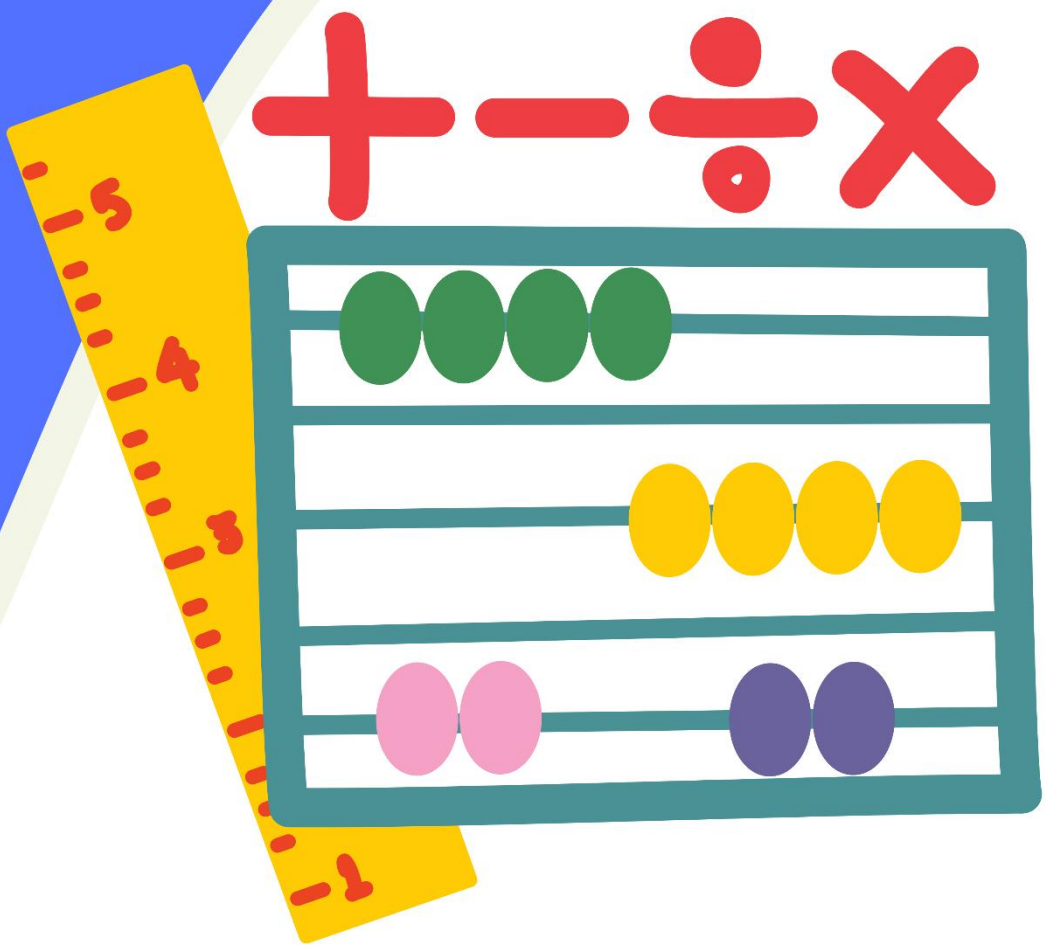


Mathematics

Curriculum Overview

Statement of Intent for Mathematics

At Masefield, we recognise the fascination and excitement that the subject of Mathematics has to offer. We believe that Mathematics is a subject to practically experience, not simply learn, and we engage children in the subject by linking mathematical concepts with their own daily life experiences. We aim to develop a passion for Mathematics, so that pupils are motivated to use their knowledge to make changes to the world and society they live in.

We believe that all pupils can achieve excellence in mathematics and so we deliver the requirements of the National Curriculum through our teaching for mastery approach. This way of teaching mathematics means that our teachers design lessons in a coherent and well organised way to make the learning inclusive and accessible to all. Time is valued and so fewer topics are taught in greater depth. Every child is individual and has their own creative way of thinking. We value and encourage reasoning and justification as mathematical structures are discovered, allowing pupils the chance to practice use of precise vocabulary to explain their thoughts. We help our pupils see the mathematical structures using a concrete, pictorial and abstract approach. As children develop in confidence, we encourage pupils to think flexibly to develop new and innovative ways to solve problems, drawing on their experiences from not just the Mathematics curriculum, but from personal and wider cross-curricular experiences.

At BASE Academy, we value quick recall of basic facts so as not to overload the working memory. Time is dedicated to learning key facts, meaning pupils can work more efficiently when working on challenging activities that deepen understanding. The language of mathematics is international and its importance is universally recognised. In our schools, our pupils learn technical vocabulary early as we value a common language when engaging in discussion and reflection of mathematics concepts.

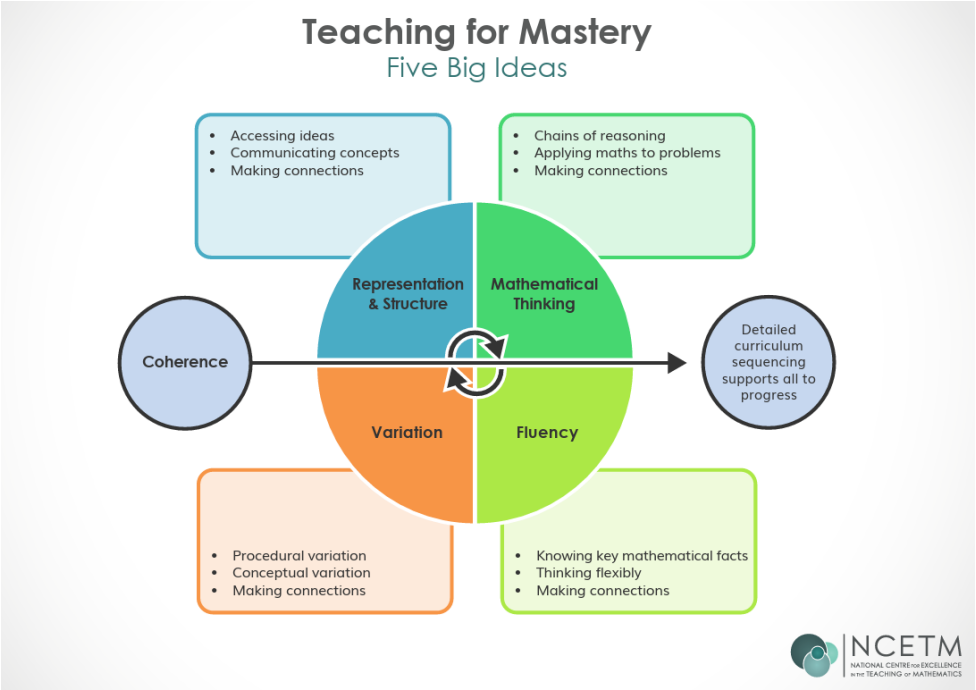
The school's long term plan for Mathematics sets out the content of teaching within in each year group. This is supported by the White Rose Education calculation policy which provides an overview of the different models and images that can support the teaching of different concepts. Short term planning details how this content is developed over a series of lessons within the unit of work. The organisation of the Mathematics curriculum provides structured opportunities for pupils to:

- Develop an ability to recall basic skills, including number bonds and times tables, and apply knowledge rapidly and accurately.
- Develop an ability to explain and justify thinking when solving problems and facing mathematical challenges.
- Develop their use of correct technical mathematical vocabulary and recognise its importance as a language for communication and thinking.
- Experience an excitement of discovery through teaching and learning of mathematical concepts, leading to a fascination of the subject
- Develop resilience alongside a positive and reflective attitude towards Maths
- Develop the ability to be competent, confident and flexible in using mathematical knowledge, concepts and skills.

The school calculation policy and Mathematics procedure document are used in conjunction with this policy.

Teaching and Learning in Mathematics

In addition to the conscious structure and design of the Maths curriculum, great consideration has been paid to the design of the implementation of the curriculum in the classroom. Teaching delivery will vary according to the activities being undertaken but will follow the principles set out in the Teaching and Learning Policy. A teaching for mastery approach is adopted across all year groups to ensure effective delivery of the intended curriculum.



Underpinning BASE Academy's Teaching for Mastery approach is a belief that all pupils can achieve in Maths. The approach rejects the idea that a large proportion of people 'just can't do maths'. All pupils are encouraged by the belief that by working hard at maths they can succeed. If pupils fail to grasp a concept or procedure, this is quickly identified and early intervention ensures the pupil is ready to move forward with the whole class in the next lesson.

When lessons are designed, the new mathematics to be taught, the key points, the difficult points and a carefully sequenced journey through the lesson is planned for. Key facts such as multiplication tables and addition facts within 10 are learnt to automaticity to avoid cognitive overload in the working memory and thus enables pupils to focus on new concepts.

The National Centre of Excellence in Teaching of Mathematics (NCETM) has developed Five Big Ideas of Mastery. They are as follows:

Coherence

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation.

Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others.

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics.

Variation

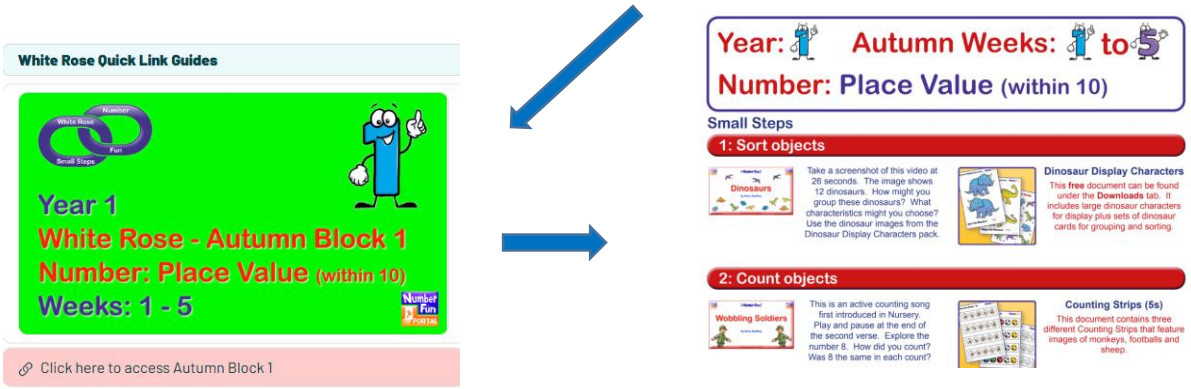
Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

Oracy and Mathematics

Our vision for Mathematics is closely aligned with Oracy, recognising that mathematical understanding is deepened through purposeful talk. We explicitly teach pupils how to articulate their thinking by using stem sentences to scaffold mathematical language, support reasoning and build confidence in explanation. Through making generalisations and focusing on the mathematical thinking element of the five Big Ideas of mastery, pupils are supported to develop clear chains of reasoning and justify their answers with precision. Opportunities for structured discussion enable pupils to explain, challenge and refine their ideas, while Number Fun songs further enhance learning by embedding key concepts and vocabulary in an engaging, memorable way.

