

# Astrea Academy Sheffield

## Maths Policy



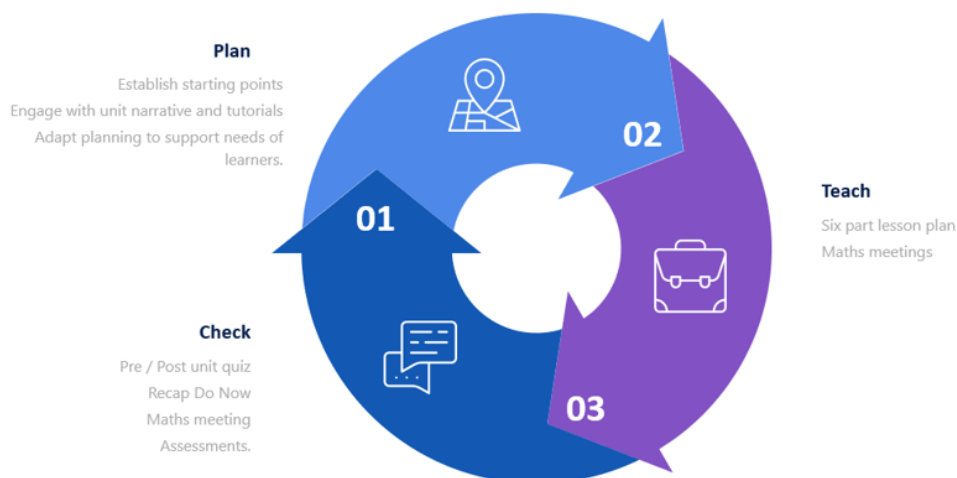
## Rationale

Our knowledge rich curriculum introduces and exposes scholars to the very best that has been thought, said and written in Maths literature, and beyond. Our ambition is to nurture and inspire our learners to become confident and curious mathematicians and to think mathematically, realizing that logical structures underpin more than the number system.

Pedagogy underpins our entire teaching ethos. Both arithmetic and reasoning are taught in a manner that ensures scholars know, remember and do more. Rosenshine's principles of instruction guide our approach to sequencing, modelling, checking for understanding and independent practice. Our approach of 'teaching to the top' ensures our sacrosanct Maths knowledge is made accessible to all, through careful sequencing of learning episodes, accurate pre-assessment to identify starting points and effective scaffolding. We carefully plan so that scholars are not cognitively overloaded and interleave knowledge to embed it into long-term memory.

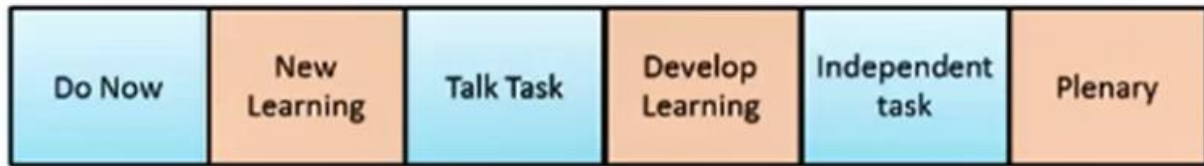
## Maths Mastery and Astrea Academy Sheffield

Our approach to maths is cyclical, and this is reinforced by our use of an interleaved and progressive curriculum from Maths Mastery. The teaching and learning process exists within a continuum in order that learning builds over time and is reinforced by reference to previously learned material and careful sequencing of new learning:



## **Six Part Lesson Sequence**

An essential element of the Maths Mastery programme is use of a six-part lesson plan:



This structure is used to deliver learning episodes in accordance with Rosenshine's Principals of Instruction whereby daily review occurs within the short, Do Now lesson starter, new information is presented in small steps within the New Learning and Develop Learning stages, where teachers also provide models and images to support and ask a wide range of questions. Pupils engage in structured talk during the Talk Task, wherein sentence and level word scaffolds are provided to support scholars in developing their lexicon of subject specific language and to reinforce logical reasoning structures. When modelling, teachers utilize a fading approach whereby they demonstrate process and 'think aloud' to explain their reasoning (I Do), then provide an adapted version to model again, but involving scholars in the process (We Do) and finally give an opportunity for pupils to demonstrate their learning independently, before engaging with independent learning. This enables teachers to impart knowledge to scholars in a controlled and structured manner, and to assess the ability of pupils to move on to independent learning and respond accordingly.

## **Reasoning**

Scholars are encouraged to reason about their understanding through the teachers' use of questioning and pupils are challenged to convince teachers of an idea or answer provided. They are given opportunities to discuss and challenge one another's ideas during Talk Tasks and are encouraged to reflect upon their thinking and provide justification. This is developed using materials taken from, and influenced by, I See Reasoning and can take the form of small difference questions, pattern spotting, multiple ways to solve a problem and identifying errors.

## **Adaptations and differentiation**

Within the framework of mastery teaching, the vast majority of pupils are engaged in learning about the same mathematical concept and early grasping pupils consolidate and deepen their understanding rather than racing through content. In order to facilitate this, teachers carry out pre-assessments one week before the start of a unit of learning and use the results to indicate gaps in prior learning and vulnerabilities which may inhibit a scholar's ability to access new learning. This informs starting points, and enables material to be delivered in small, manageable steps and enable all scholars to make links and to learn, and thereby remember, more.

## **CPA**

Throughout an episode of learning, scholars are exposed to a range of models and images in order to support understanding of key concepts and reinforce reasoning skills, and to highlight the logical structures underpinning mathematical algorithms such as the formal written methods for the four operations. Underpinning this, is the use of concrete manipulatives, such as Dienes, place value counters, Numicon, bead strings and more; pictorial representations such as number lines, bar models, area models for multiplication (including arrays); and the abstract understanding which is the ultimate goal of mathematical understanding. Learning episodes do not necessarily feature a linear progression between these elements, but a range of models are utilized and the links between them made explicit through modelling and exposition. The end result is that scholars learn, and thereby remember, more.

## Key Skills

Key skills are prioritised through weekly arithmetic sessions in KS2. These feature taught input regarding the essential skills which underpin mathematical learning including multiplication tables and core mathematical operations and opportunities to practice their knowledge to automaticity.

Maths Meetings are a fast paced, informal opportunity to increase the review of previously taught material and are held **three times a week**. These serve to reinforce learning by ensuring that previously learned material is transferred into long term memory.

Sumdog is used to enable scholars to practice key skills outside of the school day in an engaging, games based format. The school promotes access to trust-wide contests, in which scholars from all Astrea primary schools compete in a low stakes context, on the skills which are most pertinent to them.