

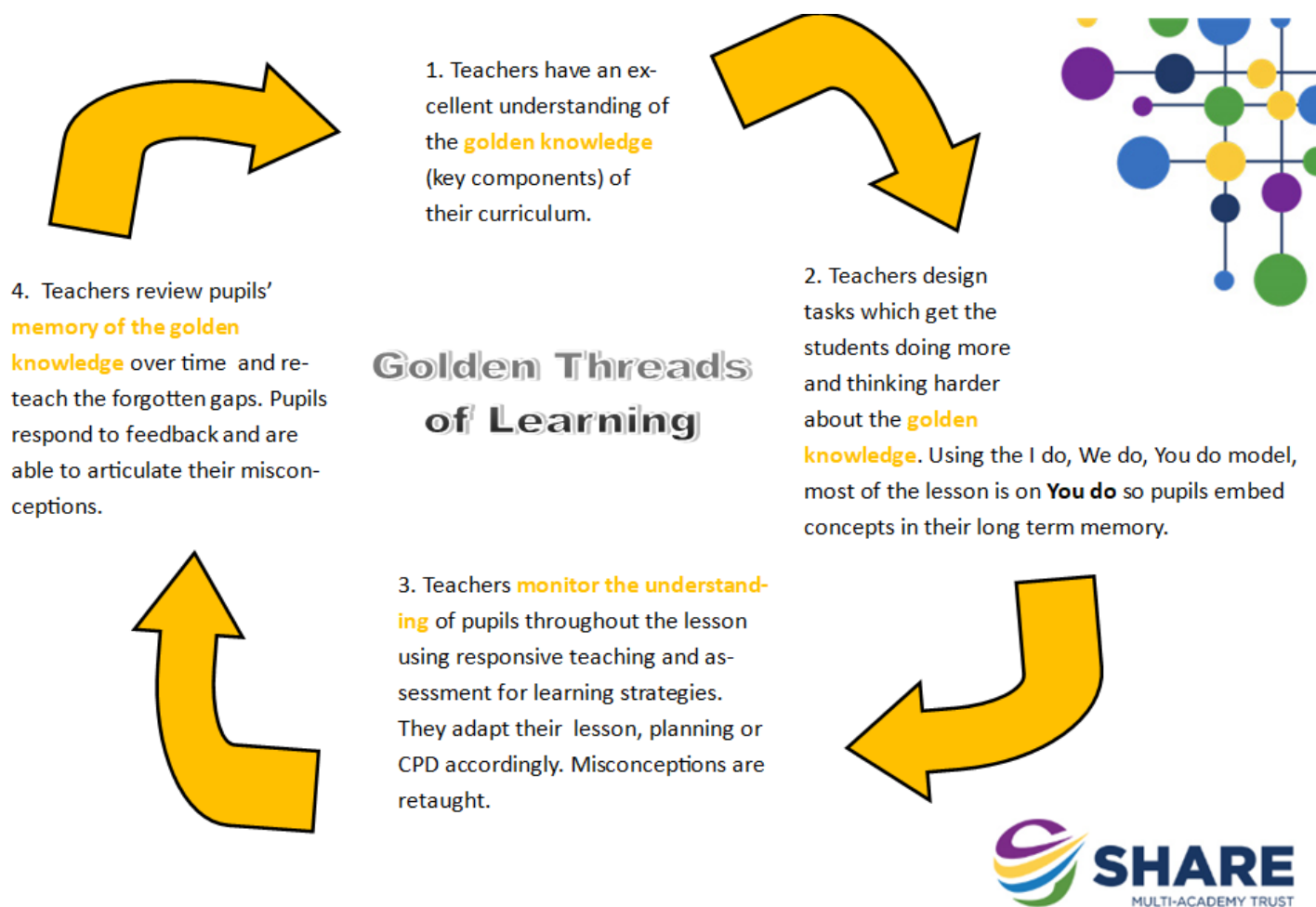
# Primary Maths Handbook



We are committed to fostering a deep and lasting understanding of mathematics through a mastery-based approach, where every child can experience success. Our vision is to empower every student to become confident and proficient mathematicians, equipped with the skills and knowledge necessary for success in an ever-changing world.

### The Golden Threads of Learning

We want to make maths ambitious and enjoyable to ensure that children experience success and attain proficiency. The 'Golden Threads of Learning' are at the forefront of our curriculum. These ensure that the sequencing, planning and delivery of our lessons are tailored to the needs of our children to support them in learning and remembering more.

