

Mathematics Vision and Policy

The **vision** of Mathematics at Holy Trinity is one that **values**:

- Good mathematical **foundations** that are deepened through a **mastery** mathematics curriculum;
- Multi-dimensional **fluency**: accuracy, efficiency, flexibility, appropriateness of strategy, knowing from memory, quick application and transfer;
- **Variation** in procedural and conceptual understanding, allowing children to **make connections** across Mathematics, other curriculum subjects;
- **Confidence, independence** and acceptance of Mathematical **challenge**;
- Deep understanding of **reasoning** and **problem solving**, providing justification or proof using **mathematical language**;
- Understanding of Mathematics in the **wider world** and Mathematical **experiential learning**;
- Awareness of the importance of **intelligent practice**;
- Effective Mathematical **communication** and use of **mathematical vocabulary** across the **whole school community** where children can express ideas confidently and talk about Maths;
- Mathematics as a key aspect of **life-long learning**.

To work towards this vision and ensure a consistent approach to high provision of mathematics throughout the school we aim:

- To keep up to date with new **government policies** and **high-quality, evidence-based research** and adapt our curriculum where appropriate;
- **Continuously adapt** to the **changing needs** of children at Holy Trinity School;
- To provide **daily challenges** to practice basic skills relating to number, calculations and problem solving;
- To deepen understanding by ensuring that **challenge** is provided through **depth** rather than acceleration into new content. More time is spent on teaching topics to allow for the development of depth, giving all children the ability to **master** mathematics ensuring that children are **ready for the next stage**, whether it is the next lesson, unit of work, year or key stage;
- To provide **challenge** in every lesson for pupils who grasp concepts rapidly;
- To deliver **interventions** for pupils who are not sufficiently fluent with material, to consolidate their understanding;
- Develop a **growth mindset** about ability to learn mathematics to instill **confidence** and **enjoyment** through the development of an **'I can do' culture**;
- To continually strive to **engage** and **support parents** to develop their skills, knowledge and understanding of Mathematics;
- To tailor **personalised learning** to meet the needs of all children through rigorous **assessment for learning**;
- To provide **meaningful, experiential learning opportunities** to aid deep understanding of Mathematical concepts and integrate and apply mathematical skills and knowledge within the framework of a **creative and skills-based curriculum**;
- To utilise **ICT purposefully** in the learning of Mathematics;
- To provide a Mathematics curriculum that challenges children beyond **National Curriculum** expectations, fulfilling requirements through the guidance of the **Hartlepool Attainment Outcomes** and the Primary Framework for Mathematics, and adding depth and breadth through **Mastery Maths** approaches including NCETM, White Rose and I See Maths. The children at Holy Trinity will acquire appropriate skills, knowledge and understanding of: **Numbers and the Number System, Calculations, Solving Problems, Reasoning, Measures, Shape and Space and Handling Data**.

Mastery

At Holy Trinity C of E Primary School we follow the Mathematics Mastery Approach to teaching which is underpinned by the NCETM's 5 big ideas:

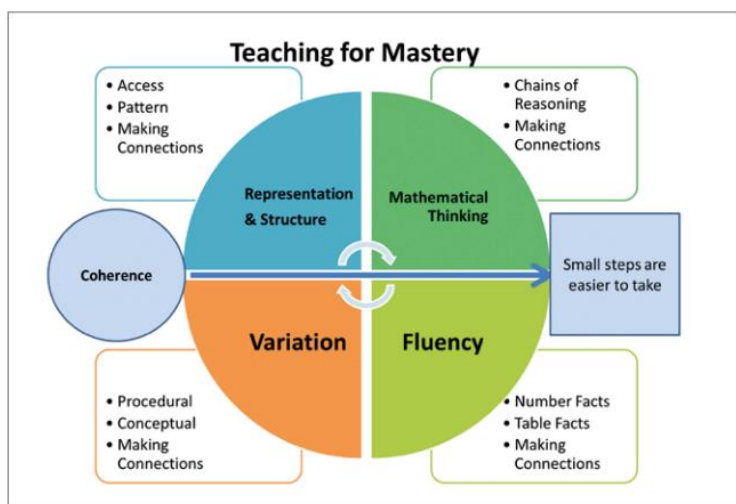


Figure 1: Five big ideas in teaching for mastery.

