

Orleans Primary School

‘A love of learning, for life, for all.’



MATHS POLICY

Governor's Committee Responsible	Quality and Standards
Status	Non-Statutory
Review Cycle	3 Yearly
Date written/last review	December 2021
Date of next review	December 2024

Headteacher..... Jane Evans Date:

Chair of Quality and Standards Date:

Mathematics at Orleans Primary School

Our curriculum for Mathematics has been designed to raise standards in Maths, with the aim that the large majority of pupils will achieve mastery of the subject.

Intent

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

- *Become fluent in the fundamentals of Mathematics*
- *Are able to reason mathematically*
- *Can solve problems by applying their Mathematics*

At Orleans, these skills are embedded within every Maths lesson through intelligent practice and developed consistently over time. We want all children to enjoy Mathematics and to experience success in the subject, with the ability to make connections, reason mathematically and articulate with confidence. We are committed to ensuring that children are able to recognise the importance of Maths in the wider world and that they are also able to use their mathematical skills and knowledge, now and in every aspect of their future lives. We strive to develop children's resiliency and curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics.

Implementation

At Orleans Primary, all pupils will experience the 'mastery approach' to learning maths, using the underlying principles of the Mathematics Mastery programme. Instead of learning mathematical procedures by rote, we want pupils to build a deep conceptual understanding of concepts that will enable them to apply their learning in different situations.

The content and principles underpinning the Mathematics Mastery programme at Orleans and the 2014 Mathematics curriculum reflect those found in high-performing education systems internationally, particularly those of east and south-east Asian countries such as Singapore, Japan, South Korea and China. These principles and features characterise this approach and convey how our curriculum is implemented.

The Principles of Teaching for Mastery at Orleans:

- **It is achievable for all** – we have high expectations and encourage a positive 'can do' mindset towards mathematics in all pupils. All pupils are encouraged by the belief that by working hard at mathematics they can succeed and that making mistakes is to be seen not as a failure but as a valuable opportunity for new learning. Teachers create learning experiences which develop children's resilience in the face of a challenge and carefully scaffold learning so everyone can make progress.
- **Deep and sustainable learning** – lessons are designed with careful small steps, questions and tasks in place to ensure the learning is not superficial.

- **The ability to build on something that has already been sufficiently mastered** – pupils' learning of concepts is seen as a continuum across the school. Significant time is spent developing a deep understanding of the key ideas and concepts that are needed to underpin future learning. The structures and connections within the mathematics are emphasised, which helps to ensure that pupils' learning is sustainable over time.
- **The ability to reason about a concept and make connections** – pupils are encouraged to make connections and spot patterns between different concepts (E.g. the link between ratio, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.
- **Conceptual and procedural fluency** – teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for pupils to learn times tables, key number facts (so they are automatic) and have a true sense of number. Pupils are also encouraged to think about whether their method for tackling a given calculation or problem is Appropriate, Reliable and Efficient (A.R.E). Fluency with procedures and algorithms without a deep and connected understanding does not constitute mastery. Mastery is achieved through developing procedural fluency and conceptual understanding in tandem, since each supports the other.
- **Problem-solving is central** – this develops pupils' understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.
- **Lessons are designed to have a high-level of teacher-pupil and pupil-pupil interaction** - all pupils in the class are thinking about, working on and discussing the same mathematical content. Challenge and the opportunity to deepen understanding of the key mathematical ideas is provided for all.
- **Every attempt is made to keep the whole class learning together.** Differentiation is achieved, not through offering different content, but through paying attention to the levels of support and challenge needed to allow every pupil to fully grasp the concepts and ideas being studied. This ensures that all pupils gain sufficiently deep and secure understanding of the mathematics to form the foundation of future learning before moving to the next part of the curriculum sequence. This prevents pupils from being left behind and others from skimming and surface learning. If some pupils do fail to grasp an important aspect of the lesson, this is identified quickly and early intervention ensures that they are ready to move forward with the whole class in the next lesson.
- **Challenge through greater depth** - rather than accelerated content, (moving onto next year's concepts) pupils are challenged through deeper analysis of the lesson content and by applying the content in new and unfamiliar problem-solving situations.
- **Practice and consolidation play a central role** - carefully designed variation within this builds fluency and understanding of underlying mathematical concepts in tandem. Key facts are learnt and practiced regularly in order to avoid cognitive overload in the working memory. This helps pupils to focus on new ideas and concepts.

