Mathematics

Policy and Guidelines

Acre Rigg Infant School

Last reviewed in	September 2024
Next review due	September 2025

Acre Rigg Infant School

MATHEMATICS POLICY AND GUIDELINES

N.B. This policy will be reviewed and amended as changes arise.

Policy:

Guidelines:

Introduction

Mathematics is a creative and highly interconnected discipline that is essential to everyday life. A high quality mathematical education should foster a sense of enjoyment and curiosity about the subject and provide a foundation for understanding the world in which we live. This policy promotes the teaching and learning of mathematical skills in practical contexts enhanced by the use and understanding of mathematical language.

Aims

At Acre Rigg Infant School we aim to:

- foster an enjoyment and enthusiasm for learning in mathematics through practical activity, exploration and discussion
- develop procedural fluency by giving children varied and frequent practice of basic number skills
- develop conceptual fluency by providing children with a range of tactile, visual and virtual manipulatives to support their learning
- develop reasoning skills by giving children opportunities to discuss their mathematical thinking and understanding with others
- develop children's problem solving skills through rich practical tasks, including those related to real life contexts
- teach children ways in which mathematical information is gathered, presented and recorded
- scaffold and support children's next steps in learning to ensure 'gaps in learning' do not hinder mathematical development
- plan opportunities for children to engage in 'thoughtful practice' as revisiting learning in different contexts helps to ensure that children are secure in their understanding before moving on to next steps and challenges

Planning

Early Years Foundation Stage: Nursery

Planning in the Early Years Foundation Stage is based on our Early Years curriculum, providing an age related progression of skills, knowledge and concepts to inform planning and support children's next steps in learning.

Early Years Foundation Stage: Reception

Planning in Reception is based on our Early Years curriculum, ensuring progression towards the statutory Early Learning Goals (ELGs) for Mathematics. Our Early Years curriculum provides an age related progression of skills, knowledge and concepts to inform planning and support children's next steps in learning. The maths skills overview demonstrates the progressions of number skills and fluency across the year.

Key Stage 1

Planning in Key Stage 1 is based on the National Curriculum. Teachers use the school's scheme of work for arithmetic lessons and the White Rose Maths Hub Schemes of Work to plan for mathematics lessons. The schemes of learning provide children with a solid foundation in the basic building blocks of number and place value and the four operations of addition, subtraction, multiplication and division whilst incorporating the wider areas of mathematics of geometry, measurement and statistics.
Where possible, children will work through the schemes as a whole group at the level appropriate to them (with the aim being for the majority of children within each year group to be working at age appropriate levels as set out in the National Curriculum). Reasoning and problem solving elements will be built into lessons to promote mastery of the curriculum and challenge will be provided for more able pupils by giving them the opportunity to work at greater depth within their specific year group content.

Lessons

Early Years Foundation Stage: Nursery
Lessons in the Early Years Foundation Stage can vary depending on the focus of learning and the age of the children. In nursery, adult led 'planned learning opportunities' usually occur in key worker groups of no more than 13 children and include singing, counting and interactive activities, however, at times it may be appropriate for the teacher to lead learning for all children together with teaching assistants supporting identified children.

Planned play activities linked to adult led lessons are available at all times within the environment for the children to access independently to consolidate understanding through repeated practice. Teachers and key workers use our Early Years Curriculum statements to assess children and identify next steps in teaching and learning. Teachers and key workers scaffold individual children's next steps of learning through supported play in all areas of the environment.

Throughout all activities, the language of mathematics will be modelled by the adult and children will be encouraged and supported to understand and use it correctly to promote mathematical understanding.

Early Years Foundation Stage: Reception
Lessons in Reception are very practical with very little recording, particularly in the first term. Children take part in a daily maths input session. During the first term this is highly focused on number. Children learn about the story of numbers and experience a range of activities to reinforce each number. Activities will then be available as enhancements which follow our continuous provision approach as well as adult led activities. Wider maths is covered through continuous provision enhancements and outdoor learning as well as in the daily maths lesson.

Key Stage 1

Lessons in Key Stage 1 have two distinct parts. The first part focuses on procedural and conceptual fluency in counting, number facts and arithmetic. The second part covers all mathematical domains and is based on the White Rose schemes of learning.

Planned learning opportunities in Key Stage 1 include whole class activities (eg rote counting, singing, interactive whiteboard games and activities), paired activities (eg games and practical tasks) and individual work (eg practical tasks and recorded work in exercise books). Throughout all activities, the language of mathematics is modelled by the adult and children are supported to understand and use it correctly to promote mathematical understanding.

Children are streamed into classes for mathematics to enable teachers to scaffold their next steps in learning appropriately. Less able children and those with Special Educational Needs are taught in small groups by teachers and teaching assistants (under the direction of the class teacher). Mathematical targets for SEN children are detailed on individual Support Plans. More able children are challenged with rich mathematical tasks to deepen their understanding of the mathematical concepts being taught.

NCETM Mastering Number Programme

All teachers in Reception and Key Stage 1 are trained in delivering the NCETM Mastering Number Programme. The programme aims to develop solid number sense, including fluency and flexibility with number facts, to enable children to explore relationships between numbers and see mathematical structure and reason in mathematics.

In Key Stage 1, children take part in a daily 15 minute session in addition to their daily maths lesson. The Maths Lead and class teachers continue to evaluate the need for both a daily arithmetic lesson and 'mastering number' lesson alongside the main maths lesson as the programme progresses.

