Mathematics

Teaching Maths at Moorthorpe Primary School

2023

Moorthorpe Primary School Mathematics policy-on-a-page

Curriculum

- NCETM Curriculum Prioritisation
- Small steps, gradually unfold concepts
- Fluency, reasoning & problem solving
- CPA approach

Five Big Ideas of Mastery

- Fluency
- Variation
- Representation & structure
- Mathematical thinking
- Coherence & small Steps

Guiding Principles

- Checking for understanding
- Questioning
- Modelling, worked examples, representations
- Guided to independent
- Dedicated time for retrieval and rehearsal
- Focus on core knowledge
- Ensure high success rate
- Keep up not catch up

Vision

- Fluent, reliable calculators
- Deep understanding
- Reason using the language of maths
- Skilled problem solvers
- Rapid recall of number facts
- Make links & connections
- Resilience & independence

Assessment & Feedback

- NFER summative termly tests
- Ready-to-progress assessment questions
- Formative assessment (checking for understanding) inc questioning
- Live verbal feedback alongside green/orange highlighters

Mastering Number

- NCETM project
- Reception, Year 1 & Year 2
- 15 minutes daily
- Fluency, confidence, flexible thinking, number sense
- Rekenreks and Numberblocks

Our Maths Toolkit

- NCETM (particularly PD materials & DFE Guidance documents)
- WRM premium account
- ISeeReasoning
- NRICH
- Master the Curriculum
- Classroom Secrets
- Twinkl
- Goal-Free Problems
- Puzzles & Problems
- www.mathsbot.com

Number Facts & Fluency

- Jenny Field intervention project
- Regular times tables retrieval practice
- Dedicated times tables lessons
- Diamond Dash
- Number Facts Awards
- TT Rockstars/NumBots
- Maths Shed
- Regular arithmetic practice

Presentation & Display

- High expectations
- One digit per square
- Number formation addressed relentlessly
- Frayer Models & Key Facts displays

Early Years

- Number
- Shape, space and measures
- White Rose Maths & Master the Curriculum
- NCETM: Cardinality & Counting, Comparison, Composition, Pattern, Shape & Space, Measures

Lesson Structures

- KS2: Arithmetic - Number Facts - Main Lesson
- I Do - We Do - You Do
- Heavily guided teacher instruction
- Structured concrete exploration
- Recap, remodel, continue
- Discuss, share, contribute

CONTENTS

VISION AND AIMS

OUR VISION

At Moorthorpe our vision for Maths is that all pupils will:

- be fluent, reliable calculators

- display genuine and deep understanding by exploring concepts using concrete and pictorial approaches

- articulate and represent reasoning using the language of mathematics

- be skilled problems solvers, consciously applying a range of logical and systematic strategies

- be adept at distinguishing between using the relevant mental and written procedures

- show rapid recall of number facts rooted in secure understanding

- make links and connections across mathematical domains and apply skills throughout the wider curriculum

- show resilience, perseverance and independent thought

Moorthorpe Primary School adopts a mastery approach to the teaching and learning of mathematics, with the goal of ensuring that students comprehend and retain the relevant mathematical knowledge, concepts, and procedures, including proficiency in efficient algorithms, based on their initial skill level. This approach also prepares students for the subsequent stage of learning, whether it's the next lesson, unit, year, or key stage. Our aim is to provide an inspiring and engaging mathematics curriculum through excellent instruction, with a focus on fostering children's ideas and techniques that enable them to comprehend the world around them.

CURRICULUM AIMS

The 2014 National Curriculum for mathematics aims to ensure that all children:

- become fluent in the fundamentals of mathematics;
- are able to reason mathematically;
- can solve problems by applying their mathematics.

At Moorthorpe Primary School, we strive to instil strong mathematical skills in our students by consistently embedding them within lessons, particularly focusing on core number facts in the lower school to ensure access to the full maths curriculum. Our goal is to help pupils understand the relevance of mathematics in the world beyond the classroom and to equip them with the confidence and ability to apply their mathematical knowledge in various contexts. Developing a positive attitude towards mathematics is crucial for creating confident and resilient learners, and our teachers foster enjoyment of the subject. We ensure that every pupil is challenged, regardless of their current level of understanding.

Our curriculum promotes mastery of mathematics, aiming to establish a deep, secure, adaptable understanding that enables pupils to become fluent in calculations, confident in reasoning mathematically, and adept at problem-solving. We aim to develop creativity, independence, and curiosity in our pupils, and to instil in them the confidence and numeracy skills necessary to succeed in the next stage of their education.

OUR APPROACH

NCETM MATERIALS, MATHS HUBS & THE FIVE BIG IDEAS

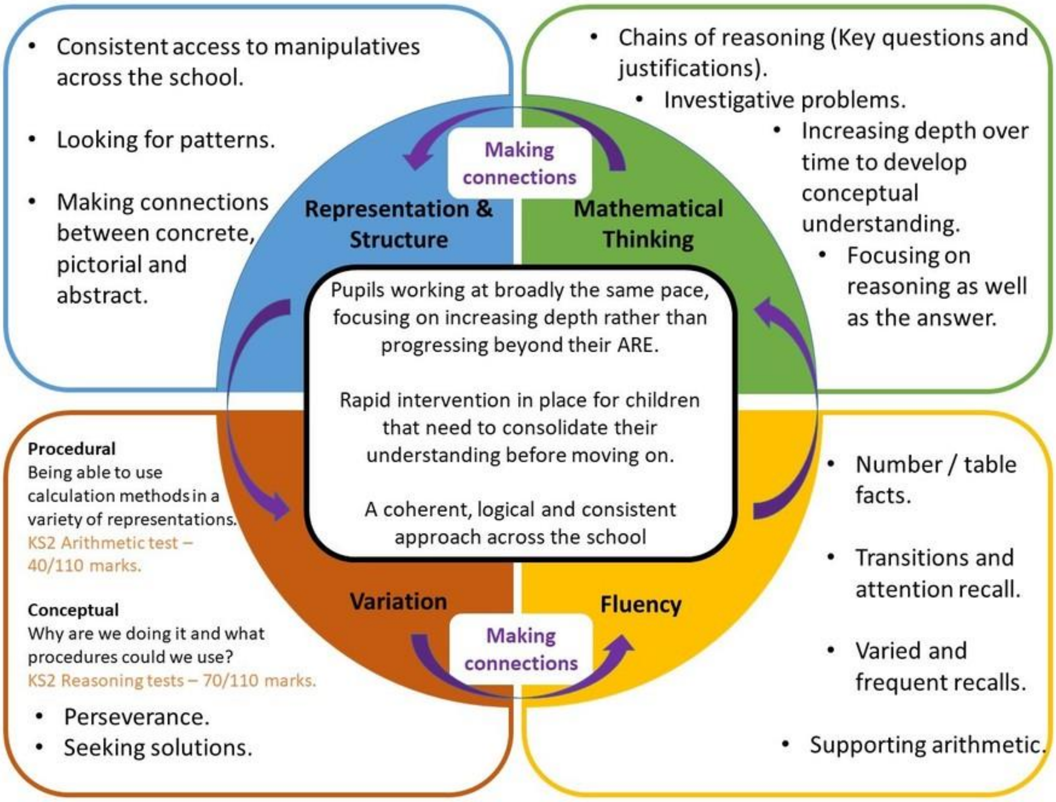
Our mathematics curriculum is carefully planned and structured to ensure progression across topics throughout each year group and across the school. To ensure whole school consistency and progression, at Moorthorpe Primary School, we use the **NCETM Curriculum Prioritisation** materials, which are linked to the Professional Development spines and the 2020 non-statutory 'Ready to Progress' guidance. We are part of the DfE funded Maths Hubs programme continues to ensure that staff at all levels understand the pedagogy of the approach and develop their knowledge of maths mastery, with ongoing CPD related to the work completed with the Yorkshire & Humber Maths Hub.

We focus on the five big ideas of Mastery:

- Coherence (including presenting in materials in small steps)
- Representation and Structure
- Mathematical Thinking
- Fluency
- Variation

Mastering maths means pupils of all ages acquiring a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths that's been taught to enable pupils to move on to more advanced material.

(Quote from NCETM website)



The NCETM spines and accompanying teacher guidance have been created specifically to allow schools to develop an effective mastery model in their own setting. We chose to use the Professional Development spines to drive our maths curriculum because we truly believe in the value of their small steps approach which gradually unfolds concepts in ways that we believe are optimal for children and staff. This 12-minute video by Debbie Morgan from the NCETM suitably explains the way in which these resources work.

Teachers plan to allow all pupils to access age-related content wherever possible, ensuring expectations for disadvantaged and SEND pupils are as high as they are for their peers. Making connections between concrete, pictorial and abstract representations, as well as effective scaffolding, are vital in ensuring this happens.

Knowing all necessary mathematical vocabulary is key to pupils understanding the different concepts that are taught and allows pupils to explain their thinking clearly and precisely. The vocabulary for a unit of work is built up over time and displayed on the maths working wall. Stem sentences are used extensively in lessons to build pupils' vocabulary schema, giving them the structure to organise and explain their understanding.

To ensure both breadth and depth in a particular area, we organize our mathematics curriculum into units consisting of blocks of lessons. Each unit covers a series of key teaching points, which are further broken down into smaller progressive steps to assist the teacher in emphasizing critical aspects of the progression. The lessons incorporate diverse fluency, reasoning, and problem-solving tasks. Our year groups' continuity is ensured by following the DfE's ready-to-progress standards, as outlined in the NCETM maths curriculum spines, which build on previously taught concepts. High quality resources are used in conjunction with NCETM, such as White Rose Maths, Master the Curriculum, ISeeReasoning, Classroom Secrets and NRich.

LESSON PRINCIPLES

Following the NCETM guidance in our maths lessons ensures that teachers are very confident in their pedagogy, clearly understanding what they are teaching when and why which will mean that an increasingly number of pupils have the tools necessary to ensure they can access age-appropriate content through to Year 6 and beyond. Using a maths mastery approach means that pupils gain a deep understanding of the different areas of mathematics. As part of this approach, almost all pupils access age-appropriate content on a daily basis; the expectation is that they can work at the appropriate level, and pupils are not pigeon-holed as being 'low ability'. Teaching in the ways described above prepare all our pupils, including those who are disadvantaged or have SEND, to be successful in their next stage of education and beyond.

The vast majority of pupils in maths lessons engage in age-appropriate learning, with teachers carefully considering how to present concepts in a manner that pupils can comprehend and remember, introducing these concepts in small steps. Extensive use of concrete and pictorial resources play a crucial role in this process, providing pupils with a solid foundation as they tackle more abstract concepts. At Moorthorpe Primary School we make us of Cuisenaire, Numicon, rekenreks, Base 10, place value counters and a range of other tangible resources. When necessary, additional scaffolding is provided to pupils as they develop their understanding to the point where it is no longer required.

The use of a variety of contexts, particularly real-world scenarios, ensures that pupils are fully engaged in their learning and grasp the significance of their education. This variety helps to develop pupils' flexibility and ability to apply their knowledge to different situations.

Teachers continue to work with their pupils on a particular step or concept until they are confident that the class has a strong grasp of the relevant objectives. The focus is on developing secure, long-term understanding of the subjects taught, preparing pupils for their next stage of learning, rather than rushing through the curriculum at the expense of a deep comprehension.

All pupils are challenged to communicate their reasoning and approach to others, utilizing set sentence stems to structure their thoughts, and using the appropriate terminology that is relevant to their level of understanding.

In the rare cases where a pupil cannot access age-appropriate learning even with additional support, pupils will then work on Wakefield Progression Steps objectives appropriate to their current level of development. These pupils still learn alongside their peers, and where possible their objectives will link to the main class objective.

LESSON STRUCTURES

In Reception, Year 1 and Year 2 we follow the Mastering Number programme which is explained in more detail in another section. In KS2 each lesson begins with review and practice of previously taught arithmetic skills (one day a week we focus on areas from non-arithmetic domains such as geometry). This is then followed by independent practice of fluency facts (explained below) whilst the adults in the room 'live mark' the initial task to check for understanding, provide individual feedback and to identify next steps in terms of modelling and subsequent areas that need more practice.

Children then progress to the main teaching objectives from the Curriculum Prioritisation framework. All children go through each teaching objective to prevent any learning gaps from emerging and enlarging as time goes on. Pupils are urged to solve problems employing concrete resources, pictorial representations, and abstract reasoning (the C-P-A method). This method enables students to approach concepts in a tangible and more relaxed manner.

Lessons can be structured and organised in a variety of ways, including but not limited to lessons described in the following ways:

- I do. We do. You do on whiteboards. You do in books independently for approximately 30 minutes. Live helicopter marking with answer sheet.

- I do. We do. You do on whiteboards. You do in books independently for 5 minutes. REPEAT X 4 for progression through steps/difficulty. Live helicopter marking with answer sheet.

- Heavily guided teacher instruction – copy what I do into your books (i.e. construction of bar models, long division etc). Teacher circulates to check being copied correctly. Progress to semi-independent. Progress to independent (all within one lesson or over a couple of lessons). Live helicopter marking with answer sheet.

- Introduce concept, then explore using concrete materials in a structured task (e.g. create numbers using place value counters). Teacher circulates with iPad to capture evidence for online work on SeeSaw and to check for understanding.

- Quick recap/teacher remodelling then continue working through or practising or extending into deeper level problems. Live helicopter marking with answer sheet

- Discussion, sharing, contributions – developing understanding of a concept (e.g. contexts for rounding, percentages). Then move on to one of the other structures above.

At the heart of what we do is to check for understanding, to match the lesson structure to the need of the lesson and to follow the overarching structure and principles set out by the Curriculum Prioritisation materials.

ROSENSHINE'S PRINCIPLES OF INSTRUCTION

Applying the Rosenshine's Principles of Reviewing Material, Questioning, Sequencing Concepts & Modelling and Stages of Practice are central to our practice. In particular we apply the principle of Checking for Understanding throughout all stages of learning. This can be achieved through questioning techniques (cold calling, probing questions, process questions etc), mini-whiteboard work and live marking. This then enables the teacher to decide whether we are ready for the progression from guided work to independent, whether we are ready to work in books, whether we are ready to obtain a high success rate and whether we are ready to move on to the next step in the learning.

OFSTED RESEARCH REVIEW

We have studied the Ofsted Research Review and have distilled the following key points from the document, using these to inform our practice and decision-making.

- A focus on core knowledge in younger year groups can be achieved by focusing on depth over breadth, covering fewer core topics but in more detail (use of Curriculum Prioritisation materials and Mastering Number support this)

- Leaders should note that disadvantaged novice mathematicians benefit from proactive approaches that can be as simple as ensuring that they are given dedicated time to learn and rehearse mathematics every day (Mastering Number and the KS2 lesson structure provide daily time to rehearse)

- Pupils are more likely to develop a positive attitude towards mathematics if they are successful in it (the use of small steps in the Curriculum Prioritisation helps children to achieve a high success rate as they move through units)

- A moment of understanding does not guarantee long-term learning. Pupils benefit from studying worked examples in addition to practising solving similar types of problems. Therefore, teachers need to balance introducing new content with pupils' need to spend time revisiting content. There should be space within the curriculum for planned consolidation. Pupils should not be rushed through content (as above, time spent daily to revisit content as well as time allocated in the long-term planning)

- Pupils can be helped with simple everyday objects and semi-concrete representations, such as Numicon, but the aim should be that pupils move to working with symbols and abstract representations. There is a distinction to be made between using physical apparatus to reveal useful information and its habitual use as an outsourced memory. Pupils need to avoid relying on manipulatives to work around gaps in core knowledge that might become barriers to learning later (a focus for us is to ensure that our staff are trained and knowledgeable with regard to this unintended pitfall)

- Systematic curricular approaches give pupils with SEND and disadvantaged pupils a better chance of success, of keeping up and therefore of feeling included. We can close gaps in learning through deliberate memorisation (systematic approach using Mastering Number, arithmetic practice and approach to learning number facts supports the memorisation process)

- Pupils who are more likely to struggle or who are at risk of falling behind are given more time to complete tasks, rather than different tasks or curriculums (aligns with the Mastery approach of the NCETM materials, explained above)

- Worked examples, questioning, visual representations, regular opportunities to rehearse and apply all make core content firm and precise in the mind, Sequences of

rehearsal should help to prevent pupils forgetting content over time (links to the school focus on Rosenshine's Principles as well as well as being supported by the Professional Development materials)

TIMES TABLES, NUMBER FACTS AND FLUENCY

The Ofsted Research Review states that teachers should help pupils develop their automatic recall of core declarative knowledge, rather than rely on derivation, guesswork or casting around for clues. They also note that pupils benefit from timed practice of knowledge that should be easily **recalled**, as the timing element gives assurance that pupils are not reliant on derivation.

