Ormesby Primary School — Maths Curriculum Overview Knowledge and Skills

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.

Year Group	Autumn Term	Spring Term	Summer Term	Additional Events
Nursery	Rationale – To provide opportunities for children to explore the number system and gain a sense of the size of different numbers through real life experiences that include counting, comparing and subitising and to develop the language associated with this. To develop a sense of curiosity and encourage children to seek meaning and to understand and explain what they observe.			**Potential on-site learning** Stay and Play – linked to number games and activities. Outdoor area- number activities. **Potential off-site learning** Local area walks to Post Office – posting a letter, links to mass, money, counting, sorting. Looking at shapes , numbers and patterns in the environment. **Potential visitors**
	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. • 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'. • Use tidy-up time to match blocks to silhouettes or fit things in containers, describing and naming shapes. • 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.	Skills- • Recite numbers, forwards and backwards, within 10 in play contexts (e.g. rocket launches). • Recognise numerals to 5. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Count a small set of objects, saying one number name for each item in order: 1,2,3,4,5. • In play contexts, compare quantities using the language: 'more than', 'fewer than' and enough. • Be able to show 'finger numbers' up to 5. • Separate a group of three or four objects in different ways, beginning to recognise that the total is still the same. • Select a particular named shape. • Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. • Make comparisons between objects relating to size, length, weight and capacity. • Use spatial words in play (e.g. on, under). • Discuss position in real contexts, e.g. how to shift the leaves off a path. • Talk about the sequence of events in stories. • Make patterns with a range of natural and everyday objects and materials, as well as blocks and shapes. • In play contexts, continue patterns and spot mistakes.	Skills- • Recite numbers to 10 and beyond. • Count objects to 10, including those in irregular arrangements. • Count actions or objects that can't be moved. • Match numerals and amounts up to 10. • Count out from larger group, e.g. be able to count out 4 pencils to put in a pot. • Solve real world mathematical problems with numbers up to 5. • Through play contexts and stories (e.g. Number Blocks), develop awareness that quantities are made up of smaller quantities, e.g. I knew it was 3 because I can see a 2 and a 1. • Develop fast recognition of up to 3 objects, without having to count them individually (subitising). • Compare two groups of objects using appropriate language and identifying when they have the same amount. • Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. • Combine shapes to make new ones - an arch, a bigger triangle etc. • Sort objects according to their attributes. • Describe their route and give directions to each other. • Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...' • Extend and create ABAB patterns – stick, leaf, stick, leaf.	