A collection of year group appropriate stem sentences and generalisations can be found in the Appendices of this document.

Access to the Number Fun songs can be gained by logging into Euhu with the school's log in details. Relevant songs can be found for each Block from Nursery to Year 6 via the Quick Links guide on the homepage. Suggested songs and relevant resources can be downloaded/ played from here. A list of all available songs can be found in the appendices of this document.



Knowing More and Remembering More in Mathematics

At BASE Academy, we recognise the importance of retrieval practice in making learning more efficient. Retrieval practice allows our teachers to identify and address gaps in knowledge and check for misunderstandings, whilst simultaneously allowing children to make and strengthen connections between their knowledge and providing firmer foundations for future learning. In Mathematics, all teachers follow these agreed procedures to support the consolidation of prior learning and the incremental development of new learning:

The beginning of every unit

In order to assess prior knowledge, the teacher will present the children with the previous years' LbQ question set for that topic where applicable.

This low stakes quiz allows children the opportunity to recall and strengthen relevant prior knowledge which then can be built upon over the upcoming lessons. This also allows teachers the opportunity to identify and address any gaps in prior knowledge or misconceptions so that they can accurately adapt their teaching to ensure that children build a strong knowledge of the required content.

The beginning of every lesson

At the beginning of every lesson, the teacher will refer back to the previous lessons within the sequence of learning by presenting children with a Flashback 4 Challenge. This provides children the opportunity to recall prior knowledge and make connections between this and the new learning in the current lesson.

The end of each unit

At the end of each unit, the teacher will present the children with the LbQ question set for that unit. This is a low stakes quiz which will assess the children's knowledge of the required content in each unit.

This allows children yet another opportunity to recall and strengthen their learning from this unit. It also provides teachers with a clear picture of children's understanding, which will inform their summative assessments for the unit. This allows the teacher another opportunity to address gaps in knowledge or misconceptions.

Morning Maths

Through Morning Maths, the teacher will present the children with the LbQ question sets for all the units taught so far that year. These are low stakes quizzes will assess the children's knowledge of the required content in each unit.

This allows children multiple further opportunities to recall and strengthen their learning from previous units. It also provides teachers with a clear picture of children's understanding and how their knowledge and skills are developing incrementally. It allows them multiple further opportunities to address gaps in knowledge or misconceptions.

SEND – Adaptive Teaching Strategies to support and scaffold

- Adjust the level of challenge – e.g provide sentence stems and question prompts to support thinking, allow children to present their work in different ways (mind maps, collaborative work).
- Clarify/simplify a task or provide numbered steps with visual representations (objects, pictures, signs, photos).
- Use bold essential content from curriculum document.
- Re-explain a concept or explain it in a different way.
- Give additional (or revisit) examples.
- Use peer tutoring/collaborative learning (everyone must participate – give them roles).
- Provide additional scaffolds - e.g – pre-teach vocabulary, 'I do, we do, you', chunk learning into smaller chunks and break learning down into key knowledge, provide worked examples, provide sentence starters for writing, use media (photographs, film) and hands on resources, where possible.
- Set clear targets/expectations.
- Provide prompts/sentence stems – e.g provide/develop with children steps to success for children to work from, question prompts to support with thinking and reduce cognitive overload.
- Improve accessibility (e.g. proximity to speaker, visibility of whiteboard, read a text to the pupil) – e.g – child-friendly texts/media, where possible. When researching, use child appropriate websites.
- Consider pace - (extra time for responses to questions, contributing to class discussions and to complete activities).
- Provide vocabulary with visual images – e.g - explicitly teach vocabulary at the beginning of a unit alongside a picture of the key word, use photographs to represent the word when using it during the unit.
- Check understanding and reinforcing as needed through repetition, rephrasing, explaining and demonstration – e.g use of mini-plenaries to check understanding (quick quizzes).
- Have alternative ways to record learning, e.g. oral, photographic, video, highlighting text, mind maps, etc. – e.g give children a variety of ways to record their work (recording themselves, use of technology, mind maps), allow children to be creative in the ways that they present their work – they do not all have to be the same.
- Pre-teach vocabulary, key content etc.

More Able – Adaptive Teaching Strategies to stretch and challenge

- Identify and account for prior knowledge – a child who has extensive prior knowledge could be asked to present some of the knowledge they have to the class; explain something they understand easily to a child who doesn't 'get it' so quickly – e.g – peer modelling, a more able child could present interesting facts that they already know to the children, more able children given more challenging enquiry based questions to extend their learning.
- Build on interests to extend - read widely around a subject outside of lesson time by providing them with information about suitable material, e.g. give them suitable higher-level texts to read – e.g – Use of History Pupil Leaders to develop love of History, questions to research for home learning, projects to complete for home learning.
- Depth of content - consider what you can add to create depth, e.g. digging into an area more deeply, going laterally with a concept, or asking pupils to use more complex terminology to describe abstract ideas.
- Use questioning techniques to boost thinking – ask open-ended questions which require higher-order thinking - e.g – How……..Why……..What does this source tell us?
- Consider learner roles – ensure they are appropriately challenged through the role they are given so they can make an effective contribution; argue in favour of a viewpoint that is different to their own, e.g. argue the opposite position to that which they actually hold, during a class debate, take on a more supportive 'tutor' role during group work.
- Mastery - more intensive teaching, tutoring, peer-assisted learning, small group discussions, or additional homework. e.g - analyse and interpret sources (questions – what's this? What can we say for certain? What can we infer? Does this new source strengthen, amend or completely change our thinking? What doesn't the source tell us?
- Adapted success criteria/choice of task – offer a choice of tasks with a different level of challenge.
- Feedback – framing feedback so pupils must take responsibility for improving their own learning – e.g extend more able learners through open-ended questions when providing feedback.

Learning by Questions – Using EdTech to support Teaching and Learning

What is Learning by Questions?

Pupils' use iPads and progress at their own pace and level through high quality Question Sets and receive immediate automatic feedback as they answer. Teachers receive live analysis and results are saved to support assessment and planning. Data is stored automatically to support lesson planning.

Why do we use it?

Learning by Questions (LbQ) is fully embedded into Masefield's curriculum journey. This evidence based and award winning teaching & learning tool has been fundamental in the significantly above average results at Masefield over the last few years. All teachers and pupils have accounts that allow access to all resources.

What support do I get?

- Tracked classes set up in the first week of the academic year.
- Every member of staff (teachers and TAs) will receive regular CPD on LbQ, including meeting updates, 1:1 CPD, in class coaching and observations.
- Question Sets are ready made for all subjects, including every foundation subject unit from Year 1 to Year 6.

Using LbQ in Maths

- 3 tasks completed daily as morning maths - LBQ tasks that start with 'practise'. Basic skills and previous learning only.
- Used as a teaching and learning tool – not assessment.
- Intervention screen should be used regularly to assess pupils understanding and address misconceptions immediately.
- Green button (play) should be used regularly to involve and engage all learners in the lesson.
- Pupils should not get an incorrect answer more than 3 times. The teacher or TA should intervene before this or the pupil must ask for support.
- LbQ to be used as part of the deeper learning within lessons.
- An application of the learning within the lesson must be shown in maths book (usually reasoning and problem solving).

Using LbQ in Reading

- Used for intervention sessions.
- Used as part of reading in foundation subjects.

Using LbQ in Science

- Vocabulary question set to be completed before Science Unit.
- Previous topic (if appropriate) to be completed before Science Unit (e.g Year 4 Light question set to be completed before teaching of Year 6 Light topic).
- Investigation question set available to support teaching of fair testing.
- Knowledge Review question set to be used at end of topic – or once teaching sequence completed.

Using LbQ in Foundation Subjects

- Question Sets to be completed at the end of learning and during knowledge days.
- Refer to Knowledge Day Overview document for Question Set Record.

Nursery – Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS: Nursery 1 Level 1 and 2 words. Focus teaching on activities which develop the key vocabulary as taken from ELKAN's Linguistic Concepts. Introduce the words using the word aware strategy.	Quality and Colour: like, colour, blue, green, red, same as, too, black, white, yellow.	Texture and Sound and Movement: hard, soft, noisy, quiet/quietly, fast, slow, cold, dry, loud, soft, moving, quick, still.	Size: heavy, small, little, empty, fat, full, long, small, biggest.	Quantity and Number: a bit, all, a lot, some, one two, another, many, no more, as much as, three, four, five, first, next.	Shape and Space (prepositions): dot, spot, line, round, by, inside, off, out, over, to, through, under, circle, flat, square, round, away, behind, bottom, forward, in front of, near, next to, outside, straight.	Time: again, now, after, soon, today.
EYFS: Nursery 2 Level 3 and 4 words. Focus teaching on activities which develop the key vocabulary as taken from ELKAN's Linguistic Concepts. Be mindful to revisit and embed the Level 1 and 2 words which were taught in N1.	Quality and Colour: different, new, very, colour, orange, pink, purple, dark, light, darker, lighter.	Texture and Sound and Movement: furry, rough, smooth, warm, jerky, smooth, high, low.	Size: large, light, short, tall, thin, bigger, fattest, heaviest, longest, smallest, deep, narrow, shallow, thick, wide, fatter, heavier, longer, smaller, largest, lightest, shortest, tallest, thinnest.	Quantity and number: about, both, every, few, half, most, only, other, second, third, last.	Shape & Space (prepositions): cross, triangle, backwards, beside, between, far, front, high, low, middle, side, together, towards, above, across, against, below, facing, row, corner, curved, diamond, oval, rectangle, slant/slope, straight.	Time: always, before, later, yesterday

Nursery – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	More than, fewer than, same		Explore and build with shapes and objects	Explore repeats	Hear and say number names		Begin to order number names	I see 1,2,3		Join in with repeats	Explore position and space	
Number Fun suggestions:	*Little Fingers; Song of the Senses; Sing a song of sixpence; 10 Green Bottles*											
Spring Term	Show me 1,2,3		Move and label 1,2,3		Explore position and routes	Explore own first patters	Take and give 1,2,3		Match, talk, push and pull	Talk about dots	Compare and sort collections	
Number Fun suggestions:	*3 bowls, 3 bears; In a Row, I am the captain; Knickers*											
Summer Term	Lead on own repeats	Start to puzzle		Making patterns together		Make games and actions	Show me 5		My own pattern	Stop at 1,2,3,4, 5	Match, sort, compare	
Number Fun suggestions:	*Wiggly Worms; Five in a Frame; Recognise; Subitise*											