Resulting from our work in the DFE Maths Hubs Work Group, we are currently working on a whole-school programme for teaching, learning and understanding times tables based upon the work of Jenny Field. She emphasises the need to teach for automaticity rather than memorisation, which Fosnot and Dolk, 2001, distinguish in the following way:

'Memorisation of basic facts usually refers to committing the result of operations to memory so that thinking is unnecessary … Teaching facts for automaticity in contrast relies on thinking. Answers to facts must be automatic, but thinking about the relationships between the facts is critical. A child can then think of 9x6 as (10x6)-6.'

Based upon her research and innovation project, Jenny Field proposes a structure that focuses on learning a 'new' times table for a half-term in order to form the neural pathways needed in the brain for automaticity, rather than jumping around with times tables. The project has two distinct components:

1) Regular retrieval practice to develop fluency (5-10 minutes 3-5 times a week)
2) Approximately 3 dedicated whole maths lessons every half term to explore each new times table

The pre-requisites for embarking on learning times tables are an understanding of unitizing, grouping and the relationship between repeated addition and the times sign. As such we believe the best time to start this structured process is during the second half of Year 2.

The other principles that feed into applying this approach are:

- Being clear on the order in which the tables will be taught
- Building new knowledge around what they already know
- Making clear conceptual links to the real world
- Ensuring teachers have a bank of high-quality activities for regular retrieval practice
- Making use of the Concrete-Pictorial-Abstract process, with a focus on the use of arrays
- Taking time to explore patterns and how they relate to other times tables
- Develop mastery through the use of variation

As of March 2023, we are in the process of writing an Implementation Plan for this project based upon the EEF's Explore-Prepare-Deliver-Sustain approach with the aim of the starting the delivery phase in September 2023.

In the meantime we use a range of resources to promote the teaching of times tables and other number facts, including:

- Diamond Dash (progressive certificates for times tables with dedicated time to practise in most maths lessons daily)
- TT Rockstars and Maths Shed (online subscriptions)

- Lessons within the curriculum
- Ongoing teacher input, discussion and games at available opportunities (especially in Years 3 & 4)

MASTERING NUMBER

We are part of an NCETM Maths Hubs project Mastering Number that aims to secure firm foundations in the development of good number sense for all children from Reception through to Year 1 and Year 2. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention will be given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future. Children access a daily fifteen-minute session which utilises resources like rekenreks and links to the Numberblocks videos and characters.

This helps to prioritise core declarative knowledge in mathematics from an early age to level the playing field, particularly for pupils with special educational needs.

RECEPTION

Autumn

Pupils will build on previous experiences of number from their home and nursery environments, and further develop their subitising and counting skills. They will explore the composition of numbers within 5. They will begin to compare sets of objects and use the language of comparison.

Pupils will:

• identify when a set can be subitised and when counting is needed

• subitise different arrangements, both unstructured and structured, including using the Hungarian number frame

• make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills

• spot smaller numbers 'hiding' inside larger numbers connect quantities and numbers to finger patterns and explore different ways of representing numbers on their fingers

• hear and join in with the counting sequence, and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number

• develop counting skills and knowledge, including: that the last number in the count tells us 'how many' (cardinality); to be accurate in counting, each thing must be counted once and once only and in

any order; the need for 1:1 correspondence; understanding that anything can be counted, including actions and sounds

• compare sets of objects by matching

• begin to develop the language of 'whole' when talking about objects which have parts

Spring

Pupils will continue to develop their subitising and counting skills and explore the composition of numbers within and beyond 5. They will begin to identify when two sets are equal or unequal and connect two equal groups to doubles. They will begin to connect quantities to numerals.

Pupils will:

• continue to develop their subitising skills for numbers within and beyond 5, and increasingly connect quantities to numerals

• begin to identify missing parts for numbers within 5

• explore the structure of the numbers 6 and 7 as '5 and a bit' and connect this to finger patterns and the Hungarian number frame

• focus on equal and unequal groups when comparing numbers understand that two equal groups can be called a 'double' and connect this to finger patterns

• sort odd and even numbers according to their 'shape'

• continue to develop their understanding of the counting sequence and link cardinality and ordinality through the 'staircase' pattern

• order numbers and play track games

• join in with verbal counts beyond 20, hearing the repeated pattern within the counting numbers

Summer

Pupils will consolidate their counting skills, counting to larger numbers and developing a wider range of counting strategies. They will secure knowledge of number facts through varied practice.

Pupils will:

• continue to develop their counting skills, counting larger sets as well as counting actions and sounds

• explore a range of representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame

• compare quantities and numbers, including sets of objects which have different attributes

• continue to develop a sense of magnitude, e.g. knowing that 8 is quite a lot more than 2, but 4 is only a little bit more than 2

• begin to generalise about 'one more than' and 'one less than' numbers within 10

• continue to identify when sets can be subitised and when counting is necessary

• develop conceptual subitising skills including when using a rekenrek

YEAR ONE

Autumn

Pupils will have an opportunity to consolidate the Early Learning Goals and continue to explore the composition of numbers within 10, and the position of these numbers in the linear number system.

Pupils will:

• subitise within 5, including when using a rekenrek, and re-cap the composition of 5

• develop their understanding of the numbers 6 to 9 using the '5 and a bit' structure

• compare numbers within 10 and use precise mathematical language when doing so

• re-cap the order of numbers within 10 and connect this to '1 more' and '1 less' than a given number explore the structure of even numbers (including that even numbers can be composed by doubling any number, and can be composed of 2s)

• explore the structure of the odd numbers as being composed of 2s and 1 more

• explore the composition of each of the numbers 6, 8, and 10

• explore number tracks and number lines and identify the differences between them

Spring

Pupils will continue to explore the composition of numbers within 10 and explore addition and subtraction structures and the related language (without the use of symbols).

Pupils will:

• explore the composition of each of the numbers 7 and 9

• explore the composition of odd and even numbers, seeing that even numbers can be made of two odd or two even parts, and that odd numbers can be composed of one odd part and one even part

• identify the number that is two more or two less than a given odd or even number, identifying that two more/ less than an odd number is the next/previous odd number, and two more/less than an even number is the next/previous even number

• explore the aggregation and partitioning structures of addition and subtraction through systematically partitioning and re-combining numbers within 10 and connecting this to the part-part-whole diagram, including using the language of parts and wholes

• explore the augmentation and reduction structures of addition and reduction using number stories, including introducing the 'first, then, now' language structure

Summer

Pupils will explore the composition of numbers within 20 and their position in the linear number system. They will connect addition and subtraction expressions and equations to 'number stories').

Pupils will:

• explore the composition of the numbers 11 to 19 as '10 and a bit' and compare numbers within 20

• connect the composition of the numbers 11 to 19 to their position in the linear number system, including identifying the midpoints of 5, 10 and 15

• compare numbers within 20

• understand how addition and subtraction equations can represent previously explored structures of addition and subtraction (aggregation/ partitioning/ augmentation/ reduction)

• practise retrieving previously taught facts and reason about these

YEAR TWO

Autumn

Pupils will have an opportunity to consolidate their understanding and recall of number bonds within 10; they will re-cap the composition of the numbers 11 to 20 and reason about their position within the linear number system.

Pupils will:

• review the composition of the numbers 6 to 9 as '5 and a bit'

• compare numbers using the language of comparison and use the symbols < > =

• review the structure of even numbers (including exploring how even numbers can be composed of two odd parts or two even parts) and the composition of each of 6, 8 and 10

• review the structure of odd numbers (including exploring how odd numbers can be composed of one odd part and one even part) and the composition of each of 7 and 9

• consolidate their understanding of the numbers 10 and 20 as '10 and a bit'

• consolidate their understanding of the linear number system to 20 and reason about midpoints consolidate their understanding of the numbers 10 and 20 as '10 and a bit'

• consolidate their understanding of the linear number system to 20 and reason about midpoints

Spring

Pupils will have an opportunity to use their knowledge of the composition of numbers within 10 to calculate within 20; they will explore the links between the numbers in the linear number system within 10 to numbers within 100, focusing on multiples of 10 and the midpoint of 50.

Pupils will:

• explore how the numbers 6 to 9 can be doubled using the '5 and a bit' and '10 and a bit' structure

• use doubles to calculate near doubles

• use bonds of 10 to reason about bonds of 20, in which the given addend is greater than 10

• use known number bonds within 10 to calculate within 20, working within the 10-boundary

• use their knowledge of bonds of 10 to find three addends that sum to 10

• use their knowledge of the composition of numbers within 20 to add and subtract across the 10-boundary

• use their understanding of the linear number system to 10 to position multiples of 10 on a 0 - 100 number line and reason about midpoints

Summer

Pupils will have further opportunities to use their knowledge of the composition of numbers within 10 to calculate within 20 and to reason about equations and inequalities.

Pupils will:

• continue to explore a range of strategies to subtract across the 10-boundary

• review bonds of 20 in which the given addend is greater than 10, and reason about bonds of 20, in which the given addend is less than 10

• practise previously explored strategies to support their reasoning about inequalities and equations

• review doubles and near doubles and transform additions in which two addends are adjacent odd/ even numbers into doubles

• consolidate previously taught facts and strategies through continued, varied practice

MATHS IN THE EARLY YEARS

The Early Years Foundation Stage (EYFS) is a curriculum framework in England that sets the standards for learning, development and care for children from birth to five years old. The EYFS includes specific goals for mathematics that children should be working towards at different stages of development. The specific goals for mathematics in the EYFS are divided into two areas of learning:

Numbers: This area of learning focuses on developing children's understanding of numbers, counting, and simple calculations

Shape, Space and Measures: This area of learning focuses on developing children's understanding of the world around them through spatial reasoning, measurement, and shape recognition.

CHILDREN IN NURSERY

• Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').

• Recite numbers past 5.

• Say one number for each item in order: 1,2,3,4,5.

• Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').

• Show 'finger numbers' up to 5.

• Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.

• Experiment with their own symbols and marks as well as numerals.

• Solve real world mathematical problems with numbers up to 5.

• Compare quantities using language: 'more than', 'fewer than'.

• Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.

• Understand position through words alone – for example, "The bag is under the table," – with no pointing.

• Describe a familiar route.

• Discuss routes and locations, using words like 'in front of' and 'behind'.

• Make comparisons between objects relating to size, length, weight and capacity.

• Select shapes appropriately: flat surfaces for building, a triangular prism for a roof, etc.

• Combine shapes to make new ones – an arch, a bigger triangle, etc.

• Talk about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc.

• Extend and create ABAB patterns – stick, leaf, stick, leaf.

• Notice and correct an error in a repeating pattern.

• Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

CHILDREN IN RECEPTION

• Count objects, actions and sounds.

• Subitise.

• Link the number symbol (numeral) with its cardinal number value.

• Count beyond ten.

• Compare numbers.

• Understand the 'one more than/one less than' relationship between consecutive numbers.

• Explore the composition of numbers to 10.

• Automatically recall number bonds for numbers 0–5 and some to 10.

• Select, rotate and manipulate shapes in order to develop spatial reasoning skills.

• Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.

• Continue, copy and create repeating patterns.

• Compare length, weight and capacity

WHITE ROSE MATHS & MASTER THE CURRICULUM

We use the Master the Curriculum resources and planning framework which align and can be used alongside the materials from White Rose Maths. Their units of work are organised around the following themes:

Nursery

Autumn: Colours - Matching - Sorting - Number 1 - Number 2 - Pattern

Spring: Number 3 - Number 4 - Number 5 - Number 6 - Height & length - Mass - Capacity

Summer: Sequencing - Positional language - More/fewer - 2D shape - 3D shape - After - Before

Reception

Autumn: Getting to know you - Just like me - It's me 1, 2, 3 - Light and dark

Spring: Alive in 5 - Growing 6, 7, 8 – Building 9 and 10

Summer: To 20 and beyond - First, then, now - Find my pattern – On the move

NCETM

We also guide our overall practice by using the NCETM's six key areas of early mathematics learning, which collectively provide a platform for everything children will encounter as they progress through their maths learning at primary school, and beyond. These resources help our practitioners to know what to look for and what some common errors may be as well as providing ideas for activities and opportunities within the setting.

Cardinality and Counting: Understanding that the cardinal value of a number refers to the quantity, or 'howmanyness' of things it represents

Comparison: Understanding that comparing numbers involves knowing which numbers are worth more or less than each other

Composition: Understanding that one number can be made up from (composed from) two or more smaller numbers

Pattern: Looking for and finding patterns helps children notice and understand mathematical relationships

Shape and Space: Understanding what happens when shapes move, or combine with other shapes, helps develop wider mathematical thinking

Measures: Comparing different aspects such as length, weight and volume, as a preliminary to using units to compare later

ASSESSMENT IN MATHS

FORMATIVE ASSESSMENT

Formative assessment is the act of 'checking for understanding' and is a fundamental part of the school's mastery approach on a daily basis. Teachers plan opportunities for formative assessment during their lessons, using a range of strategies, including:

- questioning
- live helicopter marking
- low-stakes quizzing and retrieval
- well-sequenced, structured tasks
- challenging pupils to articulate their thinking
- pupils explaining what is the same and what is different about two or more concepts
- self-assessment
- peer assessment

Teachers use the information gathered through these formative assessment activities to adjust their lessons in a number of ways and to determine the next steps. This could be for the whole class, a group of pupils or a single pupil. The earlier a misconception is identified, the quickly it can be addressed, allowing more learning to take place. Teachers may decide to stay at the guided stage for longer or allow children to work more independently. Some adjustments that teachers may make could include:

- showing or explaining a concept in a different way
- providing additional scaffolding or directing to use a particular resource
- using additional, smaller steps of learning
- teaching a guided group
- challenging pupils to find or correct errors
- informing or adjusting planning for subsequent lessons

Teachers give verbal feedback alongside the quick marking in books which uses green highlighters to identify successful work and orange highlighters to pick out where further practice and clarification is required

SUMMATIVE ASSESSMENT

Teacher assessment judgements are made termly by all class teachers for all pupils. This is for mathematics as a whole, rather than for an individual unit of work. Each pupil will be assessed as working at one of the following:

- Working **below** age-relating expectations (PK1-6)
- **Working towards** age-relating expectations (WTS)
- **Working at** age-relating expectations (EXS)
- Working at **greater depth** within age-relating expectations (GDS)

This is a ***point-in-time*** assessment, judging whether the pupil is performing at the relevant level considering the time of year. For example, if a pupil is judged as **working at age-related expectations** during the autumn term in Year 4, this does not mean they are working at the level expected of a Year 4 pupil at the end of Year 4, but they are on course to be so if they make expected progress from this point.

Teacher assessments are informed (but not exclusively) by written assessments/tests for all pupils who are ***not*** working below age-related expectations.

In Years 3, 4 and 5, these are assessments produced by the **National Foundation for Educational Research** (NFER). Broadly speaking, standardised scores from 95-115 equate to EXS, with scores below this being WTS, and scores above this GDS. In Year 6, past SAT papers are used, with scaled scores of 100-109 being EXS. It should be noted that NFER assessments are directly in-line with ***point-in-time*** assessment, whereas SAT papers are end of key stage assessments.

We also make use of the NCETM Curriculum Prioritisation end of unit assessment questions arranged by ready-to-progress criteria to inform termly judgements, as well considering pupil performance on ongoing arithmetic tasks and number facts fluency.

Pupils judged as PKS in maths are assessed against Wakefield Progression Steps. These feed directly into lesson planning for these pupils, so this form of assessment is ongoing.

