diagrams and tables.</td></tr>
</table>

	Main learning	**Rationale**
FOCUS 1 *Addition and subtraction (statistics)*	• Add numbers with up to three digits, using formal written method of columnar addition. • Subtract numbers with up to three digits, using formal written method of columnar subtraction. • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • Estimate the answer to a calculation and use inverse operations to check the answers. • Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. • Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	Children further develop their understanding of addition and subtraction. Rehearsing the processes involved in written methods and exploring their relationship when solving missing number problems. The calculation problems are within the context of handling data. 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.
FOCUS 2 *2-D and 3-D shape including angles.*	• Draw 2-D shapes and describe them. • Make 3-D shapes using modelling materials. • Recognise 3-D shapes in different orientations and describe them. • Recognise that angles area property of a shape or a description of a turn. • Identify whether angles are greater than or less than a right angle. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • *Compare and sort common 2-D and 3-D shapes and everyday objects.*	Children revisit their learning of the properties of 2-D and 3-D shape, drawing and making shapes in different ways e.g. drawing 2-D shapes on dotted paper; using set squares; creating 2-D shapes by combining other shapes; creating 3-D shapes using straws and plasticine; Clixi, Polydron or other construction materials. The emphasis of the learning should be on children's accurate use of language when making, identifying, describing, comparing and sorting shapes.
FOCUS 3 *Fractions*	• Recognise and show, using diagrams, equivalent fractions with small denominators. • Add and subtract fractions with the same denominator within one whole (*using diagram*) (for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$). • *Show practically or pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as 3 ÷ 4).* • Compare and order unit fractions and fractions with the same denominators (*including on a number line*). • Solve problems involving fractions.	Children build on their knowledge of fractions of shapes when moving into dealing with fractions as abstract numbers. When calculating and ordering fractions, children relate the fraction number to fraction shapes. Children's understanding of fractions should go beyond the 0-1 interval.
TIME	• Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. • Estimate 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. • Know the number of seconds in a minute and the number of days in each month, year and leap year. • Compare durations of events, for example to calculate the time taken by particular events or tasks. • *Solve simple problems involving passage of time.*	Children learn the relationships between the units of time, and other key vocabulary involving time. Children learn to tell the time (including on clocks where the numbers are Roman numerals) and on digital clocks, using 12 and 24 hour clock notation. The learning in this week requires regular revisiting through natural daily activities and routines.
CROSS-CURRICULAR *Position and direction*	• *Use mathematical vocabulary to describe position, direction and movement, including distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise), and movement in a straight line* • *Describe positions on a square grid labelled with letters and numbers.*	There is no additional learning for Geometry: position and direction in Year 3 so it is important that the learning from Year 2 is consolidated and the precursor learning for coordinates is in place.

Y3 Medium Term Planning (mathematics)

	Year 3 - Summer 1	

Starter suggestions for Number
- Count on and back in 1s, 10s or 100s from any two- or three-digit number.
- Partition three-digit numbers in different ways, *(e.g. 325 = 300 + 20 + 5 but is also 200 + 125 etc)*
- Identify the value of each digit to one decimal place.
- Recall addition and subtraction facts for 100 *(e.g. 37+63 = 100, 63+37=100, 100-63=37, 100-37=63)*.
- Mentally add groups of small numbers.
- Recall multiplication facts for 2, 3, 4, 5, 8 and 10 times tables and derive associated division facts.
- Describe and extend number sequences involving counting on or back in different steps.
- Double any number up to 100.
- Halve any number up to 200.
- Count in fraction steps, *e.g. $^1/_5$, $^2/_5$, $^3/_5$ …*

Starter suggestions for Measurement, Geometry and Statistics
- Identify right angles in different orientations and angles that are less than or greater than a right angle.
- Estimate length in m, cm and mm and volume/capacity in l and ml.
- Read scales to nearest whole unit.
- Use vocabulary of time including o'clock, a.m./p.m., morning, afternoon, noon and midnight.
- Tell and write time from an analogue clock and 12-hour and 24-hour clocks.
- Identify and describe 2-D shapes, considering sides, corners and symmetry.
- Identify and describe 3-D shapes, considering faces, edges and vertices.
- Compare and sort common 2-D and 3-D shapes and everyday objects.

