Maths Policy

Subject Leader: Mrs Helen Dewar

Review Date: September 2023

Curriculum Aims:

The aims of Trinity St Stephen are to reflect those of the 2014 National Curriculum for maths, which are that children:

● 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.

● can 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.

Progression through the curriculum

By the end of year 4, children are expected to be 'Ready to Progress' to Middle School. To achieve this, children not only need to be fluent in their knowledge and recall of mathematical facts, but they also need to be competent and confident in reasoning/investigating concepts and applying them to solve problems. When they are able to do this at their stage expectation, they are then considered by the teacher to be fully secure in their knowledge and understanding at that stage, 'Ready to Progress'. The expectation is that the majority of children will move through the curriculum at broadly the same pace. However, decisions about when to progress should always be at the discretion of the teacher and based upon assessments regarding the security of pupils' understanding. Pupils who grasp concepts quickly should not be accelerated onto the next stage of the maths curriculum content. Rather, they should be challenged through rich and sophisticated problems across a broader range of contexts. Those who are not sufficiently fluent in earlier material should consolidate their understanding through targeted intervention and support.

The National Curriculum 2014 is designed as a year by year programme of study. We assess children using the content and concepts at each stage of the curriculum. We also assess children's skills in reasoning with these concepts and their ability to use them to investigate, solve problems and apply them across the curriculum. We split each stage into 3 sub-stages to assess where the children are working within the curriculum.

Children can be working within a stage at either:

Emerging

Expected

Exceeding.

Children who are secure at their stage will have an understanding of the mathematical concepts and will be working on more complex problem solving and on the application of these skills.

The National Curriculum Programmes of study can be found on the Government website:

National curriculum in England: mathematics programmes of study - GOV.UK (www.gov.uk)

Maths in the Foundation Stage:

From September, all children in Reception will begin to gain experience of teacher led/ whole class learning at tables with a balance of adult-supported and independent activities. Further opportunities are provided for children to apply and develop their key mathematical knowledge, skills and understanding through purposeful play using carefully planned provision on number, shape, space and measure. The daily maths lessons are planned using the Reception schemes of learning (EYFS). The planning objectives within the Foundation Stage will be amended in line with the EYFS changes in September 2021. Regular assessments are made of children's learning and this information is used to ensure that future planning reflects identified needs.

Through purposeful play, our children explore and develop learning experiences which help them to make sense of the world. They practise and build up ideas and have the opportunity to think creatively alongside other children. They communicate with others as they investigate and solve problems. The Foundation Stage has opportunities for free flow between the inside and the outside learning areas which has a positive effect on the children's development. Being outdoors offers opportunities for children to explore and apply mathematical concepts in practical ways. For example, through construction and gardening. Assessment in the Foundation Stage takes the form of both formal and informal observations. In the Foundation Stage, mathematics should involve providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces and measures. In number: children count reliably with numbers from 1-20, place them in order and say which number is 1 more or 1 less than a given number. Using quantities and objects, they add and subtract two single digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing. In shape, space and measures: children use every day language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them. The CPA (concrete, pictorial, abstract) approach should be introduced in the Early Years. This approach uses physical and visual aids to build a child's understanding of abstract topics e.g using objects for addition. Stories should be used as a prerequisite to a number sentences and missing number problems. Mastery should be developed through variation of representations for number, e.g. the use of numicon should be considered.

Transition in maths should focus on mastery of the Early Learning Goals for maths to prepare them for the Y1 curriculum.

Maths in Key Stage 1

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole number, counting and place value. This should involve working with numerals, words and the four operations using practical resources. At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1. In Key Stage 1, the mastery approach to teaching is used and embedded. Mastering maths means pupils acquiring a

deep, long-term, secure and adaptable understanding. This involves presenting concepts to children in a variety of ways and spending a longer period of time focusing on concepts to ensure that they are embedded. Teachers in KS1 are expected to use Abacus Maths yearly and Sue Rogers overview to support their planning and enhance it using their own knowledge, skills and expertise.

Maths in Key Stage 2

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils are introduced to efficient written and mental methods and perform calculations accurately with increasingly large whole numbers. At this stage, pupils should develop their ability to solve a range of problems, including using simple fractions and by the end of year 4, decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing reading knowledge and their knowledge of spelling.

Teachers in Key Stage 2 should continue to employ the mastery approach and use the Abacus resources to support their planning and teaching. A range of additional resources, including Classroom Secrets, NCETM, Teach Active and Purple Mash, should also be used to support planning and teaching. Throughout key stages 1 and 2, teachers provide children with 3 different levels of challenge in lessons. Whilst some challenges are selected for the children, it is the aim for children to challenge themselves appropriately through selection of their own challenge level. This is closely monitored by the class teacher.

Teaching Calculation

Trinity St Stephen School follows the formal written methods recommended by the 2014 National Curriculum Expectations. A calculation policy has been adopted from Abacus to ensure progression within mental and written calculation methods across the school. This is available to view on the school website in the individual year group, Curriculum section. In EYFS and Key Stage One, the foundations are laid for the key concepts that underpin calculation. Beginning with counting on and counting back, children then progress on to understanding wholes and parts. This will enable them to calculate efficiently, accurately and with greater flexibility. They learn how to use an understanding of 10s and 1s to develop their calculation strategies, especially in addition and subtraction. In Year 4, children develop the basis of written methods by building their skills alongside a deep understanding of place value. They should use known addition/subtraction and multiplication/division facts to calculate efficiently and accurately, rather than relying on counting. Children use place value equipment to support their understanding, but not as a substitute for thinking.

