MATHEMATICS POLICY

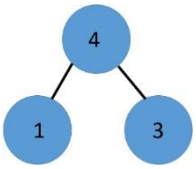
At Treeton, we believe that our ambitious maths curriculum ensures that all children know and remember more. We believe that EVERYONE can achieve and enjoy learning maths.

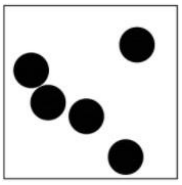
Our curriculum is based on mastery principles where pupils acquire a deep, long term, secure and flexible understanding of maths. We intervene quickly so that ALL children are able to access the curriculum with appropriate scaffolding where appropriate. Sometimes, this involves preteaching of concepts and sometimes consolidation. We aim to fade our scaffolding so that all children can access learning. Our long-term plan is based on a blocked curriculum to ensure children develop a strong enough understanding of the maths that has been taught so that they are able to move on to more advanced material. Underpinning this, is planned spaced retrieval which consists of 'Can I Still?' activities and deliberate practice. Using the Long-Term plan will ensure this is not left to chance. 'Can I still?' activities include the generative activities of brain downloads, multi-choice questions, quizzes, summarizing, mapping, drawing and imagining.

We remember what we pay attention to, so teachers draw children's attention to important learning points.

EarlyYears

In the Foundation Stage, the focus is on a deep understanding of number to 10, including the composition of each number. Children work on subitising (recognising quantities without counting) up to 5 and automatically recalling number bonds to 5 and some number bonds to 10 including doubling facts.
We recognise the pattern of the counting system and compare sets of objects up to 10 in different contexts considering size and difference. We explore and represent patterns within numbers up to 10 including evens and odds, doubles facts and distributing quantities equally.
Maths also includes pattern, measuring, and shape and space. We ask children, "Why?" and "How do you know?" so that they can share their thinking, work together to solve problems and listen to each other.

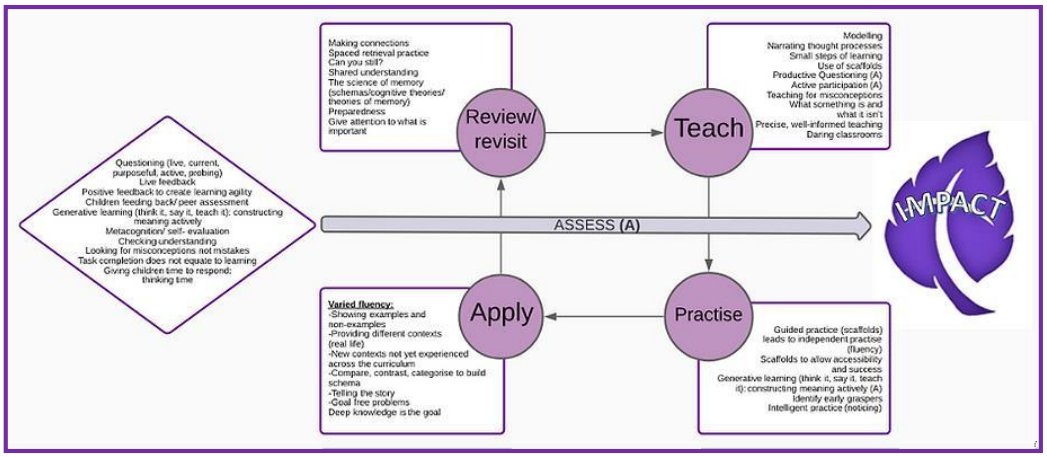




Subitising ***"Don't count. Say the amount"***

MathsLessons

Teachers use the DSAT Teach Simply model as the pedagogical approach.



REVIEW

In maths lessons, prior knowledge needs to be deliberately activated so at the start of every maths session before new ideas are introduced, time is spent enabling all children to revisit the knowledge they will need. This REVIEW helps children to make connections and should be generative so all students are engaged in retrieving their existing schema.

TEACH

In maths lessons, all children are working on the same objectives supported by scaffolds where necessary. Teachers model their thinking through narrating their thought processes. They actively teach for misconceptions and plan for small steps in learning to ensure no child is left behind.

