

Heron Park Primary Academy

Quality, excellence and passion



Heron Park Primary Academy – Teaching Guidance Document 2023-24

Pedagogical Guide for teachers for Teaching Maths at Heron Park

This is a guide for how we teach maths at Heron Park Primary Academy. In this document you will find the processes and strategies we use when teaching this subject, as well as curriculum and assessment information.

The Leadership of Maths

Assistant Head for Teaching and Learning & Aurora Maths Mastery Lead	Maths Lead
Hannah Morgan	Nicholas Bond

Our Maths Vision Statement

Aims of the maths National Curriculum:

“The national curriculum for mathematics aims to ensure that all pupils:

- *become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately*
- *reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language*
- *can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions*

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.” (DfE, 2014)

Our School Maths Vision:

Here, at Heron Park, children are taught maths every day. Our school vision is to lead a generation to be aspirational learners, through: quality, excellence and passion. Therefore, in our maths lessons, we want our pupils to develop a love for mathematics (**passion**). We aim to deliver lessons built upon the five big ideas of teaching for mastery principles, in order to strengthen our pupils' understanding of maths, supporting them to move fluently between representations and deeper mathematical thinking opportunities (**quality**). We want our learners to become the best mathematicians they can be (**excellence**) and use their values (as shown below) to help them along the way, so that they are:



Respectful



Curious



Independent



Resilient



Aspirational



Our Early Years Foundation Village Maths Curriculum

Within our Early Years Foundation Village, we place high importance on the acquisition of mathematical oracy, mathematical fluency and mathematical thinking.

Our Nursery Curriculum:

Nursery		Children are able to:	
Developing Numerical Reasoning	Identify Processes and Connections	<ul style="list-style-type: none"> Transfer mathematical skills to play and classroom activities Identify steps to complete the task or reach a solution. Select appropriate mathematics and techniques to use. Select and use relevant number facts and mental strategies. Select appropriate equipment and resources Use knowledge and practical experience to inform estimations. 	
	Represent and communicate	<ul style="list-style-type: none"> Use every day and mathematical language to talk about their own ideas and choices. Present work orally, pictorially and in written form, and use a variety of ways to represent collected data. Devise and refine informal, personal methods of recording, moving to using words and symbols in number sentences. 	
	Review	<ul style="list-style-type: none"> Use checking strategies to decide if answers are reasonable. Interpret answers within the context of the problem and consider whether answers are sensible. Interpret information presented in charts and diagrams and draw appropriate conclusions. 	
Using Number Skills	Use Number Facts and Relationships	<ul style="list-style-type: none"> Listen to and join in with rhymes, songs, stories and games that have a mathematical theme. Realise that anything can be counted, not just objects, e.g. claps, steps. Count reliably up to 5 objects. Recite numbers from 0 to 10 forwards and backwards using songs and rhymes. Recognise numbers 0 to 5 and relate a number 0 to 5 to its respective quantity. Use mark making to represent numbers in play activities that can be interpreted and explained Compare and order numbers to at least 5. Demonstrate an understanding of one-to-one correspondence by matching pairs of objects or pictures. Use the terms 'first', 'second', 'third' and 'last' in daily activities and play. 	
		Calculate Using Mental and Written Methods	<ul style="list-style-type: none"> Understand and use the concept of 'one more' in their play. Understand and use the concept of 'one less' in their play. Use counting to solve simple mathematics problems in everyday and play situations.
		Manage money	<ul style="list-style-type: none"> Demonstrate an awareness of the purpose of money through role play.
Using Measuring Skills	Length, Weight/Mass, Capacity	<ul style="list-style-type: none"> Compare, sort and order two objects in terms of size, weight or capacity by direct observation. 	
	Time	<ul style="list-style-type: none"> Anticipate events related to elements of daily routines and use the terms 'before' and 'after'. Sing/chant the days of the week. 	
	Temperature	<ul style="list-style-type: none"> Use words that describe temperature during everyday activities, e.g. hot/cold. 	
	Area and Volume	<ul style="list-style-type: none"> Follow two-step instructions for simple movements within games and play activities. 	
	Angle and Position	<ul style="list-style-type: none"> Demonstrate an awareness of prepositions and movement during their own physical activities. 	
Using Geometry Skills	Shape	<ul style="list-style-type: none"> Recognise and use the names for 2D shapes (circle, square and triangle) within play activities and the environment Use and build with 2D and 3D shapes within play-based activities. 	
	Movement	<ul style="list-style-type: none"> Use a variety of media to develop concept of symmetry. 	
Using Data Skills	Collect and Record Data Present and Analyse Data Interpret results	<ul style="list-style-type: none"> Sort and match sets of objects by recognising similarities. Use mark making to begin to record collections. 	
	Pattern	<ul style="list-style-type: none"> Copy a range of simple patterns and sequences visually and aurally, e.g. clapped patterns, threading activities. 	



Our Reception Curriculum:

Our reception curriculum is centred around the Early Years Mastering Number programme, developed by the NCETM, to ensure that all of our pupils leave reception with a firm foundation in the development of good number sense, which they can continue into KS1 as the Mastering Number programme learning continues with them, into their maths meetings. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number.

