Maths Progression

Maths at Ark Bentworth

At Ark Bentworth we believe that a secure understanding of mathematics is integral for future success. Having confidence, knowledge and skills in mathematics prepares pupils for the next phase of the education, enables them to solve real-life problems and is essential to everyday life. We want our pupils to know that the maths they learn inside and outside of the classroom has the potential to open doors in their futures as scientists, engineers and designers.

In the Early Years, an emphasis is placed on pupils being provided with real life experiences. We prioritise allowing pupils to explore and understand the wealth of mathematics in the world around them. We focus on learning through play, role-play and songs and the use of concrete materials to support and develop understanding.

From Reception to Year 6, pupils are taught using the Maths Mastery curriculum. We have adopted the Maths Mastery programme as we believe the approach to mathematics is rigorous, it covers a broad number sense and follows the pedagogical approach of concrete-pictorial-abstract to enable all pupils to access the learning. In this curriculum:

- Learning builds cumulatively so that connections are made across concepts and ideas.
- Concepts are taught through the concrete, pictorial, abstract model to ensure and promote a depth of understanding.
- There is an emphasis on learning, and confidently using language to communicate mathematical problems
- Teachers use careful questioning to encourage students to build mathematical habits of mind
- Daily Maths Meetings are used to consolidate areas of mathematics

Our lesson structure allows pupils to develop their mathematical rigor through deliberate practice of the small steps of learning so that pupils may advance to more complex learning by the end of the lesson. Learning is 'chunked' into a 'Do Now', 'New learning', 'Talk Task', 'Developed learning', 'Independent practice' and a plenary. Pupils revisit and revise concepts each day in our daily maths meetings – maths meetings also focus on daily calendar maths and place value.

Progression Through Units and Objectives

Nursery
Numbers (i) **31 – 36 months:** Uses number names in play and imitates adult actions, rote counting or saying counting words randomly alongside their physical actions. **37 – 42 months:** Uses number names with increasing accuracy in their role play and purposefully uses number songs in play. Counts up to 3 objects. **43 – 48 months:** Counts up to 4 objects and can recognise 2 objects (moveable and non) without counting. Recognises some numerals of personal significance and talks about numbers in the everyday environment. **49 – 54 months:** Recites numbers accurately to 5 demonstrating 'some' accuracy of numbers to 10. Counts small groups of manipulatives correctly using 1:1 correspondence, whilst playing a variety of number games. **55 – 60 months:** Accurately counts fixed objects to 5 and recognises numerals to at least 5 out of sequence. Recognises up 3 objects (without counting) in a range of orientations and different sizes. In self-initiated play begins to record numbers and mathematical thinking with own purpose.

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Numbers (ii)

31 – 36 months: Shows spontaneous interest in numbers in the environment, books, rhymes and in songs.

37 – 42 months: Can count alongside actions in games, rhymes and songs. Explores mathematical resources in the provision in everyday exploration.

43 – 48 months: Begins to recite numbers in order with some inconsistencies. Attempts to count beyond 4 objects and explores number in play with growing purpose.

49 – 54 months: Able to recite numbers forwards and backwards from 5. Counts small groups of fixed objects with accurate 1:1 correspondence. Uses graphic representations to record number explorations in pictures and mark making.

55 – 60 months: Accurately counts fixed objects to 5 and recognises numerals to at least 5 out of sequence. Recognises up to 3 objects (without counting) in a range of orientations and different sizes. In self-initiated play begins to record numbers and mathematical thinking with own purpose.

Numerical Patterns (i)

31 – 36 months: Children explore pattern, using manipulatives and puzzles in their independent play. Engages in lining up, placing, arranging and repositioning materials.

37 – 42 months: In play uses some language to compare quantities and talk about position such as on/in/under. Joins in with number songs which count on one more, or count down – one less.

43 – 48 months: When combining materials, knows how to change an amount (size, number) if something is added or taken away. Is able to anticipate which amount will be next in the context of one more/one less number songs/rhymes.

49 – 54 months: Identifies groups of objects that have more or less than and the same. In child-led play, is able to make groups of objects of the same quantity and begins to find totals by combining groups.

55 – 60 months: Using resources, can create quantities which are greater than, less than, the same as a given number and may record these in pictures or numerals. Can use resources and say one more or one less than a given number and to create equal groups.

Numerical Patterns (ii)

31 – 36 months: Recognises the pattern of everyday familiar routines, begins to notice that there is an order and sequence to familiar events.

37 – 42 months: Independently uses and demonstrates positional language as part of everyday role play scenarios. Acts out exchange of objects, cards, money or goods when in role play, in games or rhymes.

43 – 48 months: With a purpose in mind, recognises and selects simple geometric shapes in their construction and block play. Uses everyday vocabulary to describe and compare measures (size, weight, capacity and time).

49 – 54 months: Uses everyday language to recreate and describe patterns in nature or urban environments. Uses comparative language to describe and compare measures (size, weight, capacity and time).

55 – 60 months: Creates patterns by lining, placing, building and arranging. Orders 3 or more measures (size, weight and capacity) whilst playing, for example, with sand, water or in the mud kitchen.

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	Autumn 1 Who am I?	Autumn 2 What happens at night?	Spring 1 Can you make it work?	Spring 2 Where do animals live?	Summer 1 What can we do to help?	Summer 2 How do things change over time?
Objectives	Pupils can spot shapes and make mathematical comments in the environment/in play Pupils can make comparisons Pupils can sing number songs and recite number sequences	Pupils can use number names in play Pupils can attach numbers (to 3) reliably in play Pupils are beginning to recognise letters and numbers of significance in the environment	Pupils can use number names in play Pupils can attach numbers (to 4) reliably in play Pupils can sort objects in different ways Pupils are beginning to name shapes in construction and block play	Pupils can use number names in play Pupils can attach numbers (to 4) reliably in play Pupils can sort objects in different ways Pupils are able to act out exchange of objects/ cards/money in play	Pupils can count alongside actions in play, games and songs Pupils can use number names in play Pupils are able to compare quantities and size Pupils have number sense to 4 (focus on 3-ness and 4-	Pupils can name shapes and use to make pictures Pupils are beginning to recite numbers beyond 10 Pupils handle numbers to 4 counting 1:1 correspondence

Pupils are beginning to recognise letters and numbers of significance in the environment Pupils can sort objects in different ways Pupils can line up, arrange and reposition materials Pupils can fill and empty containers Pupils can match equipment to shadow labels	Pupils can sort objects in different ways Pupils can line up, arrange and reposition materials Pupils can fill and empty containers, selecting tools for purpose and talking about process /making observations. Pupils notice changes in the environment and ask questions	Pupils are able to act out exchange of objects /cards/money in play Pupils can use positional language Pupils can use tools to measure	Pupils can use positional language Pupils can use tools to measure Pupils are aware of the purpose of number in everyday life	ness, subitising, composition) Pupils are able to act out exchange of objects/ cards/money in play Pupils can use positional language Pupils can use tools to measure Pupils are aware of the purpose of number in everyday life	Pupils can make comparisons between sets and numbers Pupils have interest in numbers beyond 10 Pupils can count two groups together and take away (within 5) To count out (to four) from a group To mark make to record maths thinking Pupils discuss the maths children see in the world and own games

Reception

Numbers (i)

43 – 48 months: Counts up to 4 objects and can recognise 2 objects (moveable and non) without counting. Recognises some numerals of personal significance and talks about numbers in the everyday environment.

49 – 54 months: Recites numbers accurately to 5 demonstrating 'some' accuracy of numbers to 10. Counts small groups of manipulatives correctly using 1:1 correspondence, whilst playing a variety of number games.

55 – 60 months: Accurately counts fixed objects to 5 and recognises numerals to at least 5 out of sequence. Recognises up 3 objects (without counting) in a range of orientations and different sizes. In self-initiated play begins to record numbers and mathematical thinking with own purpose.

