Maths

With reference to Precision Pedagogy chapters 4 and 7, and the EEF Early, KS2 & KS3 Maths Guidance Documents

Maths Working Wall

- ★ Contain 'live' maths thinking and problem solving.
- ★ Reflect the ideas, strategies and skills being developed over the week/unit.
- ★ Contain notes, diagrams, pictures, photographs, questions and key vocabulary.
- ★ Contain modelled learning and strategies.
- ★ Support the learning by acting as a reference point for independent learning and self-assessment.

The White Rose Mastery Approach:

- ★ Has number at its heart - a large proportion of time is spent reinforcing number to build competency
- ★ Ensures teachers stay in the required key stage and blocks areas of learning to support the ideal of depth in understanding before breadth
- ★ Ensures students have the opportunity to stay together as they work through the schemes as a whole group, with differentiated levels of support designed by the teachers
- ★ Provides plenty of opportunities to build reasoning and problem solving elements into the curriculum
- ★ When introducing children to a new calculation strategy or concept teachers should refer to the White Rose Calculation Policy. They should have the opportunity to build competency by taking the concrete (manipulatives), pictorial and abstract approach.

Thinking process for planning a sequence of maths lessons

Prior learning and assessment? What are the age related expectations? How will children work at greater depth?

What is the overall learning outcome for the end of the teaching sequence?

Review: An initial review to refresh the knowledge, skills and understanding needed for a unit of learning

Explore: Drawing on prior learning to explore new concepts to determine teaching and learning approach

Teach: Introduce a concept. Model and scaffold the knowledge, skills and understanding needed

Talk for maths: Provide opportunities for children to make sense of new learning and build connections

Practice: Allow children to practice skills to ensure new learning and explanation of thinking.

Apply: Provide opportunities for children to extend new learning within real life contexts. Review learning.

Daily Maths Meetings based on 'Make it Stick'

Retrieval Practice: Children are asked to retrieve prior learning from memory as repeated recall helps strengthen the memory and children are less likely to forget. Retrieval practice produces knowledge that can be more easily retrieved, in different contexts and a wider variety of problems. Retrieval practice embeds knowledge and skills. It makes learning easier to retrieve in the future. It leads to durable retention.

Spaced Learning: Spacing out learning, practising in instalments and allowing time to elapse between learning makes both the learning and the memory stronger. Spaced learning gives children a little time to forget, which again strengthens the memory. More effortful retrieval produces stronger learning and retention. When the mind has to work harder to remember, learning is strengthened.

Interleaved Learning: Interleaved problems require pupils to select and apply the appropriate solution to mathematical problems. It develops mathematical comprehension skills and the critical sorting process. Children have to learn how to assess and discriminate between problems, selecting and applying the correct solution from a range of possibilities. Interleaved learning supports the children's understanding of everyday life, where problems and opportunities are unpredictable and out of sequence.

Fast Maths

- ★ Ensures children are accurate and fluent with basic maths skills (e.g. multiplication tables, number bonds, division facts). They should know multiplication facts up to 12 x 12 by the end of year 4. Children are given a model to use until they are accurate.
- ★ A session lasts for 10 minutes with challenge questions. The adult reads the answers out and children mark their grid. Children are in competition with themselves only and not each. Once a child is consistently reaching 99 or 100 without a model, they should record their time as their personal best. Fast maths is a rehearsal strategy- it is not a tool for teaching.