We teach children to:

1. Learn through **coherent** planning of small connected steps to link every question and lesson within a topic ensuring that learning is a comprehensive, detailed conceptual journey through the mathematics with a focus on mathematical relationships and making connections and generalisations which can be applied to a range of contexts.
2. Look for patterns as well as specialise and generalise whilst problem solving by exploring concepts using concrete, pictorial and abstract **representation and structure**.
3. Develop **mathematical thinking**, in order to make chains of reasoning connected with other areas of mathematics, including generalising, classifying and comparing, and

modifying. Children learn to apply their spoken and written **mathematical language** with confidence and clarity to **explain** and **justify** mathematical reasoning in every lesson.

4. Use manipulatives and representations to develop **fluency** of number facts, table facts and connections across topics. The children will have a deep conceptual understanding of mathematical concepts supported by the use of **concrete** objects and **pictures** before moving to **abstract** symbols (numbers and signs). Spoken and written mathematical language is also introduced and used.
5. Use **variation** of procedural and conceptual methods to create a deep understanding where connections can be made.

Teachers reinforce an expectation that all pupils are capable of achieving high standards in mathematics. The large majority of pupils progress through the curriculum content at the same pace and children are encouraged to have a growth mindset about their ability to do mathematics. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention. Those children who struggle to access mathematical content use a chosen representation and manipulative as support. Higher attainers may also use these in a different way, by selecting to use more than one representation or manipulative because they are examining the detail which provides rigour and develops a deeper understanding. The curriculum is accessible to all children because of this flexibility and our curriculum breaks the learning journey down, preventing 'gaps' in knowledge. Teaching is underpinned by sequenced and methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge. Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts in tandem. Within lessons, precise mathematical language is used by teachers so that mathematical ideas are conveyed with clarity and precision. Teachers use precise questioning in class to test conceptual and procedural knowledge, and assess pupils regularly to identify those requiring intervention so that all pupils keep up. Our aim is to ensure challenge for all. Our staff have high expectations of all children, irrespective of ability, and encourage them to be successful and achieve their full potential. Encouraging children to 'have a go' is seen as paramount. We aim to develop the mantra that: 'it's okay to be stuck because it is fantastic when you get unstuck!'. We also praise children who have 'made mistakes' and express this positively, with praise, because they have taught us something 'very important'. In some lessons, children 'self-differentiate' and choose the level of challenge right for them. In other lessons, teachers direct children to the correct level of challenge based on their assessment in the initial phases of the lesson. Part of independent work often involves some focused, targeted group work from the teacher. However groupings are 'fluid and flexible' based on the children's performance in a previous lesson or the beginning of that particular lesson. Where Teaching Assistants are available, they are fully briefed before the lesson and use the same teaching methods modelled by the teacher to support individuals or groups. In some cases, they may also model concepts to the class allowing the teacher to assess particular groups of children in more detail and identify their next steps.

Differentiation of tasks is present in various ways:

- Use of closed questioning to check understanding, and open-ended questioning and activities which allow more able children to offer more sophisticated mathematical responses. Targeted questioning, feedback and scaffolding will be differentiated for individual pupils in class, as they work through problems.
- Stepped Activities which can be accessed at different steps, supporting and challenge all.
- Higher attainers will access challenge through more demanding problems, which deepen their knowledge of the same concept.
- Recording e.g. allowing some children to give verbal responses and photographing their learning
- Resourcing, e.g. Use of cubes, 100 squares, number lines, mirrors, to support all or some children: the amount of time required to develop concrete understanding will differ.
- Representations e.g. bar model, part-whole model.
- Children are seated in mixed ability groups, completing work at the same time.
- Sometimes grouping according to ability will take place so that the groups can be given different tasks when appropriate. Activities are based on the same theme.

Role of the Subject Leader

To ensure that **all members of the school community understand the vision of Mathematics** at Holy Trinity and to lead, challenge and support all in achieving the vision by:

- Ensuring curriculum policies, guidelines and resources are up-to-date, well organised, reviewed, updated and easily accessible;
- Maintaining clarity of expectations in relation to planning, assessment and teaching and learning;
- Developing standards in teaching and learning and support staff where applicable;
- Identifying and addressing strengths and areas for development in the Maths Curriculum, teaching of Mathematics (CPD) and learning activities and resources;
- Analysing assessment data in order to plan whole school improvement in Mathematics;
- Monitoring interventions by liaising with class teachers;
- Monitoring the preparation and execution of the Y4 MTC;
- Monitoring and evaluating the Mathematics provision in school by conducting regular subject monitoring: book scrutiny, learning walks and pupil voice;
- Informing, supporting and providing development opportunities for all.