61 – 66 months: Counts reliably and creates groups of numbers to 10 using a range of objects and is able to place numerals to 10 in order. Uses a range of objects to create 5 in different ways and recognises up to 5 objects (without counting) in a range of orientations.

67+ months: Counts reliably and represents numbers beyond 10 using a range of manipulatives. Creates number lines to support their calculations of simple addition and subtraction facts and problem solving.

Numbers (ii)

43 – 48 months: Begins to recite numbers in order with some inconsistencies. Attempts to count beyond 4 objects and explores number in play with growing purpose.

49 – 54 months: Able to recite numbers forwards and backwards from 5. Counts small groups of fixed objects with accurate 1:1 correspondence. Uses graphic representations to record number explorations in pictures and mark making.

55 – 60 months: Accurately counts fixed objects to 5 and recognises numerals to at least 5 out of sequence. Recognises up to 3 objects (without counting) in a range of orientations and different sizes. In self-initiated play begins to record numbers and mathematical thinking with own purpose.

61 – 66 months: Counts up to 10 forwards and backwards including from any given number. Accurately counts fixed objects to 10 and recognises numerals to 10 out of sequence. Is able to recall number bonds to 5 and knows some number pairs to 10, including double facts.

67+ months: Uses manipulatives to demonstrate some number bonds within 10.

ELG – Numbers: Have a deep understanding of number to 10 including the composition of each number; Subitise up to 5; Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns (i)

43 – 48 months: When combining materials, knows how to change an amount (size, number) if something is added or taken away. Is able to anticipate which amount will be next in the context of one more/one less number songs/rhymes.

49 – 54 months: Identifies groups of objects that have more or less than and the same. In child-led play, is able to make groups of objects of the same quantity and begins to find totals by combining groups.

55 – 60 months: Using resources, can create quantities which are greater than, less than, the same as a given number and may record these in pictures or numerals. Can use resources and say one more or one less than a given number and to create equal groups.

61 – 66 months: Verbally counts beyond 20. Uses resources to create parts of a whole, to partition pairs of numbers up to 10, to distribute quantities equally and represent double facts. Will demonstrate thinking through use of verbal number sentences/number stories and may choose to record these.

67+ months: Begin to count reliably with numbers from 10 to 20, they begin to place them in order and can write numerals with some accuracy. Able to give examples of numbers which are greater than/less than for numbers beyond 10. Verbally counts to 30 and beyond.

Numerical Patterns (ii)

43 – 48 months: With a purpose in mind, recognises and selects simple geometric shapes in their construction and block play. Uses everyday vocabulary to describe and compare measures (size, weight, capacity and time).

49 – 54 months: Uses everyday language to recreate and describe patterns in nature or urban environments. Uses comparative language to describe and compare measures (size, weight, capacity and time).

55 – 60 months: Creates patterns by lining, placing, building and arranging. Orders 3 or more measures (size, weight and capacity) whilst playing, for example, with sand, water or in the mud kitchen.

61 – 66 months: In everyday contexts children are able to demonstrate through talk or when responding to questions an understanding of the number sequence, values, greater and less than, odd ad even. Use of measures (size, weight and capacity) when comparing and combining quantities.

67+ months: Can talk about the properties of shape and patterns using vocabulary to describe position, direction and movement. Estimates, measures, weighs, and can compare and order objects. Talks about properties, position and the sequence of time.

ELG – Numerical Patters: Verbally count beyond 20, recognising the pattern of the counting system: Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity; Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

	Autumn 1 Who am I?	Autumn 2 What happens at night?	Spring 1 Can you make it work?	Spring 2 Where do animals live?	Summer 1 What can we do to help?	Summer 2 How do things change over time?
Objectives	Pupils can use and understand positional language Pupils can act out exchange of objects/cards/money in role play and games Pupils can sing/count along with known songs/rhymes and in games (to 10) Pupils can use number names in play	Pupils can attach numbers (to 5) reliably in play Pupils can subitise (to 4) Pupils are able to observe composition of numbers - talking about the numbers within each number e.g. see and discuss that 3 and 3 are within 6 or 3 and 2 in 5 etc Pupils can recite numbers in order to 10	Pupils can attach numbers (to 7) reliably in play Pupils ca subitise (to 4) Pupils are able to observe composition of numbers - talking about the numbers within each number e.g. see and discuss that 3 and 3 are within 6 or 3 and 2 in 5 etc. Pupils are beginning to develop this into number facts with by using visualisation of numbers	Pupils are able to estimate Pupils are able to recall number bonds to 5 Pupils can use language of comparison in shape, space and measures Pupils can use prepositions correctly in relation to place (under, in, on, above, next to, in between etc.) Pupils are able to sort in own ways with rationale	Pupils are able to estimate Pupils are able to recall number bonds to 5 Pupils can use language of comparison in shape, space and measures Pupils can use prepositions correctly in relation to place (under, in, on, above, next to, in between etc.) Pupils are able to sort in own ways with a clear rationale	Pupils can use pattern and shape to create (e.g. experiment with tessellation or putting shapes together to make other shapes) Pupils can recite numbers beyond 20 noticing the patterns in the counting system Pupils can talk about comparison of quantities up to 10

Pupils can compare quantities and size Pupils have number sense to 4 (focus on 4-ness	Pupils use graphic representations to record number explorations in pictures and mark making Pupils can name simple shapes in play Pupils engage in complicated floor games e.g. small world, building	Pupils are given opportunities to explore doubling Pupils can recite numbers in order to 20 Pupils can use graphic representation to record number explorations in pictures and mark making Pupils can describe shapes using names and properties	Pupils can use non-standard units of measure independently to find out how tall, short, heavy something is. Pupils are provided with opportunities to explore and represent patterns Pupils know even and odd numbers to 10 Pupils know doubles to 10	Pupils can use non-standard units of measure independently to find out how tall, short, heavy something is Pupils are provided with opportunities to explore and represent patterns Pupils know even and odd numbers to 10 Pupils know doubles to 10	Pupils can explore and represent patterns within numbers to 10 (odds, evens, doubles, sharing) Pupils use addition and subtraction in play and discussion (e.g. number stories)

Maths Mastery Units

Unit 1 - Early Mathematical Experiences: Match equal sets using 1:1 correspondence Match unequal sets using 1:1 correspondence Compare objects according to size Compare sets without counting Order objects according to length or height Order sets without counting **Unit 2 - Pattern and Early Number:** Recognise, create and describe patterns Describe and create patterns that are the same and different Count 1, 2 or 3 objects reliably Recognise if a number of objects is the same or different (working with numbers 1, 2, 3) Count one, two or three objects, images or sounds reliably	**Unit 4 – Addition and Subtraction Within 6:** Add and subtract two single-digit numbers Estimate a number of objects and check by counting up to 6 Introduce the concept of 0 as the empty set Subitise within 5 Represent and use number bonds in 5 Use quantities and objects to add and subtract two single-digit numbers **Unit 5 – Measures:** Use everyday language to talk about size, weight, capacity Estimate, measure, weigh and compare and order objects Compare objects and quantities Solve size problems related to measures **Unit 6 – Shape and Sorting:** Explore characteristics of everyday objects and shapes and use	**Unit 7 – Numbers Within 10:** Say which number is one more or one less than a given number Estimate a number of objects and check by counting Count reliably with numbers from 1-10 Develop an understanding of zero Create representations for numbers 0-10 Place 0-10 in order Recognise numerals 0-10 Use ordinal numbers – 1st, 2nd... last Understand the conservation of numbers **Unit 8 – Calendar and Time:** Use everyday language to talk about time, days of the week and months of the year Measure short periods of time in simple ways Order and sequence familiar events Use ordinal numbers – 1st, 2nd... last	**Unit 11 – Number Patterns Within 15:** Say which number is one more or one less than a given number Estimate a number of objects and check by counting Count reliably with numbers 0-15 Create representations for numbers 0-15 Place 0-15 in order Consider equal and unequal groups **Unit 12 – Doubling and Halving:** Solve problems, including doubling, halving and sharing Explore the relationship between doubling and halving **Unit 13 – Shape and Pattern:** Talk about properties of shapes Explore characteristics of everyday objects and shapes and use mathematical language to describe them	**Unit 14 – Securing Addition and Subtraction Facts:** Estimate a number of objects and check by counting up to 20 Add and subtract two single-digit numbers and count on or back to find the answer Explore the relationship between addition and subtraction Compare quantities and objects to solve problems Solve problems, including doubling, halving and sharing Say which number is one more or one less than a given number Use quantities and objects to add and subtract two single-digit numbers **Unit 15 – Number and Patterns Within 20:** Count reliably with numbers from 1-20 Place 0-20 in order Say which number is one more or one less than a given number	**Unit 17 – Money:** Compare quantities and objects to solve problems Use everyday language to talk about money, recognise coins up to 50p and their values Compare the value of coins Use quantities and objects to count on and back to add and subtract **Unit 18 – Measures:** Use everyday language to talk about size, weight, capacity Estimate, measure, weigh and compare and order objects Compare objects and quantities Solve size problems involving measures Explore measuring objects using non-standard units **Unit 19 – Exploration of Patterns Within Number** Solve problems including grouping, sharing, doubling and halving