PRESENTATION AND DISPLAYS

PRESENTATION

From Year 1 onwards, all children are given an exercise book for recording work in Maths lessons. Teachers have high expectations of the quality and presentation of the work recorded in books. Children work neatly and are taught to:

- use one digit in each square (not one number per square)

- not use one letter per square when writing words, but instead write through the squares

- use rulers carefully to underline dates, objectives and to construct diagrams and models

- where appropriate, use circular objects like counters to draw around for part-whole models, rather than drawing free-hand

- set written calculations out in the manner modelled by the class teacher

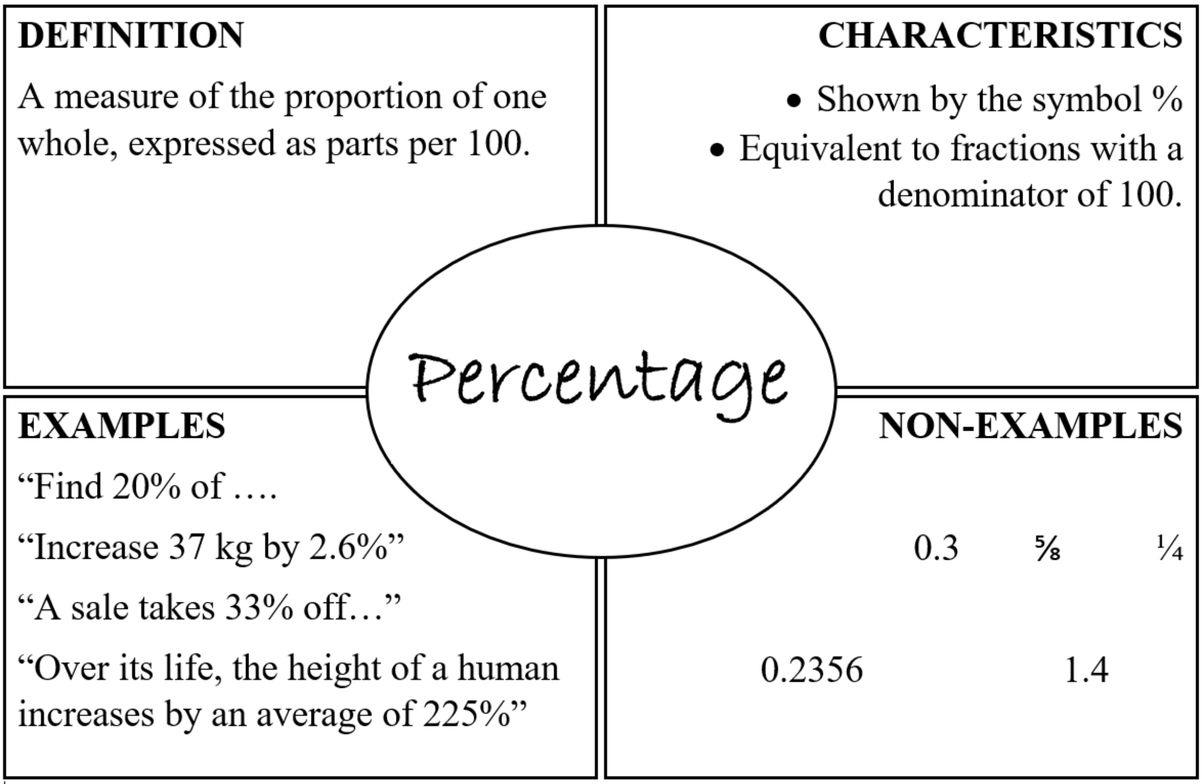
- generally take pride in their work

These expectations are reinforced by teachers when modelling and using resources.

DISPLAYS

In the summer term of 2022-23 we are aiming to provide clarity and consistency for displays in classrooms from Year 1 to Year 6. This will include a structure that involves the use of Frayer Models and stem sentences linked to the current unit of work. Children will also have visual access to the key number facts for their year group.

The Frayer Model is a chart with 4 sections which can hold a definition, some characteristics/facts, examples, and non-examples of the word/concept.



(Taken from frayer-model.co.uk website)

Stem sentences improve pupil's oracy skills and challenge them to widen their mathematical vocabulary. They provide opportunities for our pupils to communicate their ideas with mathematical precision and clarity. This is an example of a stem sentence from the NCETM Professional Development materials:

One part is ten, the other part is ___ and the whole is ___.

One part is ten, the other part is 36 and the whole is 46.

LONG TERM PLAN FOR MATHS (NCETM CURRICULUM PRIORITISATION UNITS)

	AUTUMN	SPRING	SUMMER
YEAR 1	Unit 1 – Previous Reception experiences and counting within 100 (7 weeks) Unit 2 – Comparison of quantities & part-whole relationships (3 weeks) Unit 3 – Numbers 0 to 5 (2 weeks) Unit 4 – 2D & 3D shapes (2 weeks)	Unit 4 – 2D & 3D shapes (1 week) Unit 5 – Numbers 0 to 10 (3 weeks) Unit 6 – Additive structures (4 weeks) Unit 7 – Addition & subtraction facts within 10 (3 weeks)	Unit 8 – Numbers 0 to 20 (4 weeks) Unit 9 – Unitising and coin recognition (5 weeks) Unit 10 – Position & direction (1 week) Unit 11 – Time (2 weeks)
YEAR 2	Unit 1 - Numbers 10 to 100 (4 weeks) Unit 2 – Calculations within 20 (3 weeks) Unit 3 – Fluently add & subtract within 10 (1 week) Unit 4 – Addition & subtraction of two-digit numbers (2 weeks) Unit 5 – Introduction to multiplication (4 weeks)	Unit 5 – Introduction to multiplication (3 weeks) Unit 6 – Introduction to division structures (2 weeks) Unit 7 – Shape (2 weeks) Unit 8 – Addition & subtraction of two-digit numbers (3 weeks)	Unit 9 – Money (1 week) Unit 10 – Fractions (2 weeks) Unit 11 – Time (1 week) Unit 12 – Position & direction (1 week) Unit 13 – Multiplication & division (3 weeks) Unit 14 – Sense of measure (2 weeks)
YEAR 3	Unit 1 - Adding and subtracting across 10 (2 weeks) Unit 2 - Numbers to 1,000 (10 weeks)	Unit 3 - Right angles (2 weeks) Unit 4 - Manipulating the additive relationship and securing mental calculation (4 weeks) Unit 5 - Column addition (2 weeks) Unit 6 - 2, 4, 8 times tables (3 weeks) Unit 7 - Column subtraction (1 week)	Unit 8 - Unit fractions (5 weeks) Unit 9 - Non-unit fractions (4 weeks) Unit 10 - Parallel and perpendicular sides in polygons (2 weeks) Unit 11 – Times (1 week)
YEAR 4	Unit 1 - Review of column addition and subtraction (3 weeks) Unit 2 - Numbers to 10,000 (5 weeks) Unit 3 – Perimeter (2 weeks) Unit 4 - 3, 6, 9 times tables (4 weeks)	Unit 5 - 7 times table and patterns (2 weeks) Unit 6 - Understanding and manipulating multiplicative relationships (5 weeks) Unit 7 – Coordinates (2 weeks)	Unit 8 - Review of fractions (1 week) Unit 9 - Fractions greater than 1 (5 weeks) Unit 10 - Symmetry in 2D shapes (2 weeks) Unit 11 – Time (1 week) Unit 12 - Division with remainders (2 weeks)
YEAR 5	Unit 1 - Decimal fractions (5 weeks) Unit 2 – Money (2 weeks) Unit 3 - Negative numbers (2 weeks) Unit 4 - Short multiplication and short division (6 weeks)	Unit 5 - Area and scaling (5 weeks) Unit 6 - Calculating with decimal fractions (3 weeks) Unit 7 - Factors, multiples and primes (4 weeks)	Unit 8 – Fractions (7 weeks) Unit 9 - Converting units (2 weeks) Unit 10 - Angles and transformations (3 weeks)
YEAR 6	Unit 1 - Calculating using knowledge of structures (1) (6 weeks) Unit 2 - Multiples of 1,000 (2 weeks) Unit 3 - Numbers up to 10,000,000 (4 weeks) Unit 4 - Draw, compose and decompose shapes (2 weeks)	Unit 5 - Multiplication and division (4 weeks) Unit 6 - Area, perimeter, position and direction (2 weeks) Unit 7 - Fractions and percentages (6 weeks)	Unit 8 - Statistics (1 week) Unit 9 - Ratio and proportion (2 weeks) Unit 10 - Calculating using knowledge of structures (1 week) Unit 11 - Solving problems with two unknowns (2 weeks) Unit 12 - Order of operations (1 week) Unit 13 - Mean average (1 week)

OVERVIEW OF MATHS UNITS – YEAR 1 – AUTUMN TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **7 weeks**	**1: Previous reception experiences and counting within 100** NCETM website – Early Years section 1.9 – Composition of numbers 20 to 100	1	Pupils count objects, actions and sounds.
		2	Pupils subitise
		3	Pupils link the number symbol (numeral) with its cardinal number value.
		4	Pupils count beyond 10
		5	Pupils compare numbers
		6	Pupils understand the 'one more than/one less than' relationship between consecutive numbers.
		7	Pupils explore the composition of numbers to 10.
		8	Pupils automatically recall number bonds for numbers 0–5 and some to 10
		9	Pupils select, rotate and manipulate shapes to develop spatial reasoning skills.
		10	Pupils compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.
		11	Pupils continue, copy and create repeating patterns.
		12	Pupils compare length, weight and capacity
		13	Pupils count within 100 in different ways
Autumn 2 **3 weeks**	**2: Comparison of quantities and part-whole relationships** 1.1 – Comparison of quantities and measures 1.2 – Introducing 'whole' and 'parts': part-part-whole	1	Pupils explain that items can be compared using length and height
		2	Pupils explain that items can be compared using weight/mass and volume/capacity
		3	Pupils count a set of objects
		4	Pupils compare sets of objects
		5	Pupils use equality and inequality symbols to compare sets of objects
		6	Pupils use equality and inequality symbols to compare expressions

Autumn 2 **3 weeks continued**	**2: Comparison of quantities and part-whole relationships continued**	7	Pupils explain what a whole is
		8	Pupils explain that a whole can be split into parts
		9	Pupils explain that a whole can represent a group of objects
		10	Pupils identify a part of a whole group
		11	Pupils explain what a part-whole model is
		12	Pupils use a part-whole model to represent a whole partitioned into two parts
		13	Pupils use a part-whole model to represent a whole partitioned into more than two parts
Autumn 2 **2 weeks**	**3: Numbers to 0 to 5** 1.3 - Composition of numbers 0-5	1	Pupils explain that numbers can represent how many objects there are in a set
		2	Pupils explain that ordinal numbers show a position and not a set of objects
		3	Pupils partition numbers one to five in different ways
		4	Pupils partition the numbers one to five in a systematic way
		5	Pupils find a missing part when one part and the whole is known
		6	Pupils show one more and one less than a number using representations. Pupils describe this accurately.
		7	Pupils show one more and one less than a number using representations. Pupils describe this accurately.
		8	Pupils use a bar model to represent a whole partitioned into two parts
Autumn 2 **2 weeks**	**4: 2D & 3D shapes** DfE guidance	1	Pupils compose pattern block images
		2	Pupils copy, extend and develop repeating and radiating pattern block patterns
		3	Pupils compose tangram images
		4	Pupils investigate tetromino and pentomino arrangements
		5	Pupils investigate ways that four cubes can be composed into different 3D models
		6	Pupils explore, discuss and compare 3D shapes
		7	Pupils identify 2D shapes within 3D shapes

OVERVIEW OF MATHS UNITS – YEAR 1 – SPRING TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **1 week**	**4: 2D & 3D shapes continued** DfE guidance	8	Pupils explore, discuss and compare 2D shapes
		9	Pupils explore, discuss and identify circles and shapes that are not circles from shape cut-outs
		10	Pupils explore, discuss and identify triangles and shapes that are not triangles from shape cut-outs
		11	Pupils explore, discuss and identify rectangles (including squares) from shape cut-outs
Spring 1 **3 weeks**	**5: Numbers 0 to 10** 1.4 – Composition of numbers 6 to 10	1	Pupils count a set of objects and match the spoken number to the written numeral and number name
		2	Pupils represent the numbers 6 to 10 using a five and a bit structure
		3	Pupils identify the whole and parts of the numbers 6 to 10 using the five and a bit structure
		4	Pupils explore the numbers 6 to 10 using the part whole model and the five and a bit structure
		5	Pupils explain where 6, 7, 8 and 9 lie on a number line
		6	Pupils explain what odd and even numbers are and the difference between them
		7	Pupils explain how even and odd numbers can be partitioned
		8	Pupils partition numbers 6 to 10 in different ways
		9	Pupils partition the numbers 6 to 10 in a systematic way
		10	Pupils identify a missing part when a whole is partitioned into two parts
Spring 1-2 **4 weeks**	**6: Additive structures** 1.5 – Additive structures (aggregation & partitioning)	1	Pupils combine two or more parts to make a whole
		2	Pupils explain that addends can be represented in any order. This is called the commutative law
		3	Pupils explain that the = sign can be used to show that the whole and the sum of the parts are equal (1)
		4	Pupils explain that the = sign can be used to show that the whole and the sum of the parts are equal (2)
		5	Pupils add parts to find the value of the whole and write the equation

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1-2 **4 weeks continued**	1.6 – Additive structures (augmentation & reduction)	6	Pupils find the missing addend in an equation
		7	Pupils partition a whole into two parts and express this with a subtraction equation
		8	Pupils make addition and subtraction stories and write equations to match
		9	Pupils represent 'first, then, now' stories with addition equations (1)
		10	Pupils represent 'first, then, now' stories with addition equations (2)
		11	Pupils represent 'first, then, now' stories with subtraction equations (1)
		12	Pupils represent 'first, then, now' stories with subtraction equations (2)
		13	Pupils represent different types of stories with subtraction calculations
		14	Pupils make addition and subtraction stories, writing equations to match
		15	Pupils work out the missing part of an addition story and equation if the other two parts are known
		16	Pupils work out the missing part of a subtraction story and equation if the other two parts are known
		17	Pupils explain that addition and subtraction are inverse operations (1)
		18	Pupils explain that addition and subtraction are inverse operations (2)
		19	Pupils use additive structures to think about addition and subtraction equations in different ways
Spring 2 **3 weeks**	**7: Addition & subtraction facts within 10** 1.7 – Additive & subtraction strategies within 10	1	Pupils explain that addition is commutative
		2	Pupils find pairs of numbers to 10 (1)
		3	Pupils find pairs of numbers to 10 (2)
		4	Pupils add and subtract 1 from any number
		5	Pupils explain what the difference is between consecutive numbers
		6	Pupils explain what happens when 2 is added to or subtracted from odd and even numbers

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 2 **3 weeks continued**	**7: Addition & subtraction facts within 10 continued**	7	Pupils explain what the difference is between consecutive odd and even numbers
		8	Pupils explain what happens when zero is added to or subtracted from a number
		9	Pupils explain what happens when a number is added to or subtracted from itself
		10	Pupils double numbers and explain what doubling means
		11	Pupils halve numbers and explain what halving means
		12	Pupils use knowledge of doubles and halves to calculate near doubles and halves
		13	Pupils represent different types of stories with subtraction calculations
		14	Pupils use knowledge and strategies to add 5 and 3 and 6 and 3

OVERVIEW OF MATHS UNITS – YEAR 1 – SUMMER TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **4 weeks**	**8: Numbers 0-20** 1.10 – Composition of numbers 11-19 DfE Guidance	1	Pupils explain that the digits in the numbers 11 to 19 express quantity
		2	Pupils explain that the digits in the numbers 11 to 19 express position on a number line
		3	Pupils identify the quantity shown in a representation of numbers 11 to 19
		4	Pupils use knowledge of '10 and a bit' to solve problems
		5	Pupils use knowledge of '10 and a bit' to solve problems
		6	Pupils explore odd and even numbers within 20
		7	Pupils double the numbers 6 to 9 and halve the result, explaining what doubling and halving is
		8	Pupils use knowledge of addition facts within 10 to add within 20
		9	Pupils use knowledge of subtraction facts within 10 to subtract within 20
		10	Pupils use knowledge of addition and subtraction facts within 10 to add and subtract within 20
		11	Pupils measure one object with different non-standard measures and record outcomes
		12	Pupils measure items using individual cm cubes (Dienes)
		13	Pupils measure length from zero cm using a ruler
		14	Pupils estimate length in cm
		15	Pupils estimate length, measure length and record these values in a table
Summer 1-2 **5 weeks**	**9: Unitising & coin recognition** 2.1 – Counting, unitising and coins	1	Pupils count efficiently in groups of two
		2	Pupils count efficiently in groups of ten
		3	Pupils count efficiently in group of five
		4	Pupils count efficiently by counting in groups of two, five and ten