	• In the context of songs and play activities, follow and invent movement and music patterns, such as clap, clap, stamp.		• Notice and correct an error in a repeating pattern.	
	Mathematical Vocabulary. **Number** - Number names to 10, count, count up, count down, more, less, fewer, most, least, the same as, enough, not enough, too many, the same, different, ordinal numbers (first, second, third... last), a lot, together. **Shape** - Shape, circle, square, rectangle, triangle, the same, different, match, big, bigger, biggest, small, smaller, smallest, large, larger, largest, roll, turn, slide, flat, straight, curved, round, corner, side. **Position** - In front of, behind, on top of, under, underneath, next to, beside, over, through, in between, top, bottom, middle, above, below, side, in, on, up, down, inside, outside, front, back, forwards, backwards, sideways, close, near, far, towards, away from. Pattern Next, before, notice, missing, changed, after, follow, start, finish, copy, continue, repeat, the same, different, lines, loops, zig-zags, names of shapes, names of colours, number names. **Measurement** - Long, longer, longest, short, shorter, shortest, tall, taller, tallest, high, higher, highest, heavy, heavier, heaviest, light, lighter, lightest, full, half-full, empty, over-flowing, holds, container, weigh(s), balance, scales, money coin penny, pence, pound price, cost, buy, sell, spend, spent, pay. **Time** - First, then, after, next, soon, last, before, yesterday, today, tomorrow, evening, morning, afternoon, day, bed-time, night-time, in a minute, early, late, earlier, later, days of the week, seasons, week, month, year, weekend, birthday, holiday.			
	Knowledge- To know that objects can be rearranged and the quantity will not change. To know that numerals represent a given quantity. To know that objects can be counted in any order and there will still be the same amount.			
Reception	Rationale- To develop a sense of the relative size and the composition of numbers up to five through activities which involve subitizing, counting and counting, explaining their thought processes as part of this.	Rationale- To continue to develop subitising, counting and comparing skills with numbers beyond five, and begin to use these to embed certain facts linked to the composition of numbers, e.g. I knew it was five because I saw a two and a three.	Rationale- To extend counting work to numbers beyond ten and to begin to secure knowledge of number facts with smaller numbers through varied practice involving subitising.	**On-site learning** Math resources in the areas to encourage and develop number sense and build conceptual fluency- Number Blocks, Numicon, number labels, sorting. Changed to reflect topics and area of focus, for example scales to develop understanding of mass in post office area etc. **Off-site learning** **Visits –** Autumn Walk – use of natural resources to sort, compare, count. Opportunities for work with measures and pattern. Local area walk to Post Office – posting a letter, links to mass, money, counting, sorting.
	Skills • 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.	Skills • continue to develop subitising skills for numbers within and beyond 5, and securely connect quantities to numerals. • begin to identify missing parts for numbers within 5. • understand the structure of the numbers 6 and 7 as '5 and a bit' and connect this to finger patterns and number arrangements. • recognise equal and unequal groups when comparing numbers. • understand that two equal groups can be called a 'double' and connect this to finger patterns. • sort odd and even numbers according to their 'shape.' • continue to develop an understanding of the counting sequence and link cardinality and ordinality through the 'staircase' pattern. • order numbers and join in with verbal counts beyond 20, gaining an increasing understanding of the repeated pattern within the counting numbers.	Skills • continue to secure counting skills, counting larger sets as well as counting actions and sounds. • explore a range of representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame. • compare quantities and numbers, including sets of objects which have different attributes. • continue to develop a sense of the relative size of numbers, e.g. knowing that 8 is quite a lot more than 2, but 4 is only a little bit more than 2. • begin to generalise about 'one more than' and 'one less than' numbers within 10. • continue to identify when sets can be subitised and when counting is necessary. • develop conceptual subitising skills including when using a rekenrek showing the fives and tens structure of numbers.	