Reception – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	Getting to Know You		Match, sort and compare		Talk about measure and patterns		It's me 1, 2, 3		Circle and Triangle	1, 2, 3, 4, 5		Shapes with 4 sides
Mastering Number Focus:	*Pupils will start to see that all numbers can be made of 1s and recognise quantities with number.*											
Number Fun suggestions:	*The Number Fun Bus; 3 Bowls, 3 Bears; Knickers; Can you draw?*											
Spring Term	Alive in 5		Mass and Capacity		Growing 6, 7 and 8		Length, Height and Time		Building 9 and 10			Explore 3D Shapes
Mastering Number Focus:	*Pupils will start to subitise within 5 and continue to verbally count to 20.*											
Number Fun suggestions:	*Number Dance Machine; I am the Captain; Little Fingers; Pattern Parrot*											
Summer Term	To 20 and beyond		How many now?		Manipulate, compose and decompose		Sharing and grouping		Visualise, build and map			Make Connections/ Consolidation
Mastering Number Focus:	*Pupils will explore the composition of numbers within 10.*											
Number Fun suggestions:	*My name is Russ; Treasure; Dinosaurs; Double Trouble*											

Key number facts Reception need to know by the end of the year:

Subitise up to 5; addition facts up to 5; subtraction facts up to 5; doubles up to 5+5

Year One – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	Place Value within 10					Addition and Subtraction within 10					Shape	Cons.
Mastering Number Focus:	*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.*											
Number Fun suggestions:	*Dinosaurs; Wobbling Soldiers; Arrangement styles; Subitise; Little counters; On the Bus; Farmer Pete; 3d Shape Song; 2d shape song*											
Spring Term	Place Value within 20			Addition and Subtraction within 20			Place Value within 50		Length and Height		Mass and Volume	
Mastering Number Focus:	*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).*											
Number Fun suggestions:	*I Can Count; Make 5, Make 10; Number Bonds to 20; Doubling Machine; Apples; There's a Kangaroo on my number line*											
Summer Term	Multiplication and Division			Fractions		Position and Direction	Place Value within 100		Money	Time		Cons.
Mastering Number Focus:	*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').*											
Number Fun suggestions:	*Mr Noah; Multiple Battle; Group in a Hoop; Duck Wars; The Toy Sharing song*											

Key number facts Year 1 need to know by the end of the year:

Add 1 to a single digit; add 0 to a single digit; add 2 to a single digit; add 0 to a single digit; add 10 to a single digit; doubles up to 10; doubles up to 20; bonds to 10

Year Two – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	Place Value				Addition and Subtraction					Shape		
Mastering Number Focus:	*Pupils will have an opportunity to consolidate their understanding and recall of number bonds within 10; they will recap the composition of the numbers 11-20 and reason about their position within the linear number system.*											
Number Fun suggestions:	*Number Names; Papa Titioning; Make 4, Make 10; Mick the Mechanic; Greater than, less than; Little Coins; Mr Drinks Survey; Polygon Memory Song; Family Agon; Can you Draw?*											
Spring Term	Money			Multiplication and Division				Length and Height		Mass, Capacity and Temperature		
Mastering Number Focus:	*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.*											
Number Fun suggestions:	*Clap Slap; Sing a Song of Five Pence; The Change; D.I.G Division is Grouping; Get your Bananas; Pirate Captain Hugh; Opposites; Millie Metre; Mega Measurements; The Water in the Cup; Transporter Malfunction*											
Summer Term	Fractions				Time			Statistics		Position and Direction		Consolidation
Mastering Number Focus:	*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.*											
Number Fun suggestions:	*Perfect Pizza Parlour; Tick Tock (Half past); Tick Tock (Quarters); Honest Joe's Party Bag; Party Time; The Number Fun Bus; Mini Adventure; Pattern Parrot (Shapes); Tables Troopers*											

Key number facts Year 2 need to know by the end of the year:

All previous skills and add 2 to a single digit; near doubles, bridge and compensate

Year Three – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	Place Value			Addition and Subtraction					Multiplication and Division A			
Mastering Number Focus:	*Block 1: Securing understanding of the additive relationship*			*Block 2: Composition of 5 and related facts*			**Block 4: Composition 6 to 10 and related facts*					
Number Fun suggestions:	*Number Bonds Money Chest; One Hundred; There's a kangaroo on my number line; Commutativity; Tables Troopers*											
Spring Term	Multiplication and Division B			Length and Perimeter			Fractions A			Mass and Capacity		
Mastering Number Focus:	*Block 3: Structures within 10; odd and even; 5 and a bit; related facts*			*Block 5: Alternative strategies for addition and subtraction within 10*					*Block 6: Addition strategies across 10 (doubles and near doubles)*			
Number Fun suggestions:	*My Drinks Survey; Robotic Functioning Machine; Papa Titioning's Multiplication song; Mega Measurements; Measurements conversion song; Tables Troopers*											
Summer Term	Fractions B		Money		Time			Shape		Statistics		
Mastering Number Focus:	*Block 7: Addition strategies across 10*						*Block 8: Subtraction strategies across 10*					
Number Fun suggestions:	*Chocolate Bar Song; Fraction Name Rock; Onward Roman Soldiers; Tick Tock; Clock Face Recall Accelerator challenge*											

Key number facts Year 3 need to know by the end of the year:

All previously learned facts with more fluency; x5, x10 multiplication tables and corresponding division facts; x2, x4, x8 multiplication tables and corresponding division facts

Year Four – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	Place Value				Addition and Subtraction			Area	Multiplication and Division A			Cons.
Mastering Number Focus:	*Consolidate multiplication facts that have been the focus of learning in KS1 and year 3 such as doubles and the 5 and 10 times tables. Pupils will explore multiplicative contexts and apply these facts to them and explore relationships between factors and associated products when looking at larger numbers. The use of gesture by the teacher and pupil will support with making connections.*											
Number Fun suggestions:	*Papa Titioning's Log Compound; Perfect Patterns; Rounding to 10, 100, 1000; Manipulate the calculation; Tripling Machine; Hat-trick sing; Tables Troopers*											
Spring Term	Multiplication and Division B			Length and Perimeter		Fractions				Decimals A		
Mastering Number Focus:	*Explore the core multiplication facts focusing on becoming secure with two facts per week so that all are known and can be retrieved in a random order. As a class pupils will support one another to retrieve these facts and use a 'Going for Gold' approach so that all are known as an oral response rather than having to be derived. They will continue to develop multiplicative number sense looking at for example the magnitude and/or relationship of related products.*											
Number Fun suggestions:	*Factor Spider; Factors and Multiples; Super Scaling Ladder; Papa Titioning's Multiplication song; One tenth; Decimal Jump; Chunking; Tables Troopers*											
Summer Term	Decimals B		Money		Time		Cons.	Shape		Statistics		Position and Direction
Mastering Number Focus:	*Continue to retrieve known facts focussing on those that are less secure. Continue to apply facts to multiplicative contexts and connect both multiplication and division equations to represent the maths story. Connect missing factor equations to division will sort and classify products into multiples and not multiples of a given number knowing that for example 38 ÷ 4 will not result in a whole number quotient because 38 is not a multiple of 4.*											
Number Fun suggestions:	*Money on the floor; Honest Joe; Sergeant's Snack store; Mini adventure; Wormhole neutraliser; The Angle Detective; Triangle Brothers; Tables Troopers*											

Key number facts Year 4 need to know by the end of the year:

All previously learned facts with more fluency; all multiplication facts and corresponding division facts.

Year Five – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	Place Value			Addition and Subtraction		Multiplication and Division A			Fractions A			
Mastering Number Focus:	*Consolidate multiplication facts that have been the focus of learning in previous years and use the core multiplication facts table (CMF) to practice those that are less secure. They will explore multiplicative contexts and scale known facts by 10 and 100 and explore relationships between factors and associated products when looking at larger numbers. The use of representations, such as arrays, and the use of gesture by the teacher and pupil will support pupils to see structure and to make connections.*											
Number Fun suggestions:	*Number Fun Workout; Lumber Lickin' Logs; MC RAPa CoODA NumFa; Calculation; Fraction House Rock; Yodeling Fractions; Tables Troopers*											
Spring Term	Multiplication and Division B			Fractions B		Decimals and Percentages			Perimeter and Area		Statistics	
Mastering Number Focus:	*Retrieve the core multiplication facts in a random order. Practise these facts when using the written algorithms for multiplication and division. Develop multiplicative number sense and connect contexts to equations. When looking at division there will be a focus on remainders and knowledge of when a number is 1 more, 2 more etc. than a given multiple. Sort improper fractions into those that will give a whole number quotient and those that do not and use this knowledge to write improper fractions as mixed numbers and vice-versa.*											
Number Fun suggestions:	*Papa Titioning's Division Song; Working out a discount; Treasure Nicking; Decimal Fractions Parrot; The Rumble; Running around the perimeter; Tables Troopers*											
Summer Term	Shape			Position and Direction		Decimals		Shape	Negative Number		Converting Units	Volume
Mastering Number Focus:	*Focus on multiplicative composition of number. Use the associative and the commutative property of multiplication to make calculations more accessible. Consider how they see the maths as you shift from one expression to another for example 3 × 72 to 3 × 73, and 3 x 72 to 4 x 72, being able to explain what each number represents. Make connections when number facts have been scaled by 10. For example, 5 × 6 = 30 ; 30 ÷ 5 = 6 and 50 × 6 = 300 ; 300 ÷ 5 = 6. Apply known facts to when a factor is 1/10 the size making connections to decimal fractions where the denominator of a unit fraction is a multiple of 10.*											
Number Fun suggestions:	*Salami Man; Adding Microchip; My Strategy for adding 0.9; Hugh's Birthday Treasure Quest; It's a Prefix*											

Key number facts Year 5 need to know by the end of the year:

All previously learned facts with more fluency; all multiplication facts and corresponding division facts.