To ensure whole school consistency and progression, the school uses the DfE approved 'Mathematics Mastery'. This is fully aligned with the school's ongoing engagement with the DfE funded Maths Hubs programme which continues to ensure that staff at all levels understand the pedagogy of the approach.

In addition to daily Maths lessons, children also have Maths Meetings lasting 10-15 minutes, delivered 3 times per week. Their purpose is to consolidate key areas of mathematics and give pupils repeat practice of basic skills and concepts, fostering the development of fluency, consolidation and mastery of what has been taught.

Gaps in pupils' knowledge and understanding are identified early. They are addressed rapidly through individual or small group intervention, either on the same day or the next day, which may be separate from the main mathematics lesson. This ensures all pupils are ready for the next lesson. Pre-teaching is also used to allow pupils less confident at maths and struggle with the concepts being taught, to work in a small group with an adult immediately prior to the lesson. During which, they look at the maths lesson that they are just about to cover. This means that when they start the lesson, they feel much more confident because they have rehearsed and are therefore able to access the learning, allowing them to move along at the same pace as the rest of the class.

The intention of these approaches at Orleans is to provide all children with full access to the curriculum, enabling them to achieve confidence and competence – 'mastery' – in Mathematics, rather than many failing to develop the maths skills they need for the future. At Orleans, it is our vision that pupils develop a love of mathematics and life-long skills.

Impact

The school has a supportive ethos and our approach supports the children in developing their collaborative and independent skills, as well as empathy and the need to recognise the achievement of others. Children can underperform in Mathematics because they think they can't do it or are not naturally good at it. The Mathematics Mastery programme addresses these preconceptions by ensuring that all children experience challenge and success in Mathematics by developing a growth mindset. Regular and ongoing assessment informs teaching, as well as intervention, to support and enable the success of each child. These factors ensure that we are able to maintain high standards, with achievement at the end of KS2 well above the national average and a high proportion of children demonstrating greater depth, at the end of each phase.

Curriculum design

A detailed, structured curriculum is mapped out across all phases, ensuring continuity and supporting transition. Our mastery curriculum is designed in relatively small, carefully sequenced steps, which must each be mastered before pupils move to the next stage. Fundamental skills and knowledge are secured first. This entails focusing on curriculum content in considerable depth at early stages.

Early Years Foundation Stage (EYFS)

The principal focus of mathematics teaching in Early Years is to develop a strong grounding in number so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. In addition, our EYFS curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.

Key Stage 1

The principal focus of mathematics teaching in Key Stage 1 is to ensure that children develop confidence and mental fluency with whole numbers, counting and place value. This involves working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools).

Lower Key Stage 2 – Years 3-4

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that children become increasingly fluent with whole numbers and the four operations, including number facts and the concept of

place value. This should ensure that children develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, children should develop their ability to solve a range of problems, including with simple fractions and decimal place value.

Upper Key Stage 2 – Years 5-6

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that children extend their understanding of the number system and place value to include larger integers. This should develop the connections that children make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, children should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, children are introduced to the language of algebra as a means for solving a variety of problems.


By the end of Year 6, children should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Please see below for each year group's termly curriculum overviews (links to these documents are hyperlinked). These are used as guidance for sequencing content throughout the year but in some cases, classes may be at a slightly different point during the year if teachers feel that more/less time is needed on a particular area. This judgement is made from assessment of children's progress throughout the term.

