



Tregoze Mathematics Policy

Reviewed: LBG

Ratified by governors on: April 2016

Next review date: April 2017



Introduction

At Tregoze Primary School we recognise the central importance of Mathematics: as a medium for logical reasoning and abstract thinking across the curriculum, and as a subject in its own right. Mathematics is given a high priority in the school. It is a core subject within the National Curriculum and a pre-requisite for educational and social progress. Pupils come to Tregoze with varying degrees of knowledge about mathematics. We, as their teachers, build upon this knowledge and provide opportunities to develop an enthusiasm for the different aspects of mathematics, through appropriate learning experiences. We view the acquisition and development of mathematical skills as an essential part of the school curriculum. Pupils need a facility with all aspects of mathematics in order to learn, and to play a full and active part as individuals in our global society.

Aims and Objectives

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Teaching and Learning

At Tregoze we:

- promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion;
- promote confidence and competence with numbers and the number system;
- develop rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.
- apply mathematical knowledge to science and other subjects.
- develop a practical understanding of the ways in which information is gathered and presented;
- explore features of shape and space and develop measuring skills in a range of contexts;

The school uses a variety of teaching and learning styles in mathematics lessons to develop pupils' knowledge, skills and understanding in mathematics.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. Decisions about when to progress are based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly are challenged through being offered rich and sophisticated problems to deepen their understanding before any acceleration through new content. Those who are not sufficiently fluent with earlier material consolidate their understanding. This can be through extra intervention outside of the lesson or adult support within the lesson with the aim to master the objective.



We do this through lessons that have a high proportion of whole-class teaching, taught using concrete, pictorial and abstract representation followed by group activities, which are differentiated. To develop talk for maths, each lesson opens with a hook/warmup.

In KS2, work is differentiated through Bronze, Silver, Gold and Platinum challenges. The pupils are encouraged to choose the level of challenge and progress to at least the next level of challenge within the lesson. Those that have not mastered the learning are then supported either within the class or as an additional intervention outside of the lesson.

During these lessons we encourage pupils to ask as well as answer mathematical questions (what if...? How did...?). The pupils are encouraged to think, explain and then prove. This can be verbally, in writing, through diagrams or with pictures. In KSI children are encouraged to lead their own learning by completing chilli challenges(mild, hot, firey), which they pitch to their own level of understanding.

If support is needed, pupils have the opportunity to use a wide range of resources such as: number lines, number squares, digit cards and small apparatus to support their work. Teaching assistants support groups or individuals in and outside of the lesson. Pupils also sit in mixed ability pairings. They use ICT in mathematics lessons to enhance or support their learning such as: Mathletics, RM Maths, Interactive games on iPads, SATs online, Smartboard....

Learning walls are used within lessons to help and support children with their independent learning and progression. Key vocabulary, modelling and examples (think, explain, prove) are displayed.

In addition to the mathematics lessons, every pupil completes daily mental math activities. Fortnightly, in KS2, pupils complete a mental maths and arithmetic test.

Guided maths is planned and taught fortnightly to develop problem solving, questioning, written methods and times tables.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum, and we use the National Curriculum objectives and programmes of study as the basis for implementing the statutory requirements.

We have allocated 6 hours a week to the teaching of Mathematics. Each mathematics lesson contains whole class teaching, small guided group work, independent activities and discussion time.

Opportunities for pupils to use and apply their mathematical skills and understanding are built into lessons as appropriate in line with the new Primary Curriculum objectives. In each week four/five mathematics sessions are taught with the opportunity for the reinforcement and development of the skills and knowledge being covered.

Each year group has an overview document per term setting out the teaching blocks, which includes the National Curriculum objectives to be covered in each phase and provide questions that support fluency, reasoning and problem-solving.