Through the use of Mastering Number in reception, into KS1, our pupils:

- Learn to clearly communicate their mathematical ideas
- Build firm mathematical foundations, rooted in number sense
- Develop their use of appropriate manipulatives that underpin key mathematical structures.

The Mastering Number programme in reception is as follows:

Term 1	Term 2	Term 3
<p>Pupils will build on previous experiences of number from their home and nursery environments, and further develop their subitising and counting skills. They will explore the composition of numbers within 5. They will begin to compare sets of objects and use the language of comparison.</p> <p>Pupils will:</p> <ul style="list-style-type: none"> • identify when a set can be subitised and when counting is needed • subitise different arrangements, both unstructured and structured, including using the Hungarian number frame • make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills • spot smaller numbers 'hiding' inside larger numbers <p>* connect quantities and numbers to finger patterns and explore different ways of representing numbers on their fingers</p> <ul style="list-style-type: none"> • hear and join in with the counting sequence, and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number • develop counting skills and knowledge, including: that the last number in the count tells us 'how many' (cardinality); to be accurate in counting, each thing must be counted once and once only and in any order; the need for 1:1 correspondence; understanding that anything can be counted, including actions and sounds • compare sets of objects by matching • begin to develop the language of 'whole' when talking about objects which have parts 	<p>Pupils will continue to develop their subitising and counting skills and explore the composition of numbers within and beyond 5. They will begin to identify when two sets are equal or unequal and connect two equal groups to doubles. They will begin to connect quantities to numerals.</p> <p>Pupils will:</p> <ul style="list-style-type: none"> • continue to develop their subitising skills for numbers within and beyond 5, and increasingly connect quantities to numerals • begin to identify missing parts for numbers within 5 • explore the structure of the numbers 6 and 7 as '5 and a bit' and connect this to finger patterns and the Hungarian number frame • focus on equal and unequal groups when comparing numbers • understand that two equal groups can be called a 'double' and connect this to finger patterns • sort odd and even numbers according to their 'shape' • continue to develop their understanding of the counting sequence and link cardinality and ordinality through the 'staircase' pattern • order numbers and play track games • join in with verbal counts beyond 20, hearing the repeated pattern within the counting numbers 	<p>Pupils will consolidate their counting skills, counting to larger numbers and developing a wider range of counting strategies. They will secure knowledge of number facts through varied practice.</p> <p>Pupils will:</p> <ul style="list-style-type: none"> • continue to develop their counting skills, counting larger sets as well as counting actions and sounds • explore a range of representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame • compare quantities and numbers, including sets of objects which have different attributes • continue to develop a sense of magnitude, e.g. knowing that 8 is quite a lot more than 2, but 4 is only a little bit more than 2 • begin to generalise about 'one more than' and 'one less than' numbers within 10 • continue to identify when sets can be subitised and when counting is necessary • develop conceptual subitising skills including when using a rekenrek

Our skilled EYFS team supplement our Mastering Number programme with other maths focus areas, including: pattern, shape, space and measure from the White Rose EYFS scheme of learning, which can be seen below:

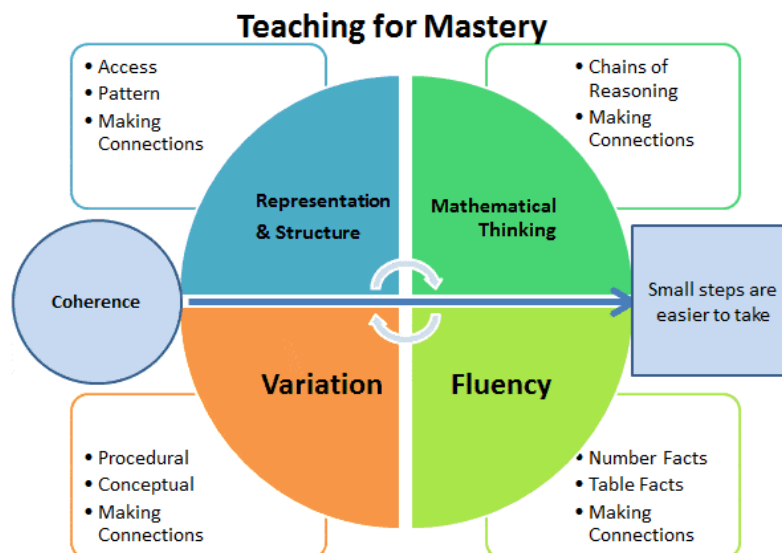
EYFS		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Getting to know you (Take this time to play and get to know the children!)				Just like me!			It's me 1, 2, 3!			Light & dark		
			VIEW			VIEW			VIEW			VIEW	
	Spring term	Alive in 5!			Growing 6, 7, 8			Building 9 & 10					
				VIEW			VIEW			VIEW		Consolidation	
Summer term	To 20 and beyond			First, then, now			Find my pattern			On the move			
			VIEW			VIEW			VIEW			VIEW	

All Early Years Foundation Village maths learning is delivered through short-burst teaching inputs and high-quality, stimulating continuous provision activities, with both indoor and outdoor opportunities for exploration and application.

