

Mathematics Cohesion Across School

Year	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number & Place Value	Autumn 1- Number and Place value to 5: Children are taught to count forwards and backwards. They count objects in different arrangements by touching each object as they count, saying the names in stable order. Children can say the total number in the ground, understanding that the final number they have said is the total in the group. They are starting to subitise numbers and can count out 5 objects from a larger set. They can represent up to 5 objects on a five frame and understand that if the frame is full then there are five. Autumn 2- Place Value – comparing groups: When comparing two groups, children should be encouraged to line the items up to make direct comparisons. Using five frames can support with this. They should also be encouraged to count each set carefully which helps them to link names of numbers, their value and their position in the counting order. Once children can	Unit 1 - Numbers to 10: In this unit, children begin by sorting and grouping objects up to 10. They then count to 10 and focus on 'one more' and 'one less' before learning how to use a number line to count forwards and backwards. Before they start this unit, it is expected that children: • can describe similarities and differences between objects • can sort objects into groups based on simple criteria. Unit 2 Part-whole within 10: This unit, which builds on Unit 1: Numbers to 10, introduces children to the part-whole model, focusing on different ways of partitioning numbers to 10. Children use the part-whole model to help them write and compare number bonds. They will continue to use these skills in Unit 3, which focuses on addition and subtraction. Before they start this unit, it is expected that children: • know how to sort and compare objects to 10 • understand how to count forwards and backwards within 10 •	Unit 1- Numbers to 100 This unit focuses on children's ability to read and understand numbers to 100. They will use their growing understanding of place value to help them sort, compare and order numbers. Before they start this unit, it is expected that children know how to group objects into groups of ten and can count up and back in ones. They will revise representations and 'tens and ones' work from Year 1.	Unit 1 – Place Value within 1000 This unit builds on the children's work from Year 2 on 2-digit numbers. The work in this unit is essential for the work in the rest of this year when they look at the four rules of number, fractions and measure. Before they start this unit, it is expected that children: • know that a 2-digit number is made up of 10s and 1s • can represent 2-digit numbers in different ways, such as base 10 equipment, place value grids and counters, part-whole models and number lines • can find 1 and 10 more and less than a 2-digit number • can compare and order 2-digit numbers • know where a 2-digit number lies on a number line.	Unit 1: Place value – 4-digit numbers This unit builds on previous learning in Year 3 about place value within 1,000. This previous learning introduced children to the concept of counting in 10s, comparing numbers, ordering numbers and using a number line to 1,000. Children will continue to use these previously learnt skills and apply them when working with 4-digit numbers. Before they start this unit, it is expected that children: • have a solid understanding of place value within 1,000 from Year 3 • understand how to count in 10s and 100s • can order and compare numbers to 1,000. Unit 2: Place value – 4-digit numbers This unit builds on the previous unit, which introduced 4-digit numbers, emphasising the importance of place value. In the previous unit, children learnt to represent 4-digit numbers and count in 1,000s. In this unit, they will move on to comparing 4-digit numbers and	Unit 1- Place value in numbers to 100, 000. The unit builds on children's work from Year 4 on 4-digit numbers. Many of the models and images used previously will be further extended to include 5-digit numbers so that children can flexibly work with all numbers to 100,000. This unit provides the foundation for working with numbers up to 1,000,000 and develops fluency with place value to support calculating during the year. Unit 2- Place value within 1, 000, 000. This unit builds on children's work in Unit 1, where they explored numbers to 100,000 and their representation on place value grids and number lines. It also builds on previous experience of comparing, ordering and rounding numbers from Unit 1. This unit provides preparation for using place value grids to add and subtract 5-digit numbers. Unit 11: Decimals and Percentages. This unit builds upon	Unit 1 - Place Value: In this unit, children extend their knowledge of numbers from within 1,000,000 to within 10,000,000, before they go on to work with the four operations in the next two units. This includes looking at place value, ordering and comparing numbers and rounding. They will also look at number lines and negative numbers. Before they start this unit, it is expected that children understand the place value of numbers within 1,000,000, can use number lines, including counting in 10s, 100s, 1,000s and 10,000s and can round numbers within 1,000,000. Unit 7 - Decimals: This unit builds on children's understanding of decimals and fractions as part of a whole and applies learning about multiplication and division methods to working with decimals. Unit 8 – Percentages: This unit focuses on strengthening children's knowledge

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	confidently sort collections into sets, they learn that these sets can be compared and ordered. They compare non identical objects by linking names of numbers, numerals, their value and their position in counting order. They understand when making comparisons a set can have more items, fewer items or the same number of items as another set. Spring 1– Number and place value to 5: Children to consolidate learning from Autumn 1 on numbers 1-5. Ensure confident counting both forwards and backwards and one to one correspondence before moving on to number 6-10. Children to be able to subitise numbers 1-5 when using a tens frame and represent up to 5 objects. Children to be confident to tell you the cardinal number of a set of objects 1-5. Spring 2– Place value numbers to 10: Children continue to apply the counting principles when counting to 6, 7 and 8 in different ways and can count out the required number of objects from a larger	can order a set of numbers and use the vocabulary 'less than', 'more than' and 'equal to'. Unit 6 – Numbers to 20: This unit builds on children's work on numbers to 10 in Units 1–2, extending their ability to count, compare and order numbers to 20. Unit 7 will focus on addition within 20. Before they start this unit, it is expected that children: • recognise numbers bonds within 10 • understand how to partition a number within 10 • can compare and order numbers within 10. Unit 9 – Numbers to 50: This unit builds on the knowledge of numbers to 20 developed so far in Year 1, as well as the addition and subtraction skills learned in Units 7 and 8. Children will apply their knowledge of numbers to 50 and word problems in Unit 10, which introduces them to measurement-based problems. Before they start this unit, it is expected that children: • know how to count to 20, using correct number names and numerals • can partition numbers below 20 into tens and ones, confidently using			ordering numbers to 10,000. This prepares them for tackling addition and subtraction of 4-digit numbers in the next unit, including numbers where exchanges are needed in more than one column. Before they start this unit, it is expected that children: Know that a 4-digit number is made up of 1000s, 100s, 10s and 1s Can represent 4-digit numbers in different ways, such as with base 10 equipment, place value grids and counters, part-whole models and number lines. can compare and order 4-digit numbers Know where a 4-digit number lies on a numberline. Unit 10: Decimals This is the first time children have covered decimals, but it builds directly on content covered within previous fraction units. The unit introduces children to writing fractional amounts in decimal notation and, in doing so, introduces the decimal point and the tenth and hundredth columns. As key learning points, tenths and hundredths are	the previous three units on fractions and on the work children have done on decimals in Year 4. Children should have a firm understanding of basic decimals and fractions before they start this unit which will build upon their knowledge and introduce them to percentages. Children will go on to another unit on decimals which covers areas such as the addition and subtraction of decimals, decimal sequences, multiplying decimals by 10, 100 and 1,000, and problem solving. Unit 12: Decimals and Percentages. This unit builds on children's work in Years 4 and 5 of adding and subtracting whole numbers, and multiplying and dividing whole numbers by 10, 100 and 1,000. It also extends on children's work with number patterns. By considering the place value of each digit, children will broaden their understanding of adding and subtracting using formal written methods and of multiplying and dividing decimal	of percentages. Children will learn a range of strategies to find percentages of amounts. They will then apply these strategies to convert between percentages, decimals and fractions. They will develop their understanding throughout the unit and ultimately use their knowledge to solve related puzzles and multi-step problems.