In Reception, children take part in short, 5-10 minute sessions in addition to their daily maths lesson. The sessions focus primarily on number sense, and introduce learning aids such as learning with Numberblocks.

Recording of work

Early Years Foundation Stage: Nursery

- Much of the mathematical work children do in nursery is practical.
- In the process of collecting evidence across a range of curriculum areas, staff will document learning in mathematics through photographs or written notes for individual children.
- Children have opportunities to see numbers in context in a range of real life situations such as birthday cards, birthday cakes or telephones and telephone numbers.

- Children will begin to sort, match, order, or make sets of objects when provided with a wide range of materials, staff should endeavour to document children's independent learning to identify misconceptions and inform assessment.
- Writing materials will be available in all areas of the environment to allow children to begin to record amounts by making marks.

Early Years Foundation Stage: Reception

Maths will predominantly be of a very practical nature in Reception. Photographs and learning stories of maths activities will be added to floor books or workbooks as evidence. Children have books where any written work can be recorded, if and when appropriate. The work books will come into effect more during the Spring and Summer term.

Key Stage 1

We recognise that:

- recording in mathematics will take on differing forms depending on the nature of the activity
- much mathematical work is practical involving discussion and therefore will not be recorded in written forms
- children need opportunities to practise writing number symbols, mathematical signs and number sentences but practical experiences should inform written work
- children need to the practise pencil and paper methods but there should not be an over emphasis on mathematical work out of context

Although there is no official guideline on the amount of work that should be recorded in books, teachers are required to plan opportunities for children to record a range of their mathematical experiences across all mathematical domains throughout the year in order to evidence curriculum coverage and show pupil progress.

Children will work in A4 books with squared paper; 1.5 cm squares for Year 1 and less able Year 2 children and 1cm squares for Year 2 children. Children will be taught how to set out their work correctly and encouraged to take pride in the presentation of their work.
Two-digit numbers will be written in one square unless children are recording algorithms.

Marking and Feedback

Early Years Foundation Stage: Nursery

Immediate verbal feedback is given to children when working in focus groups or at adult supported play activities.

Early Years Foundation Stage: Reception

As a large proportion of Reception maths will be recorded by the use of photographs and learning stories, Reception staff ensure that immediate verbal feedback is given whenever possible. When children are ready to begin recording in books, correct work will be marked in green and incorrect work in orange.

Key Stage 1

Correct work will be marked in green and incorrect work in orange. Ticks can be used to symbolise correct answers and an orange dot will be used to represent an incorrect answer. Children will be encouraged to write the correct answer next to the dot. Time should be given to correct errors and discuss misconceptions.
Where possible, teachers should give verbal feedback by marking the work with the child present. Children will be given verbal next steps in their learning. This will depend on the activity and be appropriate to the individual child. A challenge will be added to some pieces of work (where appropriate) and time will be given for children to complete this.

Please see the Marking and Feedback Policy and Guidelines for additional information.

Homework

Early Years Foundation Stage: Nursery
In nursery, suggestions of how parents can support children's mathematical development are given at the beginning of each half term via the topic newsletter. In addition, the addresses of any specific websites that are being used to support learning are provided to parents to access at home. Parents who do not have access to internet at home are invited into nursery if they wish to access the sites with their child.

Early Years Foundation Stage: Reception
Homework is sent on a weekly basis in Reception, and is usually linked to maths once a fortnight. Maths homework is often of a practical nature e.g. asking parents to involve their child in a shopping trip, spotting numbers when out for a walk or a game to play. Written homework sheets are included when appropriate.

Key Stage 1
In Key Stage 1, one piece of maths homework is set each week.

Cross Curricular Links

Mathematics has links with a wide range of curriculum subjects. Planning opportunities for children to use mathematics across other subjects will enable them to use and apply their skills in a meaningful context. Cross curricular opportunities linked to mathematics are identified specifically at the medium term planning stage when teachers plan topics for each year group. More generally, approaches to cross curricular work within each subject could include:

- position and directional work in computing
- measuring and data handling in science
- shape and pattern in art
- position and directional work in PE
- sequences and pattern in dance

- counting and patterns or rhythm in music

Acre Rigg Infant School has achieved the Level 1 UNCRC **Rights Respecting** School Award. We teach children about their rights and model rights and respect in all relationships in school. In relation to Mathematics, children are taught a curriculum which meets their individual needs to enable them to make secure progress in the subject. Children are encouraged to recognise and achieve their next steps in learning in order to be 'the best they can be.' Reference is made to specific Rights related activities on medium term topic plans.

Assessment

Early Years Foundation Stage: Nursery

Teachers and key workers collect a range of evidence throughout the year to document children's learning in mathematics. Assessments are recorded through our Early Years Curriculum statements and are evidenced within each child's individual learning journal. Maths is assessed each term and entered into the school assessment system. Assessments are used to plan next steps in teaching and learning.

Early Years Foundation Stage: Reception

Evidence of the children's maths development is collected throughout the year in the form of photographs, annotations, learning stories and recorded work. These become part of each child's learning journey and are used to inform judgements towards the Early Learning Goals in maths. Our curriculum statements are assessed on a termly basis and entered into the school assessment system. Assessments are used to both plan next steps in teaching for the following half term and share targets with parents to enable them to support their child's learning at home.