Year Six – Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn Term	Place Value		Addition, Subtraction, Multiplication and Division					Fractions A		Fractions B		Converting Units
Number Fun suggestions:	*Calculation; Manipulate the calculation; Double, double, double; Fraction House Rock; Fraction Recall Accelerator Challenge; Millie Metre*											
Spring Term	Ratio		Algebra		Decimals		Fractions, Decimals and Percentages		Area, Perimeter and Volume		Statistics	
Number Fun suggestions:	*Declan the Dodgy Decorator; Groovy Man; Sneaky Scaling Blaster; Guardian of the Rule; Robotic Functioning Machine; Formula; Jump; The Missing Chunk; Cubed Number Bashing*											
Summer Term	Shape			Position and Direction		Themed projects, consolidation and problem solving						
Number Fun suggestions:	*The Angle Detective; Triangle Brothers; Quad Face; Annette the Cube; Wormhole Neutraliser*											

Curriculum Coverage by Topic

Place Value

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count	Focus: Quantity and number (N2 Spr 2) Focus: Quantity and number (N1 Sp 2) N1 Autumn: Count in everyday contexts, sometimes skipping numbers – '1-2-3-5' N1 Autumn: Begin to count to 3		count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number count numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward	count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number	count in multiples of 6, 7, 9, 25 and 1000 count backwards through zero to include negative numbers	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 count forwards and backwards with positive and negative whole numbers, including through zero	
	N1 Summer Recognises when an object is removed from a group of 3 items.		Autumn 1 Spring 1 Spring 3 Summer 4	Autumn 1	Autumn 1 Autumn 3	Autumn 1 Autumn 4	Autumn 1 Summer 4	
Represent	N1 Autumn: Recognises numerals around the environment Represents numbers with their fingers. N1 Spring: Develop fast recognition of up to 3 objects without having to count them individually Show finger numbers up to 3 N1 Summer: Say one number for each item in order: 1,2,3 Begins to recognise groups have a total.		identify and represent numbers using objects and pictorial representations read and write numbers to 100 in numerals read and write numbers from 1 to 20 in numerals and words	read and write numbers to at least 100 in numerals and in words identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations read and write numbers up to 1000 in numerals and in words	identify, represent and estimate numbers using different representations read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit read Roman numerals to 1000 (M) and recognise years written in Roman numerals	
			Autumn 1 Spring 1 Spring 3 Summer 4	Autumn 1	Autumn 1	Autumn 1	Autumn 1	

Place Value

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use and Compare			given a number, identify one more and one less	recognise the place value of each digit in a two-digit number (tens, ones) compare and order numbers from 0 up to 100; use and = signs	recognise the place value of each digit in a three-digit number (hundreds, tens, ones) compare and order numbers up to 1000	find 1000 more or less than a given number recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) order and compare numbers beyond 1000	(read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit	(read, write), order and compare numbers up to 10 000 000 and determine the value of each digit
			Autumn 1 Spring 1 Spring 3 Summer 4	Autumn 1	Autumn 1	Autumn 1	Autumn 1	Autumn 1
Problems and rounding				use place value and number facts to solve problems	solve number problems and practical problems involving these ideas	round any number to the nearest 10, 100 or 1000 solve number and practical problems that involve all of the above and with increasingly large positive numbers	interpret negative numbers in context round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 solve number problems and practical problems that involve all of the above	round any whole number to a required degree of accuracy use negative numbers in context, and calculate intervals across zero solve number and practical problems that involve all of the above
				Autumn 1	Autumn 1	Autumn 1	Autumn 1	Autumn 1

Addition and Subtraction

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Calculations			add and subtract one-digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: • a two-digit number and ones • a two-digit number and tens • two two-digit numbers • adding three one-digit numbers	add and subtract numbers mentally, including: • a three-digit number and ones • a three-digit number and tens • a three-digit number and hundreds add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers use their knowledge of the order of operations to carry out calculations involving the four operations
			Autumn 2 Spring 2	Autumn 2	Autumn 2	Autumn 2	Autumn 2	Autumn 2
Problems			solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9	solve problems with addition and subtraction: • using concrete objects and pictorial representations, including those involving numbers, quantities and measures • applying their increasing knowledge of mental and written methods	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why
			Autumn 2 Spring 2	Autumn 2	Autumn 2	Autumn 2	Autumn 2	Autumn 2

Multiplication and Division

Recall and Use

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12 × 12 use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers recognise and use factor pairs and commutativity in mental calculations	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	identify common factors, common multiples and prime numbers use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
			Spring 2	Autumn 3 Spring 1	Autumn 4 Spring 1	Autumn 3	Autumn 2

Multiplication and Division

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Calculations				calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers multiply and divide numbers mentally drawing upon known facts divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context perform mental calculations, including with mixed operations and large numbers
				Spring 2	Autumn 3 Spring 1	Spring 1	Autumn 3 Spring 1	Autumn 2

Multiplication and Division

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Problems			solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	solve problems involving addition, subtraction, multiplication and division
			Summer 1	Spring 2	Spring 1	Spring 1	Autumn 3 Spring 1	Autumn 2
Combined							solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	use their knowledge of the order of operations to carry out calculations involving the four operation
							Spring 1	Autumn 2

Fractions

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise and Write			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	count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]	
			Summer 2	Summer 1	Spring 3	Spring 4 Summer 1	Autumn 4	
Compare				recognise the equivalence of 2/4 and 1/2	recognise and show, using diagrams, equivalent fractions with small denominators compare and order unit fractions, and fractions with the same denominators	recognise and show, using diagrams, families of common equivalent fractions	compare and order fractions whose denominators are all multiples of the same number	use common factors to simplify fractions; use common multiples to express fractions in the same denomination compare and order fractions, including fractions > 1
				Summer 1	Spring 3	Spring 3	Autumn 4	Autumn 3

Fractions

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Calculations				write simple fractions for example, 1/2 of 6 = 3	add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and denominators that are multiples of the same number multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8] divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]
				Summer 1	Summer 1	Spring 3	Autumn 4 Spring 2	Autumn 3 Autumn 4
Solve Problems					solve problems that involve all of the above	solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number		
					Spring 3 Summer 1	Spring 3		

Decimals

Recognise and Write

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalents to 1/4, 1/2, 3/4 round decimals with one decimal place to the nearest whole number compare numbers with the same number of decimal places up to two decimal places	read and write decimal numbers as fractions [for example, 0.71 = 71/100] recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents round decimals with two decimal places to the nearest whole number and to one decimal place read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places
					Spring 4 Summer 1	Spring 3 Summer 3	Spring 3

Fractions, Decimals and Percentages

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					solve simple measure and money problems involving fractions and decimals to two decimal places	recognise the percent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25	associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
					Spring 3 Spring 4 Summer 1	Spring 3	Spring 3 Spring 4

Ratio and Proportion

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
							solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts solve problems involving the calculation/use of percentages for comparison solve problems involving similar shapes where the scale factor is known or can be found solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
							Spring 1

Algebra

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	solve problems, including missing number problems			use simple formulae generate and describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two unknowns enumerate possibilities of combinations of two variables
		Note – although formal algebraic notation is not introduced until Y6, algebraic thinking starts much earlier as exemplified by the 'missing number' objectives from Y1/2/3					Spring 2

Using Measures

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		compare, describe and solve practical problems for: • lengths and heights mass/weight • capacity and volume • time measure and begin to record the following: • lengths and heights • mass/weight • capacity and volume • time (hours, minutes, seconds)	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 =	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	convert between different units of measure [for example, kilometre to metre; hour to minute] estimate, compare and calculate different measures	convert between different units of metric measure understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling	solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 d.p. where appropriate use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 d.p. convert between miles and kilometres
		Spring 4 Spring 5	Spring 3 Spring 4	Spring 2 Spring 4	Spring 2 Summer 3	Spring 4 Summer 5 Summer 6	Autumn 5

Money

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		recognise and know the value of different denominations of coins and notes	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	add and subtract amounts of money to give change, using both £ and p in practical contexts	estimate, compare and calculate different measures, including money in pounds and pence	use all four operations to solve problems involving measure [for example, money]	
		Summer 5	Spring 1	Summer 2	Summer 2	Summer 3	

Time

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Focus: Time (N2 Sum 2) Focus: Time (N1 Sum 2) N1: Spring Shows an interest in what happens next using the pattern of everyday routines. Begin to anticipate times of the day such as home time.		sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] recognise and use language relating to dates, including days of the week, weeks, months and years tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	compare 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	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight know the number of seconds in a minute and the number of days in each month, year and leap year compare durations of events [for example to calculate the time taken by particular events or tasks]	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	solve problems involving converting between units of time	use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa *Note – In the WRM schemes, time conversions are covered in Y5; the Y6 block concentrates on metric units.*
		Summer 6	Summer 2	Summer 3	Summer 3	Summer 5	Autumn 5

Perimeter, Area and Volume

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				measure the perimeter of simple 2-D shapes	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares	measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes estimate volume [for example, using blocks to build cuboids] and capacity [for example, using water]	recognise that shapes with the same areas can have different perimeters and vice versa recognise when it is possible to use formulae for area and volume of shapes calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units
				Spring 2	Autumn 3 Spring 2	Spring 4 Summer 6	Spring 5

Geometry

2D Shapes

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Focus: Quality & Colour (N2 Aut 1) Focus: Texture & Sound & Movement (N2 Aut 2) Focus: Size (N2 Spr 1) Focus: Shape & Space (prepositions) (N2 Sum 1) Focus: Quality & Colour (N1 Aut 1) Focus: Texture & Sound & Movement (N1 Aut 2) Focus: Size (N1 Spr 1) Focus: Shape & Space (prepositions) (N1 Sum 1) N1 Autumn Complete inset puzzles. Recognise that two objects have the same shape Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy' N1 Spring: Responds to some spatial and positional language		recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles]	identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] compare and sort common 2-D shapes and everyday objects	draw 2-D shapes	compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes identify lines of symmetry in 2-D shapes presented in different orientations	distinguish between regular and irregular polygons based on reasoning about equal sides and angles. use the properties of rectangles to deduce related facts and find missing lengths and angles	draw 2-D shapes using given dimensions and angles compare and classify geometric shapes based on their properties and sizes illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
		Autumn 3	Autumn 3	Summer 4	Summer 4	Summer 1	Summer 1

Geometry

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
3D Shapes			recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] compare and sort common 3-D shapes and everyday objects	recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] compare and sort common 3-D shapes and everyday objects	make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them		identify 3-D shapes, including cubes and other cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets
			Autumn 3	Autumn 3	Summer 4		Summer 1	Summer 1
Angles and Lines					recognise angles as a property of shape or a description of a turn identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle identify horizontal and vertical lines and pairs of perpendicular and parallel lines	identify acute and obtuse angles and compare and order angles up to two right angles by size identify lines of symmetry in 2-D shapes presented in different orientations complete a simple symmetric figure with respect to a specific line of symmetry	know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles draw given angles, and measure them in degrees identify: • angles at a point and one whole turn (total 360°) • angles at a point on a straight line and half a turn (total 180°) • other multiples of 90°	find unknown angles in any triangles, quadrilaterals, and regular polygons recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find
					Summer 4	Summer 4	Summer 1	Summer 1

Geometry

Position and Direction

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	describe position, direction and movement, including whole, half, quarter and three-quarter turns	order and arrange combinations of mathematical objects in patterns and sequences use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anticlockwise)		describe positions on a 2-D grid as coordinates in the first quadrant describe movements between positions as translations of a given unit to the left/right and up/down plot specified points and draw sides to complete a given polygon	identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	describe positions on the full coordinate grid (all four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes	describe position, direction and movement, including whole, half, quarter and three-quarter turns
	Summer 3	Summer 4		Summer 6	Summer 2	Summer 2	Summer 3

Statistics

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Present and interpret data				interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems
				Summer 3	Summer 5	Summer 5	Spring 5	Spring 6
Position and Direction				ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ask and answer questions about totalling and comparing categorical data	solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	solve comparison, sum and difference problems using information presented in a line graph	calculate and interpret the mean as an average
				Summer 3	Summer 5	Summer 5	Spring 5	Spring 6

Mathematics Procedures

There is a clear structure for the teaching of Maths at BASE Academy Schools. The following materials provide detail behind each element of the structure that is followed in each year group.