	Main learning	**Rationale**
FOCUS 1 *Multiplication facts (statistics)*	• Count from 0 in multiples of 4, 8, 50 and 100. • Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. • *Describe and extend number sequences involving counting on or back in different steps.* • Interpret (and present data) using bar charts, pictograms and tables.	Children use their counting, sequencing and multiplication facts knowledge in the context of handling data. The emphasis for the handling data should be on interpreting information, though there may be some mention of presentation, particularly for creating scales on bar charts by counting in equal steps.
FOCUS 2 *Addition and subtraction (measures)*	• Add and subtract mentally a three-digit number and: ones; tens; hundreds. • Add numbers with up to three digits, using formal written method of columnar addition. • Subtract numbers with up to three digits, using formal written method of columnar subtraction. • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • Estimate the answer to a calculation and use inverse operations to check the answers. • *Solve problems involving money and measures and simple problems involving passage of time.* • Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. • Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). • Measure the perimeter of simple shapes.	Children rehearse their skills of mental and written addition and subtraction in the context of measures, including perimeter. Children should engage in practical measuring activities and solve calculations based on the measurements they have made. This could involve estimating length, mass and capacity then accurately measuring and calculating the difference between the estimate and the actual measurement. Other contexts should also be used. Children should continue to count in ones, tens and hundreds. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
FOCUS 3 *Multiplication and division (measures)*	• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. • Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one-digit numbers, using mental and progressing to formal written methods. • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures and simple problems involving passage of time.* • Solve problems, including missing number problems involving multiplication and division, including positive integer scaling problems.	Children rehearse their skills of mental and written multiplication and division in the context of measures, including perimeter of regular shapes. Children should engage in practical measuring activities and solve calculations based on the measurements they have made.
FOCUS 4 *Addition and subtraction (decimals)*	• 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. • *Identify the value of each digit to one decimal place.* • Read and write numbers with one decimal place. • *Compare and order numbers with one decimal place.* • *Continue to recognise and use symbols for pounds (£) and pence (p) and understand that the decimal point separates pounds and pence.* • Recognise that ten 10p coins are equivalent to £1 and that each coin is $\frac{1}{10}$ of £1. • Add and subtract amounts of money to give change, using both £ and p in practical contexts. • *Solve problems involving money.* • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.*	Children may require further learning on decimal notation prior to or during this unit. It is often difficult for children to make the link between their understanding of hundreds, tens and units and £ and p notation (the 10p coins do not go in the 'tens' column when using £ and p notation).

CROSS-CURRICULAR *3-D shape*	• Make 3-D shapes using modelling materials. • Recognise 3-D shapes in different orientations and describe them. • *Compare and sort common 2-D and 3-D shapes and everyday objects.*	Children embed their learning of the properties 3-D shape, making shapes in different ways e.g. creating 3-D shapes using straws and plasticine; Clixi, Polydron or other construction materials. The emphasis of the learning should be on children's accurate use of language when making, identifying and describing shapes.
STARTER ACTIVITIES *2-D shape*	• Draw 2-D shapes and describe them. • Identify horizontal and vertical lines and pairs of perpendicular and parallel lines. • Recognise that angles are a property of a shape or a description of a turn. • Identify right angles, recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn. • Identify whether angles are greater than or less than a right angle. • *Compare and sort common 2-D and 3-D shapes and everyday objects (from Year 2).*	Children make links between their developing knowledge of shape and the language related to the position of lines/sides in relation to each other and also the angles made where lines/sides meet. This is an understanding of angles as a measure of turn, but the 'turn' is static i.e. the sides of the shape are not turning. The angle understanding also incorporates a dynamic understanding in which movement is made.