Key Stage 1

At the end of each term, teachers use the school's levelled assessment sheets alongside their knowledge of the child's performance in lessons to make teacher assessment judgements. Assessments are used to both plan next steps in teaching for the following half term and share targets with parents to enable them to support their child's learning at home. This data is inputted into the schools assessment system for analysis by senior leaders, the Mathematics subject leader and individual class teachers.

End of Key Stage 1 Assessment

At the end of Key Stage 1, teacher assessment is informed by the statutory Interim Teacher Assessment Framework. Teachers will base their teacher assessment judgement on a broad range of evidence from across the curriculum for each pupil. The three standards for mathematics are: 'working towards the expected standard,' 'working at the expected standard' and 'working at greater depth within the expected standard.' To demonstrate that that pupils have met a standard, teachers will have evidence that a pupil demonstrates

attainment of the statements within that standard and the statements in the preceding standard(s).

Roles and Responsibilities

Mathematics Subject Leader

- keep abreast of new developments in the teaching and learning of mathematics through appropriate in-service training, attending County and Peterlee Partnership network meetings and self-study
- prioritise improvements for the teaching and learning of mathematics across the school and contribute to the school improvement plan
- audit, organise and deliver in service training for staff in mathematics
- audit, purchase and organise resources to support curriculum delivery
- lead by example and provide 'expertise' to assist staff in the delivery of the curriculum
- provide support for ECTs and teaching students
- monitor the teaching and learning of mathematics across the school in conjunction with the Head Teacher
- support staff with assessment procedures and the tracking of progress in mathematics
- evaluate the policy and scheme of work for mathematics
- liaise with the Foundation Stage Co-Ordinator and Nursery Lead Practitioner to ensure smooth transitions between each Year Group and Key Stage
- liaise with the Governor for Mathematics
- keep a subject leaders file which is informative and relevant

Mathematics Governor

- liaise with the Mathematics Subject Leader
- visit planned mathematics events in and/or join maths lessons in school and report back to the Governing Body
- monitor standards across the school in mathematics and report back to the Governing Body
- attend any County training for governors on mathematics

Head Teacher

- analyse assessment data to track the progress of identified groups
- hold pupil progress meetings with class teachers
- lead, manage and monitor teaching and learning in mathematics across the school
- ensure mathematics remains a high profile in the school improvement plan

Policy Updated: September 2024 **Review Date: September 2025**

GUIDELINES

Introduction

These Guidelines:

1. set out a range of key teaching and learning principles to support a mastery approach to the teaching and learning of mathematics, and
2. outline progressive steps for counting, number facts, number and place value, addition, subtraction, multiplication and division in line with the National Curriculum.

These Guidelines aim to ensure consistency of approach, enabling children to progress stage by stage through the mathematical content, models and representations and formal recordings they recognise from previous teaching, allowing for deeper conceptual understanding and fluency.

KEY TEACHING AND LEARNING PRINCIPLES

(*NCETM recommendations in italic text* and **school policy in bold text**)

Develop children's fluency with number facts

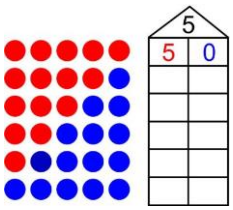
Fluent computational skills are dependent on accurate and rapid recall of basic number bonds to 20 and times-tables facts. Spending a short time everyday on these basic facts quickly leads to improved fluency. This can be done using simple whole class chorus chanting. This is not meaningless rote learning; rather, this is an important step to developing conceptual understanding through identifying patterns and relationships between numbers which is an important prerequisite for procedural fluency.

Children will spend at least 15 minutes each day learning to:

- **count on and back in 1s, 2s, 5s and 10s**
- **investigate and recall addition and subtraction facts for numbers to 5, the number 10, numbers 6-9 and then 11-20**
- **investigate and recall doubles of numbers to 5, then 10 and halves of numbers to 10, then 20**

Expose mathematical structure and work systematically

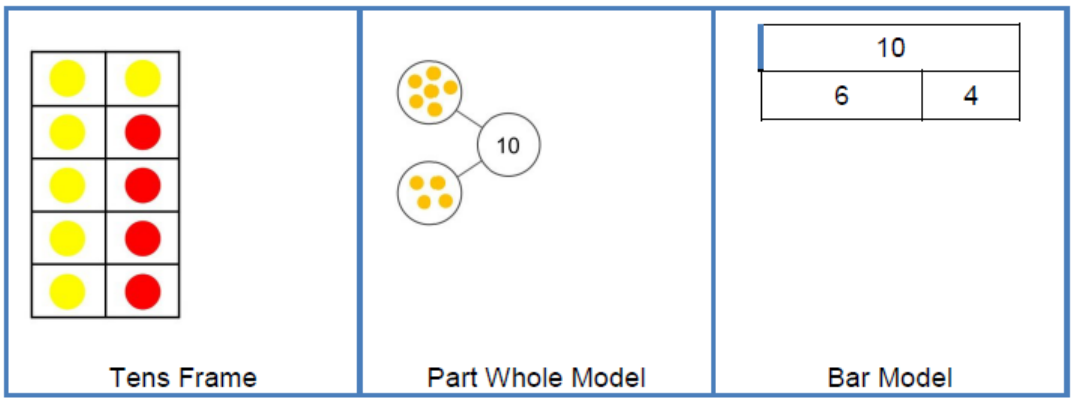
Developing instant recall alongside conceptual understanding of number bonds to 10 is important. This can be supported through the use of images such as the example illustrated below:



The image lends itself to seeing pattern and working systematically and children can connect one number fact to another and be certain when they have found all the bonds to 5.
Children will investigate and learn to recall number facts by working systematically with various manipulatives, eg. two colour counters, multilink, beadstrings pegs on a coat hanger etc. They will record corresponding number facts systematically and talk about the number patterns generated, eg:

5 + 0 = 5	**5 = 5 + 0**	**5 – 0 = 5**	**5 = 5 - 0**
4 + 1 = 5	**5 = 4 + 1**	**5 – 1 = 4**	**4 = 5 - 1**
3 + 2 = 5	**5 = 3 + 2**	**5 – 2 = 3**	**3 = 5 - 2**
2 + 3 = 5	**5 = 2 + 3**	**5 – 3 = 2**	**2 = 5 - 3**
1 + 4 = 5	**5 = 1 + 4**	**5 – 4 = 1**	**1 = 5 - 4**
0 + 5 = 5	**5 = 0 + 5**	**5 – 5 = 0**	**0 = 5 - 5**

Using other structured models such as tens frames, part whole models or bar models can help children to reason about mathematical relationships.
Connections between these models should be made, so that children understand the same mathematics is represented in different ways. Asking the question "What's the same what's different?" has the potential for children to draw out the connections. Illustrating that the same structure can be applied to any numbers helps children to generalise mathematical ideas and build from the simple to more complex numbers, recognising that the structure stays the same; it is only the numbers that change.



<u>Addition and subtraction</u>
Children will use picture stories and mathematical models, like those pictured above, to generate 'families' of calculations.

***Addition* Family: consists of four number sentences**

- **part + part = whole** **3 + 2 = 5**
- **part + part = whole** **2 + 3 = 5**
- **whole = part + part** **5 = 2 + 3**
- **whole = part + part** **5 = 3 + 2**

***Subtraction* Family: consists of four number sentences**

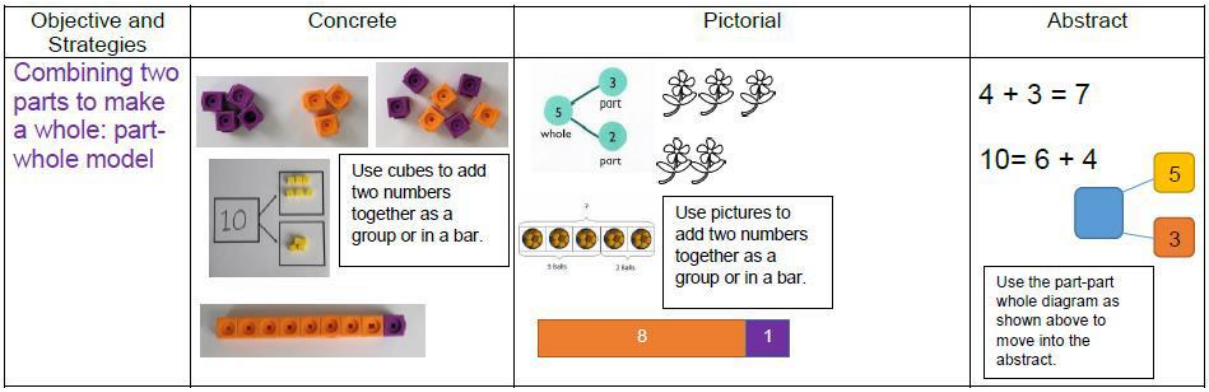
- **whole – part = part 5 – 2 = 3**
- **whole – part = part 5 – 3 = 2**
- **part = whole – part 2 = 5 – 3**
- **part = whole – part 3 = 5 – 2**

***Fact* Family: consists of all eight statements**

Children will transfer these structures to generalise about the relationships between higher numbers as they progress through the curriculum.

<u>Move between the concrete, visual and abstract</u>

Children's conceptual understanding and fluency is strengthened if they experience concrete, visual and abstract representations of a concept during a lesson. Moving between the concrete and the abstract helps children to connect abstract symbols with familiar contexts, thus providing the opportunity to make sense of, and develop fluency in the use of, abstract symbols.



Children will experience concrete, visual and abstract representations of mathematical concepts during a lesson. Planning will detail opportunities for each representation within each 'unit' of work covered.

<u>Contextualise the mathematics</u>

A lesson about addition and subtraction could start with this contextual story:
"There are 11 people on a bus. At the next stop 4 people get on. At the next stop 6 people get off. How many are now on the bus?"
This helps children develop their understanding of the concepts of addition and subtraction and their ability to link the concrete and abstract representations of mathematics.
Children will be given the opportunity to both represent a number story as a number sentence and invent a number story to match a specific calculation when they are investigating and practising number facts and working on calculations more widely.
For example, if the children are thinking about this calculation: 4 – 8, then the teacher should ask the children: "What does the 14 represent? What does the 8 represent?",

expecting that children will answer: "The 14 represents the people on the bus, and the 8 represents the number of people who got off."