Nursery

MATHS - N	Number introduction	Number blocks - Series 1	Number blocks - Series 2
	Number rhymes Number recognition - familiar numbers Number through play - count-down with space role-play topic.	'One' 'Another one' 'Two' 'Three' 'One, Two, Three' 'Four' 'Five' 'Three Little Pigs' 'How to count' 'Stampolines' 'The whole of me' 'The Terrible Twos' 'Holes' 'Hide and Seek'	'Six' 'Seven' 'Eight' 'Nine' 'Ten' 'Just add one' 'Ten green bottles' 'Counting Sheep' 'Double Trouble' 'The Three Threes' 'Fluffies' 'Blast Off' 'The Two Tree' 'Number block Castle'
Maths - SSM	Exploring shape through construction play Talking about shapes	Using shapes purposefully for construction/pictures. Positional language Shape hunts in the environment	Measuring (cooking) (plant growth) Patterns

Reception

<div>  Mathematics Mastery Curriculum Map: Reception </div>												
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	
Autumn	Early mathematical experiences <ul style="list-style-type: none"> Classifying objects based on one attribute Matching equal and unequal sets Comparing objects and sets Ordering objects and sets 				Patterns and early addition <ul style="list-style-type: none"> Recognise, describe, copy and extend colour and size patterns Count and represent the numbers 1 to 5 Estimate and check by counting 		Numbers within 6 <ul style="list-style-type: none"> Count up to six objects One more or one less Order numbers 1-6 Composition of numbers within six 		Addition and subtraction <ul style="list-style-type: none"> Explore tens, eights and fives Use addition and subtraction 		Shapes and sorting <ul style="list-style-type: none"> Describe, and sort 2-D and 3-D shapes Describe position, weight and length 	
Spring	Numbers within 10 <ul style="list-style-type: none"> Count up to ten objects Represent, order and explore numbers to ten One more or less, one greater or less 		Calendar and time <ul style="list-style-type: none"> Days of the week, seasons Sequence daily events 		Addition and subtraction <ul style="list-style-type: none"> Counting and sharing in equal groups Grouping into fives and tens Relationship between grouping and sharing 		Numbers patterns within 15 <ul style="list-style-type: none"> Count up to 15 objects and represent Represent numbers to 15 One more or fewer 		Counting and sharing <ul style="list-style-type: none"> Counting and sharing in equal groups Relationship between grouping and sharing 		Disputing and sorting <ul style="list-style-type: none"> Describe and sort 2-D and 3-D shapes Recognise, complete and create patterns 	
Summer	Securing addition and subtraction facts <ul style="list-style-type: none"> Commutativity Explore addition and subtraction Compare two amounts 		Number patterns within 20 <ul style="list-style-type: none"> Count up to 10 and beyond with objects Represent, compare and explore numbers to 20 One more or less 		Number patterns <ul style="list-style-type: none"> One more and less Estimate and count Grouping and sharing 		Money <ul style="list-style-type: none"> Gain and lose Recognise and compare Combinations Ordering Change from 10p 		Measures <ul style="list-style-type: none"> Describe, compare and order lengths Compare volumes and weights Estimate, compare and order lengths 		Exploration of patterns within number <ul style="list-style-type: none"> Explore numbers and strategies Recognise and extend patterns Apply number, shape and measures knowledge Count forwards and backwards 	


The Dimensions of Depth: Conceptual Understanding, Language and Communication and Mathematical Thinking: underpins all aspects of the curriculum; problem solving is at the heart and is embedded in all units.

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The Dimensions of Depth - Conceptual Understanding, Language and Communication and Mathematical Thinking - underpin all aspects of the curriculum; problem solving is at the heart and is embedded in all units.