Year 3 - Summer 2

Starter suggestions for Number
- Count on and back in 1s, 10s or 100s from any two- or three-digit number.
- Partition three-digit numbers in different ways, *(e.g. 325 = 300 + 20 + 5 but is also 200 + 125 etc)*
- Identify the value of each digit to one decimal place.
- Recall addition and subtraction facts for 100 *(e.g. 37+63 = 100, 63+37=100, 100-63=37, 100-37=63)*.
- Derive and use addition and subtraction facts for multiples of 100 totalling 1000.
- Mentally add groups of small numbers.
- Recall multiplication facts for 2, 3, 4, 5, 8 and 10 times tables and derive associated division facts.
- Describe and extend number sequences involving counting on or back in different steps.
- Double any number up to 100.
- Double any multiple of 50 up to 500.
- Halve any number up to 200.
- Count in fraction steps, e.g. $^1/_5$, $^2/_5$, $^3/_5$ …

Starter suggestions for Measurement, Geometry and Statistics
- Identify right angles in different orientations and angles that are less than or greater than a right angle.
- Estimate length in m, cm and mm and volume/capacity in l and ml.
- Calculate perimeter of 2-D shapes.
- Read scales to nearest whole unit.
- Use vocabulary of time including o'clock, a.m./p.m., morning, afternoon, noon and midnight.
- Tell and write time from an analogue clock and 12-hour and 24-hour clocks.
- Identify and describe 2-D shapes, considering sides, corners and symmetry.
- Identify and describe 3-D shapes, considering faces, edges and vertices.
- Compare and sort common 2-D and 3-D shapes and everyday objects.
- Interpret and answer questions based on pictograms, tally charts, block diagrams and tables.

	Main learning	Rationale
FOCUS 1 *Place value (measures)*	• Count from 0 in multiples of 4, 8, 50 and 100. • Find 1, 10 or 100 more or less than a given number. • Recognise the place value of each digit in a three-digit number (hundreds, tens and ones). • *Identify the value of each digit to one decimal place.* • Compare and order numbers up to 1000. • Identify, represent and estimate numbers using different representations, *including the number line.* • Read and write numbers to at least 1000 in numerals and in words. • *Solve problems involving measures and simple problems involving passage of time.*	Much of the learning of place value can be put into the context of measures, through looking at number lines on different measuring tools and comparing and ordering measurements. Scales on measuring instruments can be used as the context for counting and sequences with equal step size. Measurement also allows children to experience numbers in different ways.
FOCUS 2 *Mental calculation*	• Add and subtract mentally a three-digit number and ones, tens and hundreds. • *Derive and use addition and subtraction facts for 100.* • *Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* *a 2-digit number and ones; a 2-digit number and tens; two 2-digit numbers; adding three 1-digit numbers.* • *Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).* • *Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context.* • *Select a mental strategy appropriate for the numbers involved in the calculation.* • *Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.* • *Solve problems involving money and measures and simple problems involving passage of time.* • *Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.*	Children should secure their knowledge and understanding of mental calculation skills in a variety of contexts. The learning should include decision making around why it is most appropriate to solve these calculations using a mental method. Children should also mentally calculate with two-digit numbers in which the answer is a three-digit number.
FOCUS 3 *Fractions*	• Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. • Recognise and show, using diagrams, equivalent fractions with small denominators. • Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. • *Show practically or pictorially that a fraction is one whole number divided by another (for example, $\frac{3}{4}$ can be interpreted as $3 \div 4$).*	Children's understanding of fractions is consolidated in the application in a variety of different contexts. Children should solve a variety of problems involving fractions, and seeing and using them in different ways. Children's understanding of fractions should go beyond the 0-1 interval.
FOCUS 4 *Measures*	• Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). • Measure the perimeter of simple 2-D shapes. • *Solve problems involving measures.*	Children estimate and measure lengths (link to jumping and throwing in PE), mass and volume/capacity in real contexts. The learning also includes solving problems by calculating perimeter using mental and written strategies.
<mark>**CROSS-CURRICULAR** *Statistics*</mark>	• Interpret and present data using bar charts, pictograms and tables. • Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	Children use the measurements made in the previous week to present and interpret data in different forms. They should discuss the value of presenting information in tables, pictograms and bar charts and evaluate the effectiveness of each type of presentation.