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1-2 **5 weeks continued**	**9: Unitising & coin recognition continued**	5	Pupils explain the value of a 1p coin in pence
		6	Pupils recognise and explain the value of 2p, 5p and 10p coins
		7	Pupils explain that a single coin can be worth several pennies
		8	Pupils use knowledge of the value of coins to solve problems
		9	Pupils calculate the total value of the coins in a set of 2p coins
		10	Pupils calculate the total value of the coins in a set of 5p coins
		11	Pupils calculate the total value of the coins in a set of 10p coins
		12	Pupils compare sets of 2p, 5p and 10p coins
		13	Pupils relate what they have learnt to a real-life context
		14	Pupils work out how many coins are needed to make a value of 10p
		15	Pupils work out how many coins are needed to make a total value of 20p
		16	Pupils use knowledge of the value of coins to solve problems
Summer 2 **1 week**	**10: Position & direction** White Rose Maths	1	Pupils describe position, direction and movement, including whole, half, quarter and three-quarter turns.
		2	Pupils use the language of position, direction and motion
		3	Pupils make whole, half, quarter and three-quarter turns in both directions and connect turning clockwise with movement on a clock face.
Summer 2 **2 weeks**	**11: Time** White Rose Maths	1	Pupils sequence events in chronological order using language
		2	Pupils recognise and use language relating to dates, including days of the week, weeks, months and years
		3	Pupils tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

OVERVIEW OF MATHS UNITS – YEAR 2 – AUTUMN TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **4 weeks**	**1: Numbers 10 to 100** 1.8 – Composition of numbers – Multiples of 10 up to 100 1.9 – Composition of numbers 20-100	1	Pupils explain that one ten is equivalent to ten ones
		2	Pupils represent multiples of ten using their numerals
		3	Pupils represent multiples of ten using their numerals and names
		4	Pupils represent multiples of ten in an expression or an equation
		5	Pupils estimate the position of multiples of ten on a 0-100 number line
		6	Pupils explain what happens when you add and subtract ten to a multiple of ten
		7	Pupils use knowledge of facts and unitising to add and subtract multiples of ten
		8	Pupils add and subtract multiples of ten
		9	Pupils explore the counting sequence for counting to 100 and beyond
		10	Pupils count a large group of objects by counting groups of tens and the extra ones
		11	Pupils count a large group of objects by using knowledge of unitising by counting tens and ones
		12	Pupils represent a number from 20-99 in different ways
		13	Pupils explain and mark the position of numbers 20-99 on a number line
		14	Pupils explain that numbers 20-99 can be represented as a length
		15	Pupils compare two, two-digit numbers
		16	Pupils partition a two-digit number into tens and ones
		17	Pupils add two, two-digit numbers by partitioning into tens and ones

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **3 weeks**	**2: Calculations within 20** 1.11 – Addition & subtraction: bridging 10 1.12 – Addition & subtraction: subtraction as difference	1	Pupils add three addends
		2	Pupils use a 'First... Then… Now" story to add 3 addends
		3	Pupils explain that addends can be added in any order
		4	Pupils add 3 addends efficiently
		5	Pupils add 3 addends efficiently by finding two addends that total 10
		6	Pupils add two numbers that bridge through 10
		7	Pupils subtract two numbers that bridge through 10
		8	Pupils compare numbers and describe how many more or less there are in each set
		9	Pupils calculate the difference
		10	Pupils use knowledge of subtraction to solve problems in a range of contexts
		11	Pupils explain what the difference is between consecutive numbers
		12	Pupils calculate difference when information is presented in a pictogram
		13	Pupils calculate difference when information is presented in a bar chart
Autumn 2 **1 week**	**3: Fluently add & subtract within 10** DfE Guidance	1	Pupils demonstrate their fluency of addition and subtraction within ten Represent a three-digit number up to 1000 in different ways
		2	Pupils practise addition and subtraction strategies as required
Autumn 2 **2 weeks**	**4: Addition & subtraction of 2-digit numbers** 1.13 - Addition & subtraction: two-digit & single digit numbers DfE Guidance	1	Pupils add and subtract one to and from a two-digit number
		2	Pupils add and subtract one to and from a two-digit number that crosses a tens boundary
		3	Pupils add and subtract one from any two-digit number
		4	Pupils use number facts to add a single-digit number to a two-digit number
		5	Pupils use number facts to subtract a single-digit number from a two-digit number

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **2 weeks continued**	1.14 - Addition & subtraction: two-digit & multiples of ten	6	Pupils use a part-part-whole model to represent addition and subtraction
		7	Pupils use number bonds to ten to add a single-digit number to a two-digit number
		8	Pupils use number bonds to ten to subtract a single-digit number from a two-digit number
		9	Pupils use knowledge of 'make ten' to add a one-digit number to a two-digit number
		10	Pupils use knowledge of 'make ten' to subtract a multiple of ten or a single-digit from a two-digit number
		11	Pupils solve problems using knowledge of addition and subtraction
		12	Pupils find ten more or ten less than a two-digit number (1)
		13	Pupils find ten more or ten less than a two-digit number (2)
		14	Pupils add and subtract ten to/from a two-digit number
		15	Pupils explain the patterns when adding and subtracting ten
		16	Pupils use knowledge of adding and subtracting ten to solve problems
		17	Pupils use number facts to add a multiple of ten to a two-digit number
		18	Pupils use number facts to subtract a multiple of ten from a two-digit number
		19	Pupils partition a two-digit number into parts in different ways (two and three parts)
		20	Pupils use knowledge of adding and subtracting multiples of ten to solve problems
Autumn 2 **4 weeks**	**5: Introduction to multiplication** 2.2 - Structures – Multiplication representing equal groups	1	Pupils explain that objects can be grouped in different ways
		2	Pupils describe how objects have been grouped
		3	Pupils represent equal groups as repeated addition
		4	Pupils represent equal groups as repeated addition and multiplication
		5	Pupils represent equal groups as multiplication

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **4 weeks continued**	2.3 - Times tables – groups of 2 and commutativity 2.4 - Times tables – groups of 10 and of 5	6	Pupils explain and represent multiplication when a group contains zero or one items
		7	Pupils identify and explain each part of a multiplication equation
		8	Pupils use knowledge of multiplication to calculate the product
		9	Pupils represent the two times table in different ways
		10	Pupils use knowledge of the two times table to solve problems
		11	Pupils explain the relationship between adjacent multiples of two
		12	Pupils explain that factor pairs can be written in any order
		13	Pupils represent counting in tens as the ten times table
		14	Pupils represent the ten times table in different ways
		15	Pupils explain the relationship between adjacent multiples of ten
		16	Pupils represent counting in fives as the five times table
		17	Pupils represent the five times table in different ways
		18	Pupils explain the relationship between adjacent multiples of five
		19	Pupils explain how groups of five and ten are related
		20	Pupils explain the relationship between multiples of five and ten
		21	Pupils use knowledge of the relationships between the five and ten times tables to solve problems
		22	Pupils explain how a factor of zero or one affect the product

OVERVIEW OF MATHS UNITS – YEAR 2 – SPRING TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **3 weeks**	**5: Introduction to multiplication** 2.5 - Commutativity – doubling and halving	23	Pupils represent multiplication equations in different ways
		24	Pupils use knowledge of the two, five and ten times tables to solve problems (1)
		25	Pupils use knowledge of the two, five and ten times tables to solve problems (2)
		26	Pupils explain what each factor represents in a multiplication story
		27	Pupils explain what each factor represents in a multiplication story when one of the factors is one
		28	Pupils explain how a multiplication equation with two as a factor is related to doubling
		29	Pupils double two-digit numbers
		30	Pupils multiply efficiently when one of the factors is two
		31	Pupils explain how halving and doubling are related
		32	Pupils explain the relationship between factors and products
		33	Pupils halve two-digit numbers
		34	Pupils use knowledge of doubling, halving and the two times table to solve problems
Spring 1 **2 weeks**	**6: Introduction to division structures** 2.6 - Structures: quotative and partitive division	1	Pupils explain that objects can be grouped equally
		2	Pupils identify and explain when objects cannot be grouped equally
		3	Pupils explain the relationship between division expressions and division stories
		4	Pupils calculate the number of equal groups in a division story
		5	Pupils use their knowledge of skip counting and division to solve problems relating to measure
		6	Pupils skip count using the divisor to find the quotient
		7	Pupils use their knowledge of division to solve problems

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **2 weeks continued**	**6: Introduction to division structures continued**	8	Pupils explain that objects can be shared equally
		9	Pupils use skip counting to solve a sharing problem
		10	Pupils skip count using the divisor to find the quotient
		11	Pupils solve a variety of division problems, explaining their understanding
Spring 2 **2 weeks**	**7: Shape** DfE Guidance	1	Pupils learn that a polygon is a 2D shape with straight sides that meet at vertices
		2	Pupils describe polygons and find different ways to sort them
		3	Pupils learn that polygons can be sorted and named according to the number of sides and vertices
		4	Pupils discuss, and compare by direct comparison, the shape and size of polygons
		5	Pupils discuss, and compare by direct comparison, the vertices of polygons
		6	Pupils investigate how polygons can be joined and folded to form 3-dimensional shapes
		7	Pupils describe 3-dimensional shapes and find different ways to sort them
		8	Pupils discuss, and compare by direct comparison, the shape and size of 3-dimensional shapes
Spring 2 **3 weeks**	**8: Addition & subtraction of two-digit numbers** 1.15 - Addition – two-digit & two-digit numbers 1,16: - Subtraction – two-digit & two-digit numbers	1	Pupils explain strategies used to add
		2	Pupils add a two-digit number to a two-digit number
		3	Pupils add a two-digit number to a two-digit number when not crossing ten (i)
		4	Pupils add a two-digit number to a two-digit number when not crossing ten (ii)
		5	Pupils add a two-digit number to a two-digit number when crossing ten
		6	Pupils explain strategies used to subtract
		7	Pupils subtract a two-digit number from a two-digit number
		8	Pupils partition the subtrahend to help with subtraction

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 2 **3 weeks continued**	**8: Addition & subtraction of two-digit numbers continued**	9	Pupils subtract a two-digit number from a two-digit number when not crossing ten (i)
		10	Pupils subtract a two-digit number from a two-digit number when not crossing ten (ii)
		11	Pupils subtract a two-digit number from a two-digit number when crossing ten
		12	Pupils subtract efficiently using knowledge of two-digit numbers

OVERVIEW OF MATHS UNITS – YEAR 2 – SUMMER TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **1 week**	**9: Money** White Rose Maths	1	Pupils recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
		2	Pupils find different combinations of coins that equal the same amounts of money
		3	Pupils solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.
		4	Pupils become fluent in counting and recognising coins
		5	Pupils read and say amounts of money confidently
		6	Pupils use the symbols £ and p accurately, recording pounds and pence separately.
Summer 1 **2 weeks**	**10: Fractions** 3.0 – Guidance on teaching fractions in KS1	1	Pupils identify whether something has or has not been split into equal parts
		2	Pupils name the fraction 'one-half' in relation to a fraction of a length, shape or set of objects
		3	Pupils name the fraction 'one-quarter' in relation to a fraction of a length, shape or set of objects
		4	Pupils name the fraction 'one-third' in relation to a fraction of a length, shape or set of objects
		5	Pupils read and write the fraction notation ½, ⅓ and ¼ and relate this to a fraction of a length, shape or set of objects
		6	Pupils find half of numbers
		7	Pupils find ⅓ or ¼ of a number
		8	Pupils find ¼ and ¾ of an object, shape, set of objects, length or quantity
		9	Pupils recognise the equivalence of 2⁄4 and ½
Summer 1 **1 week**	**11: Time** White Rose Maths	1	Pupils compare and sequence intervals of time
		2	Pupils tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
		3	Pupils know the number of minutes in an hour and the number of hours in a day
		4	Pupils use standard units of measurement with increasing accuracy, using their knowledge of the number system

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
		5	Pupils become fluent in telling the time on analogue clocks and recording it.
Summer 1 **1 week**	**12: Position & direction** White Rose Maths	12	Pupils order and arrange combinations of mathematical objects in patterns and sequences
		13	Pupils use mathematical vocabulary to describe position, direction and movement
		14	Pupils should work with patterns of shapes, including those in different orientations
		15	Pupils use the concept and language of angles to describe 'turn' by applying rotations, including in practical contexts
Summer 2 **3 weeks**	**13: Multiplication & division** 2.5 – Commutativity: doubling & halving 2.6 – Structures: quotative & partitive division	1	Pupils identify the patterns and relationships between the 5 and 10 times tables
		2	Pupils explain the patterns and relationships between the 5 and 10 times tables
		3	Pupils use their knowledge of the 5 and 10 times tables to solve problems
		4	Pupils identify and explain relationships between the 5 and the 10 times tables
		5	Pupils use their knowledge of the 5 and 10 times tables to solve problems
		6	Pupils explain how times table facts can help to find the quotient (10 times table)
		7	Pupils explain how times table facts can help to find the quotient (5 times table)
		8	Pupils explain how times table facts can help to find the quotient (2 times table)
		9	Pupils explain how a division equation with 2 as a divisor is related to halving
		10	Pupils explain each part of a division equation and know how they can be interchanged
		11	Pupils use knowledge of divisibility rules when the divisor is 2 to solve problems
		12	Pupils use knowledge of divisibility rules when then divisor is 10 to solve problems
		13	Pupils use knowledge of divisibility rules when the divisor is 5 to solve problems
		14	Pupils explain how a dividend of zero affects the quotient
		15	Pupils explain how the quotient is affected when the divisor is equal to the dividend

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
		16	Pupils explain how a divisor of one affects the quotient
Summer 2 **2 weeks**	**14: Sense of measure: capacity, volume & mass** White Rose Maths	1	Pupils choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
		2	Pupils compare and order lengths, mass, volume/capacity and record the results using >, < and =
		3	Pupils use standard units of measurement with increasing accuracy, using their knowledge of the number system
		4	Pupils use the appropriate language and record using standard abbreviations.
		5	Pupils compare measures includes simple multiples such as ‘half as high’; ‘twice as wide’.