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Mathematics Curriculum Map Year 1											
Mastery											
Autumn	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
	Numbers 10		Addition and subtraction		Shape and patterns		Numbers 20		Addition and subtraction		
	<ul style="list-style-type: none"> Recognise number names up to 10 One more and one less Ordering and halving 		<ul style="list-style-type: none"> Recognise and represent addition and subtraction Counting Adding and subtracting facts 		<ul style="list-style-type: none"> Identify shapes and use simple 2-D and 3-D shapes Identify and describe patterns Classifying and ordering shapes and patterns 		<ul style="list-style-type: none"> Identify, represent and order numbers to 20 Counting and halving Ordering and halving 		<ul style="list-style-type: none"> Recognise and represent addition and subtraction Counting Adding and subtracting facts 		
Spring	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
	Time		Numbers 20		Addition and subtraction		Fractions		Measure, Length and Mass		
	<ul style="list-style-type: none"> Read analogue and digital time Ordering and halving Ordering and halving 		<ul style="list-style-type: none"> Representing calculation Counting Adding and subtracting facts 		<ul style="list-style-type: none"> Recognise and represent addition and subtraction Counting Adding and subtracting facts 		<ul style="list-style-type: none"> Representing fractions Ordering and halving Ordering and halving 		<ul style="list-style-type: none"> Compare and measure Ordering and halving Ordering and halving 		
Summer	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
	Addition and subtraction		Shape and patterns		Numbers 20		Fractions		Measure, Capacity and Volume		
	<ul style="list-style-type: none"> Recognise number names up to 20 One more and one less Ordering and halving 		<ul style="list-style-type: none"> Recognise and represent addition and subtraction Counting Adding and subtracting facts 		<ul style="list-style-type: none"> Identify shapes and use simple 2-D and 3-D shapes Identify and describe patterns Classifying and ordering shapes and patterns 		<ul style="list-style-type: none"> Representing fractions Ordering and halving Ordering and halving 		<ul style="list-style-type: none"> Compare and measure Ordering and halving Ordering and halving 		



The Dimension of Design: *Conceptual Understanding, Language and Communication*
 Teaching: *underpins all aspects of the curriculum, problem solving at the heart and embedded in all units.*

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 Mathematics Curriculum Map Year 9												
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11	Unit 12
Autumn	Numbers within 100 • Addition and subtraction within 100 • Multiplication and division within 100 • Addition and subtraction of money • Addition and subtraction of length • Addition and subtraction of mass	Addition and subtraction of fractions • Addition and subtraction of fractions with like denominators • Addition and subtraction of fractions with unlike denominators • Addition and subtraction of mixed numbers • Addition and subtraction of integers	Addition and subtraction of integers • Addition and subtraction of integers • Addition and subtraction of integers with money • Addition and subtraction of integers with length • Addition and subtraction of integers with mass	Measure, Length • Length and perimeter • Area and perimeter • Volume and surface area • Mass and capacity • Time and temperature	Graphs • Line graphs • Bar charts • Pie charts • Pictograms • Tally charts	Multiplication and division: 1, 2, 3 and 4 • Multiplication and division of 1 digit numbers • Multiplication and division of 2 digit numbers • Multiplication and division of 3 digit numbers • Multiplication and division of 4 digit numbers						
Spring	Time • The time on an analogue clock • The time on a digital clock • Calculating duration of time • Addition and subtraction of time • Addition and subtraction of time in hours and minutes	Fractions • Addition and subtraction of fractions with like denominators • Addition and subtraction of fractions with unlike denominators • Addition and subtraction of mixed numbers	Addition and subtraction of integers • Addition and subtraction of integers • Addition and subtraction of integers with money • Addition and subtraction of integers with length • Addition and subtraction of integers with mass	Money • Addition and subtraction of money • Addition and subtraction of money with length • Addition and subtraction of money with mass	Area, mass and patterns, time and length • Area and perimeter • Volume and surface area • Mass and capacity • Time and temperature							
Summer	Numbers within 1000 • Addition and subtraction within 1000 • Multiplication and division within 1000 • Addition and subtraction of money • Addition and subtraction of length • Addition and subtraction of mass	Numbers within 1000 • Addition and subtraction within 1000 • Multiplication and division within 1000 • Addition and subtraction of money • Addition and subtraction of length • Addition and subtraction of mass	Measure: Capacity and Mass • Capacity and mass • Addition and subtraction of capacity • Addition and subtraction of mass	Measure: Length and Area • Length and area • Addition and subtraction of length • Addition and subtraction of area • Addition and subtraction of length and area	Expanding calculations • Addition and subtraction of integers • Addition and subtraction of integers with money • Addition and subtraction of integers with length • Addition and subtraction of integers with mass	Multiplication and division: 3 and 4 • Multiplication and division of 3 digit numbers • Multiplication and division of 4 digit numbers • Multiplication and division of 3 digit numbers • Multiplication and division of 4 digit numbers						