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	group. Placing objects onto a 10 frame will support the children to subitise 6, 7 and 8 to see them as 5 and 1, 5 and 2 and 5 and 3. Children will continue to apply the counting principles when counting to 9 and 10 (forwards and backwards). They can represent 9 and 10 in different ways and can count out the required number of objects from a larger group. Children may notice that the 10 frame is full when there is 10. They can use 10 frames, fingers and bead strings to subitise 9 and 10. Children make comparisons by lining items up to compare them directly or by counting each set carefully and comparing their position in the counting order. As the children's sense of number develops so does their knowledge of where each number sits in relation to other numbers. They understand that when making comparisons a set can have more items, fewer items or the same number of items as another set. They begin by comparing 2 sets and progress to ordering 3 or more sets.	Base 10 equipment and ten frames • understand how to carry out simple addition and subtraction questions with numbers below 20. Unit 16 – Numbers to 100: This unit builds on children's previous number work, in particular Unit 9: Numbers to 50 and Unit 3: Addition and subtraction within 10 (1), in which they explored number bonds to 10. Unit 16 focuses on the structure of 2-digit numbers and number bonds to 100. Unit 17 will focus on time. Before they start this unit, it is expected that children: • recognise and can use ten frames • recognise and can use different representations of 10 and 1 • can count forwards and backwards in 10s and 1s from 0.			covered in detail; dividing by 10 and 100 to result in answers containing decimal numbers is also a major focus. In the next unit, children will explore decimals in greater depth, and learn about their relationship with fractions. Before they start this unit, it is expected that children: Know how to describe fractional amounts using the language of tenths and hundredths Understand the place value system and can therefore extend this understanding Understand the concept of regrouping a quantity in different ways, using place value knowledge. Unit 11: Decimals (2) This unit builds on children's work in Year 4 on decimals and links closely to all their work on place value and fractions so far. Before they start this unit, it is expected that children: know the decimal equivalent of $\frac{1}{10}$ and $\frac{1}{100}$. Can draw, model and write any number	numbers.	
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Addition & Subtraction	Summer 1– Place value numbers to 20: Provide opportunities for children to count beyond 10 learning the number names in order. Once children can confidently say the number names, provide opportunities for them to match them to quantities and symbols. Prompt children to recognise that as we count, each number is one more than the number before building staircases to show the growing pattern within numbers to 20.				of tenths and hundredths using a hundredths grid, ten frame or bead string. Understand that a tenth arises from dividing 1 by 10 and a hundredth arises from dividing 1 by 100. Understand the use of the decimal point and where it should be placed.		
	Autumn 1 – Addition and subtraction sorting: Children learn that collections of objects can be sorted into sets based on attributes such as colour, size or shape. Sorting enables the children to consider what is the same about all the objects in one set and how they are different to other sets. They begin to understand that the same collection of objects can be sorted in different ways and should be encouraged to come up with their own criteria for sorting objects into sets. Autumn 2 – Addition and subtraction –	Unit 3 - Addition and subtraction within 10: This unit builds on Unit 2: Part-whole within 10, which introduced children to the idea that a whole can be separated into parts of various sizes. Unit 3 is the first of two 'Addition and subtraction within 10' units. Unit 3 focuses on addition, and Unit 4 will focus on subtraction. Before they start this unit, it is expected that children: • can use the part-whole model to partition a number to 10 • can write and compare number bonds to 10. Unit 4 – Addition and Subtraction within 10	Unit 2 – Addition and Subtraction (1) This unit builds on the previous unit and applies children's place value understanding to addition and subtraction problems. Unit 2 is the first of two addition and subtraction units. In the unit children will build upon the number bonds to 10 that they will have learned in Year 1. Children consolidate this understanding and apply it to number bonds within 20 and to 20. Pupils will begin to writing fact families of equations and to relating addition and	Unit 2 - Addition and Subtraction (1) This unit builds upon the previous work children have done on place value within 1,000. It also builds upon children's ability to solve addition and subtraction calculations, by introducing exchange and formal written methods. This unit also develops children's reasoning and justifying skills which they are developing throughout the year. Before they start this unit, it is expected that children: • understand how to represent numbers to 1,000 on a number	Unit 3: Addition and subtraction This unit builds on children's Year 3 work on adding and subtracting with 3-digit numbers. It further develops their estimation and answer-checking strategies and their problem-solving skills. This unit provides essential preparation for beginning to add and subtract numbers with more than four digits. Before they start this unit, it is expected that children: Have a firm understanding of place value (up to 4-	Unit 3: Addition and Subtraction. This unit builds on children's work in Year 4, adding and subtracting 4-digit numbers. It will extend their knowledge of addition and subtraction using formal methods for numbers with up to 5 digits. It will give children the opportunity to build confidence with problem solving and to explore efficient methods for addition and subtraction calculations, including those that can be solved mentally.	Unit 2 - Four Operations: This unit builds on children's knowledge of using formal columnar written methods for addition, subtraction, multiplication and division, including with real-life contexts. Unit 3 - Four Operations: This unit allows children to develop fluency with efficient columnar written methods for addition and subtraction, without and with exchanges. They will deepen understanding of the columnar method for multiplication of 4-digit numbers by 1-

