**Passion** **Urgency** **Positivity** **Aspiration** **Commitment**

**… Teaching and Learning at Tudor Academy …**

**2022 - 2023**

## Intent

At Tudor Academy, we strive to ensure that all children have the knowledge, skills and mind-set to be successful in maths and reach their mathematical potential. We believe that children deserve an engaging and challenging maths curriculum, which stimulates and inspires them, and prepares them mathematically for everyday life and future employment. Teachers plan and teach lessons following a mastery approach to maths that aims to support all children to develop a deep understanding of key concepts and make progress. By assessing and ensuring children have the necessary pre-requisites before each unit, we want children to build upon their prior learning and develop cumulative knowledge. Using correct vocabulary and explaining ideas is a focal part of our maths lessons; we encourage children to use mathematical terminology, full sentences and clear explanations so they can demonstrate their understanding. By using a variety of concrete manipulatives and pictorial representations, we endeavour to support all children to be successful, and instil the philosophy that everyone can do well in maths, regardless of their prior attainment. We aim to challenge all children, by teaching lessons that are both ambitious and based on the needs of individuals, with opportunities for depth. We have ambitious aims and high expectations for maths at Tudor Academy, as we understand the importance of maths and mathematical skills for our children's futures.

## Implementation:

- We follow a mastery approach, supporting children to develop a deep, long-term, secure understanding of maths
- *Complete Maths Classroom* is used to support teachers in Years 1 – 6 in their planning and teaching of maths
- In EYFS, we use the Early Years Foundation Curriculum to support the teaching of maths and it is assessed using the criteria from the Early Learning Goals
- Lessons for children in Year 1 – 6 follow a 7 part lesson journey, to ensure there are opportunities for teacher modelling (New Learning), partner discussion (Paired Talk Task), independent learning (Independent Task) and questioning throughout the lesson
- Children in EYFS have daily maths sessions (15 minute maths and magic maths in Reception and 5 minute maths in Nursery) and complete maths activities in learning labs, as part of their continuous provision
- Each year group follows carefully sequenced units of work, within which small, incremental steps build upon previous learning to develop a strong understanding of maths
- Formative assessment is used to inform teachers of children's understanding and appropriate adaptations to planning are made to ensure lessons are tailored to best suit the needs of the children

- Teachers plan by considering the processes children will need to complete to achieve the learning outcome. These are referred to throughout the lesson and guide children on the steps they need to follow to be successful – we call these *Steps to Success*
- Class teachers ensure that all children have a good level of understanding before moving learning on, providing opportunities for depth and scaffolds for children needing additional support
- Class teachers support children to develop positive attitudes and interests in maths that help them to discuss mathematical ideas i.e. patterns, relationships, connections, and encourage them to explore
- We focus on children explaining their ideas using correct vocabulary, building on prior knowledge, using multiple representations and collaborative development
- We follow the National Curriculum, which ensures coverage of the relevant programmes of study and attainment targets for key stage 1 and 2
- We use a variety of concrete manipulatives, pictorial representations and abstract methods in all year groups to support teaching and learning of maths
- Children use Times Tables Rockstars (Y3 – Y6) and Complete Tutor (Y1 – Y6) to develop learning outside of lessons
- Lessons are pitched and paced based on the needs of the children
- There is a high level of questioning, partner talk and opportunities to explain ideas and demonstrate understanding, to ensure learning opportunities are maximised
- Support and scaffolds are provided for children that need it, such as concrete resources, sentence stems or additional teacher support
- Prior-knowledge is assessed pre-unit to ensure children have the necessary pre-requisite knowledge to be successful and gaps are addressed if needed
- Diagnostic tests are used post-unit to assess the learning that has taken place and gaps are revisited and filled where necessary

**Lesson journey**

The table below outline the maths lesson journey for Years 1 to 6.