	• 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.			Monk Park Farm – Linked to 'Growth' topic – measures – comparing, ordering and associated language. Opportunities for sorting, counting, comparing (more/less), subitizing, language linked to measures. **Visitors -**
	Mathematical Vocabulary- Continued from previous years with addition of the words below. **Number** - Number names to 20 and beyond, count (up) to, count on (from, to), count back (from, to), digit, as many as, one more/less, compare, order, size, equal, how many more to make? Number track, estimate, nearly, about, just over/under, add, more, altogether, subitise, take away, subtract, how many are left/left over? double, half, halve share equally, parts, whole, half, quarter. **Shape -** Hollow, solid sort make, build, draw size, 2-D shape, 3-D shape, shape face, edge, vertex, vertices cube pyramid sphere cone. **Position -** Position, direction, movement, above, below, opposite, apart, edge corner direction left, right up, across, stretch, bend whole turn, half turn. Pattern Symmetrical pattern, repeating pattern match, what do you think comes, next, how do you know, what could we try, describe draw **Measurement** - Length, height, width, deep, shallow, depth, long, short, tall high, low wide, narrow, thick, thin, old, older, new, newer, oldest, newest. **Time** - Time, dinner time, playtime, quick, quicker, quickest, quickly slow, slower, slowest, slowly, old, older, oldest, new, newer, newest, takes longer, takes less time, hour, o'clock clock, watch, hands.			
	Knowledge- To know numbers are composed of smaller quantities and to be able to 'see' a quantity in different ways, e.g. 'see' five as a four and a three or a four and a one. To know that sometimes quantities can be identified by subitising and sometimes they need to be counted.			
Year 1	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. 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.			**Potential on-site learning** Classroom set up to reflect topics – e.g. ordering and comparing heights for Gingerbread Man. **Potential off-site learning** Danby - Spring Walk – Runswick Bay – sorting collections, counting, comparing size, mass and associated language. **Potential visitors**
	Number and Place Value	**Number and Place Value**	**Number and Place Value**	
	Skills – • Count reliably up to 20 objects. • Mark numbers on a 0 to 20 number line • Count in 10s from 10. • Find one more and one less to 20 • Count to 100 • Compare 2 numbers less than 20 • Reason about the location of numbers to 20 within the linear number system, mark them on a number line and compare using appropriate language, <, > and = • Count within 100, forwards and backwards, starting with any number. • Count in multiples of 2 and 10, recognising odd and even numbers.	Skills – • Count forwards and backwards in multiples of 2, 5 and 10, up to 10th multiples, beginning with any multiple. • Compare groups of objects or pictorial representations using the language: equal to, more than, less than, most, least • Recognise odd and even numbers on a number line to 20 • Read and write numbers to 50 in numerals • Find one more and one less to 50 • Compare 2 numbers less than 50 • Order and compare numbers up to 50, then 100. • Reason about the location of numbers to 20, then 30, within the linear number system, mark them on a number line and compare using appropriate	Skills – • Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • Read and write numbers to 100 in numerals • Read and write numbers from 1 to 20 in numerals and words • Find one more and one less to 100 • Compare 2 numbers less than 100 • Reason about the location of numbers to 20, then 30, within the linear number system, mark them on a number line and compare using appropriate language, <, > and = • Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal	

	• Read and write numbers to 30 in numerals • Mark numbers on a 0 to 30 number line • Find one more and one less to 30 • Compare 2 numbers less than 30 • Compare 2 numbers using the language: equal to, more than, less than	language, <, > and = • Count within 100, forwards and backwards, starting with any number (to/from 50) • Read and write numbers to 100 in numerals • Find one more and one less to 100 • Compare 2 numbers less than 100	to, more than, less than (fewer), most, least	
	Addition and Subtraction	**Addition and Subtraction**	**Addition and Subtraction**	
	Skills – • Develop fluency in addition and subtraction facts within 10 (number bonds up to 10). • Add a small number to numbers to 10 by counting on. • Recognise and use addition (+), subtraction (-) and equals (=) signs. • Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers. • Develop fluency in addition and subtraction facts within 10 (Number bonds to 10 and related subtraction facts) • Understand subtraction as 'take away' • Begin to count back to subtract	Skills – • Add and subtract a one digit to any number up to 20 and develop fluency with numbers bonds to 20. • Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers. • Decide whether to add or subtract to solve a word problem • Know number bonds to 20 and related subtraction facts • Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9.	Skills – • Know number bonds to 20 and related subtraction facts • Add and subtract one-digit and two-digit number to 20 including 0 • Solve missing number calculations • Read, write and interpret equations 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 – • Use concrete objects to double numbers 1 to 5 • Use concrete objects to share into two equal groups	Skills – • Solve problems using concrete objects and pictorial representation for multiplication and division e.g. 3 children each need 2 sweets, how many sweets are needed?	Skills – • Count in multiples of 2, 5 and 10 • Use counting in 2s, 5s and 10s to solve practical problems involving multiplication • Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple and through the odd numbers • Use arrays for multiplication with support of the teacher	
	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. • Find halves and quarter of shapes or objects in practical contexts.	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. • Find halves and quarter of shapes or objects in practical contexts.	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. • Find halves and quarter of shapes or objects in practical contexts.	