Problem Solving and Reasoning

At Trinity St Stephen we embed problem solving and reasoning within our daily teaching. Through differentiated challenges children consolidate prior knowledge, become fluent in their skills and apply them through problem solving tasks. Children are encouraged to reason and challenge their thinking about mathematical concepts. A wealth of problem solving resources are available in school

and it should be embedded in cross curricular teaching. These include: NRICH, Mathematical challenges for able pupils, NCETM Ready to Progress activities. There should be evidence in pupil books of access to mastery and mastery at greater depth challenges at whichever stage they are working. All classrooms should have 'Challenge' activities available.

Differentiation

As previously stated, the expectation is that the majority of children will move through the curriculum at broadly the same pace. More-able pupils who grasp concepts quickly are challenged through rich and sophisticated problems in different contexts across the curriculum and through peer mentoring. Those children requiring additional support will receive appropriate intervention, ranging from a daily one to one intervention, regular small group intervention or ad hoc classroom intervention.

Displays and resources

In maths children of all ages and abilities should be encouraged to use resources to develop and explain their mathematical understanding. Some examples of resources used across the school include: Numicon, Base 10, Counters. These resources support concrete representations and understanding of concepts throughout all key stages. Children should be encouraged to develop their abstract, written representations of mathematical concepts and the calculation policy should be followed to ensure consistency throughout all key stages.

Classroom Maths displays should be working walls, displaying the most recent topic areas, methods and maths language.

Teach Active

At Trinity St Stephen we are committed to improving the fitness and well-being of the children. We try to incorporate TEACH ACTIVE resources into our lessons.

ICT in maths

Children at Trinity St Stephen have access to a number of online maths resources including Purple Mash, Abacus and TT Rockstars. All such resources are used by pupils and teachers to strengthen fluency and enjoyment of maths.

Assessment in Maths

Foundation Stage

All reception children are assessed within their first two weeks at Trinity St Stephen. This is a school based assessment. The Government baseline is completed by half term. Throughout the year, evidence is collected through observations and activities. These activities are a mixture of child led and adult led activities. Evidence is collected and stored in books and learning journals. At the end of the year the children are assessed against the early learning goals as either expected or emerging. Throughout the year progress is monitored with parents receiving information about their child's progress through parents' evening or informal chats. Children that need support receive interventions and parents are informed and provided with strategies to support their child at home.

Assessment in Maths – Key Stages 1 and 2

At the end of year 2, children are assessed against the National Curriculum requirements through SATs. In Year 2 this is to be used alongside teacher assessment to reach a final summative assessment. Past SATs papers should be used regularly to assess progress and attainment. Teacher assessments are ongoing throughout Key Stages 1 and 2. Assessments are supported by NCETM

Ready to Progress material. Children complete a termly PUMA assessment. Results are shared with pupils and individual targets established.

In the Summer Term, pupils in Year 4 complete an online multiplication tables check (MTC). The test consists of 25 questions on the 2-12 times tables. Children have six seconds to answer each question. The purpose of the MTC is to make sure that pupils' times tables knowledge is at the expected level.

Homework

To ensure that pupils are securing and embedding core mathematical facts, they are expected to complete maths homework on a weekly basis. Year 1 children to receive homework on weekly number practise and an online activity. Year 2 to 4 to complete several sessions of TT Rockstars (an online game allowing pupils to practise their times tables and participate in various 'battles').

Marking and feedback

Where possible children will be asked to mark their work in the lessons to gain instant feedback. This enables rapid targeted support and an opportunity to identify and act on misconceptions. Where children have gained full marks they can be rapidly moved on to a more challenging task. Marking should adhere to the school marking and feedback policy. Children are encouraged to provide feedback at the end of each lesson by drawing a face at the bottom of their work. A happy face indicates a confident level of understanding, a sad face indicates that more support is required, a face that is neither happy nor sad indicates that the child feels that they are almost there but lacking some confidence. This system is introduced in Year 2 through a wall display. In Year 3 and Year 4 children start to use this system in their books. Smiley faces can be replaced with traffic lights if the teacher feels it is more appropriate for their class.

During lessons children are encouraged to indicate that they need help by displaying a red marker. Children should not sit with their hand up for long periods of time. They are encouraged to move on to other questions and to keep trying, whilst waiting for help. This is introduced in Year 2.

British Values

The maths curriculum promotes the British Values of tolerance and resilience through problem solving and understanding of complex concepts. Children are required to persevere to solve problems. Teamwork is central to maths through peer assessment, mentoring and group work. Mutual respect is developed as children work together and build confidence in one another. Children can feel safe to make mistakes and take risks in problem solving, thus developing self-confidence and esteem. Children are encouraged to become life-long learners alongside developing their mathematical skills across the curriculum through enterprising and problem solving.

Monitoring and Review

The subject is monitored in the Autumn Term by the subject leader. Monitoring involves lesson observations, planning and book scrutiny, pupil interviews and data analysis. A report is produced and submitted to the governors and headteacher. Staff are provided with both general feedback and individual feedback regarding the scrutiny. During the year targets are set for each child and monitored. Data analysis takes place each term throughout the year.

To be reviewed: September 2023