Recognise the numerals 1, 2, and 3 Create representations for numbers 1, 2 and 3 **Unit 3 – Numbers Within 6:** Say which number is one more or one less than a given number Estimate a number of objects and check by counting Count reliably with numbers from 1-6 Create representations for numbers 1-6 Place 1-6 in order Say which number from 1-6 is one more or one less than a given number Recognise the numerals 1-6 Understand the conservation of number	mathematical language to describe them Show an interest in shape and space by playing with shapes by sustained construction activity Explore characteristics of everyday objects and shapes (focusing on 3-D shapes) Use positional language Use mathematical language associated with shape Classify and sort everyday objects	**Unit 9 – Addition and Subtraction Within 10:** Estimate a number of objects and check by counting up to 10 Add and subtract two single-digit numbers and count on or back to find the answer Use quantities and objects to add and subtract two single-digit numbers **Unit 10 – Grouping and Sharing:** Solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups Solve practical problems that involve grouping and sharing Explore counting on in steps of 2 from zero	Explore characteristics of everyday objects and shapes (focusing on 2-D shapes) Use mathematical language associated with shape Classify and sort shapes Recognise, create and describe patterns with shapes Use mathematical language to describe size and position	Solve practical problems that involve grouping and sharing Create representations for numbers 0-20 Estimate a number of objects and check by counting, considering equal and unequal groups **Unit 16 – Number Patterns Beyond 20** Say which number is one more or one less than a given number Solve problems including grouping and sharing Estimate a number of objects and check by counting Count reliably to 50 Explore counting on and back from any number within 50 Place 0-50 in order Estimate a number of objects and check by counting Solve practical problems that involve combining groups of 2, 5 or 10, or sharing into equal groups	Record using marks that they can interpret and explain Begin to identify own mathematical problems based on own interests and fascinations
Maths Meetings	**Number:** Counting on and back within ten along a number line (vertical and horizontal) Conservation of number and cardinality activities, for example, 6 is still '6' in any arrangement and the number will stay the same unless more are added or some are taken away Number bonds up to 5 (including subtraction facts) One more and one fewer within 3, 6 and then within 10		**Number:** Counting on and back within 20 Subitising within five One greater or one less than a given number within 10 Representing addition and subtraction within 10 on a ten frame Identifying the number of groups, how many in each group and how many altogether (within 10) Automatically recall number bonds to 5 and some number bonds to 10		**Number:** Double and half numbers (within 10) Counting using the abstraction principle and subitising Represent addition and subtraction within 10 using a bead string Counting in twos, fives and tens Comparing two numbers using vocabulary greater and less Recall number bonds to 5 (and some to 10) **Numerical patterns:** Verbally count beyond 20, recognising pattern of number system

Numerical Patterns: Verbally count beyond 20, recognising the pattern of the counting system Explore and represent patterns within numbers up to 10. Start to identify odd and even within 10 **Shape and Pattern:** Recognise, create and describe two-criteria patterns of colour or size Matching shapes that are the same **Measures:** Introduce comparative long, longer, longest, short, shorter, shortest, tall, taller, tallest, big, bigger, biggest and small, smaller, smallest **Time:** Sequencing daily timetable Days of the week Months of the year **Money:** Introduce coins 1p, 2p, 5p and 10p	**Numerical Patterns:** Compare quantities up to 10 in different contexts recognising when one quantity is greater than, less than or the same as the other quantity Explore evens and odds within numbers up to 10 **Shape and Pattern:** Naming 3-D and 2-D shapes and matching shapes that are the same **Time:** Days of the week; today, tomorrow and yesterday Months of the year Introduce the clock and talk about familiar times of the day such as the time to start school, for lunch, for the end of the school day etc. **Measures:** Ordering lengths Introduce comparative vocabulary related to weight, capacity and volume **Money:** Introduce 20p coin	Explore and represent double facts within numbers up to 10 Explore evens and odds within numbers up to 10 Explore how quantities can be distributed equally **Shape and Pattern:** Describing the properties of 3-D and 2-D shapes using the vocabulary face, edge, side, vertices **Measures:** Comparing two or more lengths, weights and capacities **Time:** Introduce the clock and o'clock times

Year 1

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	**National Curriculum Coverage:** Number: Number and Place Value Number: Addition and Subtraction Geometry: Properties of Shapes Geometry: Position and Direction	**National Curriculum Coverage:** Number: Number and Place Value Number: Addition and Subtraction	**National Curriculum Coverage:** Measurement: Time Geometry: Position and Direction Number: Addition and Subtraction Number: Number and Place Value	**National Curriculum Coverage:** Number: Addition and Subtraction Number: Fractions Measurement: Length and Mass	**National Curriculum Coverage:** Number: Number and Place Value Number: Addition and Subtraction Measurement: Money	**National Curriculum Coverage:** Number: Multiplication and Division Measurement: Capacity and Volume
	Unit 1 – Numbers to 10: Represent, compare and explore numbers within 10 One more and one less Doubling and halving	**Unit 4 – Numbers to 20:** Identify, represent, compare and order numbers to 20 Doubling and halving One more one less	**Unit 6 – Time:** Read, write and tell the time to o'clock and half past on an analogue clock Sequencing daily activities Whole and half turns linked to time	**Unit 9 – Addition and Subtraction Within 20:** Illustrate, explain and link addition and subtraction with equations Apply 'make 10' strategy	**Unit 12 – Numbers 50 to 100 and beyond:** Read, write, represent, compare and order numbers to 100 One more/fewer, ten more/fewer	**Unit 15 – Multiplication and Division** Share equally into groups Doubling Link halving to fractions Add equal groups Explore arrays