Measurement	Measurement	Measurement
Skills – • Sequence events in chronological order using appropriate language (before, after, next, first, today, yesterday, tomorrow, morning, evening) • Order days of the week and months of the year Compare, describe and solve practical problems for: • lengths and heights (for example, long/short, longer/shorter, tall/short, double/half) • mass/weight (for example, heavy/light, heavier than, lighter than) • capacity and volume (for example, full/empty, more than, less than, half, half full, quarter) • time (for example, quicker, slower, earlier, later) measure and begin to record the following: • lengths and heights • mass/weight • capacity and volume • time (hours, minutes, seconds)	Skills – • Tell the time to the hour. • Recognise and use language relating to dates, including days of the week, weeks, months and years • Recognise and know the value of different denominations of coins and notes Compare, describe and solve practical problems for: • lengths and heights (for example, long/short, longer/shorter, tall/short, double/half) • mass/weight (for example, heavy/light, heavier than, lighter than) • capacity and volume (for example, full/empty, more than, less than, half, half full, quarter) • time (for example, quicker, slower, earlier, later) measure and begin to record the following: • lengths and heights • mass/weight • capacity and volume • time (hours, minutes, seconds) • Use vocabulary heavy, light, heavier than, lighter than, full, empty, less than, more than, half full, quarter full	Skills – • Tell the time to half past the hour and record by drawing hands on clock face. • Solve practical problems for times using appropriate language (quicker, slower, earlier, later) • Review length, mass and capacity and vocabulary involved • Recognise and know the value of different denominations of coins and notes
Properties of shape	**Properties of shape**	**Properties of shape**
Skills – • Recognise common regular and irregular 2D shapes presented in different orientations. • Compose 2D from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.	Skills – • Recognise common 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another. • Compose 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.	Skills – • Recognise common 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 the position, directions and movements using appropriate language (left, right, top, middle, bottom, on top of, in front of, above, between etc.)	Skills – • Describe and make movements including whole, half, quarter and three-quarter turns.
<u>Mathematical Vocabulary</u> – 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.			
	<u>Knowledge-</u> Know and instantly recall number bonds within 5 and associated subtraction facts, including those which include missing numbers. Know and instantly recall doubles, near doubles and halves up to 5+5.	<u>Knowledge-</u> Know and instantly recall number bonds to 6, 7, 8, 9 and 10 and associated subtraction facts, including those which include missing numbers.	<u>Knowledge-</u> Know and be able to instantly subitise teens numbers according to place value (ten and a bit structure).	
Year 2	<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. 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.			**Potential on-site learning** **Easter crafts –** counting, measuring, reading scales, use of equipment and standard units. **Potential off-site learning** **Potential visitors:** Citizenship visitor
	Number and Place Value	**Number and Place Value**	**Number and Place Value**	
	Skills – • Read and write numbers up to 50 in numerals and words • Recognise the place value of each digit in two-digit numbers, compose and decompose	Skills – • Read and write numbers up to 75 in numerals and words • Recognise the place value of each digit in two-digit numbers, compose and decompose two- digit	Skills – • Read and write numbers up to 100 in numerals and words • Recognise the place value of each digit in two-digit numbers, compose and	