| Our 7-part lesson: | Content: |
|---|---|
| **Do it now** *(10 mins)* | **Independently complete maths quadrant**<br>Maths quadrant may provide opportunities to:<br>○ **Consolidate previous learning –** eg last lesson, last week, last half term, last year / prior knowledge needed to support the unit of learning<br>○ **Address identified misconceptions or knowledge gaps**<br>○ **Pre-teach** |

| | |
|---|---|
| | Key questions:<br>What do children remember?<br>Can they explain their thinking?<br>What do children already know about the new learning? |
| **Vocabulary words** *(5 mins)* | **Teach new vocabulary**<br>Call and response of vocabulary words<br>Check for understanding of meaning<br>Teachers model using key vocabulary<br>Ensure all children can use the vocabulary words correctly<br><br>Key questions:<br>Do children know the meaning of the vocabulary words?<br>Can they use them correctly and confidently in a sentence?<br>Are there any ambiguities about the vocabulary words? |
| **New Learning** *(10 – 15 mins)* | **Teacher input**<br>Teachers give clear explanation of learning<br>CPA approach (concrete > pictorial > abstract)<br>Model using manipulatives, key vocabulary and explaining ideas<br>Question children to develop their understanding<br>I do, we do, you do<br>Opportunities for partner discussions<br>Check pupils' understanding before moving on<br>Correct vocabulary used consistently<br>Follow and refer to clear Steps to Success<br><br>Key questions:<br>What do the manipulatives/pictures represent?<br>What are the steps that they need to follow?<br>How do they know the answer is correct?<br>What links/patterns can they make? |
| **Paired Talk Task** *(5 - 10 mins)* | **Team work to develop understanding**<br>Children work in groups, using resources and correct vocabulary to consolidate new learning<br>Children explain their ideas clearly<br>Teachers can identify misconceptions<br><br>This could be:<br>* Further application with a partner<br>* Identify the mistake<br>* Hinge question<br>* Multiple choice<br><br>Key questions:<br>Do they understand the new learning?<br>Can they explain their thinking?<br>Are they ready to move on? |

**Passion** **Urgency** **Positivity** **Aspiration** **Commitment**

| | |
|---|---|
| **Development** *(10 – 15 mins)* | **Deepen Understanding**<br>Develop deeper understanding of the maths concepts in lesson<br>Extend learning and provide opportunity to think mathematically<br>Reasoning and problem solving for all<br><br>This could be:<br>* What if…?<br>* Spot the pattern<br>* Make links<br>* Show in a different way<br><br>If necessary, address identified misconceptions from Paired Talk Task or previous lessons<br><br><u>Key questions:</u><br>What do children know?<br>Can they explain their thinking?<br>How does the activity deepen their understanding? |
| **Independent Learning** (*10 mins)* | **Independent Task**<br>Independent activity* to demonstrate understanding of the lesson objective<br>Purposeful task that links to the learning in the lesson<br>Low threshold high ceiling to provide challenge for all<br>Teaching staff support key children<br>Neat presentation (one digit per square, use a ruler, neat correction of a mistake)<br>Book work minimum three times a week<br>Fluency and reasoning questions for all abilities<br>Children demonstrate their working out in books<br>Live marking and immediate feedback – children correcting their work in the moment<br><br>* In some instances, children will work with a group to demonstrate learning at this part of the lesson journey<br><br><u>Key questions:</u><br>Can children independently answer questions?<br>Can they recognise and correct mistakes?<br>Do they have a sufficient level of fluency? |
| **Plenary** *(5 minutes)* | **Review of learning**<br>This could be:<br>* Summarise learning<br>* Address any common misconceptions<br>* Pose a question for the next lesson<br>* Children formulate tips to follow STS / achieve the LO<br>* Children self-evaluate (two stars and a wish) |

| | |
|---|---|
| | Key questions:<br>Can children explain what they have learnt?<br>Are they ready to move on? If not, why not? |

**Formative Assessment** (techniques that teachers may use):

- Using effective questioning
- Lollipop sticks (cold calling)
- Thumbs up/thumbs down (children's self-assessment)
- Sentence stems
- In-class discussions and explanations
- Quizzes
- Hinge questions
- Multiple choice
- Discussion/explanation of why something is incorrect

**Steps to Success:**

When planning a lesson, teachers plan backwards; this means they consider the process a successful child will go through to answer a typical question. The *Steps to Success* support children by breaking down the process into manageable chunks that children can follow to achieve the outcome. The steps are clearly visible throughout maths lessons (on the IWB / flipchart / display) and teachers model using them during teacher input. Children can use these steps for guidance and support until the processes become instinctive and embedded.