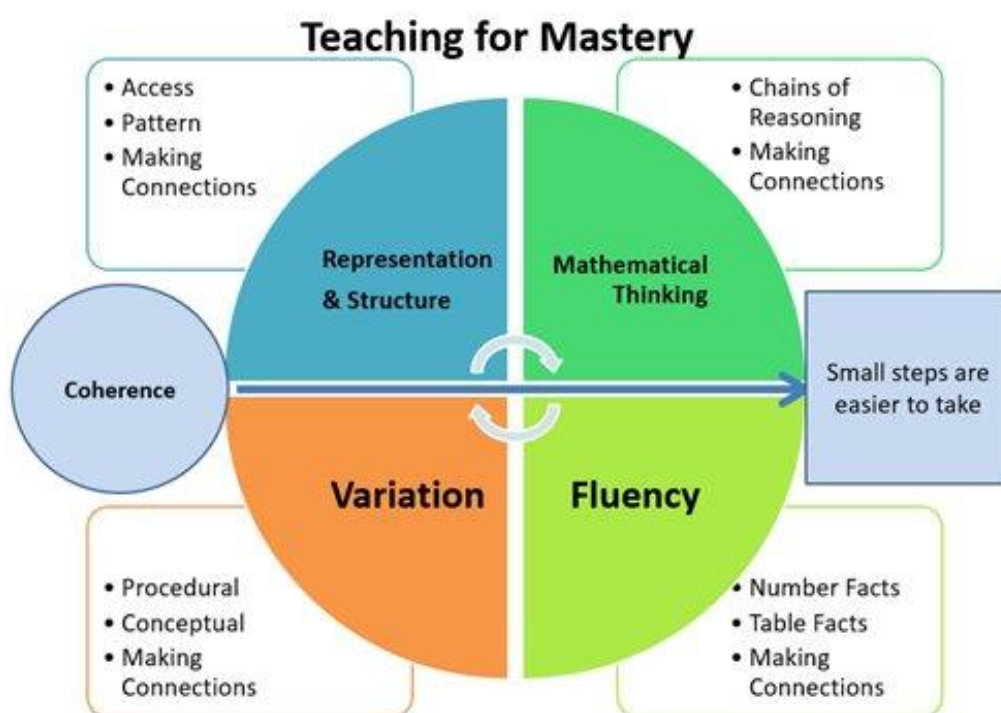


## Our Curriculum

The key expectations of our mastery curriculum reflects that of the national curriculum for mathematics. Children who:

- Become fluent in the fundamentals of mathematics, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Reason mathematically.
- Can solve problems by applying their mathematics to a variety of routine and non-routine problems.

## Five Big Ideas



The 'Five Big Ideas' are the fundamental characteristics that underpin our mastery approach.

### Coherence

White Rose uses a mastery approach, along with research-driven teaching and learning methods to inform their planning. They prioritise number knowledge and depth of learning within their sequencing, making it an ideal choice as a starting point for our children's learning journey.

We use the White Rose long term plans to inform our curriculum sequencing, yet our resources are widespread, dependent on the needs of our children. The sequencing of their planning allows for flexibility in its sequencing that teachers can utilise to revisit prior learning and address any gaps that may hinder the children's capacity to learn new content.

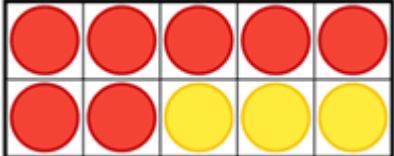
Resources for our lessons are sourced from a range of high-quality mastery resources such as textbooks and websites such as White Rose maths, NCETM and NRICH.

## Representation and Structure

Teachers model mathematics with equipment and relevant aids where necessary. This equipment should bridge the gap between initial understanding and formal methods.

Children should be explicitly shown how to use these resources to at the beginning of their learning journey to support their understanding.

Use of equipment should be consistent across a unit and across year groups to bridge between a concrete representation and the formal method.

For  example, if children begin learning number bonds to 10 in EYFS using tens frames, they should continue to use tens frames throughout their learning journey until they are confident with the formal methods.

→  $7 + 3 = 10$

## Mathematical Thinking

Teachers provide opportunities to model and verbalise mathematical thinking throughout the input of lessons, before allowing children the opportunity to share their own understanding. This is achieved by using an 'I do, We do, You do' structure to the lessons. Within these, teachers expose children to fluency and reasoning examples.

- I do: teacher models mathematical procedures, using resources and approaches that enables pupils to understand the mathematics they are learning, whilst demonstrating and verbalising success.
- We do: teacher places an example on the board and all the class work through it together. Teacher uses formative assessment to gauge understanding of the children.
- You do: teacher asks pupils to work independently to work through a final example- to be completed as a worked example in the exercise books. This may be a printed teacher example in KS1.
- This process can then be repeated to model reasoning questions to children, demonstrating strategies and elements of success.

## Fluency

To become fluent in the fundamentals of maths, children must have varied and frequent practice. Efficient, accurate recall of key number facts and procedures is essential for fluency.

Our curriculum promotes recall of facts and procedures through our curriculum sequencing and the use of the 'Flashback 4' starter activities.

### Calculate

1)  $174 \div 3$

Fluency questions require recall and practise of factual procedures. Children will use efficient strategies to calculate, whether this be a formal method, or mental maths.

2)  $272 \div 8$

Within these questions, children are to retrieve and practise a short division algorithm. It is important to note that not every question will require the same method- e.g Q2 could be halved and halved again. Q3 would not require a formal method.

3)  $810 \div 10$

## Variation

Children will need to understand how to apply their factual knowledge to the questions.

### Procedural Variation

Procedural variation draws attention to patterns and generalisations, quite often in number. It links one calculation to the next and establishes a connections and pattern.