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	change within 5: Children use their counting and comparing skills to find one more than numbers up to 5. Encourage children to use a five frame to represent numbers and then make one more. Children should see the link that one more than a number is the next number they say when they are counting. Books where there is one more object on each page will support learning when finding one more. Children will use their counting and comparing skills to find one less than numbers up to 5. Encourage children to use a five frame to represent numbers and then make one less. Children should see the link that one less than a number is the next number they say when they are counting backwards. Spring 1 – Addition and subtraction – numbers to 5: Children begin to understand that numbers can be made by combining smaller numbers, including zero. They use real life objects and familiar contexts to explore the composition of numbers to 5. The 5	(2): This unit builds children's knowledge of number bonds within 10, their ability to use a number line to count forwards and backwards, and their understanding that two parts make a whole, in the context of subtraction. It looks at subtraction as the inverse of addition and teaches children to count backwards and work out a missing part, given the whole and the other part. Unit 5 will focus on the properties of 2D and 3D shapes. Before they start this unit, it is expected that children: • know how to count back from any number under 10 • understand the different components of a part-whole model and what each represents • know what the symbols < and > mean. Unit 7 – Addition within 20: This unit builds on children's understanding of addition from Units 3 and 4, as well as on their knowledge of numbers to 20 from Unit 6. It requires children to understand how numbers can be split apart into bonds, and how to represent numbers using manipulatives, as well	subtraction operations. Children will also be introduced to the concept of 'make 10' to aid mental calculations. Once this key learning is understood, children are introduced to the column method. Unit 3 – Addition and Subtraction (2) This unit directly builds upon the content of the previous unit and exposes children to addition and subtraction involving two 2-digit numbers, where the tens boundary is crossed and regrouping and exchange is required. Before they start this unit, it is expected that children know how to partition 2-digit numbers into tens and ones and place these onto a place value table. They should understand the value of each digit within a 2-digit number and how these will change as a result of addition and subtraction. They should know number bonds within 10 and 20 and how to apply these to mental addition and subtraction calculations. Unit 12 – effective methods and problem solving (includes	line and using place value equipment • are able to partition numbers flexibly • know how parts and wholes are related in additions and subtractions Unit 3 – Addition and Subtraction (2) In this unit, children build on previous learning to add and subtract numbers with up to three digits. They begin by using place value equipment and formal written methods of columnar addition and subtraction. Before they start this unit, it is expected that children: • know how to partition numbers to 1,000 flexibly • understand the concept of exchange in addition and subtraction • know how to represent additions and subtractions using place value equipment and a place value grid.	digit numbers) Know a range of mental addition and subtraction strategies Can apply these strategies to a range of contexts including measure.		and 2-digit numbers and develop an understanding of written methods for division. Children will make links to methods they have met before and apply new learning to contextual word problems.
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	frame and part whole models are useful to represent the different parts which combine to make the whole. Children should be encouraged to record their work using mathematical jottings. Spring 2 – Addition and subtraction – addition to 10: Children begin to combine 2 groups to find how many altogether. They should be given opportunities to do this in many contexts using real objects. Encourage the children to subitise where possible although they may need to count in ones to find how many altogether. A part whole model could be used to show the relationship between the parts and the whole. Children will explore number bonds to 10 using a 10 frame. 10 frames can be filled in different ways to show the 5 and a bit structure and the pair structure. They may also use different representations such as fingers, number shapes or bead strings to explore the bonds to 10. Children to also use the part	as on number lines and number tracks. Before they start this unit, it is expected that children: • know how to count accurately up to 20 • understand how to represent numbers up to 20 on ten frames and on a bead string • know number bonds to 10, and how to split numbers up to 10 into two parts. Unit 8 – Subtraction within 20: This unit follows on closely from addition within 20, and you will find that you can make many links between the two. Children will get a greater understanding of addition and subtraction as the inverse of one another. After this unit, children will cover numbers to 50 in Unit 9. Children will become more confident with place value and many will see the patterns between each set of ten numbers. Before they start this unit, it is expected that children: • are confident with subtraction skills within 10 • can subtract more than one number mentally or by using a representation such as a number track • are fluent with counting on and back up to 20	multiplication and division) This unit mainly builds on work from Units 1, 2 and 3, focussing in particular on addition and subtraction, but also using the context of money (Unit 4) It touches on multiplication and division (Units 5 and 6) towards the end of the unit. Before they start this unit, it is expected that children: • know how to use the bar model to represent information given in a word problem • understand how to distinguish between the four operations • know key number facts to use within mental calculations.				
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	whole model to continue exploring number bonds to 10. The part whole model is useful to represent the different pairs which combine to make 10. Encourage the children to move the objects between the whole and the 2 parts. It is also important to show the part whole model in different orientations so the whole is not always at the top. Summer 1 – Addition and subtraction – Count on and back: The children will use real objects to see that the quantity of a group can be changed by adding more. The first, then, now structure can be used to create mathematical stories in meaningful contexts. At first, the children may need to re-count all of the items to see how many they have altogether. E.G. 1,2,3,4...5,6,7 When they are ready, encourage them to count on e.g. 4...5,6,7 Play games which practise counting from different starting points to support this step. They could represent the number stories using 10 frames, number tracks and their fingers. The	understand how to partition numbers up to 20 using the part-whole model.					
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	children will use real objects to see that the quantity of a group can be changed by taking items away. The first, then, now structure can again be used to create mathematical stories in meaningful contexts. Encourage the children to count out all of the items at the start, take away the required amount practically, and recount to see how many left. Continue to encourage the children to represent the number stories using 10 frames, number tracks and their fingers.						
