

Reasonable Adjustments for Maths

Reasonable adjustments help children access learning and demonstrate their understanding. These adjustments should be tailored to individual pupils and reflected in their support plans where appropriate.

- Reduce the number of questions on a page.
- Use worked examples and display these on working wall.
- Break tasks into smaller steps.
- Give instructions one at a time.
- Repeat and rephrase explanations.
- Use stem sentences to support verbal and written explanations.
- Check understanding regularly.
- Pre-teach key mathematical vocabulary and have word mats.
- Repetition of mathematical language.
- Opportunities for partner discussion.
- Use concrete-pictorial-abstract (CPA) approaches.
- Concrete resources available in classrooms - counters, cubes, bead strings, place value charts, dienes apparatus, place value counters, number lines and hundred squares, times table grids or multiplication prompts.
- Provide calculation aids where appropriate.
- Use checklists for multi-step problems.
- Encourage pupils to highlight important information.
- Build in thinking and processing time before answering.
- Seat pupils strategically.
- Chunk lessons into short sections.
- Provide regular praise and feedback.
- Extra time to complete tasks.
- Questions read aloud.
- Smaller assessment sessions.
- Opportunities to explain answers verbally.
- Frequent check-ins.

Year Group	Autumn Term	Spring Term	Summer Term	Additional Events
Nursery	Rationale – Our Nursery mathematics curriculum is designed to develop a secure foundation for future learning through meaningful, practical and engaging experiences. Guided by the EYFS Statutory Framework, we provide opportunities for children to develop number sense, counting, pattern, shape, space and measure through play and exploration. We aim to foster confidence, curiosity and positive attitudes towards mathematics, ensuring every child develops strong early mathematical understanding.			September- National Numeracy Schools and Families Programme Launch Event and parent/career and child workshop (whole school) November- Number Confidence Week (whole school)
	Skills – • Recite numbers to 5, then 10 in play contexts (e.g. rocket launches). • Use some number names and number language spontaneously. • Use some number names accurately in play.	Skills- • Recite numbers past 5, forwards and backwards. • Recognise some numerals of personal significance. • Realises not only objects, but anything can be counted, including steps, claps or jumps. • Be able to count up to 5 objects using 1:1 correspondence.	Skills- • Recognises numerals 1 to 5 including those of personal significance. • Selects the correct numeral to represent 1 to 5. • Count aloud from zero to ten. • Counts actions or objects which cannot be moved.	

- Know that the last number reached when counting a small set of objects tells you how many there are in total (cardinal principle).
- Count up to three or four objects by saying one number name for each item.
- Experiment with their own symbols and marks as well as numerals.
- In the context of stories and rhymes, predict the next number in the sequence in stories and rhymes.
- Show an interest in shape and space when playing by making arrangements.
- Talk informally about shape properties using words like 'sharp corner', 'pointy' or 'curvy'.
- Understand position through words alone – for example, "The bag is under the table," –with no pointing.
- Talk about patterns of events, in cooking or getting dressed.
- Talk about and identify the patterns around them, e.g. stripes on clothes, using informal language like 'pointy', 'spotty', 'blobs' etc.
- In the context of songs and play activities, follow and invent movement and music patterns, such as clap, clap, stamp.
- Recite numbers to 5
- Touch count each item in order: 1,2,3.
- Show 'finger numbers' up to 3
- Recognise and name basic colours
- Talk about and explore 2D shapes (for example, circles, rectangles, triangles, and squares) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.
- Compare objects and people
- Sort and match by colour, shape or size

- Experiment with their own symbols and marks as well as numerals.
- Compares two group of objects, saying when they have the same number.
- Recognise numerals up to 5.
- Link numerals and amounts within 5
- Begin to subitise quantities up to 3.
- Knows that numbers identify how many objects are in a set.
- Show an interest in shape and space by playing with shapes or objects.
- Show an interest in shape by sustained construction activity.
- Show an interest in shapes in the environment.
- Talk about and identify the patterns around them.
- Begin to talk about the shapes of everyday objects, e.g., 'round' and 'tall'.

- Estimates how many objects they can see and checks by counting them.
- Use the language of 'more' and 'fewer' to compare two sets of objects.
- Finds one more or one less from a group of up to five objects.
- Says the number that is one more than a given number 0 -5
- Begins to identify own mathematical problems based on own interests and fascinations.
- Know that the last number reached when counting a small set of objects tells you how many there are in total (cardinal principle)
- Model counting of objects in a random layout, showing the result is always the same as long as each object is only counted once.
- Begin to subitise small groups of two and three objects
- Notice and correct an error in a basic repeating pattern.
- Show 'finger numbers' up to 5.
- Solve real world mathematical problems with numbers up to 5.
-
- Beginning to use everyday language and some mathematical terms to describe 'solid' 3D shapes.
- Selects and explores a particular named shape for 2D and 3D shapes
- Can describe their relative position such as 'behind' or 'next to'
- Uses familiar objects and common shapes to create and recreate patterns and build models.
- Sort two or three items by length, height and weight.
- Uses everyday language related to time, such as before, after, soon, tomorrow, after school, in the morning.
- Measures short periods of time in simple ways.
- Orders and sequences familiar events.
- Use stories e.g. Rosie's Walk by Pat Hutchins to talk about distance

Spring- SATS parents' meeting (Y6)

Spring- MTC parents' meeting

May- National Numeracy Day

During each month- a Battle of the Bands will be scheduled for Y3-6 to encourage engagement in TTRS to support fluency in multiplication and division facts.

Mathematical Vocabulary.