Our KS1 and KS2 Maths Curriculum Design

Our Maths Curriculum Design:

Our KS1 and KS2 curriculum stems from the White Rose overviews, schemes of learning and resources. As a school, we believe in this scheme's mastery approach and progressive curriculum coverage, as well as the carefully designed small steps for cohesive teaching and learning. We also value how the White Rose curriculum materials are underpinned by the five big ideas of teaching for mastery (NCETM, 2017) (as seen below).



(Five Big Ideas for Teaching for Mastery, NCETM, 2017)



In both KS1 and KS2, White Rose curriculum overviews are followed.

(Year group concerns over attainment or coverage should be quickly raised with the maths lead so that expectations and solutions can be agreed upon).

Overviews can be found on the White Rose website and on Google Drive.

<https://whiterosemaths.com/resources>

https://docs.google.com/document/d/1EaPrwHq0_4Wvh4l7FxCYlhmZ6TE7/edit?usp=drive_web&oid=114006976028189289177&rtopf=true

Below are examples of each year group's yearly overview:

Additionally, in KS1, we continue to build upon our Early Years understanding of number, by continuing engagement with the KS1 Mastering Number programme, in both year 1 and 2. These Mastering Number sessions are delivered discretely, within our afternoon **maths meetings**, to complement our morning maths lessons and further strengthen our children's understanding of number. These sessions last approximately 10-15 minutes and are delivered three times a week.

The Mastering Number Programme in Year 1 is as follows:

Term 1	Term 2	Term 3
<p>Pupils will have an opportunity to consolidate the Early Learning Goals and continue to explore the composition of numbers within 10, and the position of these numbers in the linear number system. Pupils will:</p> <ul style="list-style-type: none"> • subitise within 5, including when using a rekenrek, and re-cap the composition of 5 • develop their understanding of the numbers 6 to 9 using the '5 and a bit' structure • compare numbers within 10 and use precise mathematical language when doing so • re-cap the order of numbers within 10 and connect this to '1 more' and '1 less' than a given number • explore the structure of even numbers 	<p>Pupils will continue to explore the composition of numbers within 10 and explore addition and subtraction structures and the related language (without the use of symbols). Pupils will:</p> <ul style="list-style-type: none"> • explore the composition of each of the numbers 7 and 9 • explore the composition of odd and even numbers, seeing that even numbers can be made of two odd or two even parts, and that odd numbers can be composed of one odd part and one even part • identify the number that is two more or two less than a given odd or even number, identifying that two more/ less than an odd number is the next/ previous odd number, and two more/ less than an even number is the next/ 	<p>Pupils will explore the composition of numbers within 20 and their position in the linear number system. They will connect addition and subtraction expressions and equations to 'number stories'. Pupils will:</p> <ul style="list-style-type: none"> • explore the composition of the numbers 11 to 19 as '10 and a bit' and compare numbers within 20 • connect the composition of the numbers 11 to 19 to their position in the linear number system, including identifying the midpoints of 5, 10 and 15 • compare numbers within 20 • understand how addition and subtraction equations can represent previously explored structures of addition and subtraction (aggregation/ partitioning/ augmentation/ reduction) • practise retrieving previously taught



<p>(including that even numbers can be composed by doubling any number, and can be composed of 2s)</p> <ul style="list-style-type: none"> • explore the structure of the odd numbers as being composed of 2s and 1 more • explore the composition of each of the numbers 6, 8, and 10 • explore number tracks and number lines and identify the differences between them 	<p>previous even number</p> <ul style="list-style-type: none"> • explore the aggregation and partitioning structures of addition and subtraction through systematically partitioning and re-combining numbers within 10 and connecting this to the part-part-whole diagram, including using the language of parts and wholes • explore the augmentation and reduction structures of addition and reduction using number stories, including introducing the 'first, then, now' language structure 	<p>facts and reason about these</p>
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The Mastering Number Programme in Year 2 is as follows:

Term 1	Term 2	Term 3
<p>Pupils will have an opportunity to consolidate their understanding and recall of number bonds within 10; they will re-cap the composition of the numbers 11 to 20 and reason about their position within the linear number system. Pupils will:</p> <ul style="list-style-type: none"> • review the composition of the numbers 6 to 9 as '5 and a bit' • compare numbers using the language of comparison and use the symbols $<$ $>$ $=$ • review the structure of even numbers (including exploring how even numbers can be composed of two odd parts or two even parts) and the composition of each of 6, 8 and 10 • review the structure of odd numbers (including exploring how odd numbers can be composed of one odd part and one even part) and the composition of each of 7 and 9 • consolidate their understanding of the numbers 10 and 20 as '10 and a bit' • consolidate their understanding of the linear number system to 20 and reason about midpoints 	<p>Pupils will have an opportunity to use their knowledge of the composition of numbers within 10 to calculate within 20; they will explore the links between the numbers in the linear number system within 10 to numbers within 100, focusing on multiples of 10 and the midpoint of 50. Pupils will:</p> <ul style="list-style-type: none"> • explore how the numbers 6 to 9 can be doubled using the '5 and a bit' and '10 and a bit' structure • use doubles to calculate near doubles • use bonds of 10 to reason about bonds of 20, in which the given addend is greater than 10 • use known number bonds within 10 to calculate within 20, working within the 10-boundary • use their knowledge of bonds of 10 to find three addends that sum to 10 • use their knowledge of the composition of numbers within 20 to add and subtract across the 10-boundary • use their understanding of the linear number system to 10 to position multiples of 10 on a 0 - 100 number line and reason about midpoints 	<p>Pupils will have further opportunities to use their knowledge of the composition of numbers within 10 to calculate within 20 and to reason about equations and inequalities. Pupils will:</p> <ul style="list-style-type: none"> • continue to explore a range of strategies to subtract across the 10-boundary • review bonds of 20 in which the given addend is greater than 10, and reason about bonds of 20, in which the given addend is less than 10 • practise previously explored strategies to support their reasoning about inequalities and equations • review doubles and near doubles and transform additions in which two addends are adjacent odd/ even numbers into doubles • consolidate previously taught facts and strategies through continued, varied practice