Maths Mastery Units	**Unit 2 – Addition and Subtraction within 10** Represent and explain addition and subtraction Commutativity Addition and subtraction facts **Unit 3 – Shapes and Patterns:** Identify, describe, sort and classify 2-D and 3-D shapes Investigate repeating patterns Use and follow instructional language	**Unit 5 – Addition and Subtraction Within 20:** Represent and explain different addition and subtraction strategies including 'make 10' Use known facts to add and subtract	**Unit 7 – Exploring Calculation Strategies Within 20:** Model, explain and choose addition and subtraction strategies **Unit 8 – Numbers to 50:** 2-digit numbers – represent, sequence, explore, compare Count in 2s, 5s and 10s Describe and complete number patterns	Use language to quantify and compare difference **Unit 10 – Fractions:** Identify half and quarter of a shape or object Find half and quarter of a quantity **Unit 11 – Measures (1) Length and Mass:** Compare and measure lengths and mass using cm and Kg Doubling and halving	Identify number patterns **Unit 13 – Addition and Subtraction:** Explore addition and subtraction involving 2-digit numbers and ones Represent and explain addition and subtraction with regrouping Investigate number bonds within 20 **Unit 14 – Money:** Name coins/notes and understand their value Represent the same value using different coins Find different amounts of change	**Unit 16 – Measures (2) Capacity and Volume** Compare capacities, volumes and lengths Explore litres Apply understanding of fractions to capacity
Maths Meetings	**Number:** Count on and back within 20, with a focus on ordinality, cardinality and conservation of number When counting do not always start at 1 and support conceptual understanding with different representations of the numbers Number bonds within ten, for example, identifying all the ways of making 6 - using the part-whole model Double and half of numbers within 10 **Shape and Pattern:** Name 2-D and 3-D shapes **Measures:** Comparison and ordering of capacities, lengths and weights **Time:** O'clock and half past times Begin to measure and record the time **Money:** Recognition of all coins and £5 and £10 notes		**Number:** Number bonds to and within 10 with part-whole representation Using inverse to find missing numbers in equations Applying known calculation strategies in addition and subtraction Recognising patterns that increase and decrease in steps of 2, 5 and 10 Half and double within 20 Grouping and sharing within 20 **Measures:** Comparison and ordering of containers using vocabulary: full, empty, more than, less than, half full, quarter full **Time:** Tell the time one or two hours before and after a time Match activities to different times of the day **Money:** Recognition of all coins and notes		**Number:** Addition and subtraction within 20, drawing attention to strategies (e.g. Make 10, counting on) and structures (e.g. 'first, then, now', combining or partitioning sets, finding difference) Partitioning 2-digit numbers into tens and ones Exploring repeated addition and the part-whole model and how it links with multiplication and division **Shape and Pattern:** Use mathematical language to describe size and position using vocabulary whole, half, quarter, three quarter turns, clockwise and anti-clockwise Identify and describe 2-D and 3-D shapes using vocabulary side, edge, face and vertices	

	Year 2					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
National Curriculum	**National Curriculum Coverage:** Number: Number and Place Value Number: Addition and Subtraction	**National Curriculum Coverage:** Measurement: Length Statistics Number: Multiplication and Division	**National Curriculum Coverage:** Measurement: Time Number: Fractions Number: Addition and Subtraction	**National Curriculum Coverage:** Measurement: Money Geometry: Properties of Shapes Geometry: Position and Direction	**National Curriculum Coverage:** Number: Number and Place Value Measurement: Capacity and Volume Measurement: Mass	**National Curriculum Coverage:** Number: Addition and Subtraction Number: Multiplication and Division
Maths Mastery Units	**Unit 1 – Numbers Within 100** Read, write, represent, partition, compare and order numbers to 100 Explore patterns including odds and evens, tens and ones **Unit 2 – Addition and Subtraction of 2-Digit Numbers:** Apply number bonds to add and subtract Represent and explain addition and subtraction of 2-digit numbers Add three 1-digit numbers **Unit 3 – Addition and Subtraction Word Problems:** Introduction to bar models as a representation Create, label and sketch bar models	**Unit 4 – Measures (1) Length:** Draw and measure lengths in centimetres Use <, > and = to compare and order lengths in metres and centimetres **Unit 5 – Graphs:** Represent and interpret: pictograms, block diagrams, tables and tally charts **Unit 6 – Multiplication and Division 2, 5 and 10** Calculate the times table of 2, 5 and 10 by skip counting Relate the 2 times table to doubling Explore representations of multiplication and division Commutativity	**Unit 7 – Time:** Tell the time on an analogue clock: quarter past, quarter to and five minute intervals Calculate durations of time in minutes and seconds Sequence daily events Understand minutes in an hour and hours in a day **Unit 8 – Fractions:** Part-whole relationships Fractions as part of a whole or a whole set Relate to division Equivalent fractions **Unit 9 – Addition and Subtraction of 2-Digit Numbers** Illustrate, represent and explain addition and subtraction involving regrouping including 'make 10', 'round and adjust' and near doubles strategies	**Unit 10 – Money:** Recognise coins and notes Use £ and p accurately Add and subtract amounts Calculate different amounts of change **Unit 11 – Face, Shapes and Patterns; Lines and Turns:** Explore, sort and describe 2-D shapes Lines of symmetry in 2-D shapes Identify 2-D shapes on 3-D shapes Compare and sort 2-D and 3-D shapes Use language to describe position, direction and rotation to follow a route	**Unit 12 – Numbers Within 1000:** Represent in different ways Compare using symbols Read scales to 1000 **Unit 13 – Measures (2) Capacity and Volume:** Read and measure temperature Estimate, measure and understand litres and millilitres Compare and order capacities **Unit 14 – Measures (3) Mass:** Weigh and compare masses in kilograms and grams	**Unit 15 – Exploring Calculation Strategies:** Apply addition and subtraction strategies to solve equations Illustrate and explain addition and subtraction using column method **Unit 16 – Multiplication and Division of 3 and 4:** Multiplication and division facts for 3 and 4 Relate 4 times table to doubling the 2 times table Describe, interpret and represent using arrays and bar models Recognise inverse relationship
Maths Meetings	**Number:** Count on and back in 2s, 3s, 5s and 10 from any number within 100 along a number line (vertical and horizontal) Recognise the place value of each digit in a 2-digit number (tens, ones)		**Number:** Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Add and subtract tens and ones to 1 and 2-digit numbers within 100 (with regrouping)		**Number:** Place value of numbers within 1000 Complete addition or subtraction calculations using a range of strategies and deciding which is the most efficient Use the inverse operations to solve missing number problems	

Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Add and subtract tens and ones to 1 and 2-digit numbers within 100 (no regrouping) **Shape and Pattern:** Use vocabulary related to shape accurately including the number of sides, edges, vertices and faces on 2-D and 3-D shapes Describe position, direction and movement, including whole and half turns (clockwise and anticlockwise) **Measures:** Introduce cm as a standard unit for length (and continue to use m) Compare the length of objects using cm and m Time: Tell the time to the hour and half past **Money:** Coin recognition of all coins and notes (£5, £10, £20) Use £ and p symbols **Data:** Interpret tables and scaled pictograms, block diagrams and simple graphs	Find unit and non-unit fractions (halves, thirds and quarters) of quantity and recognise that one half is equal to two quarters Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables **Shape and Pattern:** Identify and describe the properties of 2-D and 3-D shapes including number of sides and line symmetry (2-D) and number of edges, vertices and faces (3-D) Describe position, direction and movement, including whole, half, quarter and three- quarter turns (clockwise and anti-clockwise) Copy, continue and make patterns by colour, size and shape Order and arrange combinations of mathematical objects in patterns and sequences **Time:** Tell the time to the nearest five minutes and quarter past and to the hour Relate the multiplication table of 5 to the divisions on the clock face **Money:** Solve simple problems involving the addition and subtraction of money of the same unit, including giving change	**Measures:** Introduce standard units for mass (kg, g) and capacity (ml, L) and use these standard units when comparing and ordering mass and capacity Practise reading sequences scaled in steps of 2, 5 and 10 and use known facts to derive reading scales in 20s, 50s and 100s Reading temperature on a thermometer Estimate and calculate capacity, length and weight using standard units **Shape and space:** Identify right angles in relation to shapes and everyday objects and in relation to quarter turns Identify 2-D shapes on the surface of 3-D shapes Identify and describe the properties of common 2-D shapes including the number of sides and line symmetry in a vertical line Identify and describe the properties of common 3-D shapes including the number of edges, vertices and sides **Time:** Calculating time intervals and durations