Number and Counting- Number, Count, Counting, One, two, three, four, five, More, Lots, Many, None, How many?, Same, Different, One more, Match, Group, Pair

Comparison- Big, Small, Bigger, Smaller, Largest, Smallest, More, Fewer, Same, Equal

	Shape- Shape, Circle, Triangle, Square, Rectangle, Round, Flat, Straight, Curved, Side, Corner Space and Position- In, On, Under, Over, Above, Below, Next to, Between, Inside, Outside, Behind, In front, Up, Down Measure- Tall, Short, Long, Heavy, Light, Full, Empty, Bigger, Smaller, Large, Little Pattern- Pattern, Repeat, Repeating, Same, Different, Next, First, Last Time- Day, Night, Morning, Afternoon, Before, After, First, Next, Last, Today			
Reception	<u>Rationale-</u> Our Reception mathematics curriculum is rooted in the EYFS Statutory Framework, which emphasises developing a strong grounding in number to ensure children acquire the building blocks needed for future mathematical success. Children are provided with frequent and varied opportunities to count, subitise, explore number relationships and recognise patterns through practical, engaging experiences. The Mastering Number programme supports this by developing fluency, confidence and deep conceptual understanding through carefully sequenced learning and mathematical discussion. We foster positive attitudes towards mathematics, encouraging children to reason, problem-solve, make connections and apply their knowledge in meaningful contexts, ensuring they are well prepared for Key Stage 1.			
	<u>Skills</u> • identify when a set can be subitised and when counting is needed. • subitise different arrangements, both unstructured and structured, including using number frames make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills. • spot smaller numbers 'hiding' inside larger numbers. • connect quantities and numbers to finger patterns and explore different ways of representing numbers on their fingers. • hear and join in with the counting sequence, and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number. • to be accurate in counting, knowing that each item must be counted only once and can be counted in any order. • Be able to count actions and sounds as well as objects. • compare sets of objects by matching and begin to develop the language of 'whole' when talking about objects which have parts. • 1:1 correspondence - know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle') • Match numerals to quantities 0-5 • Compare size and length using vocabulary • Solve real world mathematical problems with measures	<u>Skills</u> • Recognise and understand the value of zero • Recall number bonds to 5 • Count verbally beyond 10 • Counting groups of 6, 7 and 8 objects. Understand these quantities as 'Five and a bit'. E.g. six is 5 and 1 more • Counting groups of 9 and 10 objects • Combine two groups to find the whole • Explore number bonds to ten using a ten frame and part whole model • Recognise and name 2D shapes. Develop spatial reasoning • Explore the properties of 3D shapes • Compare size, capacity and length using everyday vocabulary • Solve real world problems with measures • copy and continue a simple three shape repeating pattern.	<u>Skills</u> • Verbally count beyond 20, recognising the pattern of the counting system. • Have a deep understanding of number to 10, including the composition of each number. • Automatically recall number bonds for numbers 0–5 and some to 10. • Explore, talk about and represent patterns within numbers up to 10, including evens and odds and double facts • Explore, talk about and represent how quantities can be distributed equally. • Know what one more/one is less between consecutive numbers up to 10. • Use positional and directional language to describe objects and people. • Solve real world mathematical problems with shapes, space and measures. • Compare length, weight and capacity using comparative language, e.g, smaller, heavier, lighter. • Use positional and directional language to describe objects and people.	

	• copy and continue a simple three shape repeating pattern.			
	Mathematical Vocabulary Number- Number, Count, Counting, Numeral, Digit, Zero, One to twenty, How many?, More, Less, Same, Equal, Altogether, Total, Pair, Double, Half, Part, Whole, Subitise, Represent, Comparison- More than, Fewer than, Greater than, Less than, Equal to, Compare, Most, Least, Difference Addition and Subtraction- Add, Plus, Combine, Join, Increase, Sum, Subtract, Take away, Minus, Difference, Left, Remaining Pattern- Pattern, Repeating pattern, Different, Same, Continue, Predict, Sequence, Order Shape- Shape, Circle, Triangle, Square, Rectangle, Hexagon, Pentagon, Cube, Cuboid, Sphere, Cone, Cylinder, Flat, Curved, Side, Corner, Face Space and Position- In, On, Under, Over, Above, Below, Next to, Between, Behind, In front of, Near, Far, Left, Right, Turn, Rotate Measure- Length, Height, Weight, Mass, Capacity, Full, Empty, Heavier, Lighter, Taller, Shorter, Longer, Wider, Bigger, Smaller, Time- Day, Night, Morning, Afternoon, Evening, Before, After, First, Next, Last, Today, Yesterday, Tomorrow			
Year 1	<u>Rationale</u> – To ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value by working with numerals, words and the four operations, including with practical resources. Pupils will develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. They will be using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. Throughout the year, pupils will develop their confidence when articulating their mathematical thinking and they will be given various opportunities to apply their mathematical knowledge to real life contexts.			
	Number and Place Value	Number and Place Value	Number and Place Value	
	Skills – • count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • Count numbers to 100 in numerals; count in multiples of twos, fives and tens • identify and represent numbers using objects and pictorial representations • read and write numbers to 100 in numerals • read and write numbers from 1 to 20 in numerals and words • given a number, identify one more and one less • Count within 100, forwards and backwards, starting with any number • Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =			
	Addition and Subtraction	Addition and Subtraction	Addition and Subtraction	
	Skills – • add and subtract one-digit and two-digit numbers to 20, including zero • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ • Develop fluency in addition and	Skills – • add and subtract one-digit and two-digit numbers to 20, including zero • solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ • Read, write and interpret equations		

	subtraction facts within 10 • Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers. • Read, write and interpret equations containing addition (+), subtraction (–) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.	• containing addition (+), subtraction (–) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.		
	Multiplication and Division	Multiplication and Division	Multiplication and Division	
		Skills – • 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	Skills – • Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers.	
	Fractions	Fractions	Fractions	
			Skills – • recognise, find and name a half as one of two equal parts of an object, shape or quantity • recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	
	Measurement	Measurement	Measurement	
		Skills – • compare, describe and solve practical problems for: ➤ lengths and heights ➤ mass/weight ➤ capacity and volume ➤ time • measure and begin to record the following: ➤ lengths and heights ➤ mass/weight ➤ capacity and volume ➤ time (hours, minutes, seconds)	Skills – • recognise and know the value of different denominations of coins and notes • sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] • recognise and use language relating to dates, including days of the week, weeks, months and years • tell the time to the hour and half past the hour and draw the hands on a clock face to show these times • compare, describe and solve practical problems for: ➤ lengths and heights ➤ mass/weight ➤ capacity and volume ➤ time • measure and begin to record the following:	