	two- digit numbers using standard and non-standard partitioning, supported by the use of practical apparatus. • Compare and order numbers up to 100 • Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10. • Secure fluency in addition and subtraction facts within 10, through continued practice. • Bonds to 20 • Compare and order numbers up to 100 and find one more/less then, ten more/less than any number within 100. • Compare and order numbers up to 100 using < and >	numbers using standard and non- standard partitioning, supported by the use of practical apparatus. • Compare and order numbers up to 100 using < and > • Reason about the location of any two- digit number in the linear number system, including identifying the previous and next multiple of 10. • Use place value and number facts to solve problems. • Know number bonds to 20 confidently • 10 more/ 10 less from any number • Use place value and number facts to solve problems • Explain the order of numbers • Identify, represent and estimate numbers using different representations, including the number line	decompose two- digit numbers using standard and non- standard partitioning, supported by the use of practical apparatus. • Compare and order numbers up to 100 using < and > • Reason about the location of any two- digit number in the linear number system, including identifying the previous and next multiple of 10. • Identify, represent and estimate numbers using different representations, including the number line • Use place value and number facts to solve problems. • Know number bonds to 20 confidently and use these to work out facts to 100 • Consolidate 10 more/ 10 less from any number • Count to 100 forwards and backwards • Place value practical problems • More than/less than within 100	
	Addition and Subtraction	**Addition and Subtraction**	**Addition and Subtraction**	
	Skills – • Recall and use addition facts to 10, then 20 fluently. • Explore fact families • Add and subtract across 10 • 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 • Add and subtract within 100 by applying related one- digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number. • Different ways to make a number • Understand the subtraction structure of 'difference' and answer questions of the form, "How many more...?". • Addition using a number line	Skills – • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • Add and subtract across 10 • 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 number* • *Adding three one-digit numbers* • Add and subtract within 100 by applying related 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. • Use understanding of the inverse to solve missing number problems. • Apply understanding that addition of two numbers can be done in any order (commutative). • Different ways to make a number.	Skills – • Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 • Add and subtract across 10 • 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* • Use concrete apparatus then mental strategies to add and subtract across 10. • Use understanding of the inverse to solve missing number problems. • Apply understanding that addition of two numbers can be done in any order (commutative). • Problem solving- including word problems, number lines, part whole models, missing numbers, patterns (link to White rose resources and past paper examples)	

		• Add and subtract two-digit numbers • Missing number problems • Use understanding of number relationships to makes estimates using addition and subtraction facts.	• Number facts within 100	
	Multiplication and Division	**Multiplication and Division**	**Multiplication and Division**	
	Skills – • Recall and use multiplication facts for the 2, 5 and 10 x tables and use these to solve multiplication problems. • Recognise odd and even numbers up to 50 • Recall and use division facts for the 2, 5 and 10 x tables • Calculate mathematical statements for multiplication and division within the multiplication tables and write them using multiplication (x), division (÷) and equals (=) signs • Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	Skills – • Recall and use multiplication facts for the 2, 5 and 10 x tables and use these to solve multiplication problems. • Recognise odd and even numbers up to 50 • Show that multiplication of 2 numbers can be done in any order (commutative) • Draw and write multiplication sentences to describe arrays • Begin to apply multiplication facts to solve missing number problems • Begin to make links using money • Recall quickly facts from 2x,3x,5x and 10x tables, understanding the inverse relationship to division and using this to solve missing number problems. • Recall and use division facts for the 2, 5 and 10 x tables • Recall and use multiplication and division facts for the 2, 3, 5 and 10 x tables, understanding that multiplication of 2 numbers can be done in any order but that this is not true for division. • Draw pictorial representations to support division facts • Solve problems involving multiplication and division using materials, arrays, repeated addition, mental methods and multiplication and division facts including problems in context • Use the inverse with growing confidence • 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 (quotative division)	Skills – • Recall and use multiplication facts for the 2, 3, 5 and 10 x tables and use these to solve multiplication problems. • Show that multiplication of 2 numbers can be done in any order (commutative) but division cannot be. • Problem solving- involving multiplication and division, using materials, arrays, repeated addition, money, mental methods, and multiplication and division facts, including problems in contexts (link to White Rose resources and past paper examples) • Understand vocabulary linked to multiplication and calculate mathematical statements using the correct signs • Quick recall of 2,3,4,5 &10 x tables	
	Fractions	**Fractions**	**Fractions**	
	Skills – • Recognise, find, name and write fractions 1/3,	Skills – • Recognise, find, name and write fractions 1/3, 1/4,	Skills –	