Year 3 programme of study

Number – number and place value

Statutory requirements

Pupils should be taught to:
- count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number (from Year 4)
- recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- compare and order numbers up to 1000
- identify, represent and estimate numbers using different representations
- read and write numbers up to 1000 in numerals and in words
- solve number problems and practical problems involving these ideas.

Notes and guidance (non-statutory)
Pupils now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.

They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, 146 = 100 + 40 and 6, 146 = 130 + 16).

Using a variety of representations, including those related to measure, pupils continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000.

Number – addition and subtraction

Statutory requirements

Pupils should be taught to:
- add and subtract numbers mentally, including:
    - a three-digit number and ones
    - a three-digit number and tens
    - a three-digit number and hundreds
- add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction (from Year 4)
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

Notes and guidance (non-statutory)
Pupils practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100.

> Pupils use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent (see Mathematics Appendix 1).

Number – multiplication and division

Statutory requirements

Pupils should be taught to:
- recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables (from Year 4)
- write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (from Year 4)
- solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Notes and guidance (non-statutory)

Pupils continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables.

Pupils develop efficient mental methods, for example, using commutativity and associativity (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts (for example, $30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$).

Pupils develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division.

Pupils solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).

Number – fractions

Statutory requirements

Pupils should be taught to:
- 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
- recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators
- recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators
- recognise and show, using diagrams, equivalent fractions with small denominators
- add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]
- compare and order unit fractions, and fractions with the same denominators
- solve problems that involve all of the above.

Notes and guidance (non-statutory)

Pupils connect tenths to place value, decimal measures and to division by 10.

They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They should go beyond the [0, 1] interval, including relating this to measure.

Pupils understand the relation between unit fractions as operators (fractions of), and division by integers.

They continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity.

Pupils practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency.

Measurement

Statutory requirements

Pupils should be taught to:
- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) (from Year 4)
- measure the perimeter of simple 2-D shapes (from Year 4)
- add and subtract amounts of money to give change, using both £ and p in practical contexts
- tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (from Year 4 and Year 5)
- 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 (from Year 4)
- know the number of seconds in a minute and the number of days in each month, year and leap year
- compare durations of events [for example to calculate the time taken by particular events or tasks].

Notes and guidance (non-statutory)

Pupils continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm).

The comparison of measures includes simple scaling by integers (for example, a given quantity or measure is twice as long or five times as high) and this connects to multiplication.

Pupils continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts.

They record £ and p separately. The decimal recording of money is introduced formally in year 4.

Pupils use both analogue and digital 12-hour clocks and record their times. In this way they become fluent in and prepared for using digital 24-hour clocks in year 4.

Geometry – properties of shapes

Statutory requirements

Pupils should be taught to:
- draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them
- recognise angles as a property of shape or a description of a turn
- identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle

- identify <mark>horizontal and vertical lines and pairs of perpendicular and parallel lines.</mark> (from Year 4 and Year 5)

Notes and guidance (non-statutory)

Pupils' knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical polygons and polyhedra. Pupils extend their use of the properties of shapes. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle.

Pupils connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts.

Statistics

Statutory requirements

Pupils should be taught to:
- interpret and present data using bar charts, pictograms and tables
- solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.

Notes and guidance (non-statutory)

Pupils understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy.

They continue to interpret data presented in many contexts.