Mathematics

- Number
  - Number & Place value
  - Addition & Subtraction
  - Multiplication & Division
  - Fractions
- Ration & Proportion
- Algebra
- Measurement
- Geometry
  - Properties of Shape
  - Position & Direction
- Statistics

Mathematics

At Angram Bank Primary, our **intention** is to ensure all children access a high quality maths curriculum with a mastery approach, so that all children become fluent in the fundamentals of mathematics. Children will also be able to reason mathematically and solve problems by applying their understanding.

Our maths curriculum is **implemented** through White Rose's carefully sequenced units which enable children to master concepts and become assured, happy and resilient mathematicians who relish the challenge of maths. These overviews are designed to support a mastery approach to teaching and learning and have been designed to support the aims and objectives of the new National Curriculum. These overviews:

- Have number at the heart. A large proportion of time is spent reinforcing number to build competency
- Support the idea of depth before breadth
- Ensure all children have access to an ambitious curriculum
- Provide plenty of opportunities to build reasoning and problem solving elements into the curriculum
- Provide all children the opportunities to build competency using concrete, pictorial and abstract representations
- With the White Rose calculation policies ensure a consistent approach in teaching the four operations.

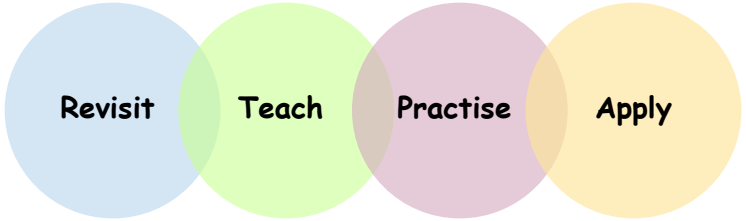
Angram Bank children need daily Maths Meetings alongside high quality maths lessons which enables them to embed key concepts in their long-term memory and provide teachers with various opportunities to assess children's learning and understanding of concepts.

The **impact** of the maths curriculum is that children become fluent mathematicians and are able to apply mastered concepts to other areas. Our high quality formative assessment allows teachers to check pupils' understanding effectively, and identify and correct misconceptions. These assessments are used to inform our daily planning and pupil progress meetings.

Mathematics
Design and Planning

Our maths curriculum is derived from the White Rose Hub structure and should:

- allow for concrete, pictorial and abstract representation
- be planned using the revisit, teach, practise and apply principles



- ensure problem solving and reasoning questions are used to challenge children thinking at all levels
- include daily Maths Meeting - these are used to recap skills already taught
- facilitate our Catch Up and Keep Up (CUKU) programme including same day interventions which targets children through formative assessment
- assess children using half termly testing

Maths Meetings

Non-negotiables

Maths Meeting Aims

Our daily Maths Meetings are designed to embed key concepts in children's long-term memory. Revisiting these key concepts will enable children to know more, remember more and do more. They allow children to develop fluency and unconsciously apply their knowledge as skills in different contexts which in turn enables them to make connections with different areas of maths.

Maths Meetings recap previously taught concepts, which builds a solid foundation for our maths lessons to move children's learning forward. Maths Meetings will provide various opportunities to assess children's learning and understanding of concepts. Any gaps in children's knowledge or misconceptions during the math meeting will be addressed in subsequent maths lessons or in 'catch up and keep up'.

Our Maths Meeting will:

- happen daily separate to the maths lesson
- recap the skills that have previously been taught
- involve oral or whiteboard work only
- be centred around a maths meeting board (display or flipchart)
- encourage children to talk in full sentences where appropriate

Each of the following areas will be included:

- Time
- Counting
- Addition and subtraction
- Multiplication and division
- Measurement
- Geometry
- Data handling
- Fractions/decimals/percentages
- Place value

Early maths

Developing a strong grounding in number is essential 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. By providing frequent and varied opportunities to build and apply this understanding - such as using concrete objects. Children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Aims

The Early Years Curriculum for mathematics aim to ensure that all children.

- Have a deep understanding of number to 10, including the composition of each number.
- Can verbally count beyond 20, recognising the pattern of the counting system.
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
- Have the skills and confidence to explore shapes, patterns and measurement.

This begins in nursery, where an enabling environment provides rich and meaningful experiences, setting the foundations of the key principles needed to be ready for the program of study in reception.

Classifying	Classifying objects based on one attribute Identifying the complement of a set
Matching	Match equal sets using one-to-one correspondence Match unequal sets using one-to-one correspondence
Comparing	Compare objects according to size Compare sets without counting
Ordering	Order objects according to length and size Order sets without counting

Yearly overview

The yearly overview provides an at-a-glance progression of the mathematical areas and concepts throughout the nursery scheme. The 24 blocks can be accessed at any stage of children starting nursery. Timings are flexible to allow you to start the progression where developmentally appropriate as well as with children starting nursery in different intakes through the year or longer.