In **KS2**, maths meetings are still utilised to continue addressing the children's mathematical needs. Sessions are planned in addition to morning maths lessons and aim to meet the identified needs of the class and gaps in learning, taken from gap analysis. These sessions may be either proactive, pre-teaching prerequisites and prior understanding to upcoming topics or may be reactive, over-learning previously covered concepts that are not yet fully embedded and fluent. As in KS1, these sessions should last between 10-15 minutes and should include teacher input and time for independent practice.



Expectations for 'complimentary' maths meetings, focused on developing fluency, are as follows:

EYFS: daily fluency embedded as part of the core maths offer.

- ▶ KS1: Multiplication Monday & Addition Fact Friday + 2 or 3 discrete Mastering Number sessions.
- ▶ Y3: 3 X fluency sessions (based on gap analysis), 1 x addition fluency session, 1 x multiplication fluency session.
- ▶ Y4 & 5: Multiplication Monday & Addition Fact Friday + 2 or 3 discrete Mastering Number sessions.



- ▶ Y6: 4 x fluency sessions (based on gap analysis, including additive and multiplicative fluency) + 1 arithmetic paper session.

Maths Planning Guidance

White Rose or Mastering Number Unit overviews (schemes of learning) are provided for each year group and each unit. These detail key information on the introductory page, which should be used to inform unit skeleton plans and subsequent teaching and learning. See example below:

Represent numbers to 100

Notes and guidance

Children have already represented numbers to 100 in Year 2. This small step provides the opportunity to revisit and consolidate their learning before moving on to numbers beyond 100.

The main focus of this step is to ensure that children get a sense of the size of numbers to 100 and can see clearly the number of tens and ones each number is made up of. Children should be confident using a range of manipulatives, such as straws, a bead string and base 10, alongside their own drawings and jottings. Place value counters are not used in this particular small step, as they do not show the relative sizes of numbers, and children cannot see that 1 ten is made up of 10 ones.

Things to look out for

- Children may count 1 ten as 1 rather than 10. Using bundles of straws is useful here as children can physically count out 10 ones and then bundle them to make 1 ten.
- When asked to draw, children can often draw too much detail. Ensure you give clear instructions, for example a line means 1 ten; a dot means 1 one.
- Children may not recognise that when there are 10 or more ones they need to make an exchange.

Key questions

- How have the beads been grouped? How does this help you to count?
- Is it quicker to count in ones or tens?
- How many tens do you have? How many ones do you have?
- How many ones make 1 ten?
- How else can you show this number?

Possible sentence stems

- There are _____ tens and _____ ones.
The number is _____.
- The _____ represents _____ groups of ten.
The _____ represents _____ extra ones.

National Curriculum links

- Identify, represent and estimate numbers using different representations

Small steps are also provided to support the delivery sequence and progression of skills within each new concept. Please note: teachers should use frequent assessment for learning opportunities in order to sculpt effective sequences of learning and have the autonomy to decide when additional steps and lessons are needed to address misconceptions and gaps in learning. Children should only move on to the next unit when they have mastered the learning. Also note: small steps are not individual lessons and some small steps may be taught over multiple sessions.

Small steps	
Step 1	Represent numbers to 100
Step 2	Partition numbers to 100
Step 3	Number line to 100
Step 4	Hundreds
Step 5	Represent numbers to 1,000
Step 6	Partition numbers to 1,000
Step 7	Flexible partitioning of numbers to 1,000
Step 8	Hundreds, tens and ones

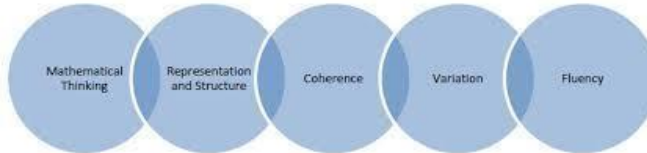
Through White Rose premium resources, provided with each step teachers can find:

- Teaching slides (Please note teaching slides are a guide and should be adapted to suit classes needs)
- True and False questions
- Worksheets
- Video tutorials (for personal CPD or to share with parents/support staff)

Teachers should use the following icons to access these supporting materials to inform their lesson design:



The five big ideas of Teaching for Mastery (NCETM) should always be considered at the planning stage to ensure that lessons are progressive and well-designed so that all children make rapid progress from their individual starting points.