	1/4, 2/4, and 3/4 of a length, shape, set of objects or quantity.	2/4, and 3/4 of a length, shape, set of objects or quantity. • Recognise that 1/2 and 2/4 are equivalent to one another. • Write simple fractions for example ½ of 6 = 3	• Recognise, find, name and write fractions 1/2, ¼, 2/4 and ¾ and 1/3 of a length, shape, set of objects or quantity and link to a variety of problem solving and reasoning questions • Make links with time • Recognise that ½ and 2/4 are equivalent to one another	
	Measurement	**Measurement**	**Measurement**	
	Skills – • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change • 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 • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (oC); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels • Compare lengths, mass, volume/capacity and record the results using >,< and =	Skills – • Tell and write times to the hour, half and quarter. • Begin to understand the units of time (hours, minutes, seconds). • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change • 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 • Make links with multiplication facts	Skills – • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (oC); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels lengths, mass, volume/capacity and record the results • 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. • Compare, sequence intervals of time, using knowledge of number of minutes in an hour or hours in day and solve problems involving time. • Problem solving- (Example- What time will it be in 1 hour? A journey took 1 and ½ hours what time did they arrive? Etc) • Solve simple problems in a practical context involving addition and subtraction of money of the same unit, paying for items and giving change • Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value • Covert pounds (£) and pence (p) • Find different combinations of coins that equal the same amounts of money (using the least amount of coins etc) • Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	

			• Compare and order lengths, mass, volume/capacity and record the results using >, < and = • Practical activities to compare, estimate, look at the difference between two measurements • Demonstrate accurate measuring using different equipment	
	Properties of shape	**Properties of shape**	**Properties of shape**	
	Skills – • Identify and describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties. • Identify 2D shapes • Describe properties of 2D shapes • Describe the number of sides and corners in a circle, triangle, square, rectangle, pentagon, hexagon, heptagon and octagon • Read and write names of common 2D shapes • Identify 2D and 3D shapes • Describe properties of 2D and 3D shapes • Describe the number of edges, vertices and faces • Read and write names of common 2D and 3D shapes	Skills – • Read and write names of common 2D and 3D shapes • Confidently describe properties of 2D and 3D shapes • Use precise language to describe the properties of 2D and 3D shapes, and compare shapes by reasoning about similarities and differences in properties • Identify line symmetry in common 2D shapes. • Identify a vertical line of symmetry in a 2D shape	Skills – • Compare and sort common 2-D and 3-D shapes and everyday objects and identify 2-D shapes on the surface of 3-D shapes. • Identify and describe the properties of 2-D shapes, including the number of sides • Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces • Identify 2-D shapes on the surface of 3-D shapes, (for example, a circle on a cylinder and a triangle on a pyramid) • Identify a vertical line of symmetry in a 2D shape	
	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 • Understand rotation in turns of right angles for quarter, half and three-quarter turns. • Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).		Skills – • Order and arrange combinations of mathematical objects in patterns and sequences (link to shape, number etc) • Use mathematical vocabulary to describe position, direction and movement including movement in a straight line • Distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise). • Children are able to explain an objects position and movement.	
	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 (how many more, most, least, difference between).	
	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.			
	Knowledge- To know and have instant recall of doubles, near doubles and halves up to 10+10. To know and have instant recall of near bonds to 10. To know and use the bridging strategy to rapidly recall facts within 20 that cross the tens boundary, e.g. 8+6. To know how to use the adjustment strategy to rapidly recall facts within 20 that cross the tens boundary, e.g. 7+9.			
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.			**On-site learning** Showcase of work – Maths. **Off-site learning** Danby Vistors centre- positional language. **Visitors**
	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.	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	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	

	• Recall multiplication and division facts for the 3 multiplication tables (Recap 2x,5x,10x) • 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.	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. • 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	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. • 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	**Addition and Subtraction**	**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.	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.	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	
	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. 5/7 + 1/7 =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. 5/7 + 1/7 =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 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.	**Measurement** 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.	**Measurement** 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 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.	**Properties of shape** 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.	**Properties of shape** 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?').		
	<u>Knowledge-</u> 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. Know and be able to instantly recall the 10 and 5 multiplication tables, and the corresponding division facts. Know and be able to instantly recall the 2, 4 and 8 multiplication tables, and corresponding division facts.			
Year 4	<u>Rationale</u> – 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.			**On-site learning** Parental Engagement: Showcase of work and understanding the curriculum. **Potential off-site learning** **Potential visitors:** Wood ambassadors Fuji Film
	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.	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	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.	