			➤ lengths and heights ➤ mass/weight ➤ capacity and volume ➤ time (hours, minutes, seconds)	
	Properties of shape	Properties of shape	Properties of shape	
	Skills – • recognise and name common 2-D shapes [for example, rectangles including squares), circles and triangles] • recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] • Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. • Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.			
	Position and Direction	Position and Direction	Position and Direction	
	Skills – • describe position, direction and movement, including whole, half, quarter and three quarter turns		Skills – • describe position, direction and movement, including whole, half, quarter and three quarter turns	
	Mathematical Vocabulary – Continued from previous years with addition of the words below. Number and Place Value - Number names to 100, none, ones, tens, teens, halfway, equal to, is the same as, sum, total, difference, distance between, column, row, value, represent, order, ordinal number names. Addition and Subtraction - Addition, plus, subtraction, minus, sum, total, parts, whole, partition, combine, difference, missing, bonds, part whole model, bar model, number line. Multiplication and Division - Multiples, twos, fives, tens, odd, even, pair, groups of, share, group. Fractions - Equal parts, same size, one half, one quarter, three quarters. Geometry - Sort, match, pattern, pointed, corner, side, circle, square, rectangle, triangle, pentagon, hexagon, octagon, circular, face, edge, vertex, vertices, cube, cuboid, pyramid, sphere, cone, cylinder, classify, criteria, left, right, quarter full, clockwise, anti-clockwise, centre, direction, journey, turn, stretch, bend. Measurement - Months of the year, hour, minute, second, fortnight, o'clock, half past, price, cost, buy, cheap, cheaper, expensive, spent, change.			
Year 2	Rationale – To ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value by working with numerals, words and the four operations, including with practical resources. Pupils will develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. They will be using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money. By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. Finally, pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1. Throughout the year, pupils will develop their confidence when articulating their mathematical thinking and they will be given various opportunities to apply their			

mathematical knowledge to real life contexts.

Number and Place Value

Skills –

- count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward
- read and write numbers to at least 100 in numerals and in words
- identify, represent and estimate numbers using different representations, including the number line
- recognise the place value of each digit in a two-digit number (tens, ones)
- compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs
- use place value and number facts to solve problems
- Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10
- Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning.

Number and Place Value

Number and Place Value

Addition and Subtraction

Skills –

- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and ones
 - a two-digit number and tens
 - two two-digit numbers
 - adding three one-digit numbers
- show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
- 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

Addition and Subtraction

Skills –

- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
 - a two-digit number and ones
 - a two-digit number and tens
 - two two-digit numbers
 - adding three one-digit numbers (Y2)
- show that addition of 2 numbers can be done in any order (commutative) and subtraction of 1 number from another cannot
- 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
- Add and subtract across 10
- Add and subtract within 100 by applying related

Addition and Subtraction

Skills –

- Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.

	- Secure fluency in addition and subtraction facts within 10, through continued practice. - Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more...?"	one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.		
	Multiplication and Division	Multiplication and Division	Multiplication and Division	
		Skills – - recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers - show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot - calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs - solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts - Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables. - Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).	Skills – Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	
	Fractions	Fractions	Fractions	
			Skills – - 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 - Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	
	Measurement	Measurement	Measurement	
		Skills – - choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels - compare and order lengths, mass, volume/capacity	Skills – - recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value - find different combinations of coins that equal the same amounts of money - solve simple problems in a practical context involving addition and subtraction	

		and record the results using $>$, $<$ and $=$ (Y2)	of money of the same unit, including giving change - compare and sequence intervals of time - tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times - know the number of minutes in an hour and the number of hours in a day - choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels - compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$	
	Properties of shape	Properties of shape	Properties of shape	
	Skills – - identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line - identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] - compare and sort common 2-D shapes and everyday objects - recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] - compare and sort common 3-D shapes and everyday objects - Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another.			
	Position and Direction	Position and Direction	Position and Direction	
	Skills – - order and arrange combinations of mathematical objects in patterns and sequences - 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		Skills – - order and arrange combinations of mathematical objects in patterns and sequences - 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	

	(clockwise and anti-clockwise)		right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)	
	Statistics	Statistics	Statistics	
		Skills – - interpret and construct simple pictograms, tally charts, block diagrams and simple tables - ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity - ask and answer questions about totalling and comparing categorical data		
	Mathematical Vocabulary Continued from previous years with addition of the words below. Place Value - Number names up to 100, digit, numeral, place value, midpoint, > as 'greater than' < as 'less than' Addition and Subtraction - Partition, inverse, calculate, solve, increase, increasing, decrease, decreasing. Multiplication and Division - Multiple, step counting, array, near double, multiplication division times tables, sharing grouping, half as much, twice as many. Fractions - Numerator denominator equivalent (one) (two) third(s) two quarters, one third, two thirds, 'one and a quarter' one and 2 quarters one and a half one and 3 quarters. Geometry - vertical, horizontal, 2 dimensional, 3 dimensional, regular, irregular, circular, rectangular, triangular, vertices edges faces surface, quadrilateral polygon, prism, solid, hollow, clockwise, anti-clockwise, whole turn, half turn, quarter turn, three quarter turn, symmetry, symmetrical, straight curved opposite rotate rotation angle right angle. Measurement - Amount, change, analogue, digital, five/ten/1/4 past/to, hours, minutes, seconds, clockwise anticlockwise, height, width, metre, centimetre, millimetre, gram, kilogram, metres, centimetres, litres, millilitres, grams, kilograms, degrees, celcius, thermometer, capacity, volume. Statistics - Pictogram tally chart block graph, bar chart, diagram, set, venn diagram, table, data, category(ies), label, title, most/least common, most/least popular, vote.			
Year 3	Rationale - To ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. Pupils will develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. By the end of the year, pupils will have developed their ability to solve a range of problems, including with simple fractions and decimal place value. Pupils will draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. Finally, they will be able to use measuring instruments with accuracy and make connections between measure and number. Throughout the year, pupils will develop their confidence when articulating their mathematical thinking and they will be given various opportunities to apply their mathematical knowledge to real life contexts.			
	Number and Place Value	Number and Place Value	Number and Place Value	
	Skills – - Recognise the place value of each digit in three-digit numbers, compose and decompose three-digit numbers using standard and non-standard partitioning. - Order, read and write numbers up to 1000. - Read & write numbers up to 1000 in numerals and words - Count on in multiples of 50 and 100. - Recall multiplication and division facts for the 3 multiplication tables (Recap 2x,5x,10x)	Skills – - Read & write numbers up to 1000 in numerals and words - Recognise the place value of each digit in three-digit numbers, compose and decompose three-digit numbers using standard and non-standard partitioning. - Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three- digit multiples of 10.	Skills – - Recognise the place value of each digit in three-digit numbers, compose and decompose three-digit numbers using standard and non-standard partitioning. - Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three- digit multiples of 10. - Compare and order numbers up to 1000.	

	- Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10. - Compare and order numbers up to 1000. - Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10. - Solve number problems and practical problems - Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.	- Compare and order numbers up to 1000. - Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10. - Identify, represent and estimate numbers using different representations, including the number line. - Solve number and practical problems. - Recall multiplication and division facts for the 3 multiplication tables (Recap 2x,5x,10x) - Count on in multiples of 3, 4 & 8 - Recall multiplication and division facts for the 3, 4 & 8 multiplication tables	- Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10. - Read and write numbers up to 1,000 in numerals and in words - Solve number problems and practical problems involving these ideas. - Count on in multiples of 3, 4, 8, 50, 100 - Recall multiplication and division facts for the 8x multiplication tables (Recap 3x, 4x) - Find 10 or 100 more or less than a given number - Count on in multiples of 3, 4, 8, 50, 100 - Solve number problems and practical problems involving place value - Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10).	
	Addition and Subtraction Skills – - Add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds - To add or subtract mentally combinations of one-digit and two-digit or 3 digit numbers - Add and subtract up to three-digit numbers using columnar methods. - Estimate the answer to a calculation and use inverse operations to check answers. - Calculate complements to 100.	Addition and Subtraction Skills – - Solve problems, including missing number problems using number facts, place value and more complex addition and subtraction. - Add and subtract numbers mentally, including: - a three-digit number and 1s - a three-digit number and 10s - a three-digit number and 100s - Add and subtract up to three-digit numbers using columnar methods. - Estimate the answer to a calculation and understand the inverse relationship between addition and subtraction, and how both relate to the part-part-whole structure. - Understand and use the commutative property of addition, and understand the related property for subtraction. - Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	Addition and Subtraction Skills – - Calculate complements to 100. - Add and subtract up to three-digit numbers using columnar methods. - Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. - Estimate the answer to a calculation - Understand the inverse relationship between addition and subtraction, and how both relate to the part-part-whole structure. - Understand and use the commutative property of addition, and understand the related property for subtraction. - Solve problems, including missing number problems using number facts, place value and more complex addition and subtraction. - Add and subtract numbers mentally, including: - a three-digit number and 1s - a three-digit number and 10s - a three-digit number and 100s	

			- Add and subtract up to three-digit numbers using columnar methods - Know and maintain fluency in addition and subtraction within and across 10 and know how to use these to derive associated facts with larger numbers.	
	Multiplication and Division	Multiplication and Division	Multiplication and Division	
	Skills – Write and calculate mathematical statements for multiplication using known multiplication tables, including for two-digit numbers times one-digit numbers, using mental method.	Skills – - Write and calculate mathematical statements for multiplication using known multiplication tables, including for two-digit numbers times one-digit numbers, using mental and progressing towards a formal written method. - Look at counting in steps along a number line and relate arrays to times tables to link to previous learning. - Use partitioning method for multiplication of a teen number by a one-digit number. - Solve problems, including missing number problems, using multiplication and division - Move on to expanded short multiplication and refine the recording in preparation for short multiplication. - Solve problems, including missing number problems, using multiplication and division	Skills – - Write and calculate mathematical statements for multiplication using known multiplication tables, including for two-digit numbers times one-digit numbers, using mental method. - 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. - Estimate the answer to a calculation and use inverse operations to check answers - Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables - Review 2, 5 and 10 multiplication tables	
	Fractions	Fractions	Fractions	
	Skills – Recognise, find and write unit and non-unit fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	Skills – - Recognise, find and write unit and non-unit fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. - Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts. - Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$) and use this understanding to solve problems.	Skills – - Recognise and show, using diagrams, equivalent fractions with small denominators. - Compare and order unit fractions and fractions with the same denominators. - Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts. - Add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$) and use this understanding to solve problems. - 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 unit and non-unit	

			fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. Solve problems that involve all of the above	
	Measurement	Measurement	Measurement	
	Skills – - Add and subtract amounts of money to give change, using both £ and p in practical contexts. - Solve number problems and practical problems - Estimate the answer to a calculation and use inverse operations to check answers. - Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). - Tell and write the time from an analogue clock (12 hour) to the nearest 5 min use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight. - Know the number of minutes in an hour and the number of hours in a day. - Know the number of seconds in a minute and the number of days in each month, year and leap year. - Tell and write the time from an analogue clock, and 12 hour and 24 hour digital clocks.	Skills – - Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). - Tell and write the time from an analogue clock, and 12 hour and 24 hour digital clocks.	Skills – - 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. - Use vocabulary such as o'clock, am/pm, 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. - Record and compare time in terms of seconds, minutes and hours. - Compare durations of events (for example to calculate the time taken by particular events or tasks). - Add and subtract amounts of money to give change, using both £ and p in practical contexts - Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). - Measure the perimeter of simple 2-D shapes	
	Properties of shape	Properties of shape	Properties of shape	
	Skills – - Draw 2-D shapes and make 3-D shapes using modelling materials; describe properties - Draw polygons by joining marked points, and identify parallel and perpendicular sides. - Recognise 3-D shapes in different orientations and describe them. - Measure the perimeter of simple 2-D shapes.	Skills – Recognise angles as a property of shape or a description of turn and identify right angles, recognising that two right angles make a half-turn, three make three quarters of a turn and four complete a turn.	Skills – - Recognise angles as a property of shape or a description of turn and identify right angles, recognising that two right angles make a half-turn, three make three quarters of a turn and four complete 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. - Draw polygons by joining marked points, and identify parallel and perpendicular sides - Draw 2-D shapes and make 3-D shapes	

