



Maths

Key Concepts

SEQUENCING (How are we piggybacking learning?)

The Maths curriculum Pathway document is a guide to how the White Rose Maths scheme links to the National Curriculum. This enables teachers to see what is covered in their year group and what is taught in other years. Maths subject leaders and senior leaders can gain an overview of the whole Primary phase to see how topics are developed over time, and the resources needed.

Our Maths Pathways are:

Pathway 1 – Number: Place Value
Pathway 2 –Number: Addition and Subtraction
Pathway 3 – Multiplication and Division
Pathway 4 – Number: Fractions
Pathway 5 – Measurement: Length and Height, Weight and Volume, Money
Pathway 6 – Time
Pathway 7 –Geometry: Shape, Position and Direction
Pathway 8 –Statistics
Pathway 9 –Decimals and Percentages
Pathway 10 –Ratio and Proportion
Pathway 11 –Algebra

CURRICULUM DRIVERS – How?

AMBITION (Success) –

- The Maths curriculum at Peters Hill aims to promote high standards of Numeracy by equipping children with a broad range of vital skills which can be applied not only within school but used in everyday life. The desired outcome is to instill a deep and lasting interest in mathematics to last a lifetime.

BELIEF (Confidence)–

- It is important to encourage children to develop and nurture a range of strategies to help them solve problems, make links with other subjects and grow in confidence in the understanding of numbers.
- Children are given praise, primarily for effort irrespective of getting the answer correct, they are listened to and their interpretations and methods acknowledged, and contributions valued.

COMPASSION (Motivation) –

- Peters Hill promotes a positive, enthusiastic and resilient attitude towards maths. Students are taught that everyone can become good at maths if they work hard and challenge themselves to constantly learn more.
- Emphasis is given to developing mathematical thinking and going through the process of solving the problem rather than the goal being focused on simply getting the right answer.

PRIDE (Knowledge)–

- Because pupils will be well-practiced in using a wide range of written and mental methods, these skills will be committed to their long term memory and therefore pupils will have faith in their mathematical abilities
- Pupils will have pride in having a sound understanding of calculation, number, shape, space and measures, and handling and interpreting data

RESPECT (Responsibility) –

- Children will be encouraged to take responsibility for setting personal goals so they feel accountable for their own learning.
- Pupils will be encouraged to approach problems using different strategies and celebrate the fact that individuals can approach the problem in unique ways, reiterating how maths is dynamic and allows for different ways of thinking, cultivating an air of mutual respect.

DEEP IDEAS (Curriculum Depth)

Peters Hill follows the central component of the NCETM programme to develop the teaching of Mastery based around Five Big Ideas, drawn from research evidence, underpinning the teaching for mastery.

Coherence

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

Representation and Structure

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

Mathematical Thinking

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

Fluency

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

Variation

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

KEY CONCEPTS (What is the subject Intent?)

- Topics will be broken down into manageable steps that build on a sequence of learning where mathematical concepts are connected in order to ensure there is a real depth of understanding
- Adopting the mastery approach, teachers will spend longer on topics in order to embed understanding and develop rich connections across topics
- The ability to calculate both mentally and in written form lies at the heart of Mathematics and continued revisiting and consolidation of these skills is essential. In order to commit them to long term memory, including the ability to rapidly recall key facts
- Interleaved learning will support children in their ability to successfully commit previous learning into their long term memory. Therefore the curriculum will have regular repetition so a significant amount of lesson content is drawn from previously linked learning and then referred to when a new idea is introduced.
- Teaching will ensure that pupils will have the necessary appropriate knowledge of facts, concepts and procedures required to solve associated mathematical problems and reasoning activities of a more complex nature
- Gaps in learning will be identified and addressed quickly when they prevent a pupil from tackling more complex mathematical concepts
- Children will explore maths and present their findings not only in a written form but also visually; to that end teachers will adopt the CPA approach: concrete, pictorial, abstract
- Children will have a sound knowledge of subject vocabulary and will be able to use this in order to communicate and justify their ideas

TESTING OUT KNOWLEDGE (Has it stuck? How do we know?)

A variety of different assessment opportunities are used for different purposes.

Formative assessment: provides crucial information about what pupils understand and what they don't. They are also valuable guides for pupils as it can help them enhance their performance. Teachers can use them to determine if further instruction is necessary. Such testing can be informal and low stakes and seen as part of the learning process

Examples of formative assessment strategies used are:

- Teachers using effective questioning techniques as part of their everyday practice
- Analysing pupil work in books - particularly effective when intervention marking occurs at the point of teaching
- Tests and quizzes at the beginning and end of a sequence of lessons as well as regular routine quizzes, tests and tasks to build memory through over-learning of facts, concepts and procedures- e.g. weekly arithmetic tests, TTRS- rapid recall of times tables, Fluent in five- daily arithmetic questions to build number fluency & confidence in 5 minutes, Flashback 4 - a series of quick questions covering something from the previous lesson, last week and then topics from earlier in the year – maybe even last year!
- Kagan structures chosen specifically to assess children's understanding during key points within the lesson
- Entrance/Exit tickets at the beginning and end of a lesson
- Analysing outcomes of homework

SUMMATIVE ASSESSMENT

- Each half term summative assessment occurs alternating between online STAR assessments and White Rose Maths Written assessments.

The responses and outcomes from all the ongoing varying assessments informs the completion of Mark Books which in turn supports the termly teacher assessment judgements.