	• 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 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.	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	• 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).	
	Addition and Subtraction	**Addition and Subtraction**	**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	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.	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	**Multiplication and Division**	**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	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	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	

	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 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.	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. • 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.	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 • 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	
	Fraction including Decimals	**Fraction including Decimals**	**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 ¼; ½; ¾ • 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.	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 ¼; ½; ¾ • 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.	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	**Measurement**	**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 • 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	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, 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.	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 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	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

		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.	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 – • 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	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	
	<u>Mathematical Vocabulary</u> 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.			
	<u>Knowledge</u> Know and be able to instantly recall the 3, 6, 9 and 11 and 12 multiplication tables, and corresponding division facts. Know and be able to instantly recall the 7-multiplication table, and corresponding division facts. Know how to use the multiplication facts and corresponding division facts to derive associated facts with powers of 10.			
Year 5	<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. 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.			**On-site learning** Orienteering (P.E. link) Parental Engagement: Showcase of work and understanding the curriculum. **Potential Off-site learning opportunities** <u>PD Ports visit</u> **–** exploring the world of work- includes where Maths skills are useful in life. **Potential visitors:** Wood ambassadors Fuji Film
	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	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.	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.	

	1,000,000 • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero.	• 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.	• 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 and methods to use and why.	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, 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.	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 fluency in multiplication table facts, and corresponding division facts, through continued practice. • 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.	

	• Multiply and divide numbers mentally drawing upon known facts.			
	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 decimals 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. • 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 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.	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 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. • 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.	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 decimals 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 (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 decimals 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	**Measurement**	**Measurement**	
	Skills – • Measure and calculate the perimeter of composite rectilinear (a shape whose sides meet	Skills – • Convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre;	Skills – • Convert between different units of metric measure	

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.	centimetre and millimetre; gram and kilogram; litre and millilitre) and understand and use approximate equivalences between metric units. •	• Estimate volume (e.g using 1 cm3 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	**Properties of shape**	**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.	Skills – • Estimate and compare acute, obtuse and reflex angles. • Identify angles at a point and 1 whole turn (total 360^o), angles at a point on a straight line and half a turn (total 180^o) other multiples of 90^o • Solve problems involving missing angles	Skills – • 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	**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		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	**Statistics**	**Statistics**
Skills – • Solve comparison, sum and difference problems using information presented in a line graph.		

<table>
<tr><td></td><td colspan="3">• Complete, read and interpret information in tables, including timetables.</td><td></td></tr>
<tr><td></td><td colspan="3"><u>Mathematical Vocabulary</u>
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.</td><td></td></tr>
<tr><td></td><td colspan="3"><u>Knowledge</u>
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.</td><td></td></tr>
<tr><td>Year 6</td><td colspan="3"><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.</td><td rowspan="2">On-site learning
Parents SATS meeting.
Showcase of learning.

Potential Off-site learning:
Energy event (aspirations- real life application of Maths.
Science Life Centre.

Potential visitors:
Wood ambassadors
Fuji Film</td></tr>
<tr><td></td><td>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.</td><td>Number and Place Value
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</td><td>Number and Place Value
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.</td></tr>
</table>

	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 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.	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 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.	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 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	**Fractions, Decimals and Percentages**	**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.	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. 1/3 ÷ 2 = 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	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. 1/3 ÷ 2 = 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 (cm^3) and cubic metres (m^3), and extending to other units (e.g. mm^3 and km^3). • 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. • Solve problems involving the calculation and conversion of units of measure up to three decimal places	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, 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. • Calculate and interpret the mean as an average.		Skills – • Interpret and construct pie charts and line graphs and use these to solve problems.	
	<u>Mathematical Vocabulary</u> 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.			
	<u>Knowledge</u> Consolidate and and maintain fluency in all multiplication and division acts up to 12 x 12 and use to derive related facts with larger numbers and in the context of			

	decimals, percentages and in contexts of shape and measures.	