Areas covered KS1 are:

- number and place value
- addition and subtraction
- multiplication and division
- fractions
- measure
- geometry- shape, position and direction
- statistics

Areas covered KS2 are:

- number and place value
- addition and subtraction
- multiplication and division
- fractions, decimals and percentages
- measure
- ratio and proportion
- algebra

It is the class teacher who completes the lesson plans for the teaching of mathematics. These weekly plans list the specific learning objective for each lesson and gives details of how the lessons are to be taught-including differentiated activities and opportunities for talking maths.The class teacher keeps these individual plans. The class teacher and subject leader may discuss them on an informal basis. The subject leader and leadership team reviews the weekly plans in line with the monitoring schedule.

At the planning stage, teachers plan effective teaching opportunities for all pupils by:

- Setting suitable learning challenges
- Responding to pupil's diverse needs.
- Overcoming potential barriers to learning and assessment for individuals and groups of pupils.

EYFS

We teach mathematics in our reception class. As the class is part of the Early Years of the National Curriculum, we relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for the children aged three to five. We give all the pupils ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practice and talk confidently about mathematics.

Contribution of mathematics to teaching in other curriculum areas

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, we encourage children to read and interpret problems in order to identify the mathematics involved. The children explain and present



their work to others during plenary sessions and during 'Talk for maths' sessions. Younger children enjoy stories and rhyme that rely on counting and sequencing. Older children encounter mathematical vocabulary, graphs and charts when using non-fiction texts.

Information and communication technology (ICT)

ICT enhances the teaching of mathematics and offers exciting ways to impact learning. Software can be used to present information visually, dynamically and interactively in a format pupils can readily access. Children use and apply mathematics in a variety of ways when solving problems using ICT software such as RM Maths and Education City. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results or when creating repeating patterns, such as tessellations. All children are given the opportunity to work on the interactive whiteboard during lessons.

Personal, social and health education and citizenship (PSHE and C)

Mathematics contributes to the teaching of PSHE and C. The work that pupils do outside their normal classroom lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that the pupils do within the classroom encourage them to work together and respect each other's views. We present older pupils with real-life situations in their work on the spending of money.

Social, Moral, Spiritual, Cultural

In Maths lessons the pupils are encouraged to delve deeply into their understanding of Mathematics and how it relates to the world around them. Our Maths teaching actively encourages risk taking which enables pupils to explore and try new ideas without the fear of failure. This is fundamental to building pupils' self-esteem within Mathematics.

Throughout history, the study of Mathematics stems from intrigue and curiosity, with people's desire to pose and solve problems relating to the real world or purely within mathematics itself. We aim for our students to appreciate this and use their own Maths to explore and question the way the world works and also to apply their reasoning to puzzles for their personal satisfaction.

Spiritual

- developing deep thinking and questioning the way in which the world works promotes the spiritual growth of our students.
- we are sensitive to the pupils' individual needs and backgrounds and experience.
- we aim to give all pupils an appreciation of the richness and power of maths.
- maths in Nature is embedded in Sequences, Patterns and Symmetry
- we promote a sense of wonder in the exactness of mathematics in the exploration of number and real world examples.
- we encourage the pupils to appreciate the enormity of the world of maths as it has developed through time.

Moral

- within the classroom, we encourage respect, reward good behaviour. We value listening to others views and opinions on problem solving.
- we promote discussion about mathematical understanding and challenge assumptions, supporting students to question information and data that they are presented with.



- we show the pupils that we are on a quest for truth by rigorous and logical argument and discourage jumping to conclusions.
- we explore and evaluate the use of Statistics in society
- Social
- in classrooms, we look for opportunities for pupils to use mini-whiteboards to promote self-esteem and build self-confidence.
- we encourage collaborative learning in the classroom – in the form of listening and learning from each other and paired discussion / working partners.
- we help pupils develop their mathematical voice and powers of logic, reasoning and explanation by offering explanations to each other.
- we exhibit pupils work in maths classrooms - to share their good practice and celebrate achievement through creating informative displays.
- we participate annually in Federation and County challenges. Once a year we have a maths open morning and a maths using and applying day.
- we have fortnightly guided maths sessions.