These materials will support teachers and teaching assistants in maintaining consistency of the approach. The explicit nature of the materials also ensure that the teaching of Maths can be clearly monitored by leaders.

The following resources detail how Maths is taught in the following areas:

- Early Years Foundation Stage
- Key Stage One
- Key Stage Two

Early Years Foundation Stage

In the Early Years Foundation Stage (EYFS), children experience learning of mathematical concepts through various means, including and not limiting to, whole group and small group adult-led sessions, focus task adult-led sessions, access to mathematical challenges in indoor and outdoor continuous provision, and within the context of other subjects.

In Nursery, teachers plan using the White Rose Maths Nursery Scheme of Learning. To ensure our pupils have a good foundation of vocabulary before beginning Reception, teachers also refer to the linguistic concepts document (appendix A) and incorporate teaching opportunities.

The White Rose Maths Nursery Scheme is built up of 24 progressive blocks. For the purposes of showing progression these have been included in the long term overview; however it may not be uncommon to see different groups of pupils to work on different blocks, depending on when they start school.

In Reception, teachers plan using the White Rose Maths Long Term overview.

Teachers use additional suitable resources (such as Master the Curriculum) to plan for discrete daily Maths sessions. 'Master the Curriculum' offers a daily breakdown of the White Rose blocks within the Reception scheme. Pupils in Reception **also** have a 10 minute Mastering Number* session (four times a week) that supports the development of number sense. **Pupils must have a practical hands on experience of Maths in the early years, and overuse of PowerPoints should be avoided. ***

The Mastering Number Programme is provided by the NCETM (National Centre for Excellence in the Teaching of Mathematics). The project 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.

Key Stage One and Two

In KS1 and KS2, teachers design the daily maths lessons using the White Rose Maths Hub Version 3 plans. Teachers design resources for individual lessons following the sequence of small steps provided in this scheme. As noted later in this document, a small step may mean one lesson, part of a lesson, or a series of lessons. Slides may be amended, hidden or deleted as required, as only the most important questions and representations should be shown to support the teacher modelling the mathematical structure. The scheme is used to inform the teacher's decision making for the direction the lesson needs to move in. Teachers can include materials from other places, including NCETM, LBQ, Primary Maths Hub and DfE guidance when constructing their lessons.

Flashback 4 slides are PowerPoints created by White Rose that support retrieval practice. Daily slides consist of four questions that connect to learning from the previous lesson, the previous week, a previous topic and a topic from the previous year. To strengthen recall of number facts, children complete five arithmetic questions at the beginning of each lesson.

LBQ (Learning by Questions) is a live real-time app that uses continuous formative assessment and pupil feedback. It also provides diagnostic information, an Ad Hoc function to provide further opportunities for practice, and is used to set homework - 'Independent Study'.

Primary Maths Hub provides resources to support the teaching, learning and practise of maths, both in school and at home. Fluency Bee is a White Rose Scheme for Years 1 and 2 and is used to give pupils additional practice at basic number skills.

Year 1

Morning Maths (Monday - Thursday 8.40am – 8.50am)

Children will start Autumn term with a focus on number formation. Once ready, pupils will complete Flashback 4 Maths with the teacher during registration time. There is no expectation for pupils to record, but pupils may discuss ideas with a partner before feeding back to the teacher.

In the Summer term, pupils will complete Flashback 4 individually. This may be completed in a jotter or on a whiteboard. *It is important the teacher quickly reviews the Flashback 4 answers and assesses any areas of weakness. As a result, the teacher may review a method during the daily maths lesson to close any gaps in knowledge.*

Mastering Number & Fluency Bee

Mastering Number (NCETM) is a whole class adult led session for all pupils that lasts 10 minutes, four times a week. Weekly plans and resources are saved in the Maths folder on the school resource drive.

Fluency Bee forms part of the weekly enrichment for KS1, along with Numbots practice. Children have a paper workbook and online resources to develop their understanding of number sense.

Key Facts

The long term plan for each year group maps out key facts to be learned and remembered by the end of the year. These are practised and focused on within the daily arithmetic questions or the weekly enrichment session. The goal is for pupils to mentally recall these facts in less than 4 seconds.

Daily Maths lesson

The lesson objective is taken from the White Rose Maths block and small steps. The teacher uses the slideshow to guide teaching, which should include many hands on practical experiences for pupils to help them build visual mental models.

Slides may be amended, hidden or deleted as required, as only the most important questions and representations should be shown to support the teacher modelling the mathematical structure. Pupils record learning in their individual Maths books, or an adult records their learning on Seesaw.

Pupils practice number formation daily, and complete three arithmetic questions independently.

Children will complete Digging Deeper teacher led tasks in groups in the autumn term. This will become more independent once children are ready.

Home Learning

Pupils in Year 1 will complete a number based task in a paper homework book each fortnight. The focus will be on practising the key Number Facts. On the opposite week, pupils will complete a Family Maths Toolkit challenge sheet.

Year 2

Morning Maths (Monday-Thursday 8.40am – 8.50am)

Each morning, pupils will complete Flashback 4 individually. This may be completed in a jotter or on a whiteboard. If pupils complete the Flashback 4 before the given time is up, they can access the daily LBQ set on the iPad. The tasks set should be fluency based. Any LBQ task beginning with 'Practise' is a fluency task. To avoid daily excessive screen time, LBQ may be rotated with a Fluent in 5 task. *It is important the teacher quickly reviews the Flashback 4/ Fluency in 5 answers and assesses any areas of weakness. As a result, the teacher may review a method during the daily maths lesson to close any gaps in knowledge.*

Mastering Number & Fluency Bee

Mastering Number (NCETM) is a whole class adult led session for all pupils that lasts 10 minutes, four times a week. Weekly plans and resources are saved in the Maths folder on the school resource drive.

Fluency Bee forms part of the weekly enrichment for KS1, along with Numbots practice. Children have a paper workbook and online resources to develop their understanding of number sense.

Arithmetic/ Key Facts

To support children's arithmetical proficiency, each year group's long term plan maps out key facts to be learned and remembered by the end of the year. These are practised and focused on within the daily arithmetic questions. This is low stakes and will focus on number bonds, simple addition and subtraction facts, and times tables. The goal is for pupils to mentally recall these facts in less than 4 seconds.

Daily Maths lesson

The lesson objective is taken from the White Rose Maths block and small steps. The teacher uses the slideshow to guide teaching, which should include many hands on practical experiences for pupils to help them build visual mental models.

Slides may be amended, hidden or deleted as required, as only the most important questions and representations should be shown to support the teacher modelling the mathematical structure. Pupils record learning in their individual Maths books, on Seesaw when able to do so independently, or an adult can record their learning on Seesaw.

Home Learning

Pupils in Year 2 will complete a number based task in a paper homework book each fortnight. The focus will be on practising the key Number Facts. On the opposite week, pupils will complete a Family Maths Toolkit challenge sheet.

Year 3 - 6

Morning Maths (Monday-Thursday 8.40am – 9.00am)

Each morning, pupils will complete Flashback 4 individually. This may be completed in a jotter or on a whiteboard. Once pupils complete the Flashback 4, they access the daily LBQ set on the iPad. To avoid daily excessive screen time, LBQ may be rotated with a Fluent in 5 task. These questions set will focus on times tables, number facts, simple addition and subtraction facts AND/OR retrieval from previous learning. The tasks set should be fluency based. Any LBQ task beginning with 'Practise' is a fluency task. *It is important the teacher quickly reviews the Flashback 4/ Fluent in 5 answers and assesses any areas of weakness. As a result, the teacher may review a method during the daily maths lesson to close any gaps in knowledge.*

Mastering Number

In Years 3 – 5, the Mastering Number programme (NCETM) is delivered. This is a whole class adult led session for all pupils that lasts 10 minutes, four times a week. Weekly plans and resources are saved in the Maths folder on the school resource drive.

Arithmetic/ Key Facts

To support children's arithmetical proficiency, each year group's long term plan maps out key facts to be learned and remembered by the end of the year. These are practised and focused on within the daily arithmetic questions. This is low stakes and will focus on number bonds, simple addition and subtraction facts, and times tables. The goal is for pupils to mentally recall these facts in less than 4 seconds.

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Slides may be amended, hidden or deleted as required, as only the most important questions and representations should be shown to support the teacher modelling the mathematical structure. Pupils record learning in their individual Maths books, or on Seesaw.

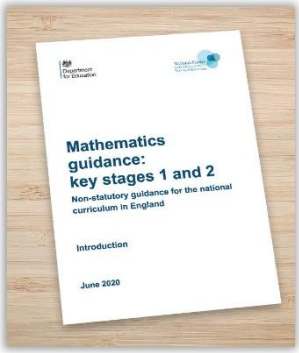
Home Learning

Pupils in Year 3 - 6 will access LBQ at home to complete an Independent Study question set. The teacher can set three tasks for pupils to complete and see results. A Family Maths Toolkit challenge sheet will also be shared with pupils to take home.

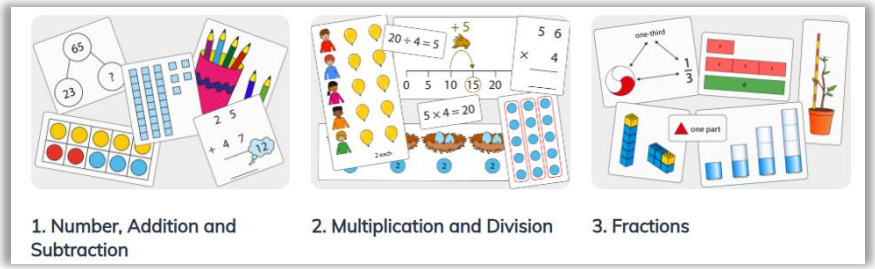
Before teaching a new block

Teachers must be prepared to teach a new block by reading the scheme of learning for the unit. It is important that teachers understand 'why this, why now' in relation to the placing of the unit within the long term overview. Teachers should consider:

- How is this unit building on the skills pupils have learned previously –what has stayed the same and therefore familiar, and what has changed. *What is the next layer?*
- What the most important representations will be so that help pupils to 'see' the structure of the maths; this includes decision making around the best concrete resources to use.
- What you want pupils to NOTICE and what you will DRAW ATTENTION TO
- How you will enable pupils to talk about what they notice, their decisions and their reasoning – knowing important stem sentences will be crucial



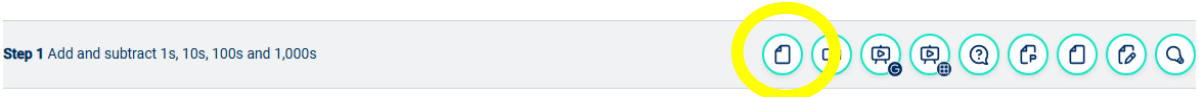
It is important you have the appropriate subject expertise before teaching the block. The NCETM Professional Development materials can offer further guidance, as can the DfE non-statutory guidance.