These questions are carefully designed to provide the opportunity to:

- Practice a procedure
- Focus on making connections to other mathematical concepts
- Think mathematically

$58 - 24 = \underline{\quad}$	$36 - 25 = \underline{\quad}$	$53 - 22 = \underline{\quad}$	$49 - 24 = \underline{\quad}$
$57 - 25 = \underline{\quad}$	$46 - 24 = \underline{\quad}$	$64 - 23 = \underline{\quad}$	$48 - 25 = \underline{\quad}$
$56 - 26 = \underline{\quad}$	$56 - 23 = \underline{\quad}$	$75 - 24 = \underline{\quad}$	$47 - 26 = \underline{\quad}$

For example, these questions all have the same answer, though there are slight variations in the calculations. This draws attention to the relationships between the calculations, not just the procedure.

These questions can be asked to provoke mathematical thinking to develop an understanding of the relationships.

What's the same?

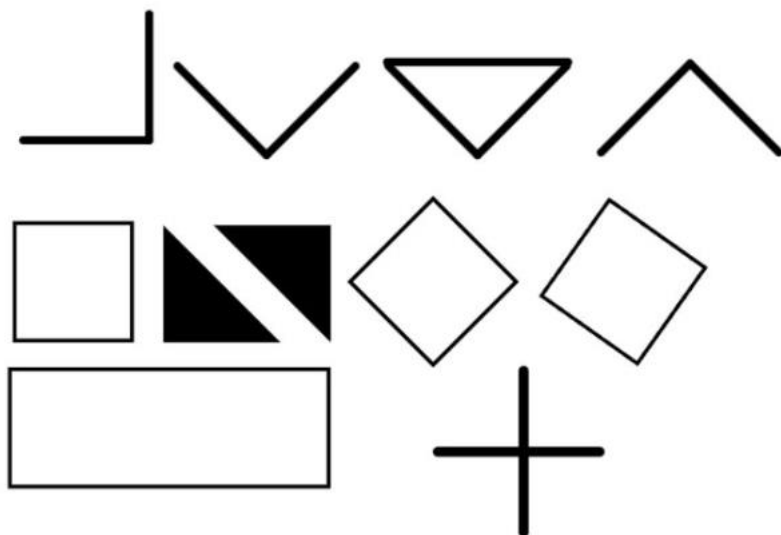
What's different?

What do you notice?

### Conceptual Variation

Conceptual variation provides pupils with different perspective and experiences of mathematical concepts. They can provide standard and non-standard examples of a concept.

For example, when children are learning about right-angles, children may only ever see right-angles represented in standards ways. Conceptual variation shows pupils alternative models, such as these:



## Our Mathematics non-negotiables

### Working walls

- Key vocabulary displayed with definitions when appropriate.
- EYFS questions displayed in provision for staff to refer to.
- To be updated throughout a unit and contain relevant, factual and procedural information.

### Exercise books

- Incorrect digit formation must be addressed by the teacher.
- 1 digit in one square
- Children should continue to keep up their presentation, especially when writing explanations.
- Children should demonstrate formal methods within their working out.
- Turquoise pen to be used when children edit or respond to comments.
- Children will have a worked example within their book from the input. In KS1, this may be a teacher example.

### Teacher delivery (lessons)

- Teacher delivery to follow procedure:
  - Starter- Children will complete flashback retrieval questions at the beginning of each lesson. These can be sourced from White Rose 'Flashback Four'. These can be found for each unit on the White Rose website.
  - I do: teacher models mathematical procedures, using resources and approaches that enables pupils to understand the mathematics they are learning, whilst demonstrating and verbalising success.
  - We do: teacher places an example on the board and all the class work through it together. Teacher uses formative assessment to gauge understanding of the children.
  - You do: teacher asks pupils to work independently to work through a final example- to be completed as a worked example in the exercise books. This may be a printed teacher example in KS1.
  - This process can then be repeated to model reasoning questions to children, demonstrating strategies and elements of success.
  - If children have proficiency, the steps may be cut down and children can be moved on sooner.

## Planning

The White Rose Unit plans can be found online and downloaded as a PDF file/ Word for each Stage.

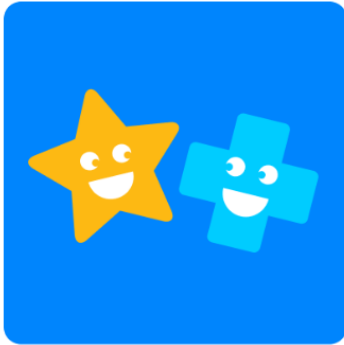
Teachers plan using the National Curriculum and long/medium term plans from White Rose.

See this folder: [Maths LTP](#)

Teachers can then use the 'Golden Knowledge' to create their short-term plans, using a variety of resources including White Rose Maths and N-rich.

### Additional/ Online resources

We subscribe to doodle maths, doodle tables and Times Tables Rockstars to supplement learning. They can be used at the teacher's discretion to set tasks which may consolidate learning or recall learning from previous units. These are also freely available for children to use at home.



DoodleMaths