The Domains: Depth: Conceptual Understanding: Language and Communication: Mathematical Thinking: understanding all aspects of the curriculum, problem solving at the heart and is embedded in all units.


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Mathematics Curriculum Map Year 9		Mastery											
	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	Number and exponentiation Calculations strategies <ul style="list-style-type: none">• Recall, select and compare mental and written calculation strategies• Calculate mentally, using known facts and mental strategies, aiming to go above the standard• Calculate using a calculator from a known fact												
	Algebra <ul style="list-style-type: none">• Simplify, compare and combine like terms• Expand and simplify algebraic expressions• Factorise and simplify algebraic expressions• Solve and check simple linear equations and inequalities												
Spring	Shape and space Calculations strategies <ul style="list-style-type: none">• Visualise and draw 2D shapes• Calculate the area and perimeter of 2D shapes• Calculate the area and circumference of circles• Calculate the area and volume of 3D shapes• Calculate the area and volume of composite shapes• Calculate the area and volume of similar figures												
	Statistics <ul style="list-style-type: none">• Collect, represent and interpret data• Calculate the mean, median, mode and range• Calculate the standard deviation• Calculate the probability of an event• Calculate the probability of two events												
Summer	Algebra and space <ul style="list-style-type: none">• Identify angles including right angles and recognise as a special case of angles• Calculate the area and perimeter of 2D shapes• Calculate the area and volume of 3D shapes• Calculate the area and volume of composite shapes• Calculate the area and volume of similar figures												
	Statistics <ul style="list-style-type: none">• Collect, represent and interpret data• Calculate the mean, median, mode and range• Calculate the standard deviation• Calculate the probability of an event• Calculate the probability of two events												

The Discovers of Maths: Conceptual Understanding, Language and Communication in Mathematics

Discovers – explores all aspects of the curriculum, problem solving at the heart and is centred on all children

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 Mathematics Curriculum Map: Year 4													
Autumn	Week 1	Week 2	Reasoning with large numbers		Addition and subtraction	Multiplication and division	Discrete and continuous						
	• Add and subtract mental, including problems involving money • Add and subtract 100, 1000 or more • Round numbers to the nearest 10, 100 or 1000		• Street geometry strategies to add and subtract • Column strategies including column method with regrouping		• Multiplicative property involving multiplying and dividing • Long multiplication and division using place value and known and derived facts • Short multiplication and division	• Area, perimeter and length and mass • Capacity, mass, length and time • Common factors, percentages and bar charts							
Spring	Week 1	Week 2	Securing multiplication facts		Fractions	Time	Decimals	Area and perimeter					
	• Explain different representations of multiplication • Memorise multiplication facts • Use multiplication facts to solve problems • Addition and subtraction facts with the same dividend including factors between that one		• Addition to 1 • Subtraction from 1 • Equivalent fractions • Addition and subtraction of fractions greater than one and mixed number and improper fractions • Add and subtract fractions with the same denominator including factors between that one		• Add and subtract times of day • Convert between units of time	• Describe lengths to, between, quarters and halves • Compare and order lengths with same and different units • Estimate and measure length • Multiply and divide by 10 and 100 including decimals	• Perimeter of rectangles and squares • Area of rectangles and squares • Area of triangles • Area of compound shapes						
Summer	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	
	Solving measures and money		Shapes and symmetry				Reasoning with numbers and sequences			3-D shapes			
• Convert units of capacity • Convert units of mass • Convert units of length • Use strategies to investigate problems involving money, including unit, time and length, money, sequencing		• Classify, compare and order shapes • Classify and compare 2-D shapes • Identify types of symmetry				• Describe • Classify • Compare • Number sequences and patterns • Sequences • Iterations			• Estimate lengths up to 100 cm • Measure lengths up to 100 cm • Measure mass up to 1 kg • Identify 2-D • Identify 3-D • Measure length of 3-D				
The Domesday of Data: Conceptual Understanding, Language and Communication and Mathematical Thinking – underpins all aspects of the curriculum, problem solving at the heart and embedded in all.													
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A coherent programme of high-quality curriculum materials is used to support classroom teaching. Concrete and pictorial representations are chosen carefully to help build procedural and conceptual knowledge together. In our classrooms throughout the school, you will see pupils using resources such as dienes, place value counters, number beads, Numicon and part-whole models. Activities are structured with great care to build deep conceptual knowledge alongside developing procedural fluency. The focus is on the development of deep structural knowledge and the ability to make connections. Making connections in mathematics deepens knowledge of concepts and procedures, ensures what is learnt is sustained over time, and cuts down the time required to assimilate and master later concepts and techniques.