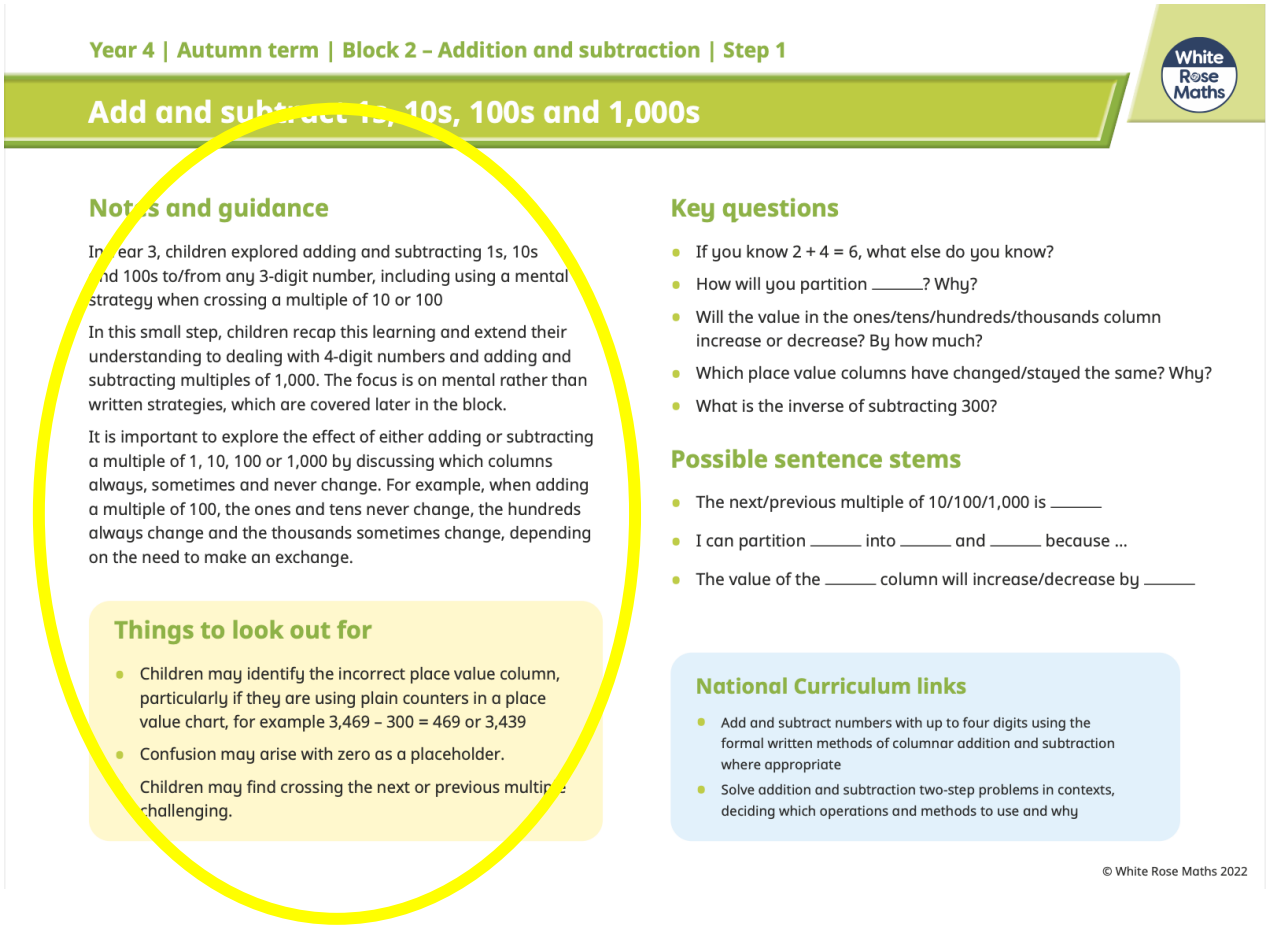


The scheme of learning block guidance must be printed as a hard copy and shared with teaching assistants.

Note and Guidance

Teaching notes and guidance are given for each small step in the 'download' file.





Year 4 | Autumn term | Block 2 – Addition and subtraction | Step 1

Add and subtract 1s, 10s, 100s and 1,000s

Notes and guidance

In Year 3, children explored adding and subtracting 1s, 10s and 100s to/from any 3-digit number, including using a mental strategy when crossing a multiple of 10 or 100

In this small step, children recap this learning and extend their understanding to dealing with 4-digit numbers and adding and subtracting multiples of 1,000. The focus is on mental rather than written strategies, which are covered later in the block.

It is important to explore the effect of either adding or subtracting a multiple of 1, 10, 100 or 1,000 by discussing which columns always, sometimes and never change. For example, when adding a multiple of 100, the ones and tens never change, the hundreds always change and the thousands sometimes change, depending on the need to make an exchange.

Things to look out for

- Children may identify the incorrect place value column, particularly if they are using plain counters in a place value chart, for example 3,469 – 300 = 469 or 3,439
- Confusion may arise with zero as a placeholder.

Children may find crossing the next or previous multiple challenging.

Key questions

- If you know 2 + 4 = 6, what else do you know?
- How will you partition _____? Why?
- Will the value in the ones/tens/hundreds/thousands column increase or decrease? By how much?
- Which place value columns have changed/stayed the same? Why?
- What is the inverse of subtracting 300?

Possible sentence stems

- The next/previous multiple of 10/100/1,000 is _____
- I can partition _____ into _____ and _____ because ...
- The value of the _____ column will increase/decrease by _____

National Curriculum links

- Add and subtract numbers with up to four digits using the formal written methods of columnar addition and subtraction where appropriate
- Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

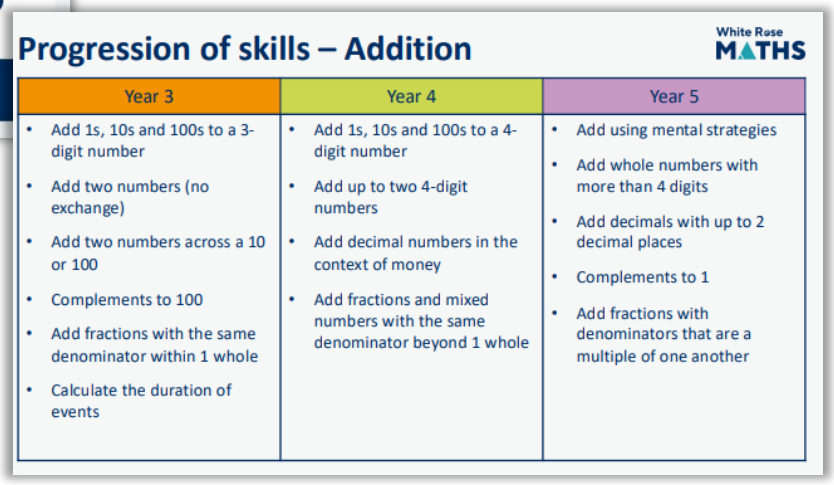
Calculation Policy

The calculation policies are saved in the Maths folder. Calculation strategies used within the White Rose blocks should be kept as they are mapped out progressively so pupils can build on learning. Teachers should familiarise themselves with their year group strategies, and what strategies have been previously taught.

Year 4

Calculation policy

Updated September 2024



Progression of skills – Addition

White Rose MATHS

Year 3	Year 4	Year 5
• Add 1s, 10s and 100s to a 3-digit number • Add two numbers (no exchange) • Add two numbers across a 10 or 100 • Complements to 100 • Add fractions with the same denominator within 1 whole • Calculate the duration of events	• Add 1s, 10s and 100s to a 4-digit number • Add up to two 4-digit numbers • Add decimal numbers in the context of money • Add fractions and mixed numbers with the same denominator beyond 1 whole	• Add using mental strategies • Add whole numbers with more than 4 digits • Add decimals with up to 2 decimal places • Complements to 1 • Add fractions with denominators that are a multiple of one another

Other supporting documents

Guidance

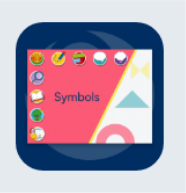
National curriculum & 'Ready to progress'...

Calculation policy all year groups

Y4 calculation policy

Vocabulary progression

STEM calendar



Symbols

Vocabulary progression

White Rose have mapped out the progression of vocabulary from Nursery to Year 6. ***Please note the following additions and generalisations for BASE Academy schools based on guidance from the NCETM:***

Year 1: addend	*"If you change the order of the addends, the sum remains the same."*	Early understanding of commutative law.
Year 2: minuend, subtrahend, difference,	*"Difference is the gap between the numbers."*	Pupils understand difference as the missing part. Teaching this supports problem solving in statistics block. Teaching minuend (whole), subtrahend (part) and difference (part) when teaching subtraction helps pupils to see the relationship between the numbers, and understand that the two parts must equal the whole. This will show that the commutative law does not apply to the subtraction structure.
Year 2/3: factor multiplier, multiplicand,	*"If you change the order of the factors, the product remains the same."*	Works only when teaching times tables and practising recall. Supports understanding of commutative law and that addition and multiplication have a relationship.

product		When groups are multiplied by a whole amount the words multiplicand (the group), multiplier (the number of groups) and product should be used.

Planning preparation

1. Use 'My Resources' to find your year group White Rose Scheme.
2. Download the Flashback 4 for the block (you will need this daily).
3. Download the 'scheme of learning' (you will need this to map out your steps and note things to look out for)
4. Download the 'Downloadable resources and printables' (you may need these to enhance lessons or classroom provision with games and other hands-on activities)
5. Download 'Reasoning and Problem Solving' questions (you will need these to challenge your pupils to dig deeper)
6. Download the 'End of Block assessment B' (you will need this to assess learning at the end of the block)
7. Look at the scheme of learning you have downloaded and scan through the steps. Use this as a working document and make decisions around the number of lessons that each small step will take to teach. Some steps may condense into one lesson, some may take one full lesson, and some steps may need a series of lessons. (If you feel the gap between the steps may be unmanageable for your pupils, refer to the NCETM Curriculum Prioritisation curriculum maps for a better break down, guidance and resources/ PowerPoint slides to support)
8. Identify two or three key words that you want children to learn that session and add to your plan. You will need to give pupils a concise definition.