OVERVIEW OF MATHS UNITS – YEAR 3 – AUTUMN TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **2 weeks**	**1: Adding and subtracting across 10** 1.11 – Addition and subtraction bridging 10	1	Add 3 addends
		2	Use a 'First… Then… Now…' story to add 3 addends
		3	Explain that addends can be added in any order
		4	Add 3 addends efficiently
		5	Add 3 addends efficiently by finding two addends that total 10
		6	Add two numbers that bridge through 10
		7	Subtract two numbers that bridge through 10
Autumn 1-2 **10 weeks**	**2: Numbers to 1,000** 1.17 - Composition and Calculation: 100 and bridging 100 DfE Guidance 1.18 - Composition and calculation: three-digit numbers	1	Explain that 100 is composed of ten tens and one hundred ones
		2	Explain that 100 is composed of 50s 25s and 20s
		3	Use known facts to find multiples of ten that compose 100
		4	Will use known facts to find a two-digit number and a one- or two-digit number that compose 100
		5	Use known facts to find correct complements to 100
		6	Use known facts to find complements to 100 accurately and efficiently
		7	Represent a three-digit number which is a multiple of ten using their numerals and names
		8	Use place value knowledge to write addition and subtraction equations
		9	Bridge 100 by adding or subtracting in multiples of ten
		10	Use knowledge of addition and subtraction of multiples of ten bridging the hundreds boundary to solve problems

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1-2 **10 weeks continued**	**2: Numbers to 1,000 continued**	11	Count across and on from 100
		12	Represent a three-digit number up to 199 in different ways
		13	Bridge 100 by adding or subtracting a single-digit number
		14	Find ten more or ten less than a given number
		15	Cross the hundreds boundary when adding and subtracting any two-digit multiple of ten
		16	Become familiar with a metre ruler (marked and unmarked intervals, 1 x 1m, 10 x 10cm, 100 x 1cm)
		17	Measure length and height from zero using whole metres and cm
		18	Measure length and height from zero using cm
		19	Convert between m and cm (include whole m to cm, cm to whole m and cm and vice versa)
		20	Become familiar with a ruler in relation to cm and mm (marked and unmarked intervals, knowing 1cm = 10mm)
		21	Measure length from zero using mm / whole cm and mm
		22	Convert between cm and mm (include whole cm to mm, mm to whole cm and mm and vice versa)
		23	Estimate a length/height, measure a length/height and record in a table
		24	Use knowledge of place value to represent a three-digit number in different ways
		25	Represent a three-digit number up to 1000 in different ways
		26	Use knowledge of the additive relationship to solve problems
		27	Count in hundreds and tens on a number line
		28	Identify the previous, next and nearest multiple of 100 on a number line for three-digit multiples of ten
		29	Position three-digit numbers on number lines
		30	Estimate the position of three-digit numbers on unmarked number lines

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1-2 **10 weeks continued**	**2: Numbers to 1,000 continued**	31	Compare one-, two- and three-digit numbers
		32	Compare two three-digit numbers
		33	Order sets of three-digit numbers
		34	Use known facts to add or subtract multiples of 100 within 1000
		35	Write a three-digit multiple of 10 as a multiplication equation
		36	Partition three-digit numbers in different ways
		37	Use known facts to solve problems involving partitioning numbers
		38	Use known facts to add or subtract to/from multiples of 100 in tens
		39	Use known facts to add or subtract to/from multiples of 100 in ones
		40	Add/subtract multiples of ten bridging 100
		41	Add/subtract to/from a three-digit number in ones bridging 100
		42	Find 10 more or less across any hundreds boundary
		43	Use knowledge of adding or subtracting to/from three-digit numbers to solve problems
		44	Count forwards and backwards in multiples of 2, 20, 5, 50 and 25
		45	Use knowledge of counting in multiples of 2, 20, 5, 50 and 25 to solve problems
		46	Become familiar with different weighing scales up to 1kg (intervals of 100g, 200g, 250g and 500g)
		47	Become familiar with the tools to measure volume and capacity up to 1 litre (intervals of 100ml, 200ml, 250ml and 500ml)
		48	Measure mass from zero up to 1kg using grams
		49	Measure mass from zero above 1kg using whole kg and grams
		50	Measure volume from zero up to 1 litre using ml

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1-2 **10 weeks continued**	**2: Numbers to 1,000 continued**	51	Measure volume from zero above 1 litre using whole litres and ml
		52	Estimate mass in grams and volume in ml
		53	Estimate a mass/volume, measure a mass/volume and record in a table

OVERVIEW OF MATHS UNITS – YEAR 3 – SPRING TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **2 weeks**	**3: Right angles** DfE Guidance	1	Pupils rotate two lines around a fixed point to make different sized angles
		2	Pupils draw triangles and quadrilaterals and identify vertices
		3	Pupils learn that a right angle is a 'square corner' and identify them in the environment
		4	Pupils learn that a rectangle is a 4-sided polygon with four right angles
		5	Pupils learn that a square is a rectangle in which the four sides are equal length
		6	Pupils cut rectangles and squares on the diagonal and investigate the shapes they make
		7	Pupils join four right angles at a point using different right-angled polygons
		8	Pupils investigate and draw other polygons with right angles
Spring 1 **4 weeks**	**4: Manipulating the additive relationship and securing mental calculation** 1.19 – Securing Mental Strategies: calculation up to 999 DfE Guidance	1	Pupils add 3 addends
		2	Pupils add two 3-digit numbers using adjusting
		3	Pupils add a pair of 2- or 3-digit numbers using redistribution
		4	Pupils subtract a pair of 2- or 3-digit numbers, bridging a multiple of 10, using partitioning
		5	Pupils subtract a pair of 2-digit numbers, crossing a ten or hundreds boundary, by finding the difference between them
		6	Pupils subtract a pair of three-digit multiples of 10 within 1000 by finding the difference between them
		7	Pupils evaluate the efficiency of strategies for subtracting from a 3-digit number
		8	Pupils explain why the order of addition and subtraction steps in a multi-step problem can be chosen
		9	Pupils accurately and efficiently solve multi-step addition and subtraction problems
		10	Pupils understand and can explain that both addition and subtraction equations can be used to describe the same additive relationship (2-digit numbers)
		11	Pupils understand and can explain that both addition and subtraction equations can be used to describe the same additive relationship (3-digit numbers)

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **4 weeks continued**	**4: Manipulating the additive relationship and securing mental calculation continued**	12	Pupils use knowledge of the additive relationship to rearrange equations
		13	Pupils use knowledge of the additive relationship to identify what is known and what is unknown in an equation
		14	Pupils use knowledge of the additive relationship to rearrange equations before solving
		15	Pupils rearrange missing number equations and use knowledge of the additive relationship to solve the problem
Spring 2 **2 weeks**	**5: Column addition** 1.20 – Algorithms: column addition	1	Pupils identify the addends and the sum in column addition
		2	Pupils use their knowledge of place value to correctly lay out column addition
		3	Pupils add a pair of 2-digit numbers using column addition
		4	Pupils add using column addition
		5	Pupils use their knowledge of column addition to solve problems
		6	Pupils add a pair of 2-digit numbers using column addition with regrouping in the ones column
		7	Pupils add a pair of 2-digit numbers using column addition with regrouping in the tens column
		8	Pupils add using column addition with regrouping
		9	Pupils use known facts and strategies to accurately and efficiently calculate and check column addition
		10	Pupils use their knowledge of column addition to solve problems
Spring 2 **3 weeks**	**6: 2, 4, 8 times tables** 2.7 – Times tables: 2, 4 and 8 and the relationship between them	1	Pupils represent counting in fours as the 4 times table
		2	Pupils use knowledge of the 4 times table to solve problems
		3	Pupils explain the relationship between adjacent multiples of four
		4	Pupils explain the relationship between multiples of 2 and multiples of 4
		5	Pupils use knowledge of the relationships between the 2 and 4 times tables to solve problems
		6	Pupils represent counting in eights as the 8 times table

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 2 **3 weeks continued**	**6: 2, 4, 8 times tables continued**	7	Pupils explain the relationship between adjacent multiples of eight
		8	Pupils explain the relationship between multiples of 4 and multiples of 8
		9	Pupils use knowledge of the relationships between the 4 and 8 times tables to solve problems
		10	Pupils explain the relationship between multiples of 2, 4 and multiples of 8
		11	Pupils use knowledge of the relationships between the 2, 4 and 8 times tables to solve problems
		12	Pupils use knowledge of the divisibility rules for divisors of 2 and 4 to solve problems
		13	Pupils use knowledge of the divisibility rules for divisors of 8 to solve problems
		14	Pupils scale known multiplication facts by 10
		15	Pupils scale division derived from multiplication facts by 10
Spring 2 **1 week**	**7: Column subtraction** 1.21 – Algorithms: Column subtraction	1	Pupils identify the minuend and the subtrahend in column subtraction
		2	Pupils explain the column subtraction algorithm
		3	Pupils subtract from a 2-digit number using column subtraction with exchanging from tens to ones
		4	Pupils subtract from a 3-digit number using column subtraction with exchanging from hundreds to tens (1)
		5	Pupils subtract from a 3-digit number using column subtraction with exchanging from hundreds to tens (2)
		6	Pupils evaluate the efficiency of strategies for subtraction

OVERVIEW OF MATHS UNITS – YEAR 3 – SUMMER TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **5 weeks**	**8: Unit fractions** 3.1 – Preparing for fractions: the part-whole relationship 3.2 – Unit fractions: identifying, representing and comparing Not from main spines – See DfE guidance	1	Pupils identify a whole and the parts that make it up
		2	Pupils explain why a part can only be defined when in relation to a whole
		3	Pupils identify the number of equal or unequal parts in a whole
		4	Pupils identify equal parts when they do not look the same (i)
		5	Pupils explain the size of the part in relation to the whole
		6	Pupils construct a whole when given a part and the number of parts
		7	Pupils identify how many equal parts a whole has been divided into
		8	Pupils use fraction notation to describe an equal part of the whole
		9	Pupils represent a unit fractions in different ways
		10	Pupils identify parts and wholes in different contexts (i)
		11	Pupils identify parts and wholes in different contexts (ii)
		12	Pupils identify equal parts when they do not look the same (ii)
		13	Pupils compare and order unit fractions by looking at the denominator
		14	Pupils identify when unit fractions cannot be compared
		15	Pupils construct a whole when given one part and the fraction that it represents
		16	Pupils use knowledge of the relationship between parts and wholes in unit fractions to solve problems
		17	Pupils identify the whole, the number of equal parts and the size of each part as a unit fraction
		18	Pupils quantify the number of items in each part and connect to the unit fraction operator
		19	Pupils calculate the value of a part by using knowledge of division and division facts

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **5 weeks continued**	**8: Unit fractions continued**	20	Pupils calculate the value of a part by connecting knowledge of division and division facts with finding a fraction of a quantity
		21	Pupils find fractions of quantities using knowledge of division facts with increasing fluency
Summer 1-2 **4 weeks**	**9: Non-unit-fractions** 3.3 – Non-unit fractions: identifying, representing and comparing 3.4 – Adding and subtracting within one whole	1	Pupils explain that non-unit fractions are composed of more than one unit fraction
		2	Pupils identify non-unit fractions
		3	Pupils identify the number of equal or unequal parts in a whole
		4	Pupils use knowledge of non-unit fractions to solve problems
		5	Pupils use knowledge of unit fractions to find one whole
		6	Pupils place fractions between 0 and 1 on a number line
		7	Pupils use repeated addition of a unit fraction to form a non-unit fraction
		8	Pupils use repeated addition of a unit fraction to form 1
		9	Pupils compare using knowledge of non-unit fractions equivalent to one
		10	Pupils compare non-unit fractions with the same denominator
		11	Pupils compare unit fractions
		12	Pupils compare fractions with the same numerator
		13	Pupils add up fractions with the same denominator
		14	Pupils add on fractions with the same denominator
		15	Pupils add fractions with the same denominator using a generalised rule
		16	Pupils subtract fractions with the same denominator
		17	Pupils identify the whole, the number of equal parts and the size of each part as a unit fraction
		18	Pupils explain that addition and subtraction of fractions are inverse operations

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1-2 **4 weeks**	**9: Non-unit-fractions continued**	19	Pupils subtract fractions from a whole by converting the whole to a fraction
		20	Pupils represent a whole as a fraction in different ways and use this to solve problems involving subtraction
Summer 2 **2 weeks**	**10: Parallel and perpendicular sides in polygons** DfE guidance	1	Pupils make compound shapes by joining two polygons in different ways (same parts, different whole)
		2	Pupils investigate different ways of composing and decomposing a polygon (same whole, different parts)
		3	Pupils draw polygons on isometric paper
		4	Pupils use geostrips to investigate quadrilaterals with and without parallel and perpendicular sides
		5	Pupils make and draw compound shapes with and without parallel and perpendicular sides
		6	Pupils learn to extend lines and sides to identify parallel and perpendicular lines
		7	Pupils make and draw triangles on circular geoboards
		8	Pupils make and draw quadrilaterals on circular geoboards
		9	Pupils draw shapes with given properties on a range of geometric grids
Summer 2 **1 week**	**11: Time** White Rose Maths	1	Pupils know the number of seconds in a minute and the number of days in each month, year and leap year
		2	Pupils use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight
		3	Pupils estimate and read time with increasing accuracy to the nearest minute
		4	Pupils record and compare time in terms of seconds, minutes, hours
		5	Pupils tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks
		6	Pupils compare duration of events, for example to calculate the time taken by particular events or tasks

OVERVIEW OF MATHS UNITS – YEAR 4 – AUTUMN TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **3 weeks**	**1: Review of column addition and subtraction** 1.20 – Algorithms: column addition 1.21 – Algorithms: column subtraction	1	Identify the addends and the sum in column addition
		2	Use their knowledge of place value to correctly lay out column addition
		3	Add a pair of 2-digit numbers using column addition
		4	Add using column addition
		5	Use their knowledge of column addition to solve problems
		6	Add a pair of 2-digit numbers using column addition with regrouping in the ones column
		7	Add a pair of 2-digit numbers using column addition with regrouping in the tens column
		8	Add using column addition with regrouping
		9	Use known facts and strategies to accurately and efficiently calculate and check column addition
		10	Use their knowledge of column addition to solve problems
		11	Identify the minuend and the subtrahend in column subtraction
		12	Subtract using column subtraction
		13	Subtract from a 2-digit number using column subtraction with exchanging from tens to ones
		14	Subtract from a 3-digit number using column subtraction with exchanging from hundreds to tens (1)
		15	Subtract from a 3-digit number using column subtraction with exchanging from hundreds to tens (2)
		16	Evaluate the efficiency of strategies for subtraction
Autumn 1 **5 weeks**	**2: Numbers to 10,000**	1	Explain how many tens, hundreds and ones 1,000 is composed of
		2	Use knowledge of 1,000 to explain common measure conversions
		3	Use knowledge of 1,000 to solve problems

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
	1.22 – Composition and calculation: 1,000 and four-digit numbers	4	Use different strategies to add multiples of 100
		5	Use different strategies to subtract multiples of 100
		6	Use knowledge of calculation and common measure conversions to solve problems
		7	Compose and decompose four-digit numbers in different ways
		8	Use strategies to make solving calculations more efficient
		9	Compare and order four-digit numbers
		10	Calculate efficiently by using knowledge of place value, addition and subtraction
		11	Explain what rounding is
		12	Round a four-digit number to the nearest thousand
		13	Round a four-digit number to the nearest hundred and ten
		14	Round a four-digit number to the nearest thousand, hundred and ten
		15	Add up to 3 four-digit numbers using a column addition
		16	Subtract four-digit numbers using a column subtraction
		17	Use strategies to make solving calculations more efficient
		18	Explain how many '100s' and '200s', 1,000 is composed of
		19	Explain how many '500s' and '250s', 1,000 is composed of
Autumn 2 **2 weeks**	**3: Perimeter** 2.16 – Multiplicative contexts: area and perimeter 1	1	A regular polygon has sides that are all the same length and interior angles that are all equal in size
		2	Perimeter is the distance around the edge of a two-dimensional shape
		3	Different shapes can have the same perimeter
		4	Perimeter is measured in units of length and can be found by counting units

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **2 weeks continued**	**3: Perimeter continued**	5	Perimeter can be calculated by adding together the side lengths of a 2D shape
		6	The perimeter of a rectangle can be calculated by addition and multiplication
		7	Unknown side lengths can be calculated from perimeter and known side lengths
		8	The perimeter of a regular polygon can be calculated by multiplication
		9	The side length of a regular polygon can be calculated by division where the perimeter is known
Autumn 2 **4 weeks**	**4: 3, 6, 9 times tables** 2.8 – Times Tables: 3, 6 and 9, and the relationship between them	1	Represent counting in threes as the three times table
		2	Explain the relationship between adjacent multiples of three
		3	Use knowledge of the three times table to solve problems
		4	Represent counting in sixes as the six times table
		5	Explain the relationship between adjacent multiples of six
		6	Use knowledge of the six times table to solve problems
		7	Use known facts from the five times table to solve problems involving the six times table
		8	Explain the relationship between multiples of three and multiples of six
		9	Use knowledge of the relationships between the three- and six-times tables to solve problems
		10	Represent counting in nines as the nine times table
		11	Explain the relationship between adjacent multiples of nine (1)
		12	Explain the relationship between adjacent multiples of nine (2)
		13	Use known facts from the ten times table to solve problems involving the nine times table
		14	Explain the relationship between multiples of three and multiples of nine
		15	Explain the relationship between pairs of three- and nine-times table facts that have the same product (1)

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **4 weeks**	**4: 3, 6, 9 times tables continued**	16	Explain the relationship between pairs of three- and nine-times table facts that have the same product (2)
		17	Use the divisibility rules for divisors of three
		18	Use the divisibility rules for divisors of six (1)
		19	Use the divisibility rules for divisors of six (2)