Lessons are crafted with similar care and are often perfected over time with input from other teachers, drawing on evidence from observations of pupils in class. Lesson designs set out in detail well-tested methods to teach a given mathematical topic. They include a variety of representations needed to introduce and explore a concept effectively and also set out related teacher explanations and questions to pupils. At Orleans, we follow the Mathematics Mastery programme and teachers follow the six-part lesson model:

Do Now, New Learning, Talk Task, Develop Learning, Independent Task and Plenary.

Six Part Lesson structure			
Part	Lesson Focus	Explanation	Further Information
1	Do Now	This is a quick task all pupils can access without any teacher input as an introduction to the mathematics lesson.	Teachers assess children's fluency and mathematical understanding through careful observation of

			pupils within this session without any input.
2	New Learning	The New Learning segment introduces the main mathematical concepts for the day's lesson.	Teachers teach the new learning to all pupils.
3	Talk Task	The Talk Task segment of the lesson practises the new learning by talking about maths with key vocabulary.	This section focuses on children developing their oracy skills, modelled within the new learning section and embedded in the talk task. When practising- teachers model how to use the correct mathematical language and the key element of using full sentences to embed the learning through both speaking and listening.
4	Develop Learning	The Develop Learning segment builds on the new learning and develops a deeper understanding of the maths concepts of that lesson.	This is the section where teachers assess those that require additional scaffolding to enable them to reach their target. A range of methods can be used to ensure that all pupils make progress:
5	Independent Learning	The Independent task practises learning independently through solving problems.	<ul style="list-style-type: none"> • Teacher focus group selected from AFL • Peer teaching- teacher to pair peers to enable this to happen effectively • Problem solving activities linked directly to the taught concept to ensure those that have understood have the opportunity to deepen their understanding
6	Plenary	The Plenary segment recaps on the lesson, checking understanding and celebrating success. This must include a reasoning question linked to the lesson's objective.	Teachers can use the plenary to complete AFL of learning that has taken place. Pupils are also expected to complete a self and/or peer assessment based on the success criteria of the lesson that has taken place.

**This model will be pursued with EYFS but for focus groups whilst the rest of the children are involved in child-initiated play.*

Teaching methods

Teachers at Orleans teach in a precise way which makes it possible for all pupils to engage successfully with tasks at the expected level of challenge. Pupils work on the same tasks and engage in common discussions. Concepts are often explored together to make mathematical relationships explicit and strengthen pupils' understanding of mathematical connectivity. Precise questioning during lessons ensures that pupils develop fluent technical proficiency and think deeply about the underpinning mathematical concepts.