Year 3

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	Number: Number and Place Value Number: Addition and Subtraction Statistics	Number: Addition and Subtraction Measurement: Length and Perimeter	Number: Multiplication and Division	Measurement: Time Number: Fractions	Geometry: Properties of Shapes Measurement: Mass, Volume and Capacity	Number: Multiplication and Division Number: Addition and Subtraction Number: Place Value
	Unit 1 – Number Sense and Exploring Calculation Strategies: Read, write, order and compare numbers to 100 Calculate mentally using known facts, round and adjust, near doubles,	**Unit 4 – Addition and Subtraction:** Develop and use a range of mental calculation strategies Illustrate and explain formal written methods – column method	**Unit 6 – Multiplication and Division:** Multiplication and associated division facts for 2, 3, 4, 5, 6, 8 and 10 Multiplicative structures: equal groups/parts, change and comparison,	**Unit 8 – Time:** Tell, record, write and order the time – analogue and digital 12-hour, am and pm Measure, calculate and compare durations	**Unit 10 – Angles and Shape:** Identify angles including right angles and recognise as a quarter of a turn Identify and draw parallel and perpendicular lines	**Unit 12 – Securing Multiplication and Division:** Recall and use multiplication and division facts for 6 and 8 times tables

Maths Mastery Units	adding on to find the difference Derive new facts from a known fact **Unit 2 – Place Value** Read, write, represent, partition, order and compare 3-digit numbers Find 10/100 more or less Round to the nearest multiple of 10 and 100 **Unit 3 – Graphs:** Collect, interpret and present data using charts and tables	**Unit 5 – Length and Perimeter:** Measure, draw and compare lengths Add and subtract lengths Calculate perimeter	correspondence problems Relationships: commutativity and inverse **Unit 7 - Deriving Multiplication and Division Facts:** Multiply and divide by 10 and 100 Multiply a 2-digit number by 2, 3, 4, 5 and corresponding division situations Divide 2-digit by a 1-digit	**Unit 9 – Fractions:** Part-whole relationships Fractions as part of a whole or a whole set and as a number Add, subtract, compare and order fractions	Draw/make, classify and compare 2-D and 3-D shapes Measure the perimeter of shapes **Unit 11 – Measures:** Read scales with different intervals when measuring mass and volume Weigh and compare masses and capacities with mixed units Estimate mass and capacity	**Unit 13 – Exploring Calculation Strategies and Place Value:** Add and subtract mentally Find 10, 100 and 1000 more or less Order and compare numbers beyond 1000 Round numbers

Maths Meetings	**Number:** Consolidate mental addition and subtraction for 2-digit numbers (with and without regrouping) using a range of calculation strategies Represent numbers to 1000 with concrete manipulatives and images, including number lines Place value of digits in numbers with up to three digits Derive multiplication and division equations using arrays (multiples of 2, 5 & 10) Recognise, find and write fractions of lengths, shapes and quantities Choose and discuss efficient calculation strategies for 3-digit addition and subtraction, emphasising using number bonds / make ten Derive facts from known facts 'If I know…, what else do I know?' (number bonds) Doubles & halves (continue throughout the year) **Shape and Pattern:** Name and describe 2-D and 3-D shapes according to their properties Describe position, direction and movement in terms of straight line movements and rotations including angles Identify horizontal and vertical lines **Measures:** Read scales with intervals of 2, 5, 10 and 100 (comparing to increments of 1)	**Number:** Recognise that two halves/three thirds/four quarters are equal to one whole Count in halves, thirds and quarters within 10 Choose and justify efficient calculation strategies for age-appropriate calculations Derive facts from known facts (multiplication / division and addition / subtraction) Introduce counting in tenths during Unit 9 Multiply by 10 and 100 recognising the importance of place value Doubles & halves **Data:** Read scales in steps of 2, 3, 4, 5 and 10 **Shape and measure:** Identify right angles and that two right angles make a half turn Calculate the perimeter of simple 2-D shapes **Time:** Tell the time to the nearest minute • Tell the time from an analogue clock using Roman numbers I to XII	**Number:** Recognise equivalent fractions using a fraction wall Count in halves, thirds, quarters and tenths from any number Find fractions (thirds, halves and quarters) of simple amounts (linked to division) Multiplication and division by 10 and 100 Choose efficient calculation strategies for age-appropriate calculations Derive new facts from known number facts (all four operations) Given a number, pupils identify calculations (from all four operations) that could result in that number **Data:** Read scales in steps of 2, 3, 4, 5, 10, 50 and 100 Interpret tallies, tables, bar charts and pictograms **Measures:** Read scales with intervals of 2, 5, 10, 25, 50, 100, 250 and 500 Shape and pattern: Identify pairs of perpendicular and parallel lines **Money:** Recognise British coins and notes and use in practical contexts

Time:
Tell the time to the nearest five minutes
Money:
Coin recognition of all coins and notes (£5, £10, £20)

Year 4

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	Number: Number and Place Value Number: Addition and Subtraction	Number: Multiplication and Division Statistics	Number: Multiplication and Division Number: Fractions Measurement: Time	Number: Fractions (Including Decimals) Measurement: Area and Perimeter	Measurement: Measures and Money Geometry: Properties of Shapes	Geometry: Position and Direction Number: Number and Place Value Geometry: Properties of Shapes
Maths Mastery Units	**Unit 1 – Reasoning with Large Numbers:** 4-digit place value – read, write, represent, order and compare Find 10, 100 or 1000 more or less Round numbers to the nearest 10, 100 or 1000 **Unit 2 – Addition and Subtraction:** Select appropriate strategies to add and subtract Illustrate and explain appropriate addition and subtraction strategies including column method with regrouping	**Unit 3 – Multiplication and Division:** Distributive property including multiplying three 1-digit numbers Mental multiplication and division strategies using place value and known and derived facts Short multiplication and division **Unit 4 – Discrete and Continuous Data:** Read, interpret and construct pictograms, bar charts and time graphs Compare tables, pictograms and bar charts	**Unit 5 – Securing Multiplication Facts:** Identify and explore patterns in multiplication tables including 7 and 9 **Unit 6 – Fractions:** Explore different interpretations of fractions Equivalent fractions Represent fractions greater than one as mixed number and improper fractions Add and subtract fractions with the same denominator including fractions greater than one **Unit 7 – Time:** Analogue to digital, 12-hour and 24-hour Convert between units of time	**Unit 8 – Decimals:** Decimal equivalents to tenths, quarters and halves Compare and order numbers with same number of decimal places Multiply and divide by 10 and 100 including decimals **Unit 9 – Area and Perimeter:** Perimeter of rectangles and rectilinear shapes Area of rectangles and rectilinear shapes Investigate area and perimeter	**Unit 10 – Solving Measuring and Money Problems:** Convert units of measure Select appropriate units to measure Use strategies to investigate problems: trial and improvement, organising using lists and tables, working systematically **Unit 11 – Shape and Symmetry:** Classify, compare and order angles Compare and classify 2-D shapes Identify lines of symmetry	**Unit 12 – Position and Direction:** Describe and plot using coordinates Describe translations **Unit 13 – Reasoning with Pattern and Sequences:** Roman numerals up to 100 Place value of other number systems Number sequences and patterns **Unit 14 – 3-D Shape:** Use understanding of 3-D shapes Identify 3-D shapes from 2-D representations
Maths Meetings	**Number:** Count in multiples of 6, 8, 25, 100 and 1000 Using the multiplication tables up to 12 × 12 Roman numerals to 100 (I to C) Derive facts from known facts 'If I know…, what else do I know?' using all four operations		**Number:** Divide by ten and 100 (using knowledge of place value) to get a decimal fraction • Use the number line to represent numbers (including decimals), fractions (including mixed numbers) and measures		**Number:** Identify the place value of the digits in a number with up to two decimal places Suggest a decimal fraction that is equivalent to a fraction in tenths or hundredths Round decimals with one decimal place to the nearest whole number	