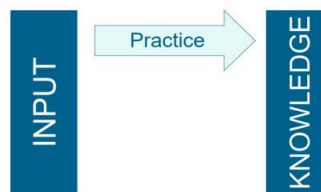


Typical Lesson Pedagogy

Lesson Design

The pace of a maths lesson should be 'succinct and snappy', with regular input from the teacher, followed by a task for the child – the 'Ping Pong' approach (I do, we do, you do – repeat). Lessons begin by revisiting prior learning and will always build progressively in small steps, as learning journeys through worked examples, often supported by the CPA approach (concrete, pictorial, abstract).

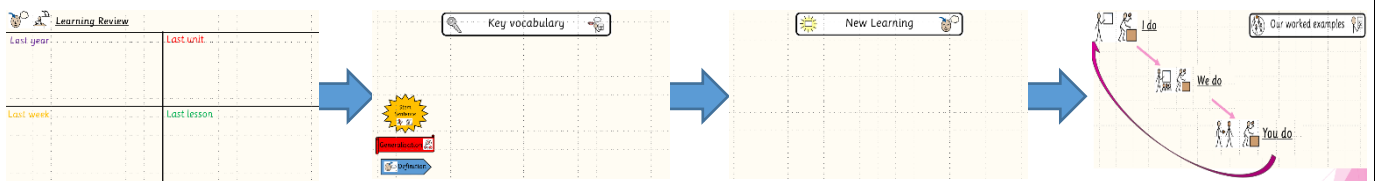
Traditional Lesson Design



Mastery Lesson Design



The Aurora Maths Mastery Template Planning Slides support teachers in delivering new concepts, empowering them to adapt and design lessons with a critical eye, based on the class' needs, learning styles, prior knowledge and attainment. The Aurora Maths Mastery Planning Slides follow this template:

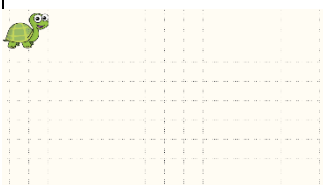


a) Starter activity linked to prior learning

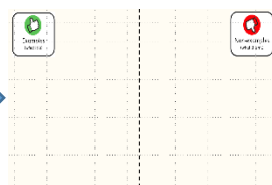
b) Introduction of key vocabulary

c) Introduction to new content, often through CPA or varied contexts.

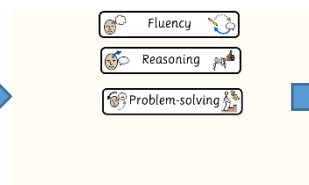
d) Multiple worked examples (I do, We do, You do) for input and AfL



e) Opportunity to address a misconception



f) Deepening or development of the concept (often with variation)



g) Independent practice



h) Plenary/ Exit Ticket task for AfL

- Oracy is a key feature within all maths lessons and teachers make use of mixed ability pairings for talk opportunities and feedback. Key vocabulary for calculations using the four operations is modelled by teachers and encouraged in explanations from the children. Children are also encouraged to use sentence stems that are displayed in the classroom to answer any reasoning questions and we encourage children to clearly articulate the mathematics they are doing in order to promote deeper thinking and conceptual understanding.

Key vocabulary for calculations using the four operations

$3 \times 2 + 5 =$
 addend plus addend equals sum

$10 - 7 =$
 minuend subtract subtrahend equals difference

$30 \times 2 =$
 factor times factor equals product

$30 \div 6 = 5$
 dividend divided by divisor equals quotient

Reasoning sentence stems

- I think that ... because ...
- I know that ... so ...
- I noticed that ...
- It must be ... because ...
- It cannot be ... because ...
- It could be ... because ...
- If ... then ...
- You could check by ...

- Regular assessment for learning practices are used throughout the lesson, with live feedback being given to introduce new tasks or address misconceptions, which ensure that progress is made.
- Manipulatives are available in **most** lessons so that links between concrete, pictorial and abstract representations can be made. Teachers identify and select which manipulatives are most appropriate for use and have these readily available.
- The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. **However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage.** Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Lesson tasks are structured in line with the national curriculum aims, promoting the development of:

- Fluency
- Reasoning
- Problem Solving

Fluency
 Reasoning
 Problem-solving

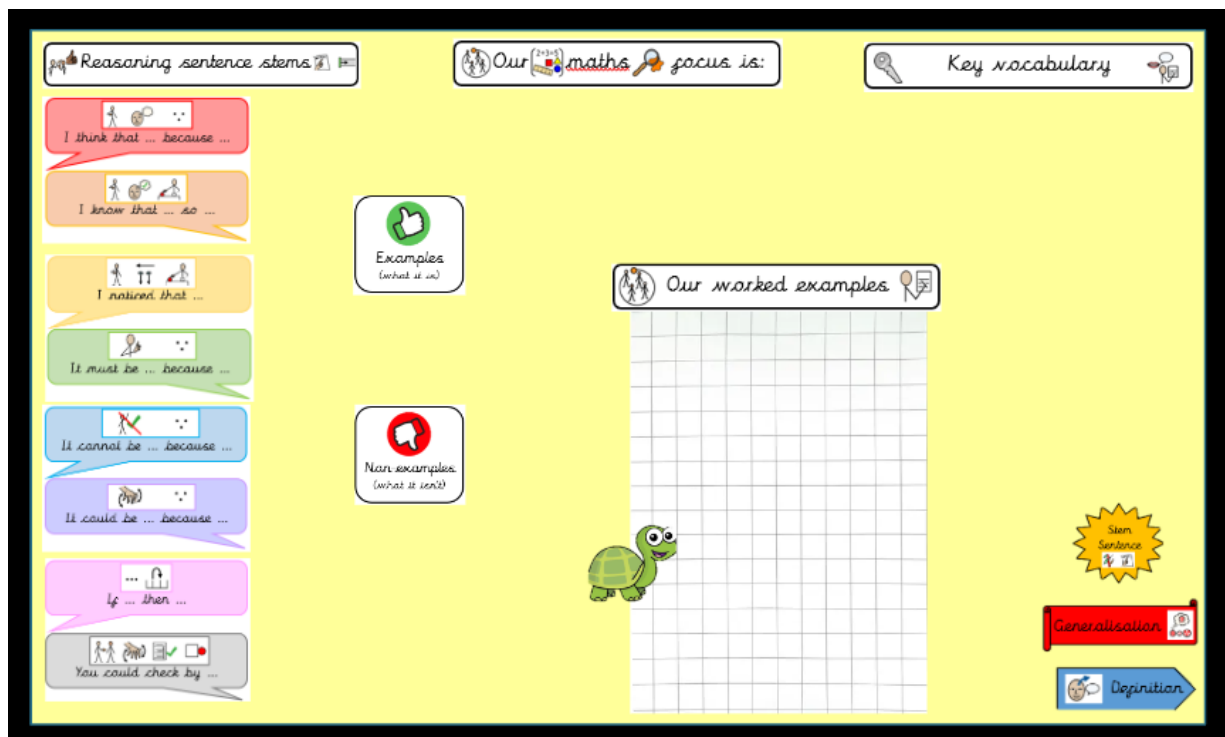
This pedagogy supports all learners by ensuring that they are exposed to a rich diet of mathematical tasks and activities, whilst also offering stretch and challenge opportunities to students who grasp concepts quickly, or ensuring that others are given adequate time to master/ practice essential learning. Tasks are designed with variation (both conceptual and procedural) in mind and tasks are selected to promote deeper mathematical thinking. Across the course of a new concept, all children should be given the opportunity to access all three areas.

Resourcing for lessons may also be supported by the NCETM prioritisation materials and PD spines, DfE ready-to-progress criteria and supporting materials (see links at the end of the pedagogy guide). These resources heavily support teacher subject knowledge and provide insightful CPD/ teacher notes that break down learning into even smaller steps. Resources from these approved providers can be used to supplement the White Rose scheme.

Maths Working Walls

Maths Working Walls should showcase current learning for the unit. These should be built actively and progressively throughout a unit of learning. Teachers should encourage children to use the worked examples to support independent work and should include the following features:

- *A named maths focus, naming the concept that the class are currently focussing on.
 - *Key vocabulary for the unit (this may be added to as the vocabulary throughout the unit expands/ develops)
 - *Flip charts that show worked (modelled) examples
 - *Examples of misconceptions (through 'Tiny' – White Rose character used school wide)
 - *Examples (what it is) (standard and non-standard where possible) and non-examples (what it isn't)
 - *Reasoning sentence stems
- And, where applicable:
- *Stem sentences (orange stars)
 - *Generalisations (red banner)
 - *Definitions (blue arrow)

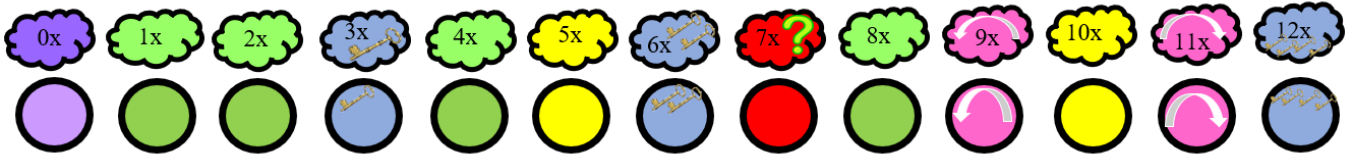


Class learning walls should contain all of the components above and children should be able to refer actively to them for support with their current learning.

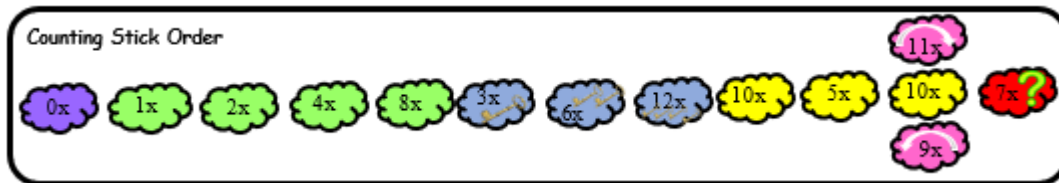
Additionally, concrete and pictorial apparatus should be readily available during lessons and should be stored in a well-organised manner, within classrooms, so that this can be accessed by all teaching staff when needed to support pupils.