Multiplication & Division	Summer 2 – Multiplication and division – Numerical patterns: The children will learn that double means 'twice as many'. They should be given opportunities to build doubles using real objects and mathematical equipment. Building numbers using the pair wise patterns on 10 frames helps the children to see the doubles. Mirrors are also a fun way for children to 'double' the quantities they build. Encourage children to say the doubles as they build them, e.g. double 2 is 4. Provide examples of doubles and non –	Unit 12 – Multiplication: Before they start this unit, it is expected that children: • count reliably in 2s, 5s and 10s • can sort objects into equal groups • recognise and use ten frames and number lines. Unit 13 – Division: This unit builds on children's work on multiplication in Unit 12. Unit 13 focuses on the division of whole numbers, while Unit 14 will introduce children to halves and quarters. Before they start this unit, it is expected that children: • can group objects into sets • can compare two numbers • recognise	Unit 5 – Multiplication and Division (1) In this unit children will look at multiplication and division methods and skills such as calculating different multiplication sentences using equal groups, number lines and arrays. They will have counted in steps using coins in the previous money unit. Before they start this unit, it is expected that children will know how to jump forward on a number line. They will understand how to skip count using a resource, such as a number line or 100 square and know what odd and even numbers are. Unit 6 – Multiplication	Unit 4 – Multiplication and Division (1) This unit builds on children's work in Year 2, where multiplication and division are introduced and equal and unequal groups are explored. It also builds on equal sharing and equal grouping. This unit provides essential preparation for beginning to multiply and divide 2-digit numbers by 1-digit numbers in the spring term, and also for working with fractions. Knowledge of times-table facts is also essential. Before they start this unit, it is expected that children:	Unit 5: Multiplication and division This unit builds upon the previous work children have done on multiplication and subtraction from Year 3, where children learnt how to multiply by equal grouping and to divide using sharing. This unit also builds upon previous work children have done on addition and subtraction. It also develops children's reasoning skills, which they are developing throughout the year. Before they start this unit, it is expected that children: know how to multiply and divide by 2, 3, 4, 5, 8 and 10 understand related	Unit 5: Multiplication and Division. In this unit, children develop their understanding of the multiplicative properties of numbers. This unit follows their learning about data handling and precedes their work on measure and perimeter. Unit 7: Multiplication and Division. In this unit children extend understanding of multiplication and division using a range of methods to calculate with up to 4-digit numbers, multiplying by 2-digit numbers or dividing by 1-digit numbers while dealing with exchange. Children	

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	doubles for the children to sort and explain why. The children will halve quantities by sharing items into 2 equal groups. The children will probably already have some experience of sharing and will be quick to point out when groups are not shared fairly. This distinction between fair and unfair sharing can be used to emphasise the idea of half as being one of 2 equal parts. Once children can confidently halve small quantities, they can explore sharing between 3 or 4 people. They will notice that sometimes that there are items left over and many come up with their own suggestions for how to resolve this. The children will begin to understand that quantities which can be shared into 2 equal groups with no items left over are even. Those which have one left over when they are shared into 2 equal groups are odd. Encourage the children to notice this structure on the number shapes by building pair wise patterns on the 10 frames. They can also explore odd and even by grouping	where numbers are equal and unequal.	and Division (2) This unit builds on equal groups as a key idea in multiplication and division. Children have been exposed to repeated addition as a strategy for multiplication and will apply this knowledge to use repeated subtraction as a strategy for division. Unit 6 looks at division facts within the context of other multiplication facts that have been learned previously. The primary method that is taught is sharing however children will be shown the difference between sharing and grouping. Before they start this unit, it is expected that children know how to count backwards in equal groups on number line. They should also understand how to use an array for multiplication (or repeated addition). Unit 12 – Problem Solving and efficient methods This unit touches on multiplication and division (Units 5 and 6) towards the end of the unit. Before they start this unit, it is expected that children: • know how to use the bar model to	• know what it means when groups are equal and not equal • know that multiplication can be seen as repeated addition and division as repeated subtraction • know that an array shows two multiplications, such as $5 \times 4 = 4 \times 5$. Unit 5 – Multiplication and Division (2) In this unit children develop their understanding of the multiplicative properties of numbers. This unit follows their learning about multiplication and division and precedes their work on money. Before they start this unit it is expected that children: • are familiar with different concrete and visual representations for multiplying by 2, 3, 4, 5 and 10 • can share and group numbers that occur in the 2, 3, 4, 5 and 10 times-tables, making links between the 2 and 4 times-tables and the 4 and 8 times-tables • can solve problems involving multiplication and division • can solve division problems leading to remainders.	multiplication and division facts know how to apply their knowledge of these facts to solve problems. Unit 6: Multiplication and division This unit expands learning from Year 3, where children developed confidence in knowing when to multiply and an understanding of the difference between equal grouping and sharing. This unit also builds on what children learnt in Year 3 about remainders and on work in Year 4 Unit 5, where children learnt their multiplication facts up to 12×12. Before they start this unit, it is expected that children: Know that numbers can be partitioned in different ways Know that multiplication can be seen as repeated addition, and division as repeated subtraction Know that an array shows two multiplications, For example $5 \times 4 = 4 \times 5$.	continue to develop reasoning and problem- solving skills while interpreting remainders.	
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	quantities into pairs. Even quantities can be grouped into pairs and odd quantities will have one left on their own when they are grouped into pairs.		represent information given in a word problem • understand how to distinguish between the four operations • know key number facts to use within mental calculations.				