Add and subtract 3-digit numbers mentally using a range of calculation strategies	Recognise and use factor pairs and commutativity in mental calculations	Compare numbers with the same number of decimal places up to two decimal places
Calculate multiplications and divisions mentally using a range of strategies (including known facts, halving, doubling, applying place value, inverse, commutativity etc)	Multiply three numbers together	Add and subtract 4-digit numbers mentally using a range of calculation strategies
Compare and order fractions	**Geometry and shape:**	**Geometry, position and direction:**
Find fractions of simple amounts and quantities (linking this to division)	Calculate the perimeters of rectilinear 2-D shapes on cm grids	Use flags to identify angles, shapes, symmetry, parallel and perpendicular lines
Count in tenths and hundredths forwards and backwards	Identify lines of symmetry in 2-D shapes	Describe positions on a 2-D grid as coordinates in the first quadrant
Shape and Pattern:	**Measures including money:**	Measures:
Recognise 3-D shapes in different orientations and describe their properties	Solve problems, including missing number problems using number facts, place value and more complex addition and subtraction problems	Recognise and write decimal equivalents to one quarter, one half and three quarters in the context of capacity, length and mass
Identify right angles, compare angles and classify angles as acute or obtuse	Add and subtract money, including mixed units, and give change in practical contexts	Recognise centimetres written in metres; ml written in litres
Recognise quarter, half, three-quarter and whole turns and their equivalent number of right angles	**Time:**	Round lengths to the nearest metre
Identify lines of symmetry in the surrounding environment and regular 2-D shapes	Estimate and read time to the nearest minute	**Money:**
Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	Compare time in terms of seconds, minutes and hours	Recognise how many ten pence pieces equal one pound, how many one pence pieces equal one pound and relate them to tenths and hundredths of a pound
Time:	Convert units of time e.g. minutes to seconds, weeks to days	Compare amounts of money up to two decimal places
Tell and write the time from an analogue clock, including Roman numerals from I to XII and 12-hour and 24-hour clocks		**Time:**
Estimate and read the time to the nearest minute		Look at timetables using correct vocabulary e.g. arrive / depart, first, last.
Money:		
Add and subtract money, including mixed units, and give change in practical contexts		

Year 5

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	Number: Number and Place Value Number: Addition and Subtraction Statistics	Number: Multiplication and Division Measurement: Perimeter and Area	Number: Fractions and Decimals Geometry: Properties of Shapes	Number: Factions and Percentages Geometry: Position and Direction	Measurement Number: Decimals	Geometry: Properties of Shapes Measurement: Volume Number: Number and Place Value

Maths Mastery Units	**Unit 1 – Reasoning with Large Whole Integers:** Read, write, order and compare numbers up to one million Round numbers within one million to the nearest multiple of powers of ten Read Roman numerals up to 1000 **Unit 2 – Integer Addition and Subtraction:** Use rounding to estimate Use a range of mental calculation strategies to add and subtract integers Illustrate and explain the written method of column addition and subtraction Select efficient calculation strategies **Unit 3 – Line Graphs and Timetables:** Complete, read and interpret data presented in line graphs Read and interpret timetables including calculating intervals	**Unit 4 – Multiplication and Division:** Identify multiples and factors Investigate prime numbers Multiply and divide by 10, 100 and 1000 (integers) Derived facts Illustrate and explain formal multiplication and division strategies such as short and long division Use a range of mental calculation strategies **Unit 5 – Perimeter and Area:** Investigate area and perimeter of rectilinear shapes Estimate area of non-rectilinear shapes	**Unit 6 – Fractions and Decimals:** Read, write, order and compare decimals Round decimals to the nearest whole number Represent, identify, name, write, order and compare fractions (including improper and mixed numbers) Calculate fractions of amounts **Unit 7 – Angles:** Classify, compare and order angles Measure and draw angles with a protractor Understand and use angle facts to calculate missing angles	**Unit 8 – Fractions and Percentages:** Add and subtract fractions with denominators that are multiples of the same number Multiply fractions (and mixed numbers) by a whole number Explore percentage, decimal, fraction equivalence **Unit 9 – Transformation:** Coordinates in all four quadrants Translation and reflection Calculate intervals across zero as a context for negative numbers	**Unit 10 – Converting Units of Measure:** Convert between metric units of length, mass and capacity and units of time Know and use approximate conversion between imperial and metric **Unit 11 – Calculating with Whole Numbers and Decimals:** Mental strategies to add and subtract involving decimals Formal written strategies to add, subtract and multiply using decimals Multiply and divide by 10, 100 and 1000 involving decimals Derive multiplication facts involving decimals	**Unit 12 – 2-D and 3-D Shape:** Classify 2-D shapes and reason about regular and irregular polygons Properties of diagonals of quadrilaterals Classify 3-D Shapes 2-D representations of 3-D shapes **Unit 13 – Volume:** Use cube numbers and notation Estimate volume Convert units of volume **Unit 14 – Problem Solving:** Negative numbers and calculating intervals across zero Calculating the mean Interpret remainders Investigate numbers: consecutive, palindromic, multiples
Maths Meetings	**Number:** Place value of 5-digit and 6-digit whole numbers Count back past zero to include negative numbers using a number line Recognise Roman numerals up to 1000 (M) Count forwards and backwards in steps of powers of ten (including tenths and hundredths) Count in multiples of 7, 9, 25, 50, 100 and 1000 Recalling and using multiplication facts up to 12 x 12		**Number:** Interpret negative numbers in context and calculate intervals across zero Continue number sequences including negative numbers Identify the place value in a number with up to three decimal places Compare and order fractions, including mixed number and improper fractions whose denominators are multiples of the same number		**Number:** Write percentages as a fraction and as a decimal number Add and subtract fractions with the same denominator and denominators that are multiples of the same number Use all four operations to solve problems involving measure, using decimal notation **Measures, including money and time:** Solve problems involving converting between units of time	

Add, subtract, multiply and divide numbers mentally with increasingly large numbers, drawing upon known facts (including number bonds and multiplication facts, halving, doubling, applying place value, inverse, commutativity etc)	Identify multiples and factors, including finding all factor pairs and common factors of two numbers	**Geometry:**

Add, subtract, multiply and divide numbers mentally with increasingly large numbers, drawing upon known facts (including number bonds and multiplication facts, halving, doubling, applying place value, inverse, commutativity etc)

Compare and order fractions and decimals

Find fractions of simple amounts and quantities (linking this to division)

Add and subtract fractions with the same denominator

Geometry:

Name and describe the properties of 2-D and 3-D shapes

Identify acute and obtuse angles and compare and order angles (do not include reflex angles at this point)

Measures including money and time:

Convert between different units of metric measure (cm/mm, cm/m, kg/g, km/m, l/ml)

Tell the time to the nearest minute with analogue and digital clocks and 12-hour and 24-hour notation

Solve problems involving converting between units of time from hours to minutes; minutes to seconds; years to months; weeks to days

Measure and calculate the perimeter of a rectilinear shape (including squares) in cm and m

Statistics:

Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

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Identify multiples and factors, including finding all factor pairs and common factors of two numbers

Read decimal numbers as fractions

Read, order and compare numbers with up to three decimal places

Convert mixed numbers to improper fractions and vice versa

Measures including money and time:

Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

Calculate and compare the area and perimeter of rectangles

Estimate and compare acute, obtuse and reflex angles

Identify: angle at a point and one whole turn (total 360°); angles at a point on a straight line and a turn (total 180°); other multiples of 90°

Read and convert time between analogue, digital, 12- and 24-hour clock

Statistics:

Solve comparison, sum and difference problems using information presented in line graphs

Complete, read and interpret information in tables, including timetables

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Geometry:

Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language

Know and use the angles at a point / full turn sum to 360°

Know and use the angles on a straight line / half turn sum to 180°

Year 6

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
National Curriculum	Number: Number and Place Value Number: Multiplication and Division	Number: Addition, Subtraction, Multiplication and Division Algebra Number: Fractions and Decimals Geometry: Properties of Shapes	Geometry: Position and Direction Geometry: Properties of Shapes Number: Fractions and Decimals Measurements	Number: Fractions, Decimals and Percentages Statistics Ratio and Proportion		