Achieving the Mathematics Vision

Teaching and Learning

- Planned blocks of teaching are based on the specific needs of cohorts, groups and individual children and are identified through ongoing tracking; informing next steps;
- Maths teaching objectives are selected from Hartlepool Attainment Outcome Sheets and meet the National Curriculum expectations for: Number and Place Value; Addition and Subtraction; Multiplication and Division; Fractions, Decimals, Percentage; Ratio and Proportion; Statistics; Measure; Geometry; Algebra and Ratio and Proportion.
- All children complete Top 10 daily which involves mental and written number and calculations as well as a reasoning or problem-solving question. Questions meet key objectives for each year group stated on the Hartlepool Attainment Outcome Sheets;
- The Holy Trinity progression in calculations document outlines the steps and expectations that are followed to achieve secure basic skills in number and calculation. This document is used throughout the teaching of Mathematics and is written for the use of all members of the school community;
- Dedicated Mathematics lessons are flexible to allow meaningful, experiential learning opportunities and the ability to develop and apply mathematical skills in other areas of the curriculum;

Within a planned Mathematics lesson:

- Previous knowledge, understanding and skills are built upon;
- Key vocabulary, learning outcomes, success criteria and targets are shared with the children at the outset;
- Challenge, independence, experiential learning and relating Mathematics to the wider world are what drives planned sessions;
- A numerical date and learning objective (title) will be recorded in all books. KS2 books will also have the date recorded in Roman Numerals to allow them to apply the Roman Numerals element of the National Curriculum;
- A combination of teaching styles is adopted to suit the needs of all learners. To support and guide children, staff provide models which may include: kinaesthetic examples with concrete resources, visual examples with pictorial examples and written working out, as well as auditory modelling of the teacher's thinking;
- Concrete, pictorial and abstract learning is evident, with concrete resources provided where applicable;
- Differentiation is evident, effective and support is precisely targeted;
- Pupils may engage in: mental strategies, consolidation of basic skills and number facts, written methods, practical work, investigational work, problem solving, mathematical discussion and maths games/interactive games.
- 'Talk' is used within group and paired work to encourage children to use and apply mathematical language with confidence and clarity to explain and justify mathematical reasoning;
- Independent practice allows children to complete carefully crafted questions focused on one key piece of learning and include:
 - Fluency: simple examples linked to the key learning of the lesson. The focus is on procedural fluency.
 - Reasoning: active argument using questioning styles such as yes or no, true or false, odd one out, identifying misconceptions/mistakes. Procedural methods and the CPA approach may be applied. Probing questions may be provided such as how do you know? Can you prove it?
 - Problem solving: solving a range of problems including word problems, sometimes, always or never true problems, exploring patterns and 'real life' scenarios. Strategies for problem solving are taught so that children follow an 'enquiry-style' process, including identifying key numbers and words in word problems. Knowledge of the vocabulary associated with the mathematical symbols is necessary, in order for children to make sense of the word problem. Probing questions may be provided such as: can you represent it in another way? What's the value? What's the same/different? Can you explain that?
- Teachers and teaching assistants work with specific focus groups, and actively intervene and support with the learning of these children by providing concrete or pictorial support as well as verbal feedback. For example: Show me how to complete the calculation. How do you know which operation to use? How else can you represent this number?
- Incidental or planned intervention groups, with staff or the use of technology, are in place to support children's specific needs.

Planning and Assessment

- A planned long-term block follows the National Curriculum (2014) expectations for Mathematics for each year group;

- Planned next steps in teaching and learning are identified from information gathered in the previous half term and this in turn informs the planning for the coming half term. Discussions during transition also highlight where more time may be needed on a topic to increase fluency;
- A planned medium-term block of teaching includes the following key information:
Ongoing learning; new learning; resources; timescales; success criteria/outcomes;
- A planned short-term block of teaching includes the following key information:
Ongoing objectives; new objectives; teaching; pre-learning activity; talk activities; independent activities; differentiation; success criteria/outcomes; evaluation of learning.
Staff are advised to refer to NCETM, White Rose, Maths Shed and I See Maths for teaching guidance and examples of ‘talk’ and independent learning challenges as well as variation, and how to scaffold those learners who may struggle to grasp concepts. Teachers have the flexibility to choose resources that best support the needs of the learners in their class to ensure they achieve fluency, reasoning and problem solving within lessons;
- Learning is planned online to support lessons using websites such as Maths Shed and Mathletics and results are monitored by staff to assess knowledge and understanding and subsequently plan next steps or intervention support;
- In the Foundation Stage teachers follow a curriculum that is planned in line with the new statutory framework for the Early Years Foundation Stage (2021) and Development Matters (2021) and aim for children to achieve the ELGs. The children are given frequent and varied opportunities to develop a strong understanding of number and numerical patterns, such as using manipulatives, including small pebbles and tens frames for organising counting. This rich experience allows children develop the necessary building blocks to excel mathematically. The curriculum also includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. This begins the ‘I can do’ maths culture where mistakes are not feared, which continues through KS1 and KS2 so that from the outset children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, and talk to adults and peers about what they notice.