Maths Counting Sticks

Counting Sticks are a feature of all maths teaching and learning, across all phases of the school to promote oracy, fluency and mathematical thinking. The use of the counting stick helps children to make multiplicative links and connections between different number facts and also adds to their fluent recall of times tables facts.



The delivery order and script to support the use of the counting stick is as follows:



Teacher Counting Stick Script
Ready... and... 0.

0x What comes at the start?

1x What times table are we learning?

2x Double ____
Two ____s are ____

4x Double ____
Four lots of ____ is ____

8x Double ____
Eight lots of ____ is ____

3x What's the key?
Three lots of ____ is ____
The key is ____

6x Double the key.
Six lots of ____ is ____

12x Quadruple the key.
Twelve lots of ____ is ____

1x What times table are we learning?

10x Ten lots of ____

5x Half of ____
Five lots is ____

Ten lots. Five lots. Ten lots. Five lots.

Ten lots of ____
____ more than ____ is ____

11x Eleven lots of ____ is ____

Ten lots of ____ is ____
9x ____ less than ____ is ____
Nine lots of ____ is ____

Oh no, ~~is~~ embarrassing.
There's one I just can't remember.
7x What's seven lots of ____?
If five lots is ____ and two lots is ____
____ + ____ makes ____ Seven lots is ____

Both of these resources can be found here: https://docs.google.com/document/d/174YdI96Ro-CZvnZEulJFFx1sgYhkoMAs/edit?usp=drive_web&ouid=114006976028189289177&rtqpf=true

Teachers are responsible for delivering and securing their year group's given times tables facts, in line with White Rose's progression documentation. See below:

Primary Progression – Multiplication & Division



	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication & Division: Recall, Represent, Use		<ul style="list-style-type: none"> 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 <p>Autumn 4 Spring 1</p>	<ul style="list-style-type: none"> recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables <p>Autumn 3</p>	<ul style="list-style-type: none"> 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 <p>Autumn 4 Spring 1</p>	<ul style="list-style-type: none"> identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers 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) <p>Autumn 4</p>	<ul style="list-style-type: none"> 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. <p>Autumn 2</p>

Note 1: EYFS will focus on their 1 and 2 times tables.

Note 2: Year 1 will focus on the 1, 2, 5 and 10 times tables in preparation for Year 2.

Note 3: Year 2 will also introduce the 3 times table in the summer term.



Maths Book Expectations

In maths:

- Children use squared Maths books, which have a yellow cover that is protected by a plastic cover. Square size varies according to age or individual need of the child.
- Date recorded is the short date and the LO comes from the White Rose small steps.
- One digit per box, although written sentences do not follow this rule.
- Children should take pride in their books and are taught to stick any sheets in neatly.
- Pencil is ALWAYS used in Maths books – never pen, apart from teacher's marking.
- Work is kept up-to-date and is acknowledged daily either via live marking, self-assessment or via teacher AfL and is carried out in line with the school 'Feedback and Marking Policy' (see below).

The LO is marked daily with green or pink highlighter to indicate whether or not a child has understood the concept/ not.

https://docs.google.com/document/d/15193M_B0awWX-kkcZ302uBtqIHfjNR/edit# #

Maths Assessment

Formative Assessment in maths

"Teaching for Mastery improves children's chances of success as they develop deep and lasting understanding of mathematical procedures and concepts." Effective marking and feedback in maths provide both the class teacher and teaching assistant the opportunity to develop and consolidate pupils' understanding of maths.

This could be in the form of:

- Cold calling, hinge questions, anchor tasks, use of mini-WB examples to check understanding
- Fluid groupings and focus grouping based on assessment for learning (in lesson) and marking (post lesson)
- Live marking and feedback leading to mini-plenaries to address misconceptions, provide scaffolding or challenge based on in-lesson attainment
- Exit tickets to capture in-lesson attainment and understanding
- Use of **self-assessment** trays to indicate the children's confidence levels, post lesson.

The most important consideration, both during and after the lesson, is that assessment information gathered should provide the teacher with knowledge as to which children require additional focused learning that afternoon or the next morning so that they can keep up not catch up when moving the learning forward. It will also inform the teacher whether the class as a whole are ready to move on or whether in fact they need more time to embed the learning.

Summative Assessment in maths

Within our Early Years Foundation Village, teachers make effective use of the Early Learning Goals to assess children's knowledge and understanding. They evidence this through pupil's independent work, continuous provision engagement and learning captured on Tapestry.

Across KS1 and KS2, at three key check points within the year (Autumn, Spring, Summer), staff administer three different, summative White Rose assessments for Arithmetic and Reasoning. After these have been administered, staff complete a question level analysis, which is used to inform maths meeting content.