Comparison 1	**Shape, space and measure 1**	**Pattern 1**	**Counting 1**	**Counting 2**	**Subitising 1**
More than, fewer than, same	Explore and build with shapes and objects	Explore repeats	Hear and say number names	Begin to order number names	I see 1, 2, 3
Pattern 2	**Shape, space and measure 2**	**Subitising 2**	**Counting 3**	**Shape, space and measure 3**	**Pattern 3**
Join in with repeats	Explore position and space	Show me 1, 2, 3	Move and label 1, 2, 3	Explore position and routes	Explore patterns
Counting 4	**Shape, space and measure 4**	**Subitising 3**	**Comparison 2**	**Pattern 4**	**Shape, space and measure 5**
Take and give 1, 2, 3	Match, talk, push and pull	Talk about dots	Compare and sort collections	Lead on own repeats	Start to puzzle
Pattern 5	**Subitising 4**	**Counting 5**	**Pattern 6**	**Counting 6**	**Comparison 3**
Making patterns together	Make games and actions	Show me 5	My own pattern	Stop at 1, 2, 3, 4, 5	Match, sort, compare

FS2

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	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	Getting to know you		Match, sort and compare		Talk about measure and patterns		It's me 1, 2, 3		Circles and triangles	1, 2, 3, 4, 5		Shapes with 4 sides
Spring	Alive in 5		Mass and capacity	Growing 6, 7, 8		Length, height and time		Building 9 and 10			Explore 3-D shapes	
Summer	To 20 and beyond		How many now?	Manipulate, compose and decompose		Sharing and grouping		Visualise, build and map			Make connections	Consolidation

White Rose MATHS

Mathematics - The National Curriculum

Purpose of Study

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject

Aims

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.

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.

Key Stage 1

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Year 1

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	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 **Place value (within 10)**					Number **Addition and subtraction (within 10)**					Geometry **Shape**	Consolidation
Spring	Number **Place value (within 20)**			Number **Addition and subtraction (within 20)**			Number **Place value (within 50)**		Measurement **Length and height**		Measurement **Mass and volume**	
Summer	Number **Multiplication and division**			Number **Fractions**		Geometry **Position and direction**	Number **Place value (within 100)**		Measurement **Money**	Measurement **Time**		Consolidation

White Rose MATHS

Year 2

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	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 **Place value**				Number **Addition and subtraction**					Geometry **Shape**		
Spring	Measurement **Money**				Number **Multiplication and division**				Measurement **Length and height**	Measurement **Mass, capacity and temperature**		
Summer	Number **Fractions**				Measurement **Time**			**Statistics**	Geometry **Position and direction**	**Consolidation**		

Lower Key Stage 2

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Year 3

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	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 **Place value**			Number **Addition and subtraction**					Number **Multiplication and division A**			
Spring	Number **Multiplication and division B**			Measurement **Length and perimeter**			Number **Fractions A**			Measurement **Mass and capacity**		
Summer	Number **Fractions B**		Measurement **Money**		Measurement **Time**			Geometry **Shape**		**Statistics**		Consolidation

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	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 Place value				Number Addition and subtraction			Measurement Area	Number Multiplication and division A			Consolidation
Spring	Number Multiplication and division B				Measurement Length and perimeter		Number Fractions				Number Decimals A	
Summer	Number Decimals B		Measurement Money		Measurement Time	Consolidation	Geometry Shape			Statistics	Geometry Position and direction	

Upper Key Stage 2

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

At this stage, pupils 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, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

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

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Year 5

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	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 **Place value**			Number **Addition and subtraction**		Number **Multiplication and division A**			Number **Fractions A**			
Spring	Number **Multiplication and division B**			Number **Fractions B**		Number **Decimals and percentages**			Measurement **Perimeter and area**		**Statistics**	
Summer	Geometry **Shape**			Geometry **Position and direction**		Number **Decimals**			Number **Negative numbers**	Measurement **Converting units**		Measurement **Volume**

Yearly overview

The yearly overview provides suggested timings for each block of learning, which can be adapted to suit different term dates or other requirements.

	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 **Place value**		Number **Addition, subtraction, multiplication and division**					Number **Fractions A**		Number **Fractions B**		Measurement **Converting units**
Spring	**Ratio**		**Algebra**		Number **Decimals**		Number **Fractions, decimals and percentages**		Measurement **Area, perimeter and volume**		**Statistics**	
Summer	Geometry **Shape**				Geometry **Position and direction**		Themed projects, consolidation and problem solving					