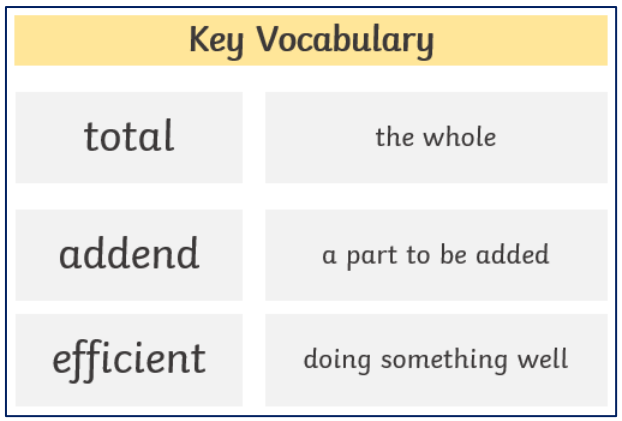
The Daily Maths Lesson

	Daily arithmetic	Review Slide	Introduce small step & Key Vocabulary	I Do (New learning)	We Do (Guided Practice)	You Do (INDEPENDENT practice)	Review
Pupil	**PRACTICE** Complete at least 5 arithmetic questions (offer different sets so accessible)	**RETRIEVAL & DISCUSSION** Talk partner discussion task	Repeat words and definition back to teacher Activate or make connections to prior knowledge	Actively listening Feeding thoughts back to teacher/ partner as directed. Making connections between new and prior learning.	Think through the steps. Tell the teacher what to do next in worked example. Record own example as modelled by teacher.	**Work alone** to complete a series of questions that allow me to practise the skill I have just learned.	Think about my learning this lesson and how it applies to more complex problems.
Teacher	**Pre-teach/ intervention** for those who misunderstood in previous lesson.	Go through the answers of the arithmetic questions and discuss efficient strategies	Explicitly teach new vocab definitions using **My Turn, Your Turn.**	**Be concise in instruction.** *Draw attention to connections between new and previous learning.* Lay out learning so pupils make discoveries. *Point out common mistakes so pupils don't make them.*	Share worked example thinking aloud through the steps. Pupils will tell you the necessary steps to complete question. Assess pupil understanding.	Work with pupils you identified as struggling learners or rapid graspers/ mark pupils work around the room and celebrate success/ re-teach misunderstood concepts.	Choose at least one challenge pupils completed independently and combine learned facts and methods to decide on an efficient strategy to find solution. Typically a 'Digging Deeper' challenge.
TA	**Circulate, mark and give feedback** on arithmetic questions and observe methods.		Supporting pupils where required. **Observe.** Who understands? Who doesn't? Who might need my help?	**Observe.** Who understands? Who doesn't? Who might need my help? **Intervene** to scaffold learning, challenge thinking, maintain focus.	Work with pupils who require support/ scaffolding/ further challenge.	Work with pupils you identified as struggling learners or rapid graspers/ mark pupils work around the room and celebrate success/ re-teach misunderstood concepts.	Mark pupils work around the room/ pre-teach prior to next lesson/ provide same day intervention for struggling learners.

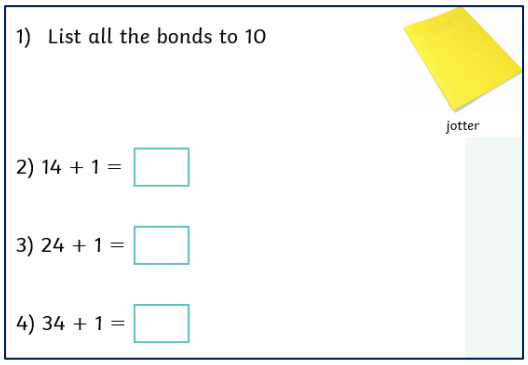
Daily arithmetic: Pupils set up books with date and grid, then complete the five arithmetic questions displayed on the board (for Year 1 and other identified pupils, these should be written in books in BLACK pen so the pupil learns the layout).

Review slide: Pupils complete their arithmetic then begin to work with their talk partner to discuss the content of the review slide. This slide may contain past test paper questions, questions from a previous lesson but must always include an age appropriate counting activity e.g. count forwards and back in 2s from 0 or from 1, count in 0.1's, count on and back in thirds etc.

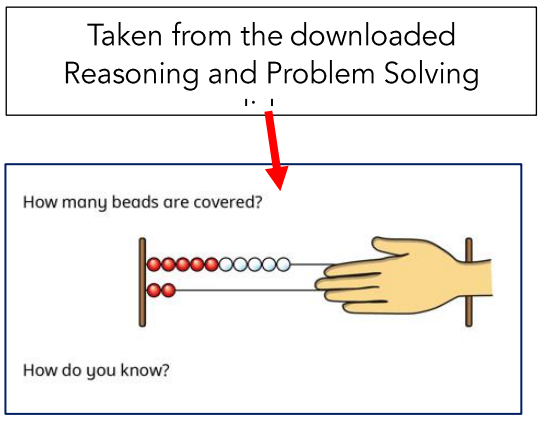
Introduce Small Step & Vocabulary: Share the Learning Objective for the lesson and how it builds on the previous step. Use a *My Turn Your Turn* approach to introduce new key vocabulary and a given definition (Y1 – Y3), or for Y4 – Y6 pupils, a list of words can be shared for pupils to discuss. They should identify which are familiar or unfamiliar then feedback to the teacher. The purpose is to remove barriers in understanding. **A vocabulary slide must be included each lesson.** It may be appropriate to introduce vocabulary for the week and revisit each day to help pupils revise and revisit or it may be suitable to display two or three words only. Definitions should be short and concise.



I Do (Instruction/ new learning): A question, challenge or activity is given to 'open the mind' about the learning in the session. This may involve a quick recap of a previous skill learned that will be needed in this session, or a problem that allows pupils to share their mathematical thinking.



or



Teachers must adapt slides to meet the needs of their pupils, removing any that feel excessive* or where the content can be better demonstrated with concrete/ real life resources or by teacher modelling on a whiteboard. The scheme acts as a teacher guide. Opportunities for pupils to practise new learning should be planned for in this section, and so use of mini-whiteboards, partner discussion and LBQ ad hoc questions are encouraged. Maths is a **practical subject** where understanding the structure should be evident in every lesson.

*White Rose Maths deliberately offer many slides so teachers can make decisions and select

the best questions and representations to meet the needs of their pupils; therefore deleting slides is to be expected.

During the I Do section of the lesson, teachers should point out **potential mistakes** to avoid pupils spending time (the scheme points these out), and consider carefully what they want the children to **notice** and **think about**.

Children will use sentence stems and generalisations to apply new vocabulary in context – these should be added to your slides, displayed on flipchart paper, or better still, form part of your working wall display. Some are embedded throughout the White Rose slides, though a further set of stem sentences can be found in the appendix.

E.g. The whole is 5. One part is 3, one part is 2. The whole is 5.

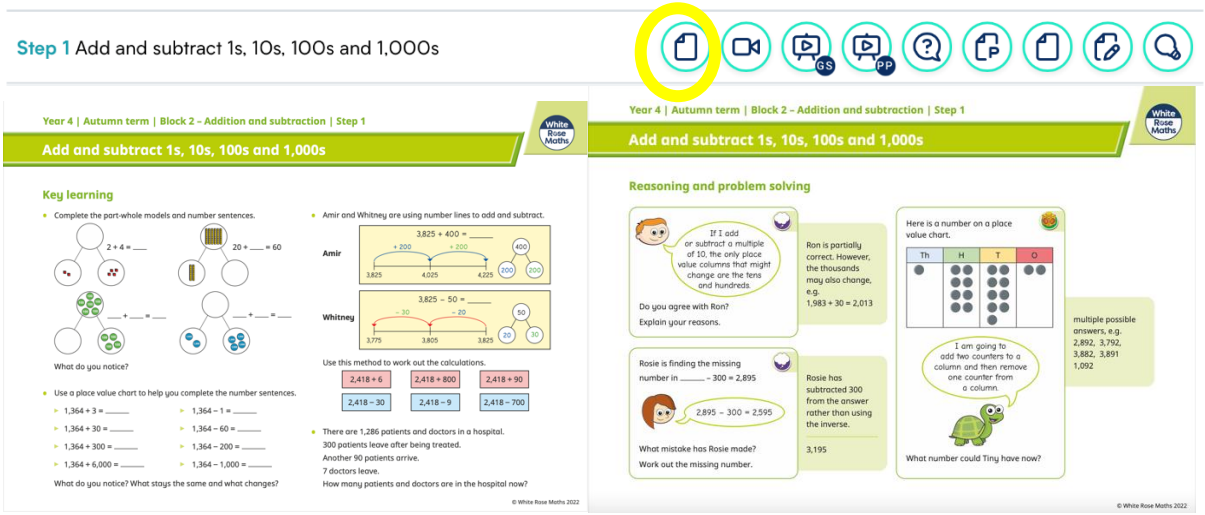
Generalisations summarise new learning concisely. *E.g. If you change the order of the factors, the product stays the same.*

See Appendix for further guidance from the NCETM.

We do (Guided Practice): The teacher will share a worked example of the task pupils will complete independently. They will think aloud as they model clear steps. The teacher will share a partially completed model and pupils will tell the teacher how to complete the question. At this point, pupils are being asked to think about how they will apply known facts and methods to solve the problem/ find the answer. Teachers will assess and identify pupils who do not understand, and give them further intervention as the other pupils move onto the 'I Do' section.

Teachers should obtain resources for the We Do section from:

1. 'Download' button (free resource) on small steps guidance



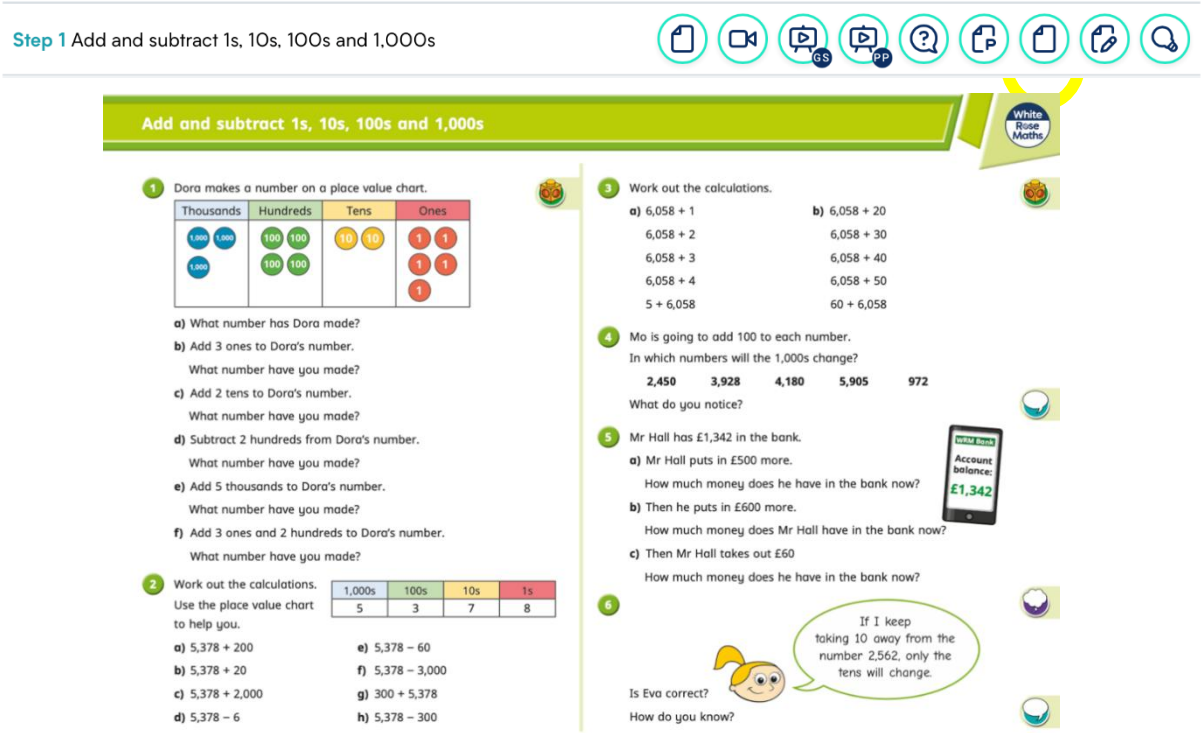
*Page 2 = Key learning; page 3 – reasoning and problem solving

2. Teacher knowledge of questions written on flipchart paper

You do (Independent Practice): By this point, pupils will have the knowledge and skills to complete the given tasks by themselves. Pupils should be given many opportunities to practise their new learning. Tasks should be designed so that pupils thinking is challenged to apply facts and methods they now know, to apply an efficient strategy. Teachers should think carefully about the most efficient strategies pupil could use, and draw attention to these when reviewing. Tasks should challenge children to independently solve a range of fluency, reasoning and problem-solving based activities.