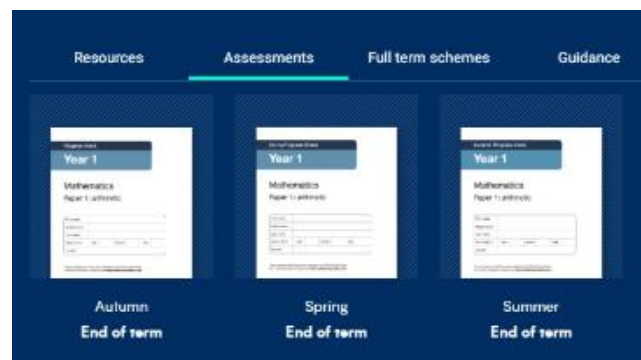
Assessments for EYFS and KS1's additive fluency are also undertaken at three intervals throughout the year: Autumn Term 2, Spring Term 4 and Summer Term 6. These assessments account for all of the addition facts that children should have acquired before the end of KS1.

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0=	0+1=	0+2=	0+3=	0+4=	0+5=	0+6=	0+7=	0+8=	0+9=	0+10=
1	1+0=	1+1=	1+2=	1+3=	1+4=	1+5=	1+6=	1+7=	1+8=	1+9=	1+10=
2	2+0=	2+1=	2+2=	2+3=	2+4=	2+5=	2+6=	2+7=	2+8=	2+9=	2+10=
3	3+0=	3+1=	3+2=	3+3=	3+4=	3+5=	3+6=	3+7=	3+8=	3+9=	3+10=
4	4+0=	4+1=	4+2=	4+3=	4+4=	4+5=	4+6=	4+7=	4+8=	4+9=	4+10=
5	5+0=	5+1=	5+2=	5+3=	5+4=	5+5=	5+6=	5+7=	5+8=	5+9=	5+10=
6	6+0=	6+1=	6+2=	6+3=	6+4=	6+5=	6+6=	6+7=	6+8=	6+9=	6+10=
7	7+0=	7+1=	7+2=	7+3=	7+4=	7+5=	7+6=	7+7=	7+8=	7+9=	7+10=
8	8+0=	8+1=	8+2=	8+3=	8+4=	8+5=	8+6=	8+7=	8+8=	8+9=	8+10=
9	9+0=	9+1=	9+2=	9+3=	9+4=	9+5=	9+6=	9+7=	9+8=	9+9=	9+10=
10	10+0=	10+1=	10+2=	10+3=	10+4=	10+5=	10+6=	10+7=	10+8=	10+9=	10+10=

0+0 0+1 1+0 0+2 2+0 0+3	3+0 0+4 4+0 0+5 5+0 0+6	6+0 0+7 7+0 0+8 8+0	0+9 9+0 0+1 1+0 1+2	2+1 1+3 3+1 1+4 4+1	1+5 5+1 1+6 6+1 1+7	7+1 1+8 8+1 2+3 3+2	2+4 4+2 2+5 5+2 2+6	6+2 2+7 7+2 2+9 9+2	1+1 2+2 3+3 4+4 5+5 6+6	7+7 8+8 9+9 10+10
3+5 5+3 3+6 6+3	0+10 10+0 1+9 9+1 2+8 8+2	8+2 3+7 7+3 4+6 6+4	10+1 1+10 10+2 2+10	10+3 3+10 10+4 4+10 10+5	5+10 10+6 10+9 10+7 7+10	10+8 8+10 10+9 9+10 3+4	4+3 4+5 5+4 5+6 6+5	6+7 7+6 7+8 8+7 8+9 9+8	3+8 8+3 3+9 9+3 4+7 7+4	5+7 7+5 4+8 8+4 4+9
	9+4 5+8 8+5 5+9 9+5	6+8 8+6 6+9 9+6 7+9	9+7							

Conclusions from these assessments feed into school improvement, teacher CPD and are discussed and analysed during Pupil Progress Meetings to inform next steps.

STAR assessments are also used across the Aurora Trust, within years 2 – 6 according to the assessment timetable. These assessments provide teachers with an additional measure to see whether children are 'on track', 'working towards' or 'exceeding' age related expectations.



RENAISSANCE
Star Maths

Key Maths Websites for use:

White Rose Premium resources can be found at:

<https://whiterosemaths.com/resources/primary-resources/primary-sols/>

Additional sites to support with planning:

<https://www.ncetm.org.uk/teaching-for-mastery/mastery-materials/primary-mastery-professional-development/>

<https://www.ncetm.org.uk/classroom-resources/cp-curriculum-prioritisation-in-primary-maths/>

<https://www.ncetm.org.uk/classroom-resources/assessment-materials-primary/>

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1017683/Maths_guidance_KS_1_and_2.pdf

<https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/>

<https://thirdspacelearning.com/>

<http://www.snappymaths.com/>

<https://nrich.maths.org/>

Heron Park Primary Academy

Quality, excellence and passion



<https://corbettmathsprimary.com/5-a-day/>

Useful websites for fluency worksheets:

<https://www.math-salamanders.com/>

<https://www.math-aids.com/>

Online manipulatives for use in lessons:

<https://mathsbot.com/>

<https://toytheater.com/category/teacher-tools/virtual-manipulatives/>

Lesson Observation Maths Proforma:

<https://docs.google.com/document/d/14X9186vyB0dThrrbBNwSqQ0WBRU43VLZ/edit#>