Develop children's fluency with mental calculation

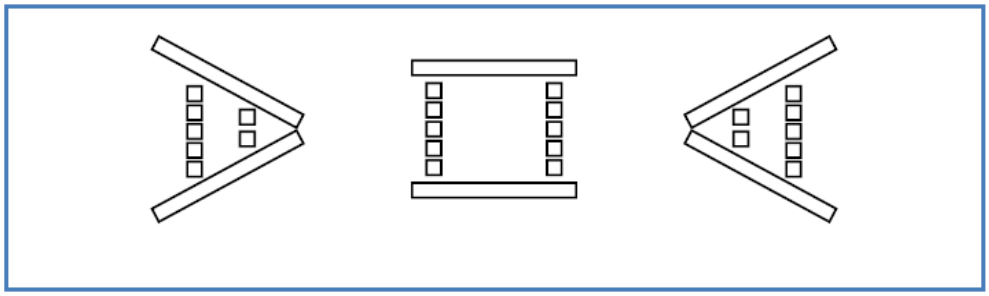
Young children benefit from being helped at an early stage to start calculating, rather than relying on 'counting on' as a way of calculating. For example, with a sum such as:
4 + 7 =__ Rather than starting at 4 and counting on 7, children could use their knowledge and bridge to 10 to deduce that because 4 + 6 = 10, so 4 + 7 must equal 11.
Referred to "magic 10" - it is helpful to make a 10 as this makes the calculation easier.
Children will be taught 'Magic 10' when they have a sound understanding of addition facts to 10 and they are learning to add two single digit to 20. (See Magic 10 Planning Guidance)

Develop fluency in the use of formal written methods

Teaching column methods for calculation provides the opportunity to develop both procedural and conceptual fluency. Teachers need to ensure that children understand the structure of the mathematics presented in the algorithms, with a particular emphasis on place value. Base ten apparatus should be used to support the development of fluency and understanding.
Informal methods of recording calculations are an important stage to help children develop fluency with formal methods of recording. However, they should only used for a short period, to help children understand the internal logic of formal methods of recording calculations. They are stepping stones to formal written methods.
Children will record calculations informally and then formally alongside the use of base 10 apparatus to support their understanding.

Teach inequality alongside teaching equality

To help young children develop their understanding of equality, they also need to develop understanding of inequality. One way to introduce the signs is to use rods and cubes to make a concrete and visual representation such as: to show that 5 is greater than 2 (5 ≥ 2), 5 is equal to 5 (5 = 5), and 2 is less than 5 (2 ≤ 5).



Incorporating both equality and inequality into examples and exercises can help children develop their conceptual understanding. 5 + 7 □ 5 + 6 An activity like this also encourages children to develop their mathematical reasoning: "I know that 7 is greater than 6, so 5 plus 7 must be greater than 5 plus 6".

Children will be introduced to the inequality signs in Year 1 Autumn Term as detailed in the White Rose Scheme of Work. They will use the signs to compare numbers before progressing on to missing symbol number sentences.

Look for pattern and make connections

Even when a great many visual representations of the mathematics and some concrete resources are used in lessons, understanding, however, does not happen automatically, children need to reason by and with themselves and make their own connections. The question "What's the same, what's different?" can be used frequently to make comparisons. For example "What's the same, what's different between addition facts for 10 and addition facts for 20?"

Teachers will plan opportunities for children to talk about patterns and make connections in mathematics.

Use intelligent practice

Teachers should avoid practice which involves mechanical repetition and create opportunities for children to engage in exercises where they are required to reason and make connections between calculations. This will develop both their procedural and conceptual fluency. For example:

2 × 3 =

2 × 30 =

2 × 300 =

Teachers will plan opportunities for children to engage in intelligent practice and talk about what they notice.

Use empty box problems

Empty box problems are a powerful way to help children develop a strong sense of number through intelligent practice. They provide the opportunity for reasoning and finding easy ways to calculate. They enable children to practise procedures, whilst at the same time thinking about conceptual connections. A sequence of examples such as

3 + □ = 8
3 + □ = 9
3 + □ = 10
3 + □ = 11

helps children develop their understanding that the = symbol is an assertion of equivalence, and invites children to spot the pattern and use this to work out the answers.

Children should also be given examples where the empty box represents the operation, for example:
4 × 5 = 10 □ 10
6 □ 5 = 15 + 15
Children will be introduced to empty box problems when working with known number facts and then progress to solving number problems with increasingly bigger numbers – in line with curriculum year group requirements. Empty box problems should be solved by helping the children to determine which numbers, including the missing number, are the parts and which is the whole.

Use questioning to develop mathematical reasoning
Teachers' questions in mathematics lessons are often asked in order to find out whether children can give the right answer to a calculation or a problem. However, in order to develop children's conceptual understanding and fluency, there needs to be a strong and consistent focus on questioning that encourages and develops their mathematical reasoning. This can be done simply by asking children to explain how they worked out a calculation or solved a problem, and to compare and contrast different methods that are described. Children quickly come to expect that they need to explain and justify their mathematical reasoning, and they soon start to do so automatically – and enthusiastically. Some calculation strategies are more efficient and teachers should scaffolded children's thinking to guide them to the most efficient methods, whilst at the same time valuing their own ideas.
Teachers will use the following rich questioning strategies in lessons:
What's the same and what's different? True or false? Which is the odd one out and why? Here's the answer, what could the question have been?

Rich questioning can also be used alongside intelligent practice exercises to further develop children's procedural fluency, conceptual understanding and mathematical reasoning:

In this sequence of expressions, what stays the same each time and what's different?
23 + 10
23 + 20
23 + 30
23 + 40
Discussion of the variation in these examples can help children to identify the relationship between the calculations and hence to use the pattern to calculate the answers.

Which is the odd one out in this list of numbers: 24, 15, 16 and 22?
This encourages children to apply their existing conceptual understanding.
Possible answers could be:
"15 is the odd one out because it's the only odd number in the list."
"16 is the odd one out because it's the only square number in the list."
"22 is the odd one out because it's the only number in the list with exactly four factors."