			using modelling materials - Recognise 3-D shapes in different orientations and describe them - Measure the perimeter of simple 2-D shapes.	
	Position and Direction	Position and Direction	Position and Direction	
	No objectives within Y3 Programme of Study	No objectives within Y3 Programme of Study	No objectives within Y3 Programme of Study	
	Statistics	Statistics	Statistics	
	Skills – Interpret and present data using bar charts, pictograms and tables and use to solve one-step questions (e.g. ‘How many more/fewer?’ and ‘How many fewer?’).	Skills – Interpret and present data using bar charts, pictograms and tables and use to solve one-step questions (e.g. ‘How many more/fewer?’ and ‘How many fewer?’).		
Year 4	Rationale – To ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. Pupils will develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. By the end of the year, pupils will have developed their ability to solve a range of problems, including with simple fractions and decimal place value. Pupils will draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. Pupils will be able to use measuring instruments with accuracy and make connections between measure and number. Finally, by the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Throughout the year, pupils will develop their confidence when articulating their mathematical thinking and they will be given various opportunities to apply their mathematical knowledge to real life contexts.			
	Number and Place Value	Number and Place Value	Number and Place Value	
	Skills – - Counting in multiples of 3, 4, 6 and 7 - Order and compare numbers beyond 1000, recognising the place value of each digit in four-digit numbers and round to the nearest 10, 100 and 1000. - Compose and decompose four-digit numbers using standard and nonstandard partitioning. - Find 1000 more or less than a given number - Reason about the location of mixed numbers in the linear number system including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each. - Count backwards through zero to include negative numbers. - Count in multiples of 6, 7, 8 and 9 - Ordering and comparing numbers beyond 1000 - Identify, estimate and represent number in different representations - Count in multiples of 9, 25 and 1000 - Divide 1,000 into 2, 4, 5 and 10 equal parts, and	Skills – - Count backwards through zero to include negative numbers. - Recognise the place value of each digit in four-digit numbers and compose and decompose four-digit numbers using standard and nonstandard partitioning. - Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100. - Round any number to the nearest 10, 100 and 1000 - Use known facts and efficient strategies to solve number and practical problems 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. - Count in multiples of 6, 7, 9, 25 and 1000	Skills – - Round and number to the nearest 10, 100, 1000 and round decimals with one decimal place to the nearest whole number. - Identify the value of the digits in 4 digit numbers and decimal numbers as one, tenths and hundredths. - Find 1000 more or less than a given number - Count backwards through zero to include negative numbers. - Recognise the place value of each digit in four-digit numbers and compose and decompose four-digit numbers using standard and nonstandard partitioning. - Order and compare numbers beyond 1000, recognising the place value of each digit in four-digit numbers and round to the nearest 10, 100 and 1000. - Compose and decompose four-digit numbers using standard and nonstandard partitioning. - Read Roman Numerals to 100 (I to C).	

	read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts. • Round any number to the nearest 10, 100 and 1000 • Count in multiples of 6, 7, 9, 25 and 1000 • 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. • Use known facts and efficient strategies to solve number and practical problems with increasingly large positive numbers • Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.			
	Addition and Subtraction Skills – • Add and subtract numbers up to 4 digits using the formal written method where appropriate. • Estimate and use inverse operations to check answers to a calculation. • Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100) including multiplying by 0 and 1; dividing by 1. • Solve two step problems/word problems • Subtract numbers up to 4 digits using the formal written method where appropriate	Addition and Subtraction Skills – • Add and subtract numbers up to 4 digits using the formal written method where appropriate. • Estimate and use inverse operations to check answers to a calculation. • Solve addition and subtraction two-step problems in contexts (including measures, money and statistics), deciding which operations and methods to use and why. • Solve simple measure and money problems involving fractions and decimals to two decimal places.	Addition and Subtraction Skills – • Add and subtract numbers up to 4 digits using the formal written method where appropriate. • Solve addition and subtraction two-step problems in contexts (including measures, money and statistics), deciding which operations and methods to use and why.	
	Multiplication and Division Skills – • Recall multiplication and division facts for multiplication tables up to 12×12 and recognise products in multiplication tables as multiples of the corresponding number. • Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication. • Recognise and use factor pairs and commutativity in mental calculations. • Apply place-value knowledge to known multiplicative number facts (scaling facts by 100) including multiplying by 0 and 1; dividing by 1 • Multiply two- and three-digit numbers by a	Multiplication and Division Skills – • Apply place-value knowledge to known multiplicative number facts (scaling facts by 100) including multiplying by 0 and 1; dividing by 1 • Multiply two- and three-digit numbers by a one-digit number using the formal written layout • Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context. • Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems which involve describing the relationship between two objects using the language of scaling.	Multiplication and Division Skills – • Solve integer scaling problems and harder correspondence problems such as n objects are connected to m objects. • Recall multiplication and division facts for multiplication tables up to 12×12 and recognise products in multiplication tables as multiples of the corresponding number. • Preparation for MTC • Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication • Multiply two- and three-digit numbers by a one-digit number using the formal written layout	

	one-digit number using the formal written layout Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context.	- Recall multiplication and division facts for multiplication tables up to 12×12 and recognise products in multiplication tables as multiples of the corresponding number. - Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.	- Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context. - Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit - Know how to use the multiplication facts and corresponding division facts to derive associated facts with powers of 10.	
	Fraction including Decimals Skills – - Recognise and show, using diagrams, families of common equivalent fractions. - Add and subtract fractions with the same denominator. - Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$ - Reason about the location of mixed numbers in the linear number system. - 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.	Fraction including Decimals Skills – - Recognise and show, using diagrams, families of common equivalent fractions. - Add and subtract fractions with the same denominator. - 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 denominator. - Recognise and write decimal equivalents to $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$ - Recognise and write decimal equivalents of any number of tenths or hundredths. - Compare numbers with the same number of decimal places up to two decimal places. - Identify, estimate and represent number in difference representations. - Solve simple measure and money problems involving fractions and decimals to 2 decimal places. - 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.	Fraction including Decimals Skills – - Understand the effect of dividing a one- or two-digit number by 10 and 100. - 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 2 decimal places. - Add and subtract fractions with the same denominator. - Convert mixed numbers to improper fractions and vice versa. - Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers. - Recognise and show, using diagrams, families of common equivalent fractions. - Reason about the location of mixed numbers in the linear number system. - Recognise and write decimal equivalents of any number of tenths or hundredths. - Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit denominator. - Reasoning and problem-solving questions linked to fraction objectives	
	Measurement Skills – - Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. - Find the area of rectilinear shapes by counting squares	Measurement Skills – - Estimate, compare and calculate different measures e.g. for length, mass, capacity and money in pounds and pence. - Convert between different units of measure for length,	Measurement Skills – - Solve simple measure and money problems involving fractions and decimals to two decimal places. - Convert between different units of measure - Estimate, compare and calculate different	