OVERVIEW OF MATHS UNITS – YEAR 4 – SPRING TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **2 weeks**	**5: 7 times table and patterns** 2.9 – Times Tables: 7 and patterns within / across times tables	1	Pupils represent counting in sevens as the 7 times table
		2	Pupils explain the relationship between adjacent multiples of seven
		3	Pupils use their knowledge of the 7 times table to solve problems
		4	Pupils identify patterns of odd and even numbers in the times tables
		5	Pupils represent a square number
		6	Pupils use knowledge of divisibility rules to solve problems
Spring 1-2 **5 weeks**	**6: Understanding and manipulating multiplicative relationships** 2.10 – Connecting multiplication and division, and the distributive law 2.13 – Calculation: multiplying and dividing by 10 and 100	1	Pupils explain what each factor represents in a multiplication equation
		2	Pupils explain how each part of a multiplication and division equation relates to a story
		3	Pupils explain where zero can be part of a multiplication or division expression and the impact it has
		4	Pupils partition one of the factors in a multiplication equation in different ways using representations (I)
		5	Pupils partition one of the factors in a multiplication equation in different ways using representations (II)
		6	Pupils explain which is the most efficient factor to partition to solve a multiplication problem
		7	Pupils use knowledge of distributive law to solve two part addition and subtraction problems, efficiently
		8	Pupils use knowledge of distributive law to calculate products beyond known times tables facts
		9	Pupils explain the relationship between multiplying a number by 10 and multiples of 10
		10	Pupils explain why a zero can be placed after the final digit of a single-digit number when we multiply it by 10
		11	Pupils explain why a zero can be placed after the final digit of a two-digit number when we multiply it by 10
		12	Pupils explain why the final digit zero can be removed from a two-digit multiple of 10, when we divide by 10
		13	Pupils explain why the final digit zero can be removed from a three-digit multiple of 10, when we divide by 10

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1-2 **5 weeks continued**	**6: Understanding and manipulating multiplicative relationships continued**	14	Pupils explain the relationship between multiplying a number by 100 and multiples of 100
		15	Pupils explain why two zeros can be placed after the final digit of a single-digit number when we multiply it by 100
		16	Pupils explain why two zeros can be placed after the final digit of a two-digit number when we multiply it by 100
		17	Pupils explain why the last two zeros can be removed from a three-digit multiple of 100 when we divide it by 100
		18	Pupils explain why the last two zeros can be removed from a four-digit multiple of 100 when we divide it by 100
		19	Pupils use knowledge of the composition of 100 to multiply by 100 in different ways
		20	Pupils use knowledge of the composition of 100 to divide by 100 in different ways
		21	Pupils explain how making a factor 10 times the size affects the product
		22	Pupils explain how making the dividend 10 times the size affects the quotient
		23	Pupils explain how making a factor 100 times the size affects the product
		24	Pupils explain how making the dividend 100 times the size affects the quotient
		25	Pupils scale known multiplication facts by 100
		26	Pupils scale division derived from multiplication facts by 100
Spring 2 **2 weeks**	**7: Coordinates** DfE guidance	1	Pupils give directions from one position to another on a grid
		2	Pupils move objects including polygons on a grid according to directions, and mark the new position
		3	Pupils describe translations of polygons drawn on a square grid
		4	Pupils draw polygons specified by translations
		5	Pupils mark points specified as a translation from the origin
		6	Pupils mark the position of points specified by coordinates in the first quadrant of a coordinate grid, and write coordinates for already-marked points
		7	Pupils draw polygons specified by coordinates in the first quadrant
		8	Pupils translate polygons in the first quadrant

OVERVIEW OF MATHS UNITS – YEAR 4 – SUMMER TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **1 week**	**8: Review of fractions** 3.1 – Preparing for fractions: the part-whole relationship	1	Pupils identify a whole and the parts that make it up
		2	Pupils explain why a part can only be defined when in relation to a whole
		3	Pupils identify the number of equal or unequal parts in a whole
		4	Pupils identify equal parts when they do not look the same
		5	Pupils explain the size of the part in relation to the whole
		6	Pupils construct a whole when given a part and the number of parts
Summer 1 **5 weeks**	**9: Fractions greater than 1** 3.5 – Working across one whole: improper fractions and mixed numbers	1	Pupils explain how to express quantities made up of both whole numbers and a fractional part
		2	Pupils explain how a quantity made up of whole numbers and a fractional part is composed
		3	Pupils compose and decompose quantities made of whole numbers and fractional parts
		4	Pupils accurately label a range of number lines and explain the meaning of each part
		5	Pupils identify numbers on marked but unlabelled number lines
		6	Pupils estimate the position of numbers on a number line using fraction sense
		7	Pupils compare and order mixed numbers using fraction sense
		8	Pupils compare and order mixed numbers when the whole number is the same
		9	Pupils compare and order mixed numbers when the whole number and the numerator of the fractional part is the same
		10	Pupils make efficient choices about the order they solve an addition problem in
		11	Pupils make efficient choices about the order they solve a subtraction problem in
		12	Pupils express a quantity as a mixed number and an improper fraction (quarters)

Summer 1 **5 weeks continued**	**9: Fractions greater than 1 continued**	13	Pupils convert a quantity from an improper fraction to a mixed number (quarters)
		14	Pupils express and convert a quantity from an improper fraction to a mixed number (fifths)
		15	Pupils explain how an improper fraction is converted into a mixed number (any unit)
		16	Pupils explain how a mixed number is converted into an improper fraction
		17	Pupils add mixed numbers
		18	Pupils subtract a proper fraction from a mixed number (converting to an improper fraction first)
		19	Pupils subtract a mixed number from a mixed number and explain which strategy is most efficient
		20	Pupils use knowledge of subtraction to choose correct and efficient approaches when subtracting mixed numbers
Summer 2 **2 weeks**	**10: Symmetry in 2D shapes** DfE guidance	1	Pupils complete a symmetrical pattern
		2	Pupils compose symmetrical shapes from two congruent shapes
		3	Pupils investigate lines of symmetry in 2D shapes by folding paper shape cut-outs
		4	Pupils find lines of symmetry in 2D shapes using a mirror
		5	Pupils reflect polygons in a line of symmetry
		6	Pupils reflect polygons that are dissected by a line of symmetry
Summer 2 **1 week**	**11: Time** White Rose Maths	1	Pupils can convert 12-hour to 24-hour time and vice versa
		2	Pupils can convert hours to minutes and vice versa
		3	Pupils can convert minutes to seconds and vice versa
		4	Pupils can solve questions involving the number of days in a week

Summer 2 **2 weeks**	**12: Division with remainders** 2.12 – Division with remainders	1	Pupils interpret a division story when there is a remainder and represent it with an equation (i)
		2	Pupils interpret a division story when there is a remainder and represent it with an equation (ii)
		3	Pupils interpret a division story when there is a remainder and represent it with an equation (iii)
		4	Pupils explain how the remainder relates to the divisor in a division equation
		5	Pupils explain when there will and will not be a remainder in a division equation
		6	Pupils use knowledge of division equations and remainders to solve problems
		7	Pupils interpret the answer to a division calculation to solve a problem (i)
		8	Pupils interpret the answer to a division calculation to solve a problem (ii)

OVERVIEW OF MATHS UNITS – YEAR 5 – AUTUMN TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **5 weeks**	**1: Decimal fractions** 1.23 – Composition and calculation: tenths 1.24 – Composition and calculation: hundredths and thousandths	1	Identify tenths as part of a whole
		2	Describe and represent tenths as a decimal fraction
		3	Count in tenths in different ways
		4	Describe and write decimal numbers with tenths in different ways
		5	Compare and order decimal numbers with tenths
		6	Explain that decimal numbers with tenths can be composed additively
		7	Explain that decimal numbers with tenths can be composed multiplicatively
		8	Use their knowledge to calculate with decimal numbers within and across one whole
		9	Use their knowledge to calculate with decimal numbers using mental methods
		10	Use their knowledge to calculate with decimal numbers using column addition and subtraction
		11	Use representations to round a decimal number with tenths to the nearest whole number
		12	Identify hundredths as part of a whole
		13	Describe and represent hundredths as a decimal fraction
		14	Describe and write decimals numbers with hundredths in different ways
		15	Compare and order decimal numbers with hundredths
		16	Explain that decimal numbers with hundredths can be partitioned in different ways
		17	Use their knowledge of decimal place value to convert between and compare metres and centimetres
		18	Explain that different lengths can be composed additively and multiplicatively
		19	Use their knowledge of decimal place value to solve problems in different contexts

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **5 weeks continued**	**1: Decimal fractions continued**	20	Use their knowledge to calculate with decimal numbers up to and bridging one tenth
		21	Use their knowledge to calculate with decimal numbers using column addition and subtraction
		22	Round a decimal number with hundredths to the nearest tenth
		23	Round a decimal number with hundredths to the nearest whole number
		24	Read and write numbers with up to three decimal places
		25	Compare and order numbers with up to three decimal places
Autumn 1 **2 weeks**	**2: Money** 1.25 – Addition and subtraction: money	1	Explain and represent whole pounds as a quantity of money
		2	Explain and represent whole pounds and pence as a quantity of money
		3	Explain how to compare amounts of money
		4	Convert quantities of money between pounds and pence
		5	Use their knowledge of addition to efficiently add commonly used prices
		6	Use their knowledge of subtraction to calculate the change due when paying whole pounds or notes
		7	Use and explain the most efficient strategies when adding quantities of money
		8	Use and explain the most efficient strategies when subtracting quantities of money
		9	Find the change when purchasing several items
		10	Use the most efficient and reliable strategy to find the change when purchasing several items
Autumn 2 **2 weeks**	**3: Negative numbers** 1.27 – Negative numbers: counting, comparing, calculating	1	Represent a change story using addition and subtraction symbols
		2	Interpret numbers greater than and less than zero in different contexts
		3	Read and write negative numbers
		4	Explain how the value of a number relates to its position from zero

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **2 weeks continued**	**3: Negative numbers continued**	5	Identify and place negative numbers on a number line
		6	Interpret sets of negative and positive numbers in a range of contexts
		7	Use their knowledge of positive and negative numbers to calculate intervals
		8	Explain how negative numbers are used on a coordinate grid
		9	Use their knowledge of positive and negative numbers to interpret graphs
Autumn 2 **6 weeks** *Spring term as required*	**4: Short multiplication and short division** 2.14 – Multiplication: partitioning leading to short multiplication 2.15 – Division: partitioning leading to short division	1	Multiply a two-digit number by a single-digit number using partitioning and representations (no regroups)
		2	Multiply a two-digit number by a single-digit number using partitioning and representations (one regroup)
		3	Multiply a two-digit number by a single-digit number using partitioning and representations (two regroups)
		4	Multiply a two-digit number by a single-digit number using partitioning
		5	Multiply a two-digit number by a single-digit number using expanded multiplication (no regroups)
		6	Multiply a two-digit number by a single-digit number using short multiplication (no regroups)
		7	Multiply a two-digit number by a single-digit number using expanded multiplication (regrouping ones to tens)
		8	Multiply a two-digit number by a single-digit number using short multiplication (regrouping ones to tens)
		9	Multiply a two-digit number by a single-digit number using expanded multiplication (regrouping tens to 100s)
		10	Multiply a two-digit number by a single-digit number using short multiplication (regrouping tens to hundreds)
		11	Multiply a two-digit number by a single-digit number using both expanded and short multiplication (two regroups)
		12	Use estimation to support accurate calculation
		13	Multiply a three-digit number by a single-digit number using partitioning and representations
		14	Multiply a three-digit number by a single-digit number using partitioning
		15	Multiply a three-digit number by a single-digit number using expanded and short multiplication (no regroups)
		16	Multiply a three-digit number by a single-digit number using expanded and short multiplication (one regroup)
		17	Multiply a three-digit number by a single-digit number using expanded and short multiplication (multiple regroups)

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **6 weeks continued** *Spring term as required*	**4: Short multiplication and short division continued**	18	Use estimation to support accurate calculation
		19	Divide a two-digit number by a single-digit number using partitioning and representations (no remainders, no exchanging)
		20	Divide a two-digit number by a single-digit number using partitioning and representations (with exchanging)
		21	Divide a two-digit number by a single-digit number using partitioning and representations (with exchanging and remainders)
		22	Divide a two-digit number by a single-digit number using short division (no exchanging, no remainders)
		23	Divide a two-digit number by a single-digit number using short division (with exchanging)
		24	Divide a two-digit number by a single-digit number using short division (with exchanging and remainders)
		25	Divide a three-digit number by a single-digit number using partitioning and representations (no exchanging, no remainders)
		26	Divide a three-digit number by a single-digit number using partitioning and representations (one exchange, no remainders)
		27	Divide a three-digit number by a single-digit number using partitioning and representations (with exchanging and remainders)
		28	Divide a three-digit number by a single-digit number using short division
		29	Divide a three-digit number by a single-digit number using short division (with exchanging and remainders)
		30	Solve short division problems accurately when the hundreds digit is smaller than the divisor
		31	Use efficient strategies of division to solve problems

OVERVIEW OF MATHS UNITS – YEAR 5 – SPRING TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **5 weeks**	**5: Area and scaling** 2.16 – Multiplicative contexts: area and perimeter 1 2.17 – Structures: using measures and comparison to understand scaling	1	Pupils explain what area is and can measure using counting as a strategy (1)
		2	Pupils explain what area is and can measure using counting as a strategy (2)
		3	Pupils explain how to make different shapes with the same area
		4	Pupils explain how to compare the area of different shapes
		5	Pupils measure the area of flat shapes area using square centimetres
		6	Pupils measure the area of flat shapes area using square metres
		7	Pupils calculate the area of a rectangle using multiplication
		8	Pupils calculate the area of rectilinear shapes
		9	Pupils use their knowledge of area to solve problems
		10	Pupils compare and describe lengths by using their knowledge of multiplication
		11	Pupils use their knowledge of multiplication to solve comparison and change problems
		12	Pupils compare and describe lengths by using their knowledge of division
		13	Pupils use their knowledge of division to solve comparison and change problems
		14	Pupils compare and describe measurements by using their knowledge of multiplication and division (mass/capacity/time) (1)
		15	Pupils compare and describe measurements by using their knowledge of multiplication and division (mass/capacity/time) (2)
		16	Pupils describe the changes in measurements using their knowledge of multiplication and division
		17	Pupils use their knowledge of multiplication and division to solve comparison and change problems

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1-2 **3 weeks**	**6: Calculating with decimal fractions** 2.29 – Decimal place value knowledge, multiplication and division 2.19 – Calculation: x/÷ decimal fractions by whole numbers	1	Pupils explain the effect of multiplying and dividing a number by 10, 100 and 1,000 (1)
		2	Pupils explain the effect of multiplying and dividing a number by 10, 100 and 1,000 (2)
		3	Pupils explain how to multiply and divide a number by 10, 100 and 1,000 (first 'number' two or more non-zero digits)
		4	Pupils use their knowledge of multiplication and division by 10/100/1,000 to convert between units of measure (length)
		5	Pupils use their knowledge of multiplication and division by 10/100/1,000 to convert between units of measure (mass and capacity)
		6	Pupils explain how to use known multiplication facts and unitising to multiply decimal fractions by whole numbers (tenths)
		7	Pupils explain how to use known multiplication facts and unitising to multiply decimal fractions by whole numbers (hundredths)
		8	Pupils use their knowledge of multiplying decimal fractions by whole numbers to solve measures problems
		9	Pupils explain the relationship between multiplying by 0.1 dividing by 10
		10	Pupils explain the relationship between multiplying by 0.01 dividing by 100
		11	Pupils explain how to use multiplying by 10 or 100 to multiply one-digit numbers by decimal fractions (1)
		12	Pupils explain how to use multiplying by 10 or 100 to multiply one-digit numbers by decimal fractions (2)
		13	Pupils explain how to use the size of the multiplier to predict the size of the product compared to the multiplicand
		14	Pupils explain how to use multiplying by 10 or 100 to divide decimal fractions by one-digit numbers (1)
		15	Pupils explain how to use multiplying by 10 or 100 to divide decimal fractions by one-digit numbers (2)
Spring 2 **4 weeks**	**7: Factors, multiples and primes** 2.20 – Multiplication with three factors and volume	1	Pupils explain what 'volume' is using a range of contexts
		2	Pupils describe the units used to measure volume
		3	Pupils explain how to calculate the volume of a cuboid
		4	Pupils explain what a cube number is
		5	Pupils use their knowledge of calculating volume to solve problems in a range of contexts