Children are given a series of equations are asked whether they are true or false:
4 × 6 = 23
4 × 6 = 6 × 4
12 ÷ 2 = 24 ÷ 4
12 × 2 = 24 × 4
Children are expected to reason about the relationships within the calculations rather than calculate.

Expect children to use correct mathematical terminology and to express their reasoning in complete sentences

The quality of children's mathematical reasoning and conceptual understanding is significantly enhanced if they are consistently expected to use correct mathematical terminology (e.g. saying 'digit' rather than 'number') and to explain their mathematical thinking in complete sentences.

I say, you say, you say, you say, we all say

This technique enables the teacher to provide a sentence stem for children to communicate their ideas with mathematical precision and clarity. These sentence structures often express key conceptual ideas or generalities and provide a framework to embed conceptual knowledge and build understanding.

Example 1:

If the rectangle is the whole, the shaded part is one third of the whole.

Having modelled the sentence, the teacher then asks individual children to repeat this, before asking the whole class to chorus chant the sentence. This provides children with a valuable sentence for talking about fractions. Repeated use helps to embed key conceptual knowledge.

Example 2:

Children fill in the missing parts of a sentence; varying the parts but keeping the sentence stem the same

There are 12 stars. ½ of the stars is equal to 6 stars.
There are 12 stars. ¼ of the stars is equal to 3 stars.

Example 3:

A mathematical generalisation or "rule" emerges within a lesson.

When adding 10 to a number, the ones digit stays the same

This is repeated in chorus using the same sentence, which helps to embed the concept.

Children will be taught to use correct mathematical vocabulary. Sentence stems will be modelled and used to help children to explain their mathematical thinking in complete sentences.

Agreed vocabulary to use includes:

- **"number sentence" alongside "number story"**
- **"is equal to" as opposed to "equals"**
- **the terms "parts" and "whole" when talking about addition and subtraction to support transition from concrete/visual strategies to abstract**
- **"number bonds" to denote a "family of numbers" which can be used to generate:**
    - **"addition facts"**
    - **"subtraction facts"**
    - **"addition family," and**
    - **"subtraction family"**
- **"addition family" (4 number sentences), "subtraction family" (4 number sentences) and "fact family" (all eight number sentences)**
- **"ones" as opposed to "units" when discussing place value, eg. 23 is two tens and three ones**
- **"digit" rather than "number" 0**

YEAR 1 MATHEMATICS OVERVIEW

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Autumn 1	Number: Place Value (Within 10)			Number: Addition and Subtraction (Within 10)			Assessment
Autumn 2	Number: Place Value (Within 20)			Measurement: Length and Height	Geometry: Shape		Assessment
Spring 1	Number: Addition and Subtraction (Within 20)			Number: Place Value (Within 50)		Assessment	
Spring 2	Number: Multiplication and Division			Measurement: Time		Assessment	
Summer 1	Number: Fractions			Measurement: Weight and Volume	Assessment		
Summer 2	Number: Place Value (Within 100)		Measurement: Money		Position and Direction	Assessment	

YEAR 2 MATHEMATICS OVERVIEW

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Autumn 1	Number: Place Value				Geometry: Properties of Shape		Assessment
Autumn 2	Number: Addition and Subtraction				Measurement: Length, Height, Mass, Capacity and Temperature		Assessment
Spring 1	Number: Multiplication and Division			Statistics		Assessment	
Spring 2	Number: Fractions			Measurement: Money		Assessment	
Summer 1	Measurement: Time		SATs				
Summer 2	Position and Direction		Consolidation			Assessment	

YEAR 1 ARITHMETIC OVERVIEW

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Counting	Counting in 1s: on to 20 and back to 0 - in order and from random numbers	Counting in 10s: on to 100 and back to 0 - in order and from random multiples of 10	Count on in 2s Count on in 5s	Counting on in 1s to 100 - in order and from random numbers (focus on bridging multiples of 10)	Counting back in 1s from 100 - in order and from random numbers (focus on bridging multiples of 10)	
Addition and Subtraction (Counting on and back)	+ and - 1 to 10 4+1= ☐ 5-1= ☐ + and - 1 to 20 12+1=☐ 16-1= ☐ + and - to 5 2+1= ☐ 4-2= ☐ + and - to 10 6+3= ☐ 9-7= ☐	+ and - of three numbers to 10 (in descending order first) 4+2+1=☐ 9-5-2= ☐	+ and - to 20 16+3= ☐ 18-5= ☐ + and - of three numbers to 20 (in descending order first) 9+5+2= ☐ 16-5-1= ☐			
Missing Number Calculations				+ and - to 10 6+☐=9 8- ☐=2 + and - to 20 9+☐=14 15- ☐=9	+ and - to 20 12+☐= 8+9 19-8 =15- ☐ 17- ☐= 6+5	+ and - of three numbers to 10, then 20 (missing number box in the third position first) 5+2+☐=9 8-2- ☐=4 11+☐+6=20
Fractions				x 10 3x10=☐ x 2 5x2= ☐ x 5 6x5= ☐		
Multiplication					½ of a number to 20 ½ of 6 = ☐ ¼ of a number to 20 ¼ of 12 = ☐	