Cultural

- we share the appreciation with the pupils that mathematics, its language and symbols have developed from many different cultures around the world: eg Egyptian, Greek and Roman.
- we investigate and research cross cultural patterns – tessellation, islamic tiling.

Mathematics and Inclusion

We teach mathematics to all pupils, whatever their ability. It is part of the school curriculum policy to provide a broad and balanced education to all children. We strive to meet the needs of pupils with special educational needs, those with disabilities, those with special gifts and talents and those with English as an additional language.

When progress falls significantly outside the expected range the pupil may have special educational needs. Our assessment process looks at factors such as classroom organization, teaching materials, differentiation and teaching styles so we can take additional or different action to enable the pupil to learn more effectively. Assessment against the National Curriculum allows us to consider pupils attainment and progress against age related expectations.

Intervention through School Action will lead to the children being on a provision map for the class. Pupils who are School Action Plus or Statemented will have an EHP. Pupils will be placed on the Special Educational Needs register and may have a specific target related to mathematics.

Provision is made for gifted and talented children through the use of differentiation within the class, where they are set questions or activities to deepen their understanding. The class teacher will broaden the pupils mathematical experiences through problem solving and investigative learning activities.



Assessment and Target setting

We assess pupils work in mathematics from three aspects (long term, short-term and medium term). We make short-term assessments which we use to help us adjust our daily plans. These short-term assessments, cold and hot tasks, which are closely matched to the teaching objectives.

We complete medium-term assessments at the end of each term, to measure progress against the unit objectives, and to help us to plan the next unit of work. We use the Age related banding sheets to then track progress and identify areas that still need developing.

We complete formal assessments at the end of the year to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each pupils progress before discussing it with parents. We pass this information on to the next teacher at the end of the year, so that he/she can plan for the new school year. We make a long-term assessment based on the national tests and teacher assessment using the band tracking sheets. We use learning journals alongside the early years emerging, expected and exceeding outcomes and development matters to assess pupils throughout Reception and into Year 1 (where appropriate). We use the national tests for pupils in Year 2 and Year 6.

All pupils are encouraged to self assess against their learning for each session. This appears as a traffic light or smiley face in the younger pupils books and from Year 2 onwards the pupils reflect against the learning and success criteria to write their own comments and next time target. The pupils are encouraged to evaluate their own learning but their peers too through verbal or written feedback.

All classes have Year group non negotiables displayed on their learning walls, which are referred to within lessons with an aim to meet them all by the end of the year. Using and applying and mental math level appropriate targets are also in their books to enable pupils to take ownership of their progress. These are both assessed by the pupil and the teacher. Pupils are encouraged to think about their next steps in their learning and what they need to do in order to achieve it.

Resources

There is a range of resources to support the teaching of mathematics across the school. All classrooms have a wide range of appropriate small apparatus and other larger apparatus is stored in the Key Stage 1 classes and the resources cupboard. Calculators are in all Key Stage 2 classes. The library contains a range of books to support the pupils' individual research. Whilst using the computers a range of software is also available to support maths work and apps on the iPads.

Monitoring

Monitoring of the standards of pupils work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leader. The work of the mathematics subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject and providing a strategic lead and direction for the subject in the school.



The subject leader is responsible for writing the mathematics action plan as part of the School Improvement Plan. Areas for focus during the current academic year are identified. At the end of the academic year the subject leader is responsible for identifying areas of strength and areas for development in the teaching and learning of mathematics across the school.

Teachers meet termly with the Head teacher/Leadership team to discuss individual pupil progress and targets in mathematics. This is fed to the subject leader and informs further support and intervention with the delivery of the mathematics curriculum.

A named member of the school's governing body is briefed to oversee the teaching of mathematics within the school. This governor meets regularly with the subject leader to review progress.

Written By: Erika Sylvester

Written: April 2016

Agreed:

Review Date:

School: Tregoze Primary

Principal: Helen Tudor

Name of Governor: Mark Woodward