Spring 2 **4 weeks continued**	2.21 – Factors, multiples, prime numbers and composite numbers	6	Pupils explain how to calculate the volume of compound shapes
		7	Pupils explain the use of the commutative and distributive laws when multiplying three or more numbers
		8	Pupils explain the reasons for changing two-factor multiplication calculations to three-factor multiplications
		9	Pupils explain what a factor is and how to use arrays and multiplication/division facts to find them
		10	Pupils explain how to systematically find all factors of a number and how they know when they have found them all
		11	Pupils use a complete list of factors to explain when a number is a square number
		12	Pupils explain how to identify a prime number or a composite number
		13	Pupils explain how to identify a common factor or a prime factor of a number
		14	Pupils explain how to identify a multiple or common multiple of a number
		15	Pupils use knowledge of properties of number to solve problems in a range of contexts
		16	Pupils explain how to use the factor pairs of '100' to solve calculations efficiently

OVERVIEW OF MATHS UNITS – YEAR 5 – SUMMER TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **7 weeks**	**8: Fractions** 3.6 – Multiplying whole numbers and fractions 3.7 – Finding equivalent fractions and simplifying fractions 3.10 – Linking fractions, decimals and percentages	1	Pupils explain the relationship between repeated addition of a proper fraction and multiplication of unit fractions
		2	Pupils explain the relationship between repeated addition of and multiplication of non-unit proper fractions
		3	Pupils multiply a proper fraction by a whole number (within a whole)
		4	Pupils multiply a proper fraction by a whole number (greater than a whole)
		5	Pupils multiply an improper fraction by a whole number
		6	Pupils multiply a mixed number by a whole number (product is within a whole)
		7	Pupils multiply a mixed number by a whole number (product is greater than a whole)
		8	Pupils find a unit fraction of a quantity
		9	Pupils explain the relationship between finding a fraction of a quantity and multiplying a whole number by a unit fraction
		10	Pupils explain the relationship between dividing and multiplying a whole number by a unit fraction
		11	Pupils use their knowledge of multiplying a whole number by a unit fraction to solve problems
		12	Pupils find a non-unit fraction of a quantity (mental calculation)
		13	Pupils find a non-unit fraction of a quantity (written calculation)
		14	Pupils multiply a whole number by a proper fraction
		15	Pupils explain when a calculation represents scaling down and when it represents repeated addition
		16	Pupils find the whole when the size of a unit fraction is known
		17	Pupils find a unit fraction when the size of a non-unit fraction is known
		18	Pupils find the whole when the size of a non-unit fraction is known
		19	Pupils find the unit fraction when the size of a non-unit fraction is known

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **7 weeks continued**	**8: Fractions continued**	20	Pupils use representations to describe and compare two fractions (1/4 and 3/12)
		21	Pupils use representations to describe and compare two fractions (1/5 and 5/10)
		22	Pupils use representations to describe and compare two fractions (pouring context)
		23	Pupils correctly use the language of equivalent fractions
		24	Pupils explain the vertical relationship between numerators and denominators within equivalent fractions (1/5, 1/3 and equivalent)
		25	Pupils use their knowledge of the vertical relationship to solve equivalent fractions problems
		26	Pupils explain the horizontal relationship between numerators and denominators across equivalent fractions (1/5, 1/3 and equivalent)
		27	Pupils explain the relationship within families of equivalent fractions
		28	Pupils use their knowledge of equivalent fractions to solve problems
		29	Pupils explain and represent how to divide 1 into different amounts of equal parts
		30	Pupils identify and describe patterns within the number system
		31	Pupils use their knowledge of common equivalents to compare fractions with decimals
		32	Pupils practise recalling common fraction-decimal equivalents
Summer 2 **2 weeks**	**9: Converting units** DfE guidance	1	Pupils apply memorised unit conversions to convert between units of measure (larger to smaller units - whole number conversions)
		2	Pupils apply memorised unit conversions to convert between units of measure (smaller to larger units - whole number conversions)
		3	Pupils convert from and to fraction and decimal fraction quantities of larger units
		4	Pupils derive common conversions over 1
		5	Pupils carry out conversions that correspond to 100 parts
		6	Pupils solve measures problems involving different units

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 2 **2 weeks continued**	**9: Converting units continued**	7	Pupils understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
		8	Pupils convert between miles and kilometres
		9	Pupils solve problems involving converting between units of time
Summer 1 **3 weeks**	**10: Angles** DfE guidance	1	Pupils compare the size of angles where there is a clear visual difference
		2	Pupils use the terms acute, obtuse and reflex when describing the size of angles or amount of rotation with relation to right angles
		3	Pupils use a unit called degrees (°) as a standard unit to measure angles
		4	Pupils estimate the size of angles in degrees using angle sets
		5	Pupils measure the size of angles accurately using a protractor

OVERVIEW OF MATHS UNITS – YEAR 6 – AUTUMN TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **6 weeks**	**1: Calculating using knowledge of structures (1)** 1.28 – Common structures and the part-part-whole relationship 1.29 – Using equivalence and the compensation category to calculate	1	Explain how a combination of different parts can be equivalent to the same whole and can represent this in an expression
		2	Identify structures within stories and use their knowledge of structures to create stories
		3	Identify the missing part using their knowledge of part-whole relationships and structures
		4	Interpret and represent a part-whole problem with 3 addends using a model
		5	Create stories to correctly match a structure presented in a model
		6	Use their knowledge of additive structures to solve problems
		7	Calculate the value of a missing part (1)
		8	Calculate the value of a missing part (2)
		9	Correctly represent an equation in a part-whole model
		10	Explain how adjusting both addends affect the sum (2-digit numbers)
		11	Explain how adjusting both addends affect the sum (decimal fractions)
		12	Use the 'same sum' rule to balance equations
		13	Use the 'same sum' rule to balance equations with an unknown
		14	Explain how adjusting one addend affects the sum
		15	Solve addition calculations mentally by using known facts
		16	Solve calculations with missing addends
		17	Explain how adjusting both the minuend and subtrahend by the same amount affects the difference
		18	Explain how using the 'same difference' rule can make mental calculation easier (1)

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 1 **6 weeks continued**	**1: Calculating using knowledge of structures (1) continued**	19	Explain how using the 'same difference' rule can make written calculation easier (2)
		20	Use the 'same difference' rule to balance equations
		21	Explain how increasing or decreasing the minuend affects the difference (1)
		22	Explain how increasing or decreasing the minuend affects the difference (2)
		23	Solve subtraction calculations mentally by using known facts
		24	Explain how adjusting the minuend can make mental calculation easier
		25	Explain how adjusting the subtrahend affects the difference
		26	Explain how increasing or decreasing the subtrahend affects the difference
		27	Calculate the difference using their knowledge of an adjusted subtrahend (1)
		28	Calculate the difference using their knowledge of an adjusted subtrahend (2)
Autumn 1 **2 weeks**	**2: Multiples of 1,000** 1.26 – Multiples of 1,000 up to 1,000,000	1	Explain how ten thousand can be composed
		2	Explain how one hundred thousand can be composed
		3	Read and write numbers up to one million (1)
		4	Read and write numbers up to one million (2)
		5	Identify and place the position of five-digit multiple of one thousand numbers, on a marked, but unlabelled number line
		6	Identify and place the position of six-digit multiple of one thousand numbers, on a marked, but unlabelled number line
		7	Count forwards and backwards in steps of powers of 10, from any multiple of 1,000
		8	Explain that 10,000 is composed of 5,000s 2,500s and 2,000s
		9	Explain that 100,000 is composed of 50,000s 25,000s and 20,000s
		10	Read scales in graphing and measures contexts, by using their knowledge of the composition of 10,000 and 100,000

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **4 weeks**	**3: Numbers up to 10,000,000** 1.30 – Numbers up to 10,000,000	1	Use representations to identify and explain patterns in powers of 10
		1	Use representations to identify and explain patterns in powers of 10
		2	Compose seven or eight-digit numbers using common intervals
		3	Use their knowledge of the composition of up to eight-digit numbers to solve problems
		4	Explain how to read numbers with up to seven digits efficiently
		5	Recognise and create numbers that contain place-holding zeroes
		6	Determine the value of digits in numbers up to tens of millions
		7	Explain how to compare up to eight-digit numbers
		8	Use their knowledge of the composition of seven-digit numbers to solve problems
		9	Add and subtract mentally without bridging a boundary (only one and more than one-digit changes)
		10	Add numbers whilst crossing the millions boundary
		11	Subtract numbers whilst crossing the millions boundary (multiples of 100,000 and different powers of 10)
		12	Explain how a seven-digit number can be composed and decomposed into parts
		13	Identify and explain a pattern in a counting sequence
		14	Identify numbers with up to seven digits on marked number lines
		15	Estimate the value and position of numbers on unmarked or partially marked number lines
		16	Explain why we round and how to round seven-digit numbers to the nearest million
		17	Explain how to round seven-digit numbers to the nearest hundred thousand
		18	Explain how to round up to seven-digit numbers to any power of 10 in context
		19	Identify and explain the most efficient way to solve a calculation

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Autumn 2 **4 weeks**	**3: Numbers up to 10,000,000**	20	Add and subtract numbers with up to seven digits using column addition and subtraction
		21	Explore and explain different written and mental strategies to solving addition and subtraction problems
		22	Solve addition and subtraction problems and explain whether a mental or written strategy would be most efficient
Autumn 2 **2 weeks**	**4: Draw, compose and decompose shapes** 2.30 – Multiplicative contexts: area and perimeter 2	1	Use knowledge of shape properties to draw, sketch and identify shapes
		2	The same 3D shape can be composed from different 2D nets
		3	When a 2D shape is decomposed and the parts rearranged, the area remains the same. The area of a compound shape is therefore equal to the total of the areas of the constituent parts
		4	Any parallelogram can be decomposed and the parts rearranged to form a rectangular parallelogram
		5	Two congruent triangles can be composed to form a parallelogram
		6	Shapes with the same area can have different perimeters. Shapes with the same perimeters can have different areas
		7	We can use the relationship between area and side length, and perimeter and side length, to reason about measurements of shapes, including compound shapes

OVERVIEW OF MATHS UNITS – YEAR 6 – SPRING TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **4 weeks**	**5: Multiplication and division** 2.18 – Using equivalence to calculate 2.23 – Multiplication strategies for larger numbers and long multiplication 2.24 – Division: dividing by two-digit numbers 2.25 – Using compensation to calculate	1	Pupils explain why the product stays the same when one factor is doubled and the other is halved
		2	Pupils explain the effect on the product when scaling the factors by the same amount
		3	Pupils use their knowledge of equivalence when scaling factors to solve problems
		4	Pupils explain the effect on the quotient when scaling the dividend and divisor by 10
		5	Pupils explain the effect on the quotient when scaling the dividend and divisor by the same amount
		6	Pupils explain how to multiply a three-digit by a two-digit number
		7	Pupils explain how to accurately use the method of long multiplication to multiply two, two-digit numbers (no regrouping of ones to tens)
		8	Pupils explain how to accurately use the method of long multiplication (with regrouping of ones to tens)
		9	Pupils explain how to accurately use the method of long multiplication (with regrouping of ones to tens & tens to hundreds)
		10	Pupils explain how to accurately use the method of long multiplication to multiply a three-digit by a two-digit number
		11	Pupils explain how to accurately use the method of long multiplication to multiply a four-digit by a two-digit number
		12	Pupils explain how to use the associative law to multiply efficiently
		13	Pupils explain when it is more efficient to use long multiplication or factorising to multiply by two-digit numbers
		14	Pupils explain how to use accurately the methods of short and long division (two and three-digit number by multiples of 10)
		15	Pupils explain how to use accurately the method of long division with and without remainders (two-digit by two-digit numbers)
		16	Pupils use knowledge of long division to solve problems in a range of contexts (with and without remainders)
		17	Pupils explain how to use a ratio chart to solve efficiently: short division
		18	Pupils explain how to use a ratio chart to solve efficiently: long division

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 1 **4 weeks continued**	**5: Multiplication and division continued**	19	Pupils explain how to use a ratio chart to solve efficiently: long division (II)
		20	Pupils explain how to use accurately the method of long division with and without remainders (three-digit by two-digit, four-digit by two-digit numbers)
		21	Pupils use long division with decimal remainders (1 decimal place)
		22	Pupils use long division with fraction remainders
		23	Pupils use long division with decimal remainders (2 decimal places)
		24	Pupils use knowledge of the best way to interpret and represent remainders from a range of division contexts
		25	Pupils explain how and why a product changes when a factor changes multiplicatively
		26	Pupils use their knowledge of multiplicative change to solve problems efficiently (multiplication)
		27	Pupils explain how and why a quotient changes when a dividend changes multiplicatively (increase or decrease)
		28	Pupils explain how and why a quotient changes when a divisor changes multiplicatively
		29	Pupils identify and explain the relationship between divisors and quotients
Spring 1 **2 weeks**	**6: Area, perimeter, position and direction** 2.30 – Multiplicative contexts: area and perimeter 2	1	Pupils explain how to calculate the area of a parallelogram
		2	Pupils explain how to calculate the area of a triangle
		3	Pupils explain why shapes can have the same perimeters but different areas
		4	Pupils explain why shapes can have the same areas but different perimeters
		5	Pupils describe the relationship between scale factors and side lengths of two shapes
		6	Pupils describe the relationship between scale factors and perimeters of two shapes
		7	Pupils describe positions on the full coordinate grid (all four quadrants)
		8	Pupils draw and translate simple shapes on the coordinate plane and reflect them in the axes

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 2 **6 weeks**	**7: Fractions and percentages** 3.7 – Finding equivalent fractions and simplifying fractions 3.8 – Common denomination: more adding and subtracting 3.9 – Multiplying fractions and dividing fractions by a whole number 3.10 – Linking fractions, decimals and percentages	1	Pupils explain how to write a fraction in its simplest form
		2	Pupils reason and apply their knowledge of how to write a fraction in its simplest form
		3	Pupils use their knowledge of how to write a fraction in its simplest form when solving addition and subtraction problems (1)
		4	Pupils use their knowledge of how to write a fraction in its simplest form when solving addition and subtraction problems (2)
		5	Pupils use their knowledge of how to write a fraction in its simplest form when solving multiplication problems
		6	Pupils explain, using an image, how to add related fractions (unit fractions)
		7	Pupils explain what is meant by 'related fractions'
		8	Pupils explain, without using an image, how to add related fractions
		9	Pupils use their knowledge of adding related fractions to solve problems in a range of contexts
		10	Pupils explain, with and without using an image, how to subtract related fractions (unit fractions)
		11	Pupils use their knowledge of adding and subtracting related fractions to solve problems in a range of contexts
		12	Pupils explain, with and without using an image, how to add and subtract related fractions (non-unit fractions)
		13	Pupils explain, with and without using an image, how to add and subtract related fractions (non-unit fractions that bridge the whole)
		14	Pupils use their fraction sense to fraction addition, subtraction and comparison
		15	Pupils explain how to add or subtract non-related fractions with different denominators
		16	Pupils use their knowledge of adding or subtracting non-related fractions with different denominators to solve problems in a range of contexts (non related fractions)
		17	Pupils explain how to compare pairs of non-related fractions (converting to common denominators)
		18	Pupils explain how to compare pairs of non-related fractions (using fraction sense)
		19	Pupils explain how to compare pairs of non-related fractions (using common numerators)
		20	Pupils explain which method for comparing non-related fractions is most efficient

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Spring 2 **6 weeks continued**	**7: Fractions and percentages continued**	21	Pupils explain how to multiply two unit fractions
		22	Pupils explain how to multiply two non-unit fractions
		23	Pupils explain how to divide a unit fraction by a whole number
		24	Pupils explain how to divide a non-unit fraction by a whole number
		25	Pupils explain when and how to divide efficiently a fraction by a whole number
		26	Pupils explain what percent means
		27	Pupils explain how to represent a percentage in different ways
		28	Pupils explain how to convert percentages to decimals and fractions (with a denominator of 100)
		29	Pupils explain how to convert a percentage to a fraction (without denominator of 100)
		30	Pupils use their knowledge of fraction-decimal-percentage conversions to solve conversion problems in a range of contexts
		31	Pupils use their knowledge of calculating 50%, 10% and 1% of a number to solve problems in a range of contexts
		32	Pupils use their knowledge of calculating common percentages of a number to solve problems in a range of contexts
		33	Pupils use their knowledge of calculating any percentage of a number to solve problems in a range of contexts
		34	Pupils explain how to solve problems where the percentage part and the size of the part is known and the whole is unknown
		35	Pupils explain how to solve problems where the known percentage part and the size of the part changes the whole