YEAR 2 ARITHMETIC PLANNING

	Autumn 1	Autumn 2	Spring 1	Spring 2
Counting	Counting on and back in 1s from 100 - in order and from random numbers (focus on bridging multiples of 10)		Counting on in 3s to 12 times Revision of counting on in 10s, 2s and 5s to12 times	
Addition and Subtraction (Counting on and back)		+ and - of two multiples of 10 40+20=□ 50-30= □ + and - of three multiples of 10 40+20+10=□ 50-30-20=□ Column addition and subtraction	+ and - a single number to a two-digit number 48+3=□ 52-5= □	Column addition and subtraction with renaming
Missing Number Calculations (Counting on and back)	+ and - to 20 9+□=14 12+□= 8+9 15- □=9 19-8 =15- □ + and - of three numbers to 20 (missing number box in the third position first) 11+□+6=20 16-5-□=□ + of two and three missing parts to 20 □+□= 16 □+□+□=18	+ and - of two multiples of 10 40+□=60 50-□=10 + and - of three multiples of 10 (missing number box in the third position first) 30+10+ □=70 80-30- □=20	+ and - a single number to a two-digit number 39+□=44 83-□=76	
Multiplication			Multiplication in any order eg: x10 12x10=□ 6x10=□ Division by counting on in multiples 50÷10=□ 16÷2=□ 15÷3=□	
Fractions				1/2 and 1/4 of a number to 20 2/4 and 3/4 of a number to 20 1/3 and 2/3 of a number to 20

Name:	YEAR 1 MATHEMATICS ASSESSMENT			
	Arithmetic	**Wider Mathematics**		
Autumn	Count in 1s: on to 20 and back to 0 - in order and from random numbers Add and subtract 1 to 10 Add and subtract 1 to 20 Add and subtract to 10 by counting on and back Add and subtract to 20 by counting on and back	Count objects and write numbers to 10 Use mathematical language to compare groups of objects and numbers to 10 Use inequality statements to compare groups of objects and numbers to 10 Order three groups of objects or three numbers to 10	Read, write and interpret mathematical statements using + and = signs Understand and write addition fact families Explore addition facts within 10 Know addition facts for the number 10 Write addition facts systematically Solve one step problems by adding two numbers to 10 Add to 10 by counting on Find a missing part of a whole number to 10 Compare number statements to 10	Read, write and interpret mathematical statements using - and = signs Understand and write subtraction fact families Explore subtraction facts within 10 Know subtraction facts for the number 10 Write subtraction facts systematically Solve one step problems by subtracting two numbers to 10 Subtract from numbers to 10 by counting back Subtract by finding the difference between nos to 10 Compare number statements to 10
	Count in 10s: on to 100 and back to 0 - in order and from random multiples of 10 Add and subtract three numbers to 10 by counting on and back	Count objects and write numbers to 20 Represent numbers to 20 using tens and ones Use mathematical language to compare groups of objects and numbers to 20 Use inequality statements to compare groups of objects and numbers to 20 Order three groups of objects or three numbers to 20	Use mathematical language to compare length and height Measure length and height in centimetres using a ruler	Recognise and name 2D shapes (square, rectangle, triangle, circle, pentagon, hexagon) Sort 2D shapes Recognise and name 3D shapes (cube, cuboid, cone, pyramid, sphere, cylinder) Sort 3D shapes
Spring	Count on in 2s to 20 Count on in 5s to 100 Add and subtract to 20 by counting on and back Add and subtract three numbers to 20 by counting on and back	Read, write and interpret mathematical statements using + and = signs Add to 20 by counting on Use knowledge of addition facts for the number 10 to find addition facts for the number 20 Solve one step problems - add two numbers to 20 by counting on Add numbers to 20 by making a ten Compare number statements	Read, write and interpret mathematical statements using - and = signs Subtract from a number to 20 by counting back Solve one step problems - subtract a number from a number to 20 by counting back Subtract by making a ten Subtract by finding the difference between numbers to 20 Compare number statements Explore addition and subtraction fact families and recognise the inverse operation	Count objects and write numbers to 50 Represent numbers to 50 using tens and ones Use mathematical language to compare groups of objects and numbers to 50 Use inequality statements to compare groups of objects and numbers to 50 Order up to four groups of objects or numbers to 50

Name:	YEAR 1 MATHEMATICS ASSESSMENT		
	Arithmetic	**Wider Mathematics**	
Spring	Missing number calculations - add and subtract to 10 by counting on and back Missing number calculations - add and subtract to 20 by counting on and back Multiply by 10 Multiply by 2 Multiply by 5	Count equal groups Add equal groups Understand doubling with numbers up to 20 Make arrays Divide by making equal groups Divide by sharing equally	Use key vocabulary related to time (before / after, first / next, morning / afternoon / evening Know the days of the week and talk about events using the vocabulary yesterday and tomorrow Learn about the months of the year and pick out special dates Read and set the time to the hour Read and set the time to the half hour Understand second, minutes and hours and decide which activities would measured in each unit of time Compare time using the language faster / slower, earlier / later
Summer	Count on in 1s to 100 - in order and from random numbers Missing number calculations - understanding the equals sign to 20 by counting on and back Find 1/2 of a number to 20 Find 1/4 of a number to 20	Recognise, find and name a half as one of two equal parts of an object, shape or quantity (by sharing) Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity (by sharing)	Compare the mass of two objects using the vocabulary heavier / lighter / equal Use non-standard units to weigh and compare the mass of objects Use non-standard units to measure the capacity of different containers Use non-standard units to measure the volume of liquid in a container Compare the capacity of different containers using non-standard units of measurement Compare volume using the vocabulary full / empty, more or greater than / less than and equal
	Count back from 100 to 0 - in order and then from random numbers Missing number calculations - add and subtract three numbers to 20 by counting on and back	Count objects and write numbers to 100 Represent numbers to 100 using tens and ones Use mathematical language to compare groups of objects and numbers to 100 Use inequality statements to compare groups of objects and numbers to 100 Order up to four groups of objects or numbers to 50	Recognise and know the value of different denominations of coins Recognise and know the value of different notes Use 'step counting' to count sets of 2p, 5p and 10p coins	Use the language full, half, quarter and three quarter to describe turns made by themselves, shapes and objects Use the language up / down, left / right to describe position, direction and movement