• Solve problems involving perimeter and area • Read, write and convert time between analogue and digital clocks (12 and 24 hour). • Convert between analogue and digital clocks (12 hour) and between common units of time, applying this knowledge within problems. • Convert from hours to minutes; minutes to seconds; • measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) (Y3 objective) • Convert between different units of measure	mass and capacity. • Solve addition and subtraction two-step problems in contexts (including recurs, money and statistics), deciding which operations and methods to use and why. • Read, write and convert time between analogue and digital clocks (12 and 24 hour). • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	measures e.g. for length, mass, capacity and money in pounds and pence. • Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts. • Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres. • Find the area of rectilinear shapes by counting squares • Recognise and use factor pairs and commutativity in mental calculations. • Read, write and convert time between analogue and digital clocks (12 and 24 hour). • Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.
Properties of Shapes	Properties of Shapes	Properties of Shapes
Skills – • Classify geometric shapes based on their properties, including quadrilaterals and triangles. • Identify lines of symmetry in 2-D shapes and complete a simple symmetrical figure with respect to a specific line of symmetry.	Skills – • Identify acute and obtuse angles and compare and order angles up to 2 right angles by size • Classify geometric shapes based on their properties, including quadrilaterals and triangles. • Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. • Find the perimeter of regular and irregular polygons. • Identify lines of symmetry in 2-D shapes and complete a simple symmetrical figure with respect to a specific line of symmetry. • Complete a simple symmetric figure with respect to a specific line of symmetry	Skills – • Identify acute and obtuse angles and compare and order angles up to 2 right angles by size • Solve problems involving angles – White Rose reasoning and problem solving • Identify lines of symmetry in 2-D shapes and complete a simple symmetrical figure with respect to a specific line of symmetry.
Position and Direction	Position and Direction	Position and Direction
	Skills – • Describe positions on a 2-D grid as coordinates in the first quadrant and describe movements between positions as translations of a given unit to the left/right and up/down. • Plot specified points and draw sides to complete a given polygon in the first quadrant and translate within the first quadrant. • Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.	Skills – • Describe positions on a 2-D grid as coordinates in the first quadrant and describe movements between positions as translations of a given unit to the left/right and up/down. • Plot specified points and draw sides to complete a given polygon in the first quadrant and translate within the first quadrant. • Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.
Statistics	Statistics	Statistics
	Skills –	Skills –

		• Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	• Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. • Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	
	Mathematical Vocabulary Continued from previous years with addition of the words below. Place Value - Number names to 10000, round, rounding, previous multiple, next multiple, closest multiple, nearest 10, 100, Roman numerals to 100 Addition and Subtraction - exchange, column, Multiplication and Division - factor, factor pairs, distributive, associative, derive, short multiplication, short division. Fractions and Decimals - decimal place, convert, proportion, mixed number, improper fraction. Geometry - Isosceles, scalene, equilateral, parallelogram, rhombus, trapezium, protractor, coordinates, quadrant, plot, grid, translate, translation. Measurement - Convert, rectilinear, area, centimeters squared, meters squared, dimensions, 24-hour clock Statistics - axis/axes, graph.			
Year 5	Rationale - To ensure that pupils extend their understanding of the number system and place value to include larger integers. Pupils should develop the connections between multiplication and division with fractions, decimals, percentages and ratio. Pupils will develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. Throughout the year, pupils will develop their confidence when articulating their mathematical thinking and they will be given various opportunities to apply their mathematical knowledge to real life contexts.			
	Number and Place Value	Number and Place Value	Number and Place Value	
	Skills – • Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit. • Solve number problems and practical problems that involve the above. • Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero.	Skills – • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. • Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals. • Round any 6 digit number to the nearest 10, 100, 1000, 10,000 and 100,000. • Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read • scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.	Skills – • Round any 6 digit number to the nearest 10, 100, 1000, 10,000 and 100,000. • Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. • Solve number problems and practical problems that involve all of the above (place value objective recap) • Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.	
	Addition and Subtraction	Addition and Subtraction	Addition and Subtraction	
	Skills - • Add and subtract whole numbers with more than 4 digits, including using the formal written methods. • Solve addition and subtraction multi-step problems in contexts, deciding which operations	Skills – • Add and subtract numbers mentally with increasingly large numbers. • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Skills – • Add and subtract whole numbers with more than 4 digits, including using the formal written methods. • Use rounding to check answers to calculations and determine, in the context of a problem,	

	and methods to use and why.		levels of accuracy. • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.	
	Multiplication and Division	Multiplication and Division	Multiplication and Division	
	Skills – • Secure fluency in multiplication table facts, and corresponding division facts, through continued practice. • Multiply up to 4 digits by a single or two-digit number using a formal written method, including long multiplication for two-digit numbers. • 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. • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers and identify if a number up to 100 is prime. • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. • Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes. • Multiply and divide numbers mentally drawing upon known facts.	Skills – • Secure fluency in multiplication table facts, and corresponding division facts, through continued practice. • Multiply and divide numbers mentally drawing upon known facts. • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000. • Multiply 3- and 4-digit numbers by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers. • Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) number. • Establish whether a number up to 100 is prime and recall prime numbers up to 19 • Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³) • Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes •	Skills – • Secure and maintain fluency in all multiplication and division acts up to 12 x 12 and use to derive related facts with larger numbers and decimals in the context of decimals, percentages and in contexts of shape and measures. • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. • Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. • Recap Multiplication and division methods • Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes • Multiply 4-digit numbers by a one-digit number using a formal written method, including long multiplication for two-digit numbers. • 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.	
	Fractions, Decimals and Percentages	Fractions, Decimals and Percentages	Fractions, Decimals and Percentages	
	Skills – • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000. • Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents. • Reason about the location of any number with up to 2 decimal places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.	Skills – • Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$) • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. • Find non-unit fractions of quantities. • Recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”, and write percentages as a fraction with denominator 100, and as a decimal.	Skills – • Round decimals with two decimal places to the nearest whole number and to one decimal place. • Reason about the location of any number with up to 2 decimal places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each. • Solve problems involving numbers up to three decimal places. • Read and write decimal numbers as fractions	

- Find equivalent fractions and understand that they have the same value and the same position in the linear number system.
- Compare and order fractions whose denominators are all multiples of the same number.
- Add and subtract fractions with the same denominator and multiples of the same number.
- Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $2/5 + 4/5 = 6/5 = 1 \frac{1}{5}$)
- Find non-unit fractions of quantities.
- Read, write, order and compare numbers with up to 3 decimal places
- Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place
- Solve problems involving numbers up to three decimal places.

- Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and fractions with a denominator of a multiple of 10 or 25.
- Compare and order fractions whose denominators are all multiples of the same number.
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.
- Read and write decimal numbers as fractions (e.g. $0.71 = 71/100$).
- Add and subtract fractions with the same denominator and multiples of the same number.

- (e.g. $0.71 = 71/100$).
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.
 - Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.
 - Reason about the location of any number with up to 2 decimal places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.
 - Solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and fractions with a denominator of a multiple of 10 or 25.
 - Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Measurement

Skills –

- Measure and calculate the perimeter of composite rectilinear (a shape whose sides meet at right angles) shapes in centimetres and metres.
- Calculate and compare the area of squares and rectangles including using standard units, cm^2 and m^2 and estimate the area of irregular shapes.

Measurement

Skills –

- Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) and understand and use approximate equivalences between metric units.

Measurement

Skills –

- Convert between different units of metric measure
- Estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids and capacity (e.g. using water).
- Use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling
- Understand and use equivalences between metric units and common imperial units such as inches, pounds and pints.
- Solve problems involving converting between units of time.
- Revisit year 4 objectives – Time
- Measure and calculate the perimeter of composite rectilinear (a shape whose sides meet at right angles) shapes in centimetres and metres.
- Calculate and compare the area of squares and rectangles including using standard units, cm^2 and m^2 and estimate the area of irregular shapes.

Properties of shape

Skills –

Properties of shape

Skills –

Properties of shape

Skills –

	• Use the properties of rectangles to deduce related facts and find missing lengths and angles • Draw and measure given angles, measuring them in degrees and use knowledge to solve problems involving missing angles. • Estimate and compare acute, obtuse and reflex angles.	• Estimate and compare acute, obtuse and reflex angles. • Identify angles at a point and 1 whole turn (total 360°), angles at a point on a straight line and half a turn (total 180°) other multiples of 90° • Solve problems involving missing angles	• Identify 3-D shapes, including cubes and other cuboids, from 2-D representations • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. • Use the properties of rectangles to deduce related facts and find missing lengths and angles	
	Position and Direction Skills – • 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	Position and Direction	Position and Direction Skills – • 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 • Review coordinates (year 4 objectives) • Describe positions on a 2-D grid as coordinates in the first quadrant • Plot specified points and draw sides to complete a given polygon.	
	Statistics Skills – • Solve comparison, sum and difference problems using information presented in a line graph. • Complete, read and interpret information in tables, including timetables.	Statistics	Statistics	
	Mathematical Vocabulary Continued from previous years with addition of the words below. Place Value - Number names to one million, midpoint, Roman numerals to 1000, linear, equivalence, powers, Addition and Subtraction - complements, ascending, descending. Multiplication and Division - one tenth/hundredth of the size, scale up, scale down, scaling, prime, common factors, common multiple (s), composite, squared, cubed, long multiplication, divisible, divisibility. Fractions and Decimals - decimal place, thousandths, common denominator, simplest form, percent(age). Measurement - Composite, metric, centimeters cubed, metres cubed, imperial, inch, foot, yard, mile. Geometry - Protractor, accuracy. Statistics - Line graphs.			
Year 6	<u>Rationale</u> – To ensure that pupils extend their understanding of the number system and place value to include larger integers. Pupils should develop the connections between multiplication and division with fractions, decimals, percentages and ratio. Pupils will develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them. By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.			

Throughout the year, pupils will develop their confidence when articulating their mathematical thinking and they will be given various opportunities to apply their mathematical knowledge to real life contexts.

Number and Place Value	Number and Place Value	Number and Place Value
Skills – • Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. - • Solve number and practical problems that involve all four operations, including multi-step problems and those which require conversion of measures (including recording as decimals up to 3 decimal places). • Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to multiply and divide whole numbers and decimals, explaining the effect and identifying the value of each digit up to 3 decimal places. • Round any whole number up to 1 000 000 to the nearest 10, 100, 1000, 10 0000 and round decimals up to 2 decimal places.	Skills – • Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. • Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to multiply and divide whole numbers and decimals, explaining the effect and identifying the value of each digit up to 3 decimal places. • Interpret negative numbers and calculate intervals across	Skills – • Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. • Round any whole number up to 1 000 000 to the nearest 10, 100, 1000, 10 0000 and round decimals up to 2 decimal places. • Use negative numbers in context and calculate intervals across 0 • Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.
Addition, Subtraction, Multiplication and Division	Addition, Subtraction, Multiplication and Division	Addition, Subtraction, Multiplication and Division
Skills – • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • Use formal written methods to add and subtract whole numbers with more than 4 digits. • Use knowledge of place value and multiplication facts to 12x12 to derive related multiplication and division facts involving decimals. • Multiply and divide numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication or short division, interpreting remainders according to the context. • Divide numbers up to 4 digits by a two-digit whole number using long division, and interpret remainders as whole numbers, fractions, or by	Skills – • Perform mental calculations, including with mixed operations and large numbers. • Add and subtract numbers to 2 decimal places using formal written methods. • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Use common factors to simplify fractions and common multiples to express fractions in the same denomination and use this knowledge when adding/subtracting fractions with different denominators. • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • Solve problems which require answers to be rounded	Skills – • Perform mental calculations, including with mixed operations and large numbers. • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • Multiply and divide numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication or short division, interpreting remainders according to the context. • Divide numbers up to 4 digits by a two-digit whole number using long division, and interpret remainders as whole numbers, fractions, or by rounding as appropriate. • Use their knowledge of the order of operations to carry out calculations involving the four