Fractions		Unit 14 – Halves and quarters: This unit builds on simple sharing completed in earlier units during the year. The unit focuses on strategies to find halves and quarters and ends on applying the skills learned to solve word problems. Following this unit, children will move on to learning about position and direction – including half and quarter turns. Before they start this unit, it is expected that children: • can share objects into 2 groups • can share objects into 4 groups • know the importance of equal sharing • have a simple understanding of what splitting an object in half means.	Unit 10 – Fractions This unit builds on children's knowledge of sharing and grouping in division, asking children to divide a whole into equal parts and learn that the equal parts have given names. Children also learn to halve shapes by folding them or cutting them in two. Children can find a fraction of an amount using the previous strategy of sharing objects into equal groups but can now name these parts, such as by saying that $\frac{1}{2}$ of 6 is 3. Before they start this unit, it is expected that children know how to split an amount into equal parts by sharing or grouping. They should understand that the same whole can have a different	Unit 9 – Fractions (1) This is the first time that children have discussed fractions since the end of Unit 2. Therefore, the initial lesson revises many of the important areas, and important vocabulary is defined again in order to allow all children to access the learning appropriately. Before they start this unit, it is expected that children: • know how to use the bar model to represent information presented to them in word problems • understand the concept of equal parts • know their key times-table and division facts. Unit 10 – Fractions (2) In this unit, children will learn to recognise and show (using diagrams) equivalent	Unit 8: Fractions (1) This unit builds on work done in Year 3 on fractions. It introduces children to hundredths and then develops their understanding of equivalent fractions, before introducing them to fractions greater than 1 in the form of mixed numbers and improper fractions. The next unit builds on these concepts to calculate with fractions. Before they start this unit, it is expected that children: Know what whole and part mean Know how to find simple equivalent fractions Can use a number line. Unit 9: Fractions (2)	Unit 8: Fractions. Children will begin this unit developing their understanding of how to find equivalent fractions by simplifying and expanding and how equivalent fractions represent the same number differently. Children will learn to convert between mixed numbers and improper fractions and will learn how to use these in real-life contexts, using pictorial representations to demonstrate their understanding. Using these fractions, children will investigate and complete number sequences and compare and order two or more fractions. Finally, children will learn how fractions represent division calculations and will	Unit 4 – Fractions: In this unit, children extend their understanding of fractions and mixed numbers by adding and subtracting unrelated fractions using formal written methods involving finding common denominators. Unit 5 – Fractions: Children continue to develop their reasoning and problem-solving skills while exploring efficient methods. It continues to build on children's fraction work in previous units, including multiplying a proper fraction by a whole number and finding a fraction of an amount. It aims to bring together the four operations with fractions and give children confidence in problem solving

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			number of equal parts (building upon Unit 6) and know what $\div$ means.	fractions with small denominators. They will explore a fraction wall and use it to find equivalent fractions. Children will order fractions on a number line and compare two fractions using bar models and the comparison signs $<$ $>$ or $=$. They will learn to add and subtract two or more fractions with the same denominator, answering questions in more than one way and comparing the efficiency of each method. They will develop their understanding of solving fraction problems and learn to find fractions of measures. Before they start this unit, it is expected that children: • understand how to make a whole out of two fractional parts • can recognise tenths • understand fractions as a number • can calculate a fraction of a set of objects • can use a bar model to represent problems • understand the concept of equal parts.	This unit builds on children's work in Year 3 when they added and subtracted fractions with the same denominator. They deepen their understanding of finding a fraction of an amount using both unit and non-unit fractions. Children see the link between fractions and the work they have done on multiplication and division and they should now be able to deal with any times-table facts. Before they start this unit, it is expected that children: • know how to add and subtract two fractions with the same denominator Know when two fractions add up to 1 Know how to subtract a fraction from 1.	use this, with their understanding of equivalent fractions, to find efficient methods of solving division calculations. Children will investigate how remainders in division calculations can be represented as fractions and how this can be used in context to answer real-life problems accurately. Unit 9: Fractions. In this unit, children extend their understanding of fractions by focusing on addition and subtraction of related fractions and mixed numbers. Children will continue to develop their confidence in reasoning and problem solving and will also explore different methods for addition and subtraction of fractions. Unit 10- Fractions. In this unit, children are introduced to the concept of multiplying fractions and mixed numbers by whole numbers and extend their learning of fractional amounts using visual and written strategies. Children will continue to build their confidence with problem solving and explore efficient methods for fractions as operators.	with fractions.
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Measures	Autumn 2 – Measurement – time: Children order important times in their day and use positional language to describe when events happen. E.g. now, before, later, soon, after and next. They start to develop a sense of time and use the vocabulary – yesterday, today and tomorrow to describe when relative events happen. Children begin to measure time in simple ways e.g. the number of sleeps to an event or using timers to measure durations of events. Summer 2 – Measurement – measure: Children begin by using language to describe length and height, e.g. the tree is tall, the pencil is short. When making direct comparisons, they may initially say something is big or bigger than something else. Encourage them to use more specific mathematical vocabulary relating to	Unit 10 – Introducing length and height: This unit builds on children's previous work on number, and children will apply their understanding of number within practical contexts relating to height and length. Children's previous use of number lines will help them understand how to use scales to calculate the difference between two or more lengths. Before they start this unit, it is expected that children: • know how to compare and order numbers to 50 • understand that subtraction means finding the difference between two quantities • know how to add and subtract using a number line. Unit 11 – Introducing weight and volume: This unit extends children's understanding of measurement by introducing the ideas of weight and volume, both of which should already be familiar from practical, if informal, experience. The work	Unit 4 – Money This unit builds upon basic money work children completed in year 1. It also reinforces children's counting skills, as well as addition and subtraction strategies. In this unit, children focus on coins and notes and cover the following topics: calculating total amounts, finding change and word problems. Children work with pounds, pence and notes, and towards the end of the unit they will work with pounds and pence together. Before they start this unit, it is expected that children can count in 2s, 5s and 10s. They have a basic understanding of the