Maths Meetings

Throughout the school, we use the term 'Maths Meetings'. Maths Meetings are a vital part of the Mathematics Mastery programme. Their purpose is to consolidate key areas of mathematics or introduce new topics. Maths Meetings occur three times per week for 10–15 minutes. A Maths Meeting will cover several curricular areas, broken down into short segments. Each meeting will typically start with a song, rhyme, poem or chant, to ensure full participation and enjoyment. These meetings ensure that pupils are practicing concepts and skills on a regular basis so that they are continually building on their mastery of these concepts. Visual displays and interactive whiteboard slides are used to support learning.

Transitions

Transitions are times when pupils move from place to place or activity to activity. Pupils spend a lot of time in transitions – by necessity – and when they are in transitions they are always learning. As every second counts in a Mathematics Mastery lesson, transition activities are a very important component of the approach. Between tasks, children sing songs or do call and response activities with the teacher. These activities are exciting for the pupils, and helps to keep them focused on the learning and the lesson flowing. It is imperative that the transitions are smooth, snappy and meaningful, so these will need a lot of practice initially. Although these may seem repetitive at first, this repetition will aid learning, and eventually each lesson will use a variety of transitions.

Transitions will be particularly evident in KS1 classrooms as children move regularly from whole-class teaching on the carpet, to independent or paired learning at their tables. In KS2, however, pupils remain at their tables for the majority of the lesson, therefore less 'transition' chanting will be evident within these lessons. Transition time outside of the Maths lesson is utilised instead.

Fluency and key skills

Fluency comes from deep knowledge and practice. At Orleans, we support pupils' fluency development through structured approaches, including our 'Key Instant Recall Facts' and Times Table Programmes. At early stages, explicit learning of multiplication tables is important in the journey towards fluency and contributes to quick and efficient mental calculation. The introduction of Times Table Rockstars alongside our own times table awards programme, allows pupils to feel motivated and inspired to learn key facts in a fun and engaging way. Practice leads to other number facts becoming second nature. Starting with simple doubling and the bonds of 10 through to negative numbers, estimating decimals and percentage discounts. The ability to recall facts from long term memory and manipulate them to work out other facts is very important and so with this in mind, each year group focuses on one 'Key Instant Recall Fact' every half term. Further details of these facts and ways to support your child at home can be found below.

Times Tables

From 2022, statutory testing for times tables will be in place at the end of Year 4. Knowledge of times tables and associated facts is important to help develop number fluency. Orleans uses Times Tables Rock Stars in order to improve knowledge of times tables across the school from Years 2-6. This online platform includes statistical analysis to enable teachers to keep track and monitor progress and achievement within their class and across the school. Times tables and their associated facts are also reinforced during transitions and maths meetings.

In conjunction with Times Table Rockstars, Orleans runs a successful 'Times Table Award' programme for Years 2-6 and a 'Counting in Steps' challenge for Reception and Year 1 to motivate, inspire and recognise pupil achievement.

The way we structure our teaching of times tables is as follows:

Expectations for times tables for each year group:	
Reception	Count in multiples of 10 to 100 and in multiples of 2 to 20.

Year 1	Count in multiples of 2, 5 and 10. Recall and use all doubles to 10 and corresponding halves.
Year 2	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
Year 3	Recall and use multiplication and division facts for 3, 4 and 8 multiplication tables.
Year 4	Recall and use multiplication and division facts for multiplication tables up to 12x12.
Year 5	Revision of all times tables and division facts up to 12x12. Squared and cubed tables.
Year 6	Revision of all times tables and division facts up to 12x12. Squared and cubed tables.

Pupil support and differentiation

Taking a mastery approach, differentiation occurs in the support and intervention provided to different pupils, not in the topics taught, particularly at earlier stages. There is no differentiation in the content taught, but the questioning and scaffolding individual pupils receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems which deepen their knowledge of the same content. The term 'diving deeper' is used to identify 'depth' tasks within a lesson.

Pupils' difficulties and misconceptions are identified and addressed with intervention – through individual or small group support later the same day (Same Day Intervention), during 'Pre-teaching' before school, or within 'Maths Meetings'.