	rounding as appropriate. - Identify multiples and factors including finding all factor pairs, common factors and common multiples. - Know and use the vocabulary of prime numbers, prime factors, square numbers and cube numbers. - Perform mental calculations, including with mixed operations and large numbers. - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why - Multiply one-digit numbers with up to two decimal places by whole numbers. - Use their knowledge of the order of operations to carry out calculations involving the four operations.	to specified degrees of accuracy - Multiply and divide numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication or short division, interpreting remainders according to the context. - Use their knowledge of the order of operations to carry out calculations involving the four operations. - Solve problems involving addition, subtraction, multiplication and division.	operations. - Solve problems involving addition, subtraction, multiplication and division. - Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. - Solve problems which require answers to be rounded to specified degrees of accuracy	
	Fractions, Decimals and Percentages Skills – - Multiply and divide whole numbers and decimals by 10 or 100 and integers by 1000, explain the effect. - Identify the value of each digit to 3dp - Use decimal notation for tenths and hundreds; extend to thousandths - Use common factors to simplify fractions and common multiples to express fractions in the same denomination and use this knowledge when adding/subtracting fractions with different denominators. - Recognise mixed numbers and improper fractions and convert from one to another - Compare, order, add and subtract mixed numbers and improper fraction and convert from one to another. - Identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places - Round and order decimals up to 2 decimal places.	Fractions, Decimals and Percentages Skills – - Multiply and divide numbers by 10, 100 and 1000 to 3dp - Use common factors to simplify fractions and common multiples to express fractions in the same denomination - Compare and order fractions, including >1 - Add and subtract fractions with different denominators and mixed number, using the concept of equivalent fraction - Multiply simple pairs of proper fractions, writing answer in simplest form - Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$) - Associate a fraction with division and calculate decimal fraction equivalent for a simple fraction. - Understand per cent as a number of parts per one hundred - Solve problems involving percentages. - Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. - Convert fractions to decimals to percentages and vice versa	Fractions, Decimals and Percentages Skills – - Compare and order fractions with different denominators - Add and subtract fractions with different denominators - Multiply simple pairs of proper fractions, writing answer in simplest form - Divide proper fractions by whole numbers (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$) - Find percentages of amounts of money. - Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. - Solve problems involving percentages - Use common factors to simplify fractions and common multiples to express fractions in the same denomination - Add and subtract fractions with different denominators and mixed number	
	Ratio & Proportion	Ratio & Proportion	Ratio & Proportion	

		Skills – - Understand what a proportion is and how it is represented - Understand what a ratio is a how it is represented - solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts - Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison - Solve problems involving similar shapes where the scale factor is known or can be found - Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.		
	Algebra	Algebra	Algebra	
	Skills – - Use simple formulae - Express missing number problems algebraically - Find pairs of numbers that satisfy number sentences involving two unknowns.	Skills – - Use simple formulae - Generate and describe linear number sequences - Express missing number problems algebraically - Find pairs of numbers that satisfy number sentences involving two unknowns. - Enumerate all possibilities of combinations of two variables		
	Measurement	Measurement	Measurement	
	Skills – - 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 to up to three decimal places - Convert between miles and kilometres and become familiar with imperial measures - Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 2 decimal places where appropriate	Skills – - Recognise that shapes with the same areas can have different perimeters and vice versa. - Recognise when it is possible to use formulae for area and volume of shapes. - Calculate the area of parallelograms and triangles. - Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units (e.g. mm³ and km³). - 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 to up to three decimal places - Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.	Skills – - 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 to up to three decimal places - Solve problems involving the calculation and conversion of units of measure up to three decimal places - Recognise that shapes with the same areas can have different perimeters and vice versa. - Recognise when it is possible to use formulae for area and volume of shapes. - Calculate the area of parallelograms and triangles. - Calculate, estimate and compare volume of cubes and cuboids using standard units,	

		Solve problems involving the calculation and conversion of units of measure up to three decimal places	including cubic centimetres (cm ³) and cubic metres (m ³), and extending to other units (e.g. mm ³ and km ³).	
	Properties of Shapes	Properties of Shapes	Properties of Shapes	
	Skills – - Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. - Review measuring and drawing angles – types of angles - Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles in any triangle, quadrilaterals and regular polygons - Draw 2-D shapes using given dimensions and angles - Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. - Compare and classify 2D and 3D shapes based on their properties and sizes. - Recognise, describe and build simple 3-D shapes, including making nets		Skills – - Draw 2-D shapes using given dimensions and angles - Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. - Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius - Compare and classify 2D and 3D shapes based on their properties and sizes. - Draw 2-D shapes using given dimensions and angles and construct 3D shapes from nets. - Know the properties of a range of 3D shapes from nets.	
	Position and Direction	Position and Direction	Position and Direction	
		Skills – - Describe positions on the full coordinate grid (all four quadrants) and calculate measurements between different points. - Draw, translate and reflect shapes on the coordinate plane and reflect in the axes.		
	Statistics	Statistics	Statistics	
	Skills – Interpret and construct pie charts and line graphs and use these to solve problems.		Skills – Interpret and construct pie charts and line graphs and use these to solve problems.	

- Calculate and interpret the mean as an average.

Mathematical Vocabulary

Continued from previous years with addition of the words below.

Place Value - Number names beyond one million, integer,

Addition, Subtraction, Multiplication and Division - Long division, prime factor, factorise.

Fractions - simplify, degrees of accuracy,

Algebra- Symbol, formula(e), algebraically, unknown, variable, constant, generalise.

Ratio and Proportion - relative size, scale factor, proportion, ratio, in every, for every,

Measurement - Kilometre cubed, mph, m/s, km/h

Geometry - Dissect, net(s), radius, circumference, diameter, vertically opposite, complementary angles,

Statistics - Pie chart, mean average, data set.

British Values

Democracy and **respect and tolerance** for the opinions of others/celebration of diversity is promoted through activities in statistics such as voting, activities which involve turn taking, discussions of different opinions and listening to each other. **Respect and Tolerance** is integral to classroom activities, the ethos is one of inclusivity and support, moving forwards together. For example, talk partners and cold calling promote and support tolerance and respect on a daily basis and the teacher models this through the language used and through the way misconceptions are used to address these values. The resources used also reflect this inclusivity and the diversity in British society. The ground rules in place to facilitate the successful use of these strategies and the ongoing reasoning and justification of views within this promote **individual liberties** as children understand that all views are listened to and respected. Clear, consistent boundaries, applied to everyone and modelled by the teacher promote **The Rule of Law**.