value of coins, can use addition and subtraction strategies in context and know how to count on a number line. Unit 8 – Length and Height Before they start this unit, it is expected that children have at least an informal understanding of the ideas of length and height, they can	Unit 6 – Money In this unit children will apply their knowledge of addition and subtraction to solve number problems involving money, including bridging a pound. In the subsequent units, contexts involving money feature regularly. Before they start this unit, it is expected that children: • know the symbols for pounds (£) and pence (p) • can work out the value of coins and notes by counting the pounds and pence separately • understand what change is and how to work it out in simple cases • can select coins and notes that make a particular amount and recognise different ways of doing this. Unit 8 – Length This unit builds on previous units on number, in particular Unit 1: Place value within 1,000 and Units 2 and 3: Addition and subtraction (1) and	Unit 4: Measure – perimeter This unit builds on the concept of 2D shapes, in particular children's understanding of the properties of squares and rectangles. It also applies children's prior knowledge of measurement in practical contexts. Before they start this unit, it is expected that children: understand the relationship between cm and m understand simple properties of squares and rectangles Can measure accurately using a ruler. Unit 7: Measure – area This unit builds on children's understanding of the properties of squares, rectangles and rectilinear shapes. It extends children's basic comprehension of shapes being 'bigger' or 'smaller' than one another and gives them a tangible way of measuring this.	Unit 6: Area and Perimeter. This unit builds on the concepts of area and perimeter learned in Year 4. Previous methods (including the use of concrete representations and squares) will be used as a starting point to derive numerical strategies. Before they start this unit, it is expected that children: - Can define the concepts of area and perimeter - Can find the perimeter of shapes when all side lengths are given. - Can find the area of rectilinear shapes drawn on squared paper by counting squares. Unit 16: Measure, converting units. This unit builds on the work in Year 4 where children converted between metric units of measurement. It consolidates children's existing knowledge of units of measurement and develops it further. It is a very practical unit	Unit 10 – Imperial & Metric Measures: This unit builds on the concepts of imperial and metric measures from Year 5. Prior knowledge of prefixes of metric units is used as a reminder of the equivalences of different units before converting. Children will revise imperial measures and learn the relationship between miles and kilometres. Unit 11- Perimeter & Area: This unit builds on the concepts of area and perimeter learned in Year 5. Previous methods (including doubling of the length and width to calculate perimeter, or multiplying the width and length of a rectangle to calculate its area) will be used as a starting point.

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	length (longer, shorter), height (taller, shorter), and breadth (wider, narrower). They move onto making indirect comparisons using identical objects such as blocks or cubes to measure each item, e.g. The sand tray is 5 bricks long. The table is 4 blocks long. The sand tray is longer than the table. They may also compare distance to see which is further or nearer. Children may already have some experience of weight through carrying heavy and light items. Encourage them to make direct comparisons using their hands to estimate which item feels the heaviest and then use the balance scales to check. Prompt them to use the language of heavy, heavier, heaviest, light, lighter, lightest to compare items starting with items which have an obvious difference in weight. Avoid the common misconception that bigger items are always heavier by providing some small, heavier items and some large, lighter ones. They can also use the balance scales to make indirect comparisons	here also reinforces understanding of comparison and ordering, including use of the inequality and equals signs. Before they start this unit, it is expected that children: • Have had practical experience of play with water, sand, weighing scales and a range of measuring vessels • Can carry out simple addition and subtraction calculations, supported by appropriate representations and apparatus where necessary. Unit 17 – Time: This unit builds on, and formalises, children's experiences of using various measurements of time in daily life, as well as their prior experience with numbers, calculations, and problem solving. Before they start this unit, it is expected that children: • recognise a clock face and a calendar, and understand that they are used to tell the time and day or date, respectively • can carry out simple addition and subtraction calculations • can use real-world knowledge and experience to	accurately manipulate simple apparatus such as multilink cubes, rulers and metre sticks and are familiar with some of the basic vocabulary that will be needed, such as 'how long?' and 'how high?'. This work also makes use of simple standard units and scales; reading a simple scale accurately is an important skill which will be useful in a wide range of settings. Unit 12 – Problem Solving and Efficient Methods This unit recaps money work and explores using the four operations to solve money problems Unit 13 – Time This unit builds on the concepts of time learned in Year 1 and will draw on comparing and ordering skills, whilst linking to knowledge of the number line and part-whole model. Before they start this unit, it is expected that children: • can find o'clock and half-past times on an analogue clock • can count forwards and backwards	(2). Children will apply their knowledge of number in the context of length by measuring, comparing and ordering. They will also add, subtract, multiply and divide measurements of length as well as calculating perimeters of 2D shapes. Children will have the opportunity to transfer these skills to other forms of measurement in Unit 13: Mass and Unit 14: Capacity. Before they start this unit, it is expected that children: • can count reliably in steps of 1, 2, 5 and 10 • know number bonds to 100 for multiples of 10 • can carry out addition and subtraction for 2- and 3-digit numbers • can compare and order numbers with 2 and 3 digits. Unit 11 – Time In this unit, children will begin by recapping their understanding of time from Year 2. They will develop a deeper understanding of the length of a year, a month, a day, an hour, a minute and a second, and will use this to solve problems involving reading and	Children already know how to measure the distance around a shape and now are taught how to measure the space inside it. Before they start this unit, it is expected that children: understand what is meant by a 2D shape and are able to identify the space inside it understand simple properties of squares and rectangles. Unit 12: Money Children have already worked with money and been formally introduced to decimals. Now they will learn how to write about money using £ p. Children should already be confident in knowing that 100p is equal to £1 and should be able to work out how much money is shown in notes and coins. Before they start this unit, it is expected that children: know how to convert between pounds and pence Can round amounts to the nearest 10 and 100 Can use a variety of methods to count amounts of money.	in the sense that the skills children learn will be clearly applicable to real-life measurement situations and many of the problems will be ones they will face at some point in life: conversion between units (both metric and imperial), including conversion and scaling of amounts; and timetables, including converting between units of time when the conversion does not result in a whole number answer. Unit 17: Measures, volume and capacity. This unit builds on children's understanding of the properties of cubes, cuboids and different solids. It extends children's basic comprehension of how to measure and calculate the area of a shape to estimating the amount of space taken up by an object and the amount a container can hold.	