PRACTICE

Guided practice usually involves intelligent practice where children are encouraged to notice things and spot patterns. Children are *working on* questions when they are asking themselves what is similar about the questions and what is different.

Independent practice allows children to build their fluency. DELIBERATE

PRACTICE

All children have a deliberate practice session every day in addition to their maths lesson. During this time, the teacher will take the vulnerable children to ensure they 'keep up' rather than having to 'catch up.'

APPLICATION

The goal of maths teaching and learning is deep knowledge where the children can apply their learning in different contexts. They are flexible in their thinking and can choose appropriate methods and apply them efficiently and accurately.

In the classroom:

- The whole class working on the same mathematics- learning together.
- Daily fluency sessions which involve counting.
- Children being challenged with tasks that develop depth and mastery.
- Concepts and procedures being practiced thoroughly so children have the experience of success.
- Key areas being 'overtaught' to help embed and link knowledge together.
- Conceptual understanding being taught alongside procedural understanding.
- Teachers who are aware of potential misconceptions and children who can spot tricky questions and explain why other children might find them tricky.
- The teacher moving around the classroom, asking the appropriate questions to facilitate learning and deeper thinking.
- Teachers using intelligent practice to encourage children to notice things that stay the same, things that change and provide the opportunities to reason and make connections.
- Teachers and pupils being brave and learning from their mistakes.
- Maths areas which are being accessed by the children
- Manipulatives being used to provide a positive impact.
- When appropriate, children self-selecting equipment from the maths area.
- Maths working walls being used by the teacher and children.

Working Walls

AllclasseshaveMathsWorkingWalls.ThepurposeoftheWorkingWallistorecord,visualize andassist learning.The workin

On Maths working walls, you will find:

- Vocabulary- This should be added to throughout the current area of learning as new vocabulary is introduced.
- Times Table grid- The relevant times tables for the year group (Y1/2 2,5,10 – Y3 3,4,8 Y4/5/6/ up to 12x12)
- RUCSAC display (Read, underline, choose, solve, answer, check) to support reasoning and problem solving
- Operations posters (+ - x /) to be displayed during relevant learning
- Stem Sentences are displayed on the working wall and referred to in the lesson.
- Other models and images are displayed that have been shared in the lesson.

What you will hear at different times in our classrooms.

- The correct vocabulary being used and children being encouraged to answer questions in full sentences.
- Good noise – pupils are on task and try to prove their points during discussions.
- Children talking about what they have noticed and making connections between new concepts and what they already know.
- Teachers and children celebrating the importance of mistakes. (Research shows that when children make mistakes in maths, their brain grows, synapses fire and connections are made.)

The CPA Approach

Children and adults! can find maths difficult because it is abstract. The CPA (Concrete Pictorial Abstract) approach builds on children's existing knowledge by introducing abstract concepts in a concrete and tangible way. It involves using concrete materials and pictorial representations as a bridge to more abstract symbols and problems.

The representations chosen (whether concrete or pictorial) need to clearly show the concept being taught and in particular the key difficulty point. Staff use the representation to expose the structure of the maths being taught.

Concrete apparatus is used in all year groups and with all pupils. Children use the concrete apparatus to explain their thinking. In the end, the pupils need to able do the maths without the representation. A stem sentence describes the representation and helps the pupils move to working in the abstract.

Fluency

There are three strands of fluency.

- efficiency – carrying out the method easily
- accuracy – careful recording, use of key facts and double checking
- flexibility- knowledge of more than one approach.

These are taught throughout Maths lessons

Number Bonds

Having knowledge of number facts supports pupils to think mathematically as they can use them to reason, see structures, pattern and make connections.
We use https://play.numbots.com/#/intro to ensure all children have the opportunity to practice independently both in school and at home.

Times Tables

We support our children to learn times tables to automaticity. This is important so that working memory is not overwhelmed. We teach the concept of multiplication and build a deep conceptual understanding of what the numbers represent.