Assessment Cycle

Assessment in Mathematics exists in two forms: ongoing teacher assessment and summative teacher assessment at key points during the year.

Teacher assessment

This form of assessment is viewed as a continuous process. Information is gathered continually as part of on-going formative and summative assessment. Marking and feedback in formative and summative assessment is inherently for the benefit of pupils and outcomes are used to build on pupils’ existing knowledge and understanding.

Formative Assessment:

Marking and Feedback follows the marking policy for Holy Trinity.

Mathematics at Holy Trinity aims to:

- Clarify and validate pupil understanding - What have I done that is right? What am I good at?
- Identify misconceptions and errors - What mistakes have I made? What do I not understand?
- Enable opportunities to explore reasons misconceptions and mistakes – What do I need to do? How do I do it?
- Opportunities to correct misconceptions and errors – I now understand and I am confident to have a go.
- Deepen knowledge and understanding – How do I know? How else can I prove it?
- Identify next steps in learning - What do I need to do next?
- Encourage self and peer-assessment – How much effort? How neat is presentation? Has the objective been achieved?

Teacher assessment information is gathered in a variety of ways and this informs attainment judgements against the Hartlepool Assessment Outcomes, linked to the National Curriculum. Evidence for assessment judgements are collected in an ongoing process during and after the Maths lesson via:

- Marking ongoing written work and considering the ‘ws’ marking code (with support);
- Observations of children engaged in activity;
- Pupil self/peer assessment;
- Dialogue with individuals and groups of children;
- Dialogue with members of support staff;

- Evaluations from planning documents.

Summative Assessment:

Years 1-6 complete written assessment tests in October, February and May (Y3/4/5) Optional SAT tests and Y2/Y6 End of Key Stage SAT tests in May). The test scores support and validate teacher assessment judgements. Reception class are not formally tested. Times tables are assessed each half term in KS1 and KS2 using 'Superhero' tests, created by the Maths Coordinator, that reflect our mastery curriculum. Additional testing on Mathletics is also completed at key points throughout the academic year. Results from Mathletics assessments inform future planning by identifying questions commonly answered incorrectly and building these into future teaching to support 'closing the gap'.

Tracking progress:

The teacher assessments and test scores are recorded digitally by the class teacher throughout the year and individual points progress is tracked and monitored by the subject leader to ensure that good progress is being made. An overall summative teacher assessment judgement is gathered in May also and this is added to the whole school tracking system for analysis. This judgement forms the baseline for target setting by the subject leader. Children are challenged to make the following progress per academic year, with the overall goal of being secure in their year group:

Reception - 3 FSP points

Year 1 - 3 AO steps

Year 2 - 3 AO steps

Year 3 - 3 AO steps

Year 4 - 3 AO steps

Year 5 - 3 AO steps

Year 6 - 3 AO steps

Target Setting:

End of year targets are set by SLT for each child. Teachers are responsible for communicating target progress throughout the year, and sharing specific targets with parents on parent consultation evenings that will support their child's learning. Final targets appear on the end of year school reports and given to parents. IEP targets for Mathematics are clear, specific and achievable for children.

Progression:

At the end of each academic year, all materials are passed onto the next year group and a learning dialogue is opened between professionals to discuss next steps in mathematics for new class cohorts and individuals prior to the beginning of the next academic year.

Resources:

- Maths resources, concrete objects and manipulatives are stored in a central location.
- Staff share the responsibility of ensuring that resources are well kept and replenished.
- Individual class teachers are responsible for requesting specific resources for individual topics before the start of each term.

Cross-Curricular Links

Whilst Maths is taught discretely, within this subject other curriculum skills are present including English (language comprehension), writing (such as spelling of mathematical language and conjunctions for reasoning) and computing when using cameras to photograph objects and accessing Maths learning platforms including Mathletics and Maths Shed. Maths is also present in other curriculum lessons. For example, teachers may use bar charts and line graphs in Science, pie charts in RE, timers to measure personal bests in PE, rulers to measure in art and DT, and drawing time lines or scaled time lines for chronology in History and calculating the duration of time periods.

Academy Councillor:

There is a named academy councillor linked to Maths who plays a key role in monitoring and evaluating Maths across the school through discussions each term with the subject leader.



Last reviewed
Miss Danielle Horsley
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