Teachers should obtain resources for the You Do section from:

1. 'Worksheet Display' button (premium resource) on small steps guidance.



Use the snipping tool into PowerPoint to create a tailored set of questions. Remember that pupils need adequate space to record answers if a printed sheet is to be stuck in the book, and so snips from the Write-On Worksheet may be more suitable. Recording calculations and answers directly into the squared books if preferable but some activities would require a sheet to avoid unnecessary pupil or teacher preparation.

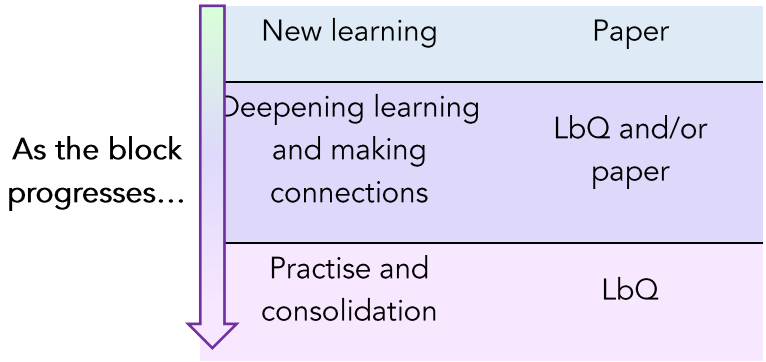
2. LBQ question set – this may form part of the lesson. It can also be used for pupils to practice or consolidate learning once they have completed 'I Do' work.

Digging Deeper: Pupils in China are challenged with a *Dong Nao Jing* problem. This means *use your head*. Pupils should be challenged with a problem or question that draws in all new learning and that is more complex.

Please review this challenge at the end of the lesson, so pupils are exposed to problem solving methods and strategies, even if they didn't complete it independently. They will still be able to contribute.

These questions may come from the 'worksheet display', reasoning and problem-solving questions for the block or other places such as Gareth Metcalfe's 'I see reasoning' or NCETM CP/ PD materials.

Using LbQ during a lesson:



As the block progresses, LbQ can support the teacher to collect assessment information and model in response to pupil feedback.

In the earliest phases of a block, whilst the structure is being learnt, discovered and understood, concrete manipulatives, key representations, stem sentences and teacher modelling is most impactful. As the block progresses, LbQ can be used so the teacher can model answering questions and collect in-the-moment pupil feedback to move learning forward and address any misconceptions.

Towards the end of the block, whole LbQ sets can be set for pupils to complete. As the evidence is collected and stored on the LbQ portal, pupils can record the LbQ question set number in their books under the marking grid. As the platform gives individual feedback to move learning on, this method is effective to give pupils lots of practice opportunities. Teachers should analyse the information to make decisions about upcoming lessons.

Supporting those with gaps in knowledge:

Some learners may struggle within a lesson, and the teacher will use formative assessment (with the support of the TA) to identify these pupils and provide same day support.

<u>Note:</u> If you know your children will struggle with some content, use the DfE guidance ready to progress criteria to see what pre-requisite skills are needed. This is available in the Maths folder on the school system. Where pupils need intervention, these are available in the Maths folder (18 Intervention Resources). <u>The slides to look for</u> correlates with the code in the Ready to Progress criteria box.

Year 1 conceptual prerequesites	Year 2 ready-to-progress criteria	Future applications
Add and subtract within 10. Know that a multiple of 10 is made up from a number of tens, for example, 50 is 5 tens.	2AS–4 Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 two-digit numbers.	Add and subtract numbers greater than 100, recognising unitising, for example: 32 ones + 23 ones = 55 ones so 32 tens + 23 tens = 55 tens 320 + 230 = 550
Count in multiples of 2, 5 and 10.	2MD–1 Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables.	Use multiplication to represent repeated addition contexts for other group sizes. Memorise multiplication tables.

Children need to be secure here before accessing year group content.

DfE Guidance: Ready to Progress criteria

Some pupils presently do not have the prior knowledge to access the small step taught to the whole class. These pupils are discussed with the class teacher, SENCO and Maths Lead to ensure they are supported effectively to close the gaps between them and their peers. In some cases, a very small number of pupils are taught a separate programme with small steps that are manageable, yet challenging using different resources. The class teacher decides on these in conjunction with the SENCO and Maths Lead. Some 'go-to' resources include My Maths, LBQ, NCETM PowerPoints or use of the Mastering Number programme.

Q&A

Where can I get the White Rose Resources?

Each teacher has their own log in to the White Rose website. All schemes of learning, resources, assessments can be accessed using the log in.

How should I include LBQ within my lesson?

LBQ is an effective teaching tool that continually moves pupils learning forward. In a Maths lesson LBQ can form part of a I Do challenge for Key Stage 2 pupils. Recording and working out can be recorded in Maths books. Please note that LBQ forms part of the Maths lesson and not the entirety. LBQ tasks will form morning maths work for KS2 pupils. When choosing appropriate tasks teachers can select any task that starts with 'Practise' as all of these tasks are fluency tasks.

How can I plan for struggling learners so they don't rely on adult support?

There are number of ways pupils can be supported:

- Pre-teach the concept. Use the Intervention PowerPoints (Maths > 18 Intervention Resources)
- Plan additional sessions to secure the pre-requisites using the DfE guidance.
- Provide children with additional resources e.g. a list of x2 tables if children will be doubling and halving. This is not to be seen as giving children the answers but a scaffold. Children will no longer use the resource when they are confident and secure.

What support programmes do we have?

- TA Hub – pre-teach guides and worksheets (Years 1 – 6)
- Year 1 – use EYFS Milestones to plan to close gaps in knowledge
- Year 2 – Mastering Number for Rec/ Y1; 1st Class@Number intervention
- KS2 - LbQ

The same children need help with the 'We Do' section. What should I do?

Talk with the pupil about their struggles and difficulties. Do they lack confidence? Is there a resource you could give them as a scaffold? If children continue to struggle, consider whether they need to be added to your class action plan to have regular intervention.

Please be aware that all pupils should complete an independent task so they do not become reliant on adult support.

If you still have concerns, speak to the Maths Lead or SENCO.

The majority of pupils cannot access my 'We Do' task, what should I do?

The Guided Practice session will give the teacher an indication of what the pupils have or have not understood. If a minority of pupils cannot access the Guided Practice task and don't show an understanding, these children will form a group of Struggling Learners and be supported by an adult in this lesson. If the majority fail to understand the concept the teacher must not proceed to Independent Practice, but revisit the teaching input and

scaffold the learning. Children may need more examples or different contexts. They may need to explore practically for longer.

There are pupils who will find the small step too easy, what shall I do?

Firstly, do not presume pupils will find the concept easy to understand; yet equally as important do not hinder children's progress by slowing them down.

- If you are confident that the pupils will achieve, you could set them off on the *We Do* challenge whilst delivering the input to other pupils.
- During *We Do* you should keep a closer eye on these pupils and set them off on the *You Do* as soon as they demonstrate an understanding of the concept.

Other agreed supporting resources

- Primary Maths Hubs
- Gareth Metcalfe 'I See Reasoning'
- White Rose Infinity
- Euhu Number Fun songs
- Numbots & TT Rockstars
- NCETM Professional Development (PD) Materials
- NCETM Curriculum Prioritisation (CP) materials
- Oak National Academy
- White Rose Digital Teaching Tools
- MathsBot.com

These materials support the main White Rose Scheme of Learning and should be used to supplement, not replace it due to the mapping and progression.

Appendix A

Early Years Maths:
Linguistic Concepts

The table below is based on Elklan's Linguistic Concept Levels. The different word lists should not be adhered to rigidly but that the words listed in the first column should be learnt at one level before preceding to the next.

	Basic concepts	→	→	Difficult concepts
SIZE	Big, little, heavy	Empty, fat, full, long, small, biggest	Large, light, short, tall, thin, bigger, fattest, heaviest, longest, smallest	Deep, narrow, shallow, thick, wide, fatter, heavier, longer, smaller, largest, lightest, shortest, tallest, thinnest
SPACE	By, inside, off, out, over, to, through, under	Round, away, behind, bottom, forward, in front of, near, next to, outside, straight	Beside, backwards, back, between, far, front, high, low, middle, side, together, towards,	above, across, against, apart, below, facing, row, sideways, upright
TEXTURE	Hard, soft	Cold, dry, wet, hot	Furry, rough, smooth, warm	
SOUND	Noisy, quiet/ly	Loud/ly, soft/ly		High, low
SHAPE	Dot, spot, line, round	Circle, flat, square	Cross, triangle	Corner, curved, diamond, oval, rectangle, shape, slant/ slope, straight
MOVEMENT	Fast, slow/ly	Moving, quick/ly, still		Jerky, smooth
QUANTITY	A bit, all, a lot, some, more	Another, any, many, no more, as much as	About, both, every, few, half, most, nearly, only, other	Each, enough, equal, fewest, less, much, none, part, plenty, several, unequal, whole.
TIME	Again, now	After, soon, today	Always, before, later, yesterday	Early, late, never, once, sometimes, tomorrow, twice
NUMBER	One, two	Three, four, five, first, next	Number, 1st, 2nd, second, third, last	
PERSONAL QUALITIES	Good, happy, naughty, sad	Bad, hungry, nice, pretty, silly	Cross, frightened, kind, thirsty	Clever, excited, pleased, unkind.
QUALITY	like	Same as, too	Different, new, very	Almost, old
COLOUR	Blue, green, red	Black, white, yellow	Colour, orange, pink, purple	Dark/er, light/er, plain, striped