From Spring term in Year 2, we practice times tables daily using 'Clare Christie's Multiplication'. These are practiced for 5 minutes daily. This includes:

- Whole Class teaching of times tables. E.g. chanting of multiples, number stick, using manipulatives.
- 3 minutes of independent practice of times tables with 40 questions.
- Whole class echo reading of the times tables aloud to aid memory
- Selection of the trickier times tables identified to practice additionally.

At home, children have access to Times Tables Rockstars to practice. Teachers set times tables to practice specific tables each week.

Each half term, we have a Times Table Rockstars and Numbots competition between key stages. This takes place over the holidays. The winner of each key stage will keep the TTRS trophy for the term. The top three competitors for each competition will receive certificates

In Year 4, pupils will have additional practice in the Spring and Summer Terms. Pupils will practice using TTRS for 10 minutes daily on 'Garage' which prepares them for the Y4 Multiplication Check.

We have an annual meeting for parents in Year 4 which supports their understanding of the statutory times tables check.

Maths Subject Leader monitors the uptake of TTRS and Numbots at home.

The MTC

The Multiplication Tables Check is an on-screen check consisting of 25 times table questions. Year 4 children take part in the Check in June. Children have 6 seconds to answer each question. The purpose of the check is to determine whether children can fluently recall their times tables up to 12x12.

Key Instant Recall Facts (KIRFs)

To help develop our children's fluency in mathematics we focus on learning Key Instant Recall Facts each half term.

From EYFS to Y6, we practice our KIRFs for a 20minute session each week.

Each child is assessed at the beginning of each half term and at the end to ensure that key facts are embedded.

We will give additional practice and support for pupils who are identified after the second assessment.

KIRFs are shared with parents at the start of each year at Parents Evening so practice at home can be completed.

KIRFs are displayed on working wall

Reasoning Mathematically

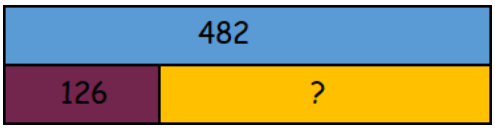
Reasoning about we already know in order to work out what is unknown will improve fluency. Strategies include

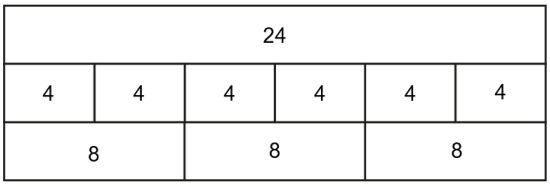
- Spot the mistake
- True or false
- Using the inverse
- Always/sometimes/never
- Odd one out
- What do you notice?
- Convince me/Prove it/Generalise
- Estimation

As teachers, we focus children's attention and encourage them to notice the structure of mathematics. We ensure children choose the most appropriate method.

Problem Solving

Children are taught the problem-solving skills of Act it out or Draw, Trial By Improvement, List or Table, Pattern, Simplify, Working Backwards or using Algebra. They are supported to develop skills in bar modelling. The bar model is used in teaching for mastery to help children to 'see' mathematical structure. It reveals structure within a problem a gaining insight and clarity to help solve it.





Maths Assessment

Our assessment values depth of learning, knowing 'why' as well as knowing 'that' and knowing 'how'. Children are encouraged to explain their thinking using manipulatives where appropriate as well as asking questions about the maths they are learning.

NTS Tests

We use the National Test-Style Assessment from Hodder Education as an accurate and informative summative assessment. These tests give us standardised scores we can compare against national standards. The tests also provide the opportunity for us to conduct gap analysis. This means that we can see which area of maths a child needs to work on to ensure automaticity.

Parent Partnership

We highly value the parents and carers within our community. We know you want the absolute best for your children and will help anyway you can.

There are many ways you can help your child in maths. We all use maths at home in everyday activities while shopping, measuring and calculating. You can talk to your child about things like planning meals for the week or making a shopping list and estimating the cost.

Homework in maths includes working on Quick Recall Facts, practising facts and using online resources.

We believe that EVERYONE can achieve and enjoy learning maths.

We are ALL mathematicians.