Name:		YEAR 2 MATHEMATICS ASSESSMENT	
	Arithmetic	**Wider Mathematics - Working at the expected standard Working at greater depth**	
Autumn	Count back from 100 to 0 - in order and then from random numbers Add and subtract missing number calculations to 20 by counting on and back Missing number calculations - add and subtract three numbers to 20 by counting on and back Missing number additions - two and three missing parts	Count objects to 100 Represent numbers to 100 Partition numbers into tens and ones Compare numbers using the correct language and symbols Order numbers Partition any two-digit number into different combinations of tens and ones, explaining their thinking verbally, in pictures or using apparatus	Recognise 2D and 3D shapes Count sides and vertices on 2D shapes Count edges and vertices on 3D shapes Identify 2D shapes on the surface of 3D shapes Draw 2D shapes Sort 2D and 3D shapes Recognise vertical lines of symmetry in shapes Make patterns with 2D and 3D shapes Name and describe properties of 2D and 3D shapes, including number of sides, vertices, edges, faces and lines of symmetry Describe similarities and differences of 2D and 3D shapes, using their properties
	Add and subtract two multiples of 10 by counting on and back Add and subtract three multiples of 10 by counting on and back Missing number calculations - add and subtract two multiples of 10 by counting on and back Missing number calculations - add and subtract two multiples of 10 by counting on and back	Fact families: write related facts Check calculations using apparatus and the inverse Compare number sentences Calculate / understand related facts Calculate / recall bonds to 100 (multiples of 10) Calculate 10 more and 10 less Column addition and subtraction, also with renaming Recall all number bonds to and within 10 and use these to reason with and calculate bonds to and within 20, recognising other associated additive relationships Add and subtract any 2 two-digit numbers using an efficient strategy, explaining their method verbally, in pictures or using apparatus Use reasoning about numbers and relationships to solve more complex problems and explain their thinking Solve unfamiliar word problems that involve more than one step	Measure length and height in centimetres and metres Compare lengths Order lengths Four operations and lengths: solve one and two step problems Compare mass Measure mass in grams and kilograms Compare capacity Measure capacity in millilitres and litres Compare temperature Measure temperature in degrees Celsius Read scales in divisions of ones, twos, fives and tens Read scales where not all numbers on the scale are given and estimate points in between

Name:		YEAR 2 MATHEMATICS ASSESSMENT	
	Arithmetic	**Wider Mathematics - Working at the expected standard Working at greater depth**	
Spring	Count on in 10s, 2s and 5s to 12 times Count on in 3s to 12 times Add and subtract a single digit to/from a two digit number by counting on and back Missing number calculations - add and subtract a single digit to/from a two digit number by counting on and back Multiply by 10, 2, 5 and 3 Divide by 10, 2, 5 and 3	Recognise, make and add equal groups Write multiplication sentences Use arrays Multiply by 2 Multiply by 5 Multiply by 10 Divide by sharing to make equal groups Divide by grouping objects into a given amount Recognise the link between division, multiplication and repeated addition Divide by 2 Divide by 5 Divide by 10 Recognise odd or even numbers Recall multiplication and division facts for 2, 5 and 10 and use them to solve simple problems, demonstrating an understanding of commutativity as necessary, Recall and use multiplication and division facts for 2, 5 and 10 and make deductions outside known multiplication facts	Make tally charts Draw pictograms (1-1) Interpret pictograms (1-1) Draw pictograms (2,5, 10) Interpret pictograms (2, 5, 10) Draw block diagrams (1-1, 2,5, 10) Interpret block diagrams (1-1, 2,5, 10) Read scales where not all numbers on the scale are given and estimate points in between
	GD	GD	GD
	Calculate using column addition and subtraction Calculate using column addition and subtraction with renaming Find 1/2, 1/4, 2/4 and 3/4 of a number to 20 Find 1/3 and 2/3 of a number to 20	Recognise a half / Find a half Recognise a quarter / Find a quarter Understand equivalence - two quarters and one half Find three quarters Recognise a third / Find a third Identify 1/4, 1/3 , 1/2 , 2/4, 3/4, of a number or shape. Know that all parts must be equal parts of the whole	Count money - pounds and pence Select money - pounds and pence Make the same amount - pounds and pence Find the total (2 digit add 2 digit, 2 digit add ones, 2 digit add tens, 3 single digits) Finding change Solve two step problems Use different coins to make the same amount
	GD	GD	GD
		Read and set the time - o'clock and half past Read and set the time - quarter to and quarter past Read and set the time - five minute intervals Know the number of minutes in an hour / the number of hours in a day Find durations of time Compare durations of time Read the time on a clock to the nearest 15 minutes	Describe movement Describe turns Create patterns with shapes that involve direction and turns
	GD	GD	GD