**Inclusion/SEND:**

Most children with SEND are supported within the classroom by maintaining an inclusive learning environment. The mastery approach supports the varying needs and abilities within a classroom, through formative assessment, consolidation and the CPA approach, and is inclusive for children who are working slightly below their year group's expectations. Children that need additional provision are supported in maths lessons through the use of additional concrete resources, scaffolds or constraints, additional support from the teacher in a focus group or by managing peer relationships. Teachers plan questions for the independent task so that there is a low threshold high ceiling; in this way, all children in the lesson are able to access questions independently to demonstrate their understanding. When teachers identify misconceptions or misunderstandings, they are addressed within the lesson, during early morning work or in the 'do it now' the subsequent day.

Children who are working significantly below year group expectations are supported by HLTA's in smaller groups where they follow a curriculum that is appropriate for their ability. This targeted support ensures they are able to make a good level of progress in maths. The maths lesson follow the same 7-part lesson structure and CPA approach and the HLTA's have high expectations for the children to achieve.

Passion Urgency Positivity Aspiration Commitment

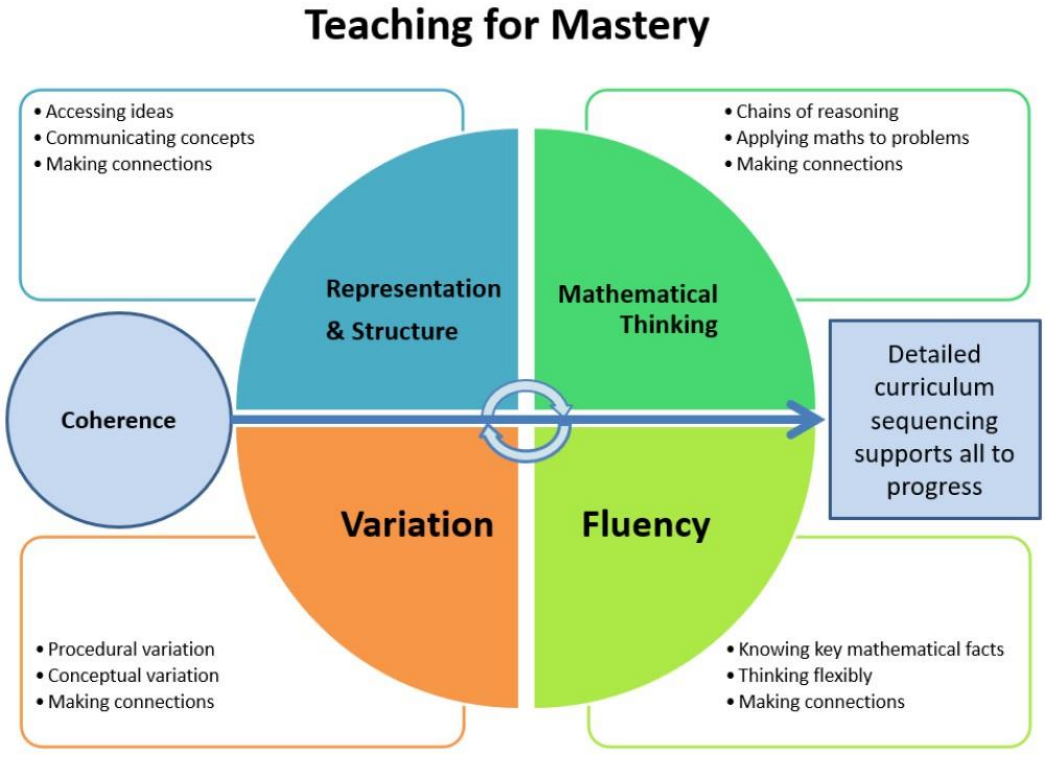
**Independent Learning** (Step 6 of 7 part lesson journey):

It is expected that children will complete formal recordings of work in books at least three times a week. We have high expectations for children's presentation: margins must be draw with a ruler, children should write one digit per square, numbers should be formed correctly and work should be neat and clear. Any mistakes should be crossed out with a single line and children should try again. This emphasis on neat presentation supports children in their working out and makes work clear, to enable them and their teacher to understand why the answer is incorrect (mistake or misconception), so they can target support effectively.

The work that children put in books is at the teacher's discretion, however it should demonstrate the learning process and the children's confidence and fluency in maths, linking to the National Curriculum Programme of Study for the relevant year group. Children are expected to answer an appropriate amount of questions as outlined by the teacher – this is dependent on the unit of work, task design and question type. As a rough guide, KS1 – 6 questions, KS2 – 8 questions. Children may not complete work in books if teacher assessment indicates they need additional practise, if manipulatives are being used or if they are completing a group activity instead, however high expectations for learning are maintained.