For pupils who have significant gaps in their understanding, a targeted intervention approach is used to 'close the gap'. Pupils' mathematical understanding is assessed against Key Constructs. Key constructs (KCs) are 'big ideas' in mathematics that are essential to understand, to enable progress in the subject and to access other areas. The Key Construct framework focuses on the expected stage of developing understanding within a KC for each year group. Once the KC assessment has taken place, specific gaps will have been identified, allowing teaching staff to provide a targeted approach to intervention. This intervention is planned to be short and intense, to essentially fill the gap and allow the pupil to catch up.

Teaching in attainment groups

With the transition to mastery, the school has reviewed its long-standing policy of teaching in attainment groups in years 4-6. Historically, in these year groups, it was felt that grouping pupils by attainment would help teachers tailor learning to their needs. Attainment grouping has now been phased out and every class is taught in mixed attaining groups which is working successfully.

Inclusion and Special Needs

Orleans aims to meet the needs of all, taking into account gender, ethnicity, culture, religion, language, disability, age and social circumstances. The provision for children with special needs is detailed in the SEND Policy. Central to this is the early identification, intervention and careful planning for intervention through Provision Mapping. SEN pupils may be supported by additional adults, different resources, scaffolded activities. They may also complete additional activities outside of the mathematics lesson (Pre-teaching and Same Day Intervention). We have high expectations of all children and strongly believe that all children are able to achieve in mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support.

Marking

Marking of mathematics books should be completed in line with the Orleans marking policy. Next steps are not necessary as the next lesson is normally the next step in learning. However, it is essential that all marking picks up and addresses any misconceptions/mistakes and thorough questioning ensures children have clarified their thinking clearly. Same Day Interventions for those pupils are then used to address any misconceptions/mistakes before the next lesson. This ensures that pupils 'keep-up' rather than having to 'catch-up' further down the line.

Assessment and Record-Keeping

Assessment is continuous and ongoing with every lesson containing assessment opportunities to improve teaching and learning. At Orleans, we value knowing 'why' and 'how', as well as correct answers.

In addition to the formative assessment undertaken in lessons, teachers (Years 1-6) will use termly summative assessments (during Assessment Week) supplied by the NFER to reinforce their judgments and provide further opportunities to identify gaps in pupil learning and tailor future lessons. Years 2 and 6 will also complete SATs paper in the Summer term as part of statutory testing. Pupils' final attainment level will be a combination of both formative and summative assessments. These final assessment levels are entered onto Target Tracker each term and teachers talk through the progress of their pupils at termly tracking progress meetings. This ensures targeted support can be given to those who need it.

Times tables and Key Instant Recall Facts are also assessed half termly. Children have the opportunity to work through times table challenge awards and achievements against these and Key Instant Recall Facts are communicated home to parents.

Home/School Link

At Orleans, we encourage parents to be involved in the Mathematics curriculum by:

- Providing parents with guides outlining what mastery teaching involves in EYFS and KS1 & KS2 and how they can support at home
- Providing parents with a curriculum letter each half term in Key Stage 1 and 2, detailing knowledge, skills and strategies that will be taught in class that term. In EYFS through weekly overview home learning from January and tapestry observations
- Sending home information about Times Tables and Key Instant Recall Facts to be practised each half term, alongside activities and guidance for supporting with these at home
- Running teaching for mastery curriculum evenings and workshops throughout the year
- Inviting parents in twice a year for parents evening to discuss their child's progress and informal meetings are encouraged when needed
- Reporting on mathematical progress in their child's report
- Using our mathematics page on the school website to provide information about how we teach the four calculations as pupils move through the school
- Pupils are provided with mathematics home learning on a weekly basis which is linked to the learning undertaken in class that week. Supporting materials for learning are also uploaded onto Google Classroom for pupils to access

Mathematics Subject Leader: Marie Hedges

Mathematics Co-subject Leader: Rachel McFall

Linked Governor:

Signed:

Date agreed: December 2021

Review date: December 2023