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	by measuring how many cubes or beads balance each item. Children will already have some experience of full and empty. Encourage them to extend their understanding to show half full, nearly full and nearly empty. Provide opportunities to explore capacity using different materials such as water, sand, rice, cereal and a variety of loose parts. They will also need a variety of different sized and shaped containers to investigate. Prompt them to use the language of tall, thin, narrow, wide and shallow. Encourage the children to make direct comparisons by pouring from one container into another. They can also use small pots and ladles to make indirect comparisons by counting how many pots it takes to fill each container.	sequence events. Unit 18 – Money: This unit stands alone but draws on the key skills of reading and writing numbers, counting and addition. Before they start this unit, it is expected that children: • can read, write and understand whole numbers to 100 • know that money is used to buy things, and that it is measured in pounds and pence/pennies • can count in 1s, 2s, 5s and 10s (with or without support number lines) • can compare values using the signs <, > and = .	reliably in 5s up to 60 • recognise and understand the word 'quarter'. Unit 14 – Weight, volume and temperature This unit builds upon the previous work children have done on mass, volume and capacity in Year 1, and the work using standard units of measure for length and height in Year 2 Unit 8. It also builds upon children's ability to count in steps of 2, 5 and 10 covered in Units 5 and 6 in Year 2. This unit also develops the reasoning skills that children have acquired throughout the year. Before they start this unit, it is expected that children: • know how to count	measuring time. Before they start this unit, it is expected that children: • know the number of minutes in an hour, and read and write time on a clock to five minutes • know the months of the year and key dates (including everyday usage) • have some prior knowledge of everyday usage of time and o'clock times that occur throughout the day • are familiar with moving from a start time through a duration to an end time. Unit 13 - Mass This unit involves the application of skills such as addition and subtraction in a measures context. Children will have covered these strategies in Key Stage 1, and in previous Year 3 units, but will require support when applying them. Measures were covered in Year 2 Unit 14, in which weight, volume and temperature were the focus. Before they start this unit, it is expected that children: • can use scales to compare, estimate and measure the	Unit 13: Time This unit builds on the concepts of time learned in Year 3 Unit 11, particularly when telling time to the minute. Children will link their prior knowledge of facts to bar models that will help them convert between units. Before they start this unit, it is expected that children: Can read and write times to the nearest minute Know the number of seconds in a minute, minutes in an hour and hours in a day Understand how to express 12-hour times digitally, including using the terms am and pm.		
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			in steps of 2, 5 and 10 • understand the concept of measuring mass, capacity and volume using non-standard units • know how to read basic scales.	mass of an object • are able to measure mass in grams and kilograms • can count in hundreds to link grams to kilograms. Unit 14 – Capacity This unit builds on from children's previous work in measures involving length and mass. Children should already have experience in reading and interpreting a range of scales and converting between units of measure, which will help them in this unit. Children will learn to compare, calculate and solve problems in the context of capacity. Children will need to apply their knowledge of the number system and calculating, in order to solve capacity word problems. Before they start this unit, it is expected that children: • understand place value in 3-digit numbers • know how to add and subtract 3-digit numbers • know multiplication facts for the 2, 5 and 10 times-tables.			
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Statistics			Unit 7 – Statistics In this unit, children will build on their learning from a number of previous units. To interpret charts and diagrams, children must use their knowledge of addition and subtraction, counting and multiplication involving 2s, 5s and 10s. They will be introduced to symbols representing one or more pieces of data and to tally marks which they will need to be able to count. Finally, previous units on problem solving will need to be called upon. out length and height. Before they start this unit, it is expected that children: can count in 2s, 5s and 10s, can add and subtract 2-digit number, can compare numbers to 100 and understand the language associated with problem solving.	Unit 7 – Statistics This unit builds on Year 2 Statistics, where children were introduced to basic pictograms and block charts. This unit develops their understanding further and encourages children to explore the range of information which they can get from the data that is presented to them. Children then apply this knowledge through the remaining units in Year 3, particularly when interpreting tables in Unit 8: Length. Before they start this unit, it is expected that children: • know how to interpret a basic pictogram • are confident in carrying out addition and subtraction calculations • know how to count in multiples of 2, 5 and 10.	Unit 14: Statistics In this unit, children build on the work from Year 3 on statistics, where they were introduced to basic pictograms, bar charts and tables. Children are encouraged to explore the range of information which they can get from the data that is presented to them. Children will explore how the structure of line graphs, and data presented within them, differs from bar charts. Children should then be able to apply this knowledge through the remaining units in Year 4. Before they start this unit, it is expected that children: know how to interpret a basic pictogram and bar graph Are confident in carrying out addition, subtraction, multiplication and division calculations Can recall the 1–12 times tables and related division facts.	Unit 4- Graphs and Tables. This unit builds on children's work in previous units on bar graphs. Also, it will bring together their understanding of tables and problem solving as they apply the four rules of calculation. Some questions will involve using their knowledge of fractions and measures.	Unit 15 – Statistics: This unit builds on the skills children have gained in Year 5 interpreting and using line graphs. They learn what the mathematic mean is and how to calculate it and are introduced to pie charts.