**Teaching for Mastery / Mastery approach**:

Mastering maths means pupils of all ages acquire a deep, long-term, secure and adaptable understanding of the subject. The phrase 'teaching for mastery' describes the elements of classroom practice and school organisation that combine to give pupils the best chances of mastering maths. Achieving mastery means acquiring a solid enough understanding of the maths that's been taught to enable pupils to move on to more advanced material. The underpinning principles in the mastery approach is that everyone can learn and enjoy maths and all children can focus and engage fully as learners who can reason and seek to make connections. Children are taught through whole-class interactive teaching, enabling all to master the concepts necessary for the next part of the curriculum sequence. If a child fails to grasp a concept or procedure, this is identified quickly, and gaps in understanding are addressed systematically to prevent them falling behind. *(The Five Big Ideas, published by the NCETM in 2017)*



Passion Urgency Positivity Aspiration Commitment

**The Five Big Ideas**

The Five Big Ideas are the fundamental practices that underpin a mastery approach. These are evident throughout lessons at Tudor Academy to support children in their learning.

**Coherence**: Teaching is designed to enable a coherent learning progression through the curriculum, providing access for all pupils to develop a deep and connected understanding of mathematics that they can apply in a range of contexts.

**Representation and Structure**: Teachers carefully select representations of mathematics to expose mathematical structure. The intention is to support pupils in 'seeing' the mathematics, rather than using the representation as a tool to 'do' the mathematics. These representations become mental images that students can use to think about mathematics, supporting them to achieve a deep understanding of mathematical structures and connections.

**Mathematical Thinking**: Mathematical thinking is central to how pupils learn mathematics and includes looking for patterns and relationships, making connections, conjecturing, reasoning, and generalising. Pupils should actively engage in mathematical thinking in all lessons, communicating their ideas using precise mathematical language.

**Fluency**: Efficient, accurate recall of key number facts and procedures is essential for fluency, freeing pupils' minds to think deeply about concepts and problems, but fluency demands more than this. It requires pupils to have the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections, and to choose appropriate methods and strategies to solve problems.

**Variation**: The purpose of variation is to draw closer attention to a key feature of a mathematical concept or structure through varying some elements while keeping others constant.

- **Conceptual variation** involves varying how a concept is represented to draw attention to critical features. Often more than one representation is required to look at the concept from different perspectives and gain comprehensive knowledge.
- **Procedural variation** considers how the student will 'proceed' through a learning sequence. Purposeful changes are made in order that pupils' attention is drawn to key features of the mathematics, scaffolding students' thinking to enable them to reason logically and make connections.

Passion Urgency Positivity Aspiration Commitment

**Times Tables Rockstars:**

At Tudor Academy, we know the importance of children recalling their multiplication and division facts at speed and with accuracy. In order to help children with learning these facts in a fun and engaging way, we subscribe to Times Tables Rockstars. Children's success on this platform is celebrated in class.

**Complete Maths:**

Complete Maths is an online resource for teachers and children, compromising 'Complete Classroom' and 'Complete Tutor'.

**Complete Classroom:**

Complete Classroom is a maths scheme that guides teachers planning by outlining the pre-requisite knowledge needed, providing a variety of example questions, explaining possible misconceptions and teaching notes. Teachers can use Complete Classroom to create assessments to check for pre-requisite understanding prior to a unit, diagnostic tests at the end of a unit, and termly tests for teacher assessment. Children can access Complete Classroom to complete assessments online, for additional resources and times tables quizzes.

**Complete Tutor:**

Complete Tutor is an online tutoring programme that aims to provide personalised one-on-one online tutoring to children to support their understanding of identified gaps in learning. All children initially complete an online diagnostic test to begin at the correct starting point. Complete Tutor compromises instructional videos and quizzes to supplement their maths learning outside of lessons.

**Impact:**

Children at Tudor Academy enjoy maths lessons and feel positively towards their maths learning. They build on knowledge and skills learned in previous years to develop as confident and inquisitive mathematicians. The mastery approach ensures that all learners are supported in lessons, feel challenged and make a good level of progress and attainment in maths. This is corroborated by assessments and teacher judgement. Children are confident using different resources and representations to demonstrate their learning, and can explain their ideas clearly and using the correct mathematical vocabulary. Children's learning is beyond 'just knowing the answer'; they understand how and why they know, which supports their mathematical thinking and development.