					SATs Preparation	Secondary Maths Readiness

| Maths Mastery Units | **Unit 1 – Integers and Decimals:**

Represent, read, write, order and compare numbers up to ten million

Round numbers, make estimates and use this to solve problems in context

Solve multi-step problems involving addition and subtraction

Unit 2 – Multiplication and Division:

Identify and use properties of number, focussing on primes

Multiply larger integers and decimal numbers using a range of strategies

Divide integers by 1-digit and 2-digit numbers representing remainders appropriately

Illustrate and explain formal multiplication and division | **Unit 3 – Calculation Problems:**

Understand the use of brackets

Use knowledge of the order of operations to carry out calculations

Generate and describe linear number sequences

Express missing number problems algebraically

Solve equations with unknown values

Unit 4 – Fractions:

Deepen understanding of equivalence

Order, simplify and compare fractions, including those > 1

Recall equivalence between common fractions and decimals

Find decimal quotients using short division

Add and subtract fractions

Unit 5 – Missing Angles and Length:

Compare and classify a range of geometric shapes

Use angle facts to find unknown angles | **Unit 6 – Coordinates and Shapes:**

Draw a range of geometric shapes using given dimensions and angles

Describe, draw, translate and reflect shapes on a co-ordinate plane

Recognise and construct 3-D shapes

Name and illustrate parts of a circle

Unit 7 – Fractions:

Represent multiplication involving fractions

Multiply two proper fractions

Divide a fraction by an integer

Unit 8 – Decimals and Measure:

Use, read, write and convert between standard units of measures; length, mass, time, money and volume and imperial units

Calculate the area of parallelograms and triangles

Calculate, estimate and compare the volume of cuboids | **Unit 9 – Percentage and Statistics:**

Calculate and compare percentages of amounts

Connect percentages with fractions

Explore the equivalence of fractions, decimals and percentages

Calculate the mean

Construct and interpret line graphs and pie charts

Compare pie charts

Unit 10 – Proportion Problems:

Use fractions to express proportion

Identify ration as a relationship between quantities and as a scale factor

Unequal sharing involving ratio | | |

| Maths Meetings | **Number and Place Value:**

Counting should be daily practice and include negative numbers, decimal and fractions, larger integers, counting in multiples etc.

Recognise, read and write Roman numerals

Identify multiples and factors, including finding all factor pairs and common factors of two numbers

Know prime, square and cube numbers including being able to apply knowledge and understanding of these to solve problems.

Number: Addition, Subtraction, Multiplication and Division:

Using the multiplication tables up to 12 × 12

Add, subtract, multiply and divide numbers mentally with increasingly large numbers, drawing upon known facts

Multiply and divide by 10, 100 and 1000 | | | | | |

Derive decimal facts for the four operations (e.g. 7 × 8 = 56 so 0.7 × 8 = 5.6; 2 + 7 = 9 so 0.02 + 0.07 = 0.09)

Interpret remainders appropriately in division, including rounding up and down, as a fraction and as a decimal

Number: Fractions, Decimals and Percentages:

Compare and order fractions, including mixed number and improper fractions whose denominators are multiples of the same number

Write percentages as a fraction with denominator 100 and as a decimal

Ratio and Proportion:

Explore the language of ratio and proportion and make connections to previous experiences with fractions and multiplication

Algebra:

Sequences, including fractions and decimals

Generalised arithmetic

Finding unknowns with operations on both sides

Measurement:

Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

Know the mathematics around the calendar including number of days in each month and calculate using these

Solve problems involving converting between units of time from hours to minutes; minutes to seconds; years to months; weeks to days

Convert between different units of metric measure

Geometry: Properties of Shape and Position and Direction:

Identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line and a half turn (total 180°); other multiples of 90°

Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language

Identify lines of symmetry in a range of 2-D shapes and patterns

Statistics:

Interpret data from a range of contexts presented in a variety of ways

Progression in Mathematical Skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Counting	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forwards and backwards Relate counting in 4's to double 2's	Count from 0 in multiples of 4, 8, 50 and 100 Find 10 or 100 more or less than a given number Relate counting in 6's to double 3's	Count in multiples of 6, 7, 9, 25 and 1000 Find 1000 more or less than a given number Count backwards through zero to include negative numbers	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, including through zero	Use negative numbers in context, and calculate intervals across zero

Place Value	Recognise the place value of each digit in a two-digit number Compare and order numbers from 0 up to 100 Use <, > and = signs	Recognise the place value of each digit in a two-digit number Compare and order numbers from 0 up to 100 Use <, > and = signs	Recognise the place value of each digit in a three-digit number Compare and order numbers up to 1000 Round any number to the nearest 10, 100 or 1000	Recognise the place value of each digit in a four-digit number Order and compare numbers beyond 1000 Round any number to the nearest 10, 100 or 1000	Read, write, order and compare numbers up to 1 000 000 and determine the value of each digit Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000	Read, write, order and compare numbers up to 10,000 000 and determine the value of each digit Round any whole number to a required degree of accuracy
Representing Number	Identify and represent numbers using objects and pictorial representations inc. the number line and use: equal, more than, less than, most, least Read and write numbers from 1 to 20 in numerals and words Read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs	Identify, represent and estimate numbers using different representations, inc. the number line Read and write numbers to at least 100 in numerals and in words Introduce bar models as a form of representation	Identify, represent and estimate numbers using different representations Read and write numbers up to 1000 in numerals and in words	Identify, represent and estimate numbers using different representations 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	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	*Consolidate skills from previous year groups*
Number Facts: Addition and Subtraction	Given a number, identify one more and one less Represent and use number bonds and related subtraction facts within 20 Use the make-10 strategy	Use place value and number facts to solve problems Recall and use addition and subtraction facts to 20 fluently Derive and use related facts up to 100 Use the make-10 strategy	*Consolidate skills from previous year groups*	*Consolidate skills from previous year groups*	*Consolidate skills from previous year groups*	*Consolidate skills from previous year groups*
Mental Addition and Subtraction	Add and subtract one-digit and two-digit numbers to 20, including zero	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:	Add and subtract numbers mentally, including: HundredsTensOnes + Ones, HundredsTensOnes +	*Consolidate skills from previous year groups*	Add and subtract numbers mentally with increasingly large numbers Develop mental strategies to add and	Perform mental calculations, including with mixed operations and large numbers

		TensOnes +Ones, TensOnes + Tens, TensOnes +TensOnes and Ones+Ones+Ones Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot	Tens and HundredsTensOnes + Hundreds		subtract involving decimals	
Written Addition and Subtraction	Add and subtract numbers with up to two digits, using written methods	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	Add and subtract whole numbers with more than 4 digits, including using formal written methods	*Consolidate skills from previous year groups*
Addition and Subtraction Problems	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ − 9	Solve problems with addition and subtraction, using concrete, pictorial and abstract representations Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	Estimate the answer to a calculation and use inverse operations to check answers Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	Estimate and use inverse operations to check answers to a calculation Solve addition and subtraction twostep problems in contexts, deciding which operations and methods to use and explaining why	Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Select efficient methods of calculation	*Consolidate skills from previous year groups*
Number Facts: Multiplication and Division		Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Develop the inverse nature of	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Develop the inverse nature of multiplication and division	Recall multiplication and division facts for multiplication tables up to 12 × 12	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	Identify common factors, common multiples and prime numbers

		multiplication and division			factors and composite (non-prime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19	
Mental Multiplication and Division		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers (2, 3, 4, 5, 6 and 8), using mental methods	Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations	Multiply and divide numbers mentally drawing upon known facts Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Perform mental calculations, including with mixed operations and large numbers
Written Multiplication and Division			Progress to formal written methods calculations as above	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers 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 Interpret remainders and representing them as fractions or decimals	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context

						Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to context
Multiplication and Division Problems	Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts Understand commutativity	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	Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes 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	Use their knowledge of the order of operations to carry out calculations involving the four operations (BODMAS/ BIDMAS) Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods and why 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
Recognising Fractions	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	Recognise, find, name and write fractions 1/3, 1/4 , 2/4 and 3/4 of a length, shape, set of objects or quantity Fractions understood in relationship to part-whole terminology	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	Count up and down in hundredths Recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number	*Consolidate skills from previous year groups*

	an object, shape or quantity Use arrays to represent and support understanding of fractions	Relationship between fractions and division				
Comparing Fractions			Compare and order unit fractions, and fractions with the same denominators Recognise and show, using diagrams, equivalent fractions with small denominators	Recognise and show, using diagrams (multiple representations), families of common equivalent fractions	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	Use common factors to simplify fractions Use common multiples to express fractions in the same denomination Compare and order fractions, including fractions > 1
Finding Fractions of Quantities			Recognise, find and write fractions of a discrete set of objects: unit fractions (proper fractions, numbers) and non-unit fractions (improper fractions) with small denominators Recognise and use fractions as numbers: unit fractions and non unit fractions with small denominators	Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number	*Consolidate skills from previous year groups*	*Consolidate skills from previous year groups*
Fraction Calculations		Write simple fractions for example, $1/2$ of $6 = 3$ and recognise the equivalence of $2/4$ and $1/2$.	Add and subtract fractions with the same denominator within one whole for example, $5/7 + 1/7 = 6/7$	Add and subtract fractions with the same denominator including fractions greater than 1 whole	Add and subtract fractions with the same denominator and denominators that are multiples of the same number Multiply proper fractions and mixed numbers by whole	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Multiply simple pairs of proper fractions, writing the answer in its simplest form

					numbers, supported by materials/diagrams	Divide proper fractions by whole numbers
Decimals as Fractions				Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to ¼, ½ and ¾ •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	Read and write decimal numbers as fractions	Associate a fraction with division and calculate decimal fraction equivalents, for example, 0.375, for a simple fraction Identify the value of each digit in numbers given to three decimal places
Ordering Decimals				Round decimals with one decimal place to the nearest whole number Compare numbers with the same number of decimal places up to two decimal places	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Round decimals with two decimal places to the nearest whole number and to one decimal place Read, write, order and compare numbers with up to three decimal places	*Consolidate skills from previous year groups*
Calculating with Decimals						Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Multiply one-digit number with up to two decimal places by whole numbers Use written division methods in cases where the answer has

					up to two decimal places
Percentages				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 involving the calculation of percentages [for example, of measures, and such as 15% of 360 and the use of percentages for comparison
Fraction, Decimal, Percentage Problems			Solve problems using all fraction knowledge	Solve simple measure and money problems involving fractions and decimals to two decimal places	Solve problems involving number up to three decimal places Solve problems which require knowing percentage and decimal equivalents of ½ , ¼ , 1/5 , 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25	Solve problems which require answers to be rounded to specified degrees of accuracy Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Solving linear number sequences involving fractions of different denominators
Ratio and Proportion					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 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 (ratios)
Algebra						Use simple formulae •generate and describe linear number sequences Express missing number problems algebraically Find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables
Measures	Compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume & time using cm/kg/ litres Measure and begin to record length/height, weight/mass, capacity/volume & time Apply understanding of fractions to capacity	Choose and use appropriate standard units to estimate and measure length/height (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 =	Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	Convert between different units of measure estimate, compare and calculate different measures, including money in pounds and pence	Convert between different units of metric measure Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Estimate volume and capacity	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate 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
Perimeter, Area and Volume			Measure the perimeter of simple 2-D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in	Measure and calculate the perimeter of composite rectilinear	Recognise that shapes with the same areas can have different

| | | | | centimetres and metres find the area of rectilinear shapes by counting squares | shapes in centimetres and metres
Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes Use cube numbers and cube number notation to express volumes | perimeters and vice versa
Recognise when it is possible to use formulae for area and volume of shapes
Calculate the area of parallelograms and triangles
Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units |
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| **Money** | Recognise and know the value of different denominations of coins and notes
Find different combinations of coins that equal the same amounts of money
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
Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change | Add and subtract amounts of money to give change, using both £ and p in practical contexts | Use strategies to investigate problems: trial and improvement, organising lists and tables, working systematically | Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling | *Consolidate skills from previous year groups* |
| **Time** | Sequence events in chronological order using language recognise and use language relating to dates, including days of the week, weeks, months and years | Compare and sequence intervals of time; involving the sequence of daily events/ routines
Tell and write the time to five minutes, including quarter | Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour digital clocks | Convert between different units of measure (e.g. Hours to minutes)
Read, write and convert time between | Solve problems involving converting between units of time (links to statistics: line graphs and timetables) | *Consolidate skills from previous year groups* |

	Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	past/to the hour and draw the hands on a clock face to show these times Know the number of minutes in an hour and the number of hours in a day Calculate durations of time in seconds	Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight Know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events	analogue and digital 12- and 24-hour clocks Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days		
Vocabulary of Shape	Recognise and name common 2-D shapes (e.g. Square, circle, triangle) Recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres)	Vocabulary of vertices, edges, faces, symmetry	Identify horizontal and vertical lines and pairs of perpendicular and parallel lines	*Consolidate skills from previous year groups*	*Consolidate skills from previous year groups*	Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Properties of 2-D Shapes	Sort and classify 2-D shapes	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line Compare and sort common 2-D and 3-D shapes and everyday objects.	Draw 2-D shapes	Compare and classify geometric shapes, including quadrilaterals and triangles, based on properties and sizes Identify lines of symmetry in 2-D shapes presented in different orientations Complete a simple symmetric figure with respect to a specific line of symmetry	Use the properties of rectangles to deduce related facts and find missing lengths and angles Distinguish between regular and irregular polygons based on reasoning about equal sides and angles Identify the properties of quadrilaterals including the properties of diagonals of quadrilaterals	Draw 2-D shapes using given dimensions and angles Compare and classify geometric shapes based on their properties and sizes

Properties of 3-D Shapes	Sort and classify 3-D shapes	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. Compare and sort common 2-D and 3-D shapes and everyday objects	Make 3-D shapes using modelling materials recognise 3-D shapes in different orientations and describe them	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Recognise, describe and build simple 3-D shapes, including making nets Find unknown angles in any triangles, quadrilaterals, and regular polygons
Angles			Recognise angles as a property of shape or a description of a turn Identify right angles, recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn Identify whether angles are greater or less than right angle	Identify acute and obtuse angles and compare and order angles up to two right angles by size	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees (°) Identify angles at a point and one whole turn (total 360°); at a point on a straight line and ½ a turn (total 180°) Identify other multiples of 90°	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
Position & Direction	Describe position, direction and movement, including whole, half, quarter and three-quarter turns	Order and arrange combinations of mathematical objects in patterns and sequences Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of	*Consolidate skills from previous year groups*	Describe positions on a 2-D grid as coordinates in the first quadrant Describe movements between positions as translations of a given unit to the left/right and up/down Plot specified points and draw sides to complete a given polygon	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 Describe positions on the full coordinate grid (all four quadrants)	Describe positions on the full coordinate grid (all four quadrants) Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

		right angles for quarter, half and ¾ turns			Calculate intervals across zero as a context for negative numbers	
Collecting and Interpreting Data		Collect and interpret and construct simple pictograms, tally charts, block diagrams and simple tables	Collect and interpret and present data using bar charts, pictograms and tables	Collect and interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	Complete, read and interpret information in tables, including timetables Interpret and construct pie charts and line graphs calculate and interpret the mean as an average	Interpret and construct pie charts and line graphs calculate and interpret the mean as an average Identify ratio as a relationship between qualities and as a scale factor
Solving Problems Using Data		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	Solve one-step and two-step questions for example, 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Solve comparison, sum and difference problems using information presented in a line graph	Use pie charts and line graphs to solve problems