Geometry	Spring 2 – Geometry – shape and space: Children hear and begin to use positional language to describe how items are positioned in relation to other	Unit 5 – 2D and 3D shapes: This unit builds on the work that children have done sorting objects. It draws on their skills of identifying similarities and differences and	Unit 9 – Properties of Shapes Children should already be able to recognise and name familiar 2D and 3D shapes. Children will be familiar with using	Unit 12 – Angles and properties of shapes This unit builds on children's understanding of the names and some of the properties of 2D and 3D shapes. It	Unit 15: Geometry – angles and 2D shapes This unit builds upon the previous work children have done on recognising and identifying the basic properties of 2D	Unit 13: Geometry, properties of shape (1) This unit builds on children's work from Year 4 where they identified properties of angles. They will also be given the	Unit 6 – Position & Direction: This unit builds on work in Year 5, where children were introduced to coordinates being used to describe the

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	items. They begin to represent real places they have visited or places in stories with their drawings, maps or models. They build life – sized journeys outdoors and travel through them, exploring them from different perspectives. Children will naturally explore 3-D shapes through their block play and modelling. They should be introduced to the names of the shapes and be given opportunities to explore similarities and differences between them and to sort them according to what they notice. Prompt them to consider which shapes are good for stacking, which will roll and why that is. They should be given opportunities to construct their own 3-D shapes in different ways. Children are encouraged to see 2-D shapes on the flat faces of 3-D shapes. They begin to name some common shapes such as circles, triangles and rectangles including squares. It is important to show shapes in different orientations. Provide opportunities to compare 2-D shapes and say what is the same and what is different.	making direct comparisons, and develops their skill of identifying patterns and sequences in shapes. Unit 6 will focus on numbers to 20. Before they start this unit, it is expected that children: • know the names of basic 2D and 3D shapes • understand that shapes are classified based on specific properties • know that shapes can be sorted by different criteria. Unit 15: Position and direction: In this unit, children will apply their knowledge of fractions to contextual and practical problems. Being able to identify and describe position and movement will help children to develop their spatial awareness and reasoning. Unit 16 will look at numbers to 100. Before they start this unit, it is expected that children: • can give and follow a simple series of instructions with two or three steps • understand the concept of a whole, halves and quarters, especially in relation to a circle • understand 'turn' as rotation around a point.	the word 'face' to describe a flat surface of a 3D shape and they will be able to describe the shape of the faces. Children have also experienced identifying and describing repeating patterns using 2D and 3D shapes. Before they start this unit, it is expected that children know how to distinguish between 2D and 3D shapes. They should understand that shapes are categorised based on specific properties. They should know the names of common 2D and 3D shapes and some of their properties. In this unit children will also draw on their counting skills and their ability to compare and order numbers. In this unit, children will learn to describe and categorise shapes based on their number of sides, vertices, edges and faces. Unit 11 Position and Direction This unit focuses on describing position in relation to other objects, describing lateral and rotational movement and describing and completing repeating patterns. Children will	extends children's basic comprehension of these shapes with an emphasis on identifying right angles, lines of symmetry, vertical and horizontal lines and parallel and perpendicular lines and edges. Before they start this unit, it is expected that children: • understand what is meant by a 2D shape and are able to recognise and name most of them • understand what is meant by a 3D shape and are able to recognise and name most of them	shapes from Year 3. Children learnt to recognise angles as a turn and learnt about right angles. This unit also builds upon previous work children did on types of line in Year 3, where they learnt about horizontal and vertical lines including symmetry, and parallel and perpendicular lines. Before they start this unit, it is expected that children: recognise and identify the basic properties of 2D shapes Use basic vocabulary of shapes to describe 2D shapes Recognise angles as a turn Recognise horizontal and vertical lines of symmetry. Unit 16: Geometry – position and direction This unit introduces children to coordinate grids, using them to describe positions of points and translations from one point to another. It builds on the knowledge developed in Unit 15 of properties and symmetry of 2D shapes to identify and represent such	grounding to work on the following unit where they will be asked to reason about the lengths and angles of quadrilaterals. Unit 14: Geometry, properties of shape (2) This unit builds on the unit of using rulers and protractors to identify angles and properties of shapes, helping children to practise and hone these new key skills. It develops learning from Years 3 and 4 to cement understanding of parallel and perpendicular lines as well as 2D and 3D shapes, encouraging children to predict results based on prior knowledge before proving them with the apparatus. This will prepare children for working with angles and drawing accurate shapes in Year 6 Unit 15: Geometry, position and direction. This unit builds on skills children will have gained in Year 4 – using coordinates in the first quadrant to plot points on a grid – and in previous Year 5 units on properties of shapes. It enables them to use these skills to plot reflections and translations. In Year 6, children will	positions of points on grids, and they developed the skill of plotting coordinates in the first quadrant. It also builds upon work on properties of shape, and it encourages children to make connections between properties of shape and coordinates to solve increasingly complex problems involving shapes in all four quadrants. Unit 13 – Properties of shapes: In this unit children extend their understanding of measuring angles to draw shapes accurately and explore the interior angles of shapes, building on prior knowledge of angles on a straight line. Children will continue to develop their reasoning skills by interpreting properties of shapes formed from a centre and will focus on exploring 3D shapes given 2D representations.
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	Encourage them to explore how shapes can be combined or partitioned to make the new shapes. Summer 1 – Geometry – Exploring patterns: Children copy, continue and create their own simple repeating patterns. They focus on AB and ABC patterns. It is important to provide patterns with at least 3 full units of repeat. Encourage the children to say the pattern aloud as this helps them to identify the part which repeats and supports them to continue the pattern. The children should be given opportunities to explore pattern in a range of contexts including shapes, colours, sizes, actions and sounds. Encourage them to build patterns both vertically and horizontally. Children continue to copy, continue and create patterns. They explore patterns which use items more than once in each repeat for example ABB, AAB, AABBB, AABBBB. Again, it is important that each pattern you model has at least 3 full units of repeat. The more units of repeat, the easier it is to identify and continue the pattern.		apply their previous learning about fractions to describe degrees of turn and their knowledge of 2D shapes. This unit also helps children to develop their logical and computational thinking in order to follow and describe sequences relating to movement, which prepares them for the following unit. Before they start this unit, it is expected that children: • know how to describe the position of an object in relation to one or more other objects • understand halves and quarters and the relationship between them • know positional and directional language such as forwards, backwards, left, right, between, above, below.		shapes using coordinates. Before they start this unit, it is expected that children: know how to read positions on a numberline (to the nearest half unit) Understand how maps and plans can be used to represent a 'real-life' scene Understand a range of simple ideas and vocabulary related to position and direction: for example left/right and horizontal/vertical.	use coordinates in all four quadrants to complete reflections and translations, using them to solve problems.	
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	Encourage the children to say each pattern aloud and create patterns around the edge of shapes as well as in straight lines.						
Ratio & Proportion							Unit 12- Ratio & Proportion: In this unit, children use their knowledge of fractions, word problems and multiplication facts to calculate and use ratio and scale factors in a variety of contexts.
Algebra							Unit 9 – Algebra: This unit follows work on percentages, including problem solving, using fractions and decimals with percentages, and finding the equivalence between fractions, decimals and percentages. Here, children will solve real-life problems to find answers, use formulae and express missing numbers algebraically. Children will go on to use metric measures, convert measurements and use different decimal notations.