OVERVIEW OF MATHS UNITS – YEAR 6 – SUMMER TERM

TERM/WEEKS	UNIT/SPINE	LO	OBJECTIVE
Summer 1 **2 weeks**	**Revision as determined by class teachers**		
Summer 1 **1 week**	**SATs**		
Summer 1 **1 week**	**8: Statistics** White Rose Maths	1	Pupils identify common fractions from a pie chart
		2	Pupils solve problems involving pie charts and angles
		3	Pupils understand what a line graph is used to represent
		4	Pupils read scales divided into 2, 4, 5 and 10 equal parts
		5	Pupils solve problems involving line graphs
Summer 1 **2 weeks**	**9: Ratio and proportion** 2.27 – Scale factors, ratio and proportional reasoning	1	Pupils describe the relationship between two factors (in a ratio context)
		2	Pupils explain how to use multiplication and division to calculate unknown values (two variables)
		3	Pupils explain how to use multiplication and division to calculate unknown values (three variables)
		4	Pupils explain how to use a ratio grid to calculate unknown values
		5	Pupils explain how to use multiplication to solve correspondence problems

Summer 1 **2 weeks continued**	**9: Ratio and proportion continued**	6	Pupils explain how and why scaling is used to make and interpret maps
		7	Pupils will use their knowledge of multiplication and division to solve scaling problems in a range of contexts
		8	Pupils identify and describe the relationship between two shapes using scale factors (squares)
		9	Pupils identify and describe the relationship between two shapes using scale factors and ratios (regular polygons)
		10	Pupils identify and describe the relationship between two shapes using scale factors and ratios (irregular polygons)
Summer 2 **1 week**	**10: Calculate using knowledge of structures (2)** 1.29 – Using equivalence and compensation property to calculate	1	Pupils explain how to balance equations with addition expressions
		2	Pupils explain how to balance equations with subtraction expressions
		3	Pupils explain how to balance equations with addition or subtraction expressions
		4	Pupils explain how to balance equations with addition and subtraction expressions
		5	Pupils use their knowledge of balancing equations to solve problems
Summer 2 **2 weeks**	**11: Solving problems with 2 unknowns** 1.31 – Problems with 2 unknowns	1	Pupils compare the structure of problems with one or two unknowns
		2	Pupils compare the structure of problems with two unknowns
		3	Pupils represent the structure of contextual problems with two unknowns
		4	Pupils represent a problem with two unknowns using a bar model
		5	Pupils explain why sometimes there is only one solution to a sum and difference problem
		6	Pupils explain why sometimes there is only one solution to a sum and multiple problem
		7	Pupils explain the values a part-whole model could represent
		8	Pupils use a bar model to visualise how to solve a problem with two unknowns
		9	Pupils use diagrams to explain how to solve a spatial problem
		10	Pupils explain how to represent an equation with a bar model
		11	Pupils solve problems with two unknowns in a range of contexts
		12	Pupils systematically solve problems with two unknowns using 'trial and improvement' (one or several solutions)

Summer 2 **2 weeks continued**	**11: Solving problems with 2 unknowns continued**	13	Pupils explain how I know I have found all possible solutions to problems with two unknowns
		14	Pupils explain how to balance an equation with two unknowns
		15	Pupils systematically solve problems with two unknowns using 'trial and improvement' (one, several and infinite solutions)
Summer 2 **1 week**	**12: Order of operations** 2.26 – Combining multiplication with addition and subtraction 2.28 – Combining division with + and subtraction	1	Pupils explain how addition and subtraction can help to solve multiplication problems efficiently (I)
		2	Pupils explain how addition and subtraction can help to solve multiplication problems efficiently (II)
		3	Pupils explain how the distributive law applies to multiplication expressions with a common factor (addition)
		4	Pupils use their knowledge of the distributive law to solve equations including multiplication, addition and subtraction
		5	Pupils explain how addition and subtraction can help to solve division problems efficiently
		6	Pupils explain how the distributive law applies to division expressions with a common divisor (addition)
		7	Pupils explain how the distributive law applies to division expressions with a common divisor (subtraction)
		8	Pupils use their knowledge of the distributive law to solve equations including division, addition and subtraction
Summer 2 **1 week**	**13: Mean average** 2.26 – Mean average and equal shares	1	Pupils explain the relationship between the mean and sharing equally
		2	Pupils explain how to calculate the mean of a set of data
		3	Pupils explain how the mean changes when the total quantity or number of values changes
		4	Pupils explain how to calculate the mean when one of the values in the data set is zero or missing
		5	Pupils explain how to use the mean to make comparisons between two sets of information
		6	Pupils explain when the mean is not an appropriate representation of a set of data

PROGRESSION GUIDANCE FOR MATHS – NUMBER AND PLACE VALUE

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Number and place value					
1NPV–1 Count within 100, forwards and backwards, starting with any number.		**3NPV–1** Know that 10 tens are equivalent to 1 hundred, and that 100 is 10 times the size of 10; apply this to identify and work out how many 10s there are in other three-digit multiples of 10.	**4NPV–1** Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.	**5NPV–1** Know that 10 tenths are equivalent to 1 one, and that 1 is 10 times the size of 0.1. Know that 100 hundredths are equivalent to 1 one, and that 1 is 100 times the size of 0.01. Know that 10 hundredths are equivalent to 1 tenth, and that 0.1 is 10 times the size of 0.01.	**6NPV–1** Understand the relationship between powers of 10 from 1 hundredth to 10 million, and use this to make a given number 10, 100, 1,000, 1 tenth, 1 hundredth or 1 thousandth times the size (multiply and divide by 10, 100 and 1,000).
	2NPV–1 Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and non-standard partitioning.	**3NPV–2** Recognise the place value of each digit in three-digit numbers, and compose and decompose three-digit numbers using standard and non-standard partitioning.	**4NPV–2** Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning.	**5NPV–2** Recognise the place value of each digit in numbers with up to 2 decimal places, and compose and decompose numbers with up to 2 decimal places using standard and non-standard partitioning.	**6NPV–2** Recognise the place value of each digit in numbers up to 10 million, including decimal fractions, and compose and decompose numbers up to 10 million using standard and non-standard partitioning.
					Identify and place the position of five- and six-digit multiples of one thousand numbers, on a marked, but unlabelled number line.
1NPV–2 Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =.	**2NPV–2** Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.	**3NPV–3** Reason about the location of any three-digit number in the linear number system, including identifying the previous and next multiple of 100 and 10.	**4NPV–3** Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.	**5NPV–3** Reason about the location of any number with up to 2 decimals places in the linear number system, including identifying the previous and next multiple of 1 and 0.1 and rounding to the nearest of each.	**6NPV–3** Reason about the location of any number up to 10 million, including decimal fractions, in the linear number system, and round numbers, as appropriate, including in contexts.

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Number and place value					
		3NPV–4 Divide 100 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 100 with 2, 4, 5 and 10 equal parts.	**4NPV–4** Divide 1,000 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.	**5NPV–4** Divide 1 into 2, 4, 5 and 10 equal parts, and read scales/number lines marked in units of 1 with 2, 4, 5 and 10 equal parts.	**6NPV–4** Divide powers of 10, from 1 hundredth to 10 million, into 2, 4, 5 and 10 equal parts, and read scales/number lines with labelled intervals divided into 2, 4, 5 and 10 equal parts.
				5NPV–5 Convert between units of measure, including using common decimals and fractions.	
				Read and write negative numbers.	
				Interpret sets of negative and positive numbers in a range of contexts.	
				Use their knowledge of positive and negative numbers to interpret graphs.	
					Explain how ten thousand and one hundred thousand can be composed.
					Read and write numbers up to one million.

PROGRESSION GUIDANCE FOR MATHS – NUMBER FACTS

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Number facts					
1NF–1 Develop fluency in addition and subtraction facts within 10.	**2NF–1** Secure fluency in addition and subtraction facts within 10, through continued practice.	**3NF–1** Secure fluency in addition and subtraction facts that bridge 10, through continued practice.			
1NF–2 Count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers.		**3NF–2** Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.	**4NF–1** Recall multiplication and division facts up to, and recognise products in multiplication tables as multiples of the corresponding number.	**5NF–1** Secure fluency in multiplication table facts, and corresponding division facts, through continued practice.	
			4NF–2 Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, and interpret remainders appropriately according to the context.		
		3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10).	**4NF–3** Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 100).	**5NF–2** Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 1 tenth or 1 hundredth).	

PROGRESSION GUIDANCE FOR MATHS – ADDITION AND SUBTRACTION

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Addition and subtraction					
1AS–1 Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.	**2AS–1** Add and subtract across 10.	**2AS–1** Add and subtract across 10. **3AS–1** Calculate complements to 100.			**6AS/MD–1** Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).
1AS–2 Read, write and interpret equations containing addition ( ), subtraction ( ) and equals ( ) symbols, and relate additive expressions and equations to real-life contexts.	**2AS–2** Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more…?".	**3AS–2** Add and subtract up to three-digit numbers using columnar methods.	**3AS–2** Add and subtract up to three-digit numbers using columnar methods.	Use knowledge of addition to efficiently add commonly used prices. Use knowledge of subtraction to calculate the change due when paying whole pounds or notes. Find the change when purchasing several items.	**6AS/MD–2** Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.
	2AS–3 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a two-digit number.	**3AS–3** Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part–part–whole structure. Understand and use the commutative property of addition, and understand the		Use and explain the most efficient strategies when adding and subtracting quantities of money.	**6AS/MD–3** Solve problems involving ratio relationships.

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Addition and subtraction					
		related property for subtraction.		Use the most efficient and reliable strategy to find the change when purchasing several items.	
	2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.				**6AS/MD–4** Solve problems with 2 unknowns.
					Explain how addition and subtraction can help to solve multiplication and division problems efficiently.
					Explain how the distributive law applies to multiplication and division problems.
					Use knowledge of the distributive law to solve problems and equations including the four operations.

PROGRESSION GUIDANCE FOR MATHS – MULTIPLICATION AND DIVISION

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Multiplication and division					
	2MD–1 Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	**3MD–1** Apply known multiplication and division facts to solve contextual problems with different structures, including quotitive and partitive division.	**4MD–1** Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients); understand this as equivalent to making a number 10 or 100 times the size.	**5MD–1** Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.	**6AS/MD–1** Understand that 2 numbers can be related additively or multiplicatively, and quantify additive and multiplicative relationships (multiplicative relationships restricted to multiplication by a whole number).
	commutativity, doubling and halving **2MD–2** Relate grouping problems where the number of groups is unknown to multiplication equations with a missing factor, and to division equations (quotitive division).		**4MD–2** Manipulate multiplication and division equations, and understand and apply the commutative property of multiplication.	**5MD–2** Find factors and multiples of positive whole numbers, including common factors and common multiples, and express a given number as a product of 2 or 3 factors.	**6AS/MD–2** Use a given additive or multiplicative calculation to derive or complete a related calculation, using arithmetic properties, inverse relationships, and place-value understanding.
			4MD–3 Understand and apply the distributive property of multiplication.	**5MD–3** Multiply any whole number with up to 4 digits by any one-digit number using a formal written method.	**6AS/MD–3** Solve problems involving ratio relationships.
				5MD–4 Divide a number with up to 4 digits by a one-digit number using a formal written method, and interpret remainders appropriately for the context.	**6AS/MD–4** Solve problems with 2 unknowns. Explain how addition and subtraction can help to solve multiplication and division problems efficiently. Explain how the distributive law applies to multiplication and division problems.

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Multiplication and division					
					Use knowledge of the distributive law to solve problems and equations including the four operations.

PROGRESSION GUIDANCE FOR MATHS – FRACTIONS

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Fractions					
	count in fractions up to 10, starting from any number and using the 1/2 and 2/4 equivalence on the number line	**3F–1** Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.	**3F–1** Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.		**6F–1** Recognise when fractions can be simplified, and use common factors to simplify 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 an object, shape or quantity	recognise, find, name and write fractions (1/3, 1/4, 2/4 and 3/4) of a length, shape, set of objects or quantity	**3F–2** Find unit fractions of quantities using known division facts (multiplication tables fluency).		**5F–1** Find non-unit fractions of quantities.	**6F–2** Express fractions in a common denomination and use this to compare fractions that are similar in value.
	write simple fractions e.g. 1/2 of 6 = 3 and recognise the equivalence of 1/2 and 2/4	**3F–3** Reason about the location of any fraction within 1 in the linear number system.	**4F–1** Reason about the location of mixed numbers in the linear number system.		**6F–3** Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.
			4F–2 Convert mixed numbers to improper fractions and vice versa.	**5F–2** Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	
		3F–4 Add and subtract fractions with the same denominator, within 1.	**4F–3** Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.	**5F–3** Recall decimal fraction equivalents for $^{1}/_{2}$, $^{1}/_{4}$, $^{1}/_{5}$ and $^{1}/_{10}$, and for multiples of these proper fractions.	

PROGRESSION GUIDANCE FOR MATHS – GEOMETRY

Progression of skills and knowledge in Maths					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry					
1G–1 Recognise common 2D and 3D shapes presented in different orientations, and know that rectangles, triangles, cuboids and pyramids are not always similar to one another.	**2G–1** Describe and compare 2D and 3D shapes.	**3G–1** Recognise right angles as a property of shape or a description of a turn, and identify right angles in 2D shapes presented in different orientations.	**4G–1** Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.	**5G–1** Compare angles, estimate and measure angles in degrees (°) and draw angles of a given size.	
				5G–2 Compare areas and calculate the area of rectangles (including squares) using standard units.	Explain how to calculate the area of a triangle and a parallelogram.
1G–2 Compose 2D and 3D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations.		**3G–2** Draw polygons by joining marked points, and identify parallel and perpendicular sides.	**4G–1** Draw polygons, specified by coordinates in the first quadrant, and translate within the first quadrant.		**6G–1** Draw, compose, and decompose shapes according to given properties, including dimensions, angles and area, and solve related problems.
			4G–2 Identify regular polygons, including equilateral triangles and squares, as those in which the side-lengths are equal and the angles are equal. Find the perimeter of egular and irregular polygons.		Explain why shapes can have the same perimeters but different areas, and the same area but different perimeters.
					Describe the relationship between scale factors and side lengths of two shapes.
					Describe the relationship between scale factors and perimeters of two shapes.

Progression of skills and knowledge in Maths					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Geometry					
			4G–3 Identify line symmetry in 2D shapes presented in different orientations. Reflect shapes in a line of symmetry and complete a symmetric figure or pattern with respect to a specified line of symmetry.		
	Order and arrange combinations of mathematical objects in patterns and sequences.				
	Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).				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.

PROGRESSION GUIDANCE FOR MATHS – MEASUREMENT

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Measurement					
	Recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value			Explain and represent whole pounds and pence as a quantity of money.	
	Find different combinations of coins that equal the same amounts of money			Explain how to compare amounts of money.	
				Convert quantities of money between pounds and pence.	
	Solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change.				
	Compare and sequence intervals of time.				
	Tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.				
	Know the number of minutes in an hour and the number of hours in a day.				

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Measurement					
	Pupils use standard units of measurement with increasing accuracy, using their knowledge of the number system. They become fluent in telling the time on analogue clocks and recording it.	Read, write and convert time between 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.			
	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels.				
	Compare and order lengths, mass, volume/capacity and record the results using >, < and = .				

PROGRESSION GUIDANCE FOR MATHS – STATISTICS

Progression of skills and knowledge in Maths					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Statistics					
					Interpret and construct pie charts and line graphs and use these to solve problems.
					Calculate and interpret the mean as an average.
					Explain how to use the mean to make comparisons between two sets of information.
					Explain when the mean is not an appropriate representation of a set of data.

MOORTHORPE PRIMARY SCHOOL

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