St Joseph's R.C Primary Academy

Mathematics Policy

School Motto

"Live Like Jesus"

Introduction

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

(National Curriculum 2014)

The aims of the 2014 National Curriculum are for our pupils to:

- Become fluent in the fundamentals of mathematics through varied and frequent practice with complexity increasing over time.
- Develop conceptual understanding and ability to recall and apply knowledge rapidly and accurately.
- Reason mathematically; follow a line of enquiry, conjecture relationships and generalisations.
- Develop an argument, justification and proof by using mathematical language.
- Problem solve by applying knowledge to a variety of routine and non-routine problems. Breaking down problems into simpler steps and persevering in answering.

The National Curriculum sets out year-by-year programmes of study for key stages 1 and 2. This ensures continuity and progression in the teaching of mathematics.

The EYFS Statutory Framework 2014 sets standards for the learning, development and care of children from birth to five years old and supports an integrated approach to early learning. This is supported by the

‘Development matters’ non statutory guidance.

The EYFS Framework in relation to mathematics aims for our pupils to:

- develop and improve their skills in counting
- understand and use numbers
- calculate simple addition and subtraction problems
- describe shapes, spaces, and measures

The purpose of mathematics in our school is to develop:

- positive attitudes towards the subject and awareness of the relevance of mathematics in the real world
- competence and confidence in using and applying mathematical knowledge, concepts and skills
- an ability to solve problems, to reason, to think logically and to work systematically and accurately,
- initiative and motivation to work both independently and in cooperation with others
- confident communication of maths where pupils ask and answer questions, openly share work and learn from mistakes
- an ability to use and apply mathematics across the curriculum and in real life
- an understanding of mathematics through a process of enquiry and investigation
- We aim to provide a stimulating and exciting learning environment that takes account of different learning styles and uses appropriate resources to maximise teaching & learning.

Breadth of study

Careful planning and preparation ensures that throughout the school children engage in:

- practical use of a variety of concrete resources
- problem solving and investigations to challenge thinking
- individual, paired, group and whole class learning and discussions
- purposeful practise where time is given to apply their learning in the form of ‘real life problems or activities recommended by NCETM and NRICH
- open and closed tasks
- a range of methods of calculating identified in our own calculation policy adapted from the White Rose Calculation policy

Through our creative approach to teaching and learning we also seek to explore and utilise further opportunities to use and apply mathematics across all subject areas.

How is a unit of work in Mathematics taught?

The school works to the expectations set out in the framework document for the National Curriculum in England, July 2013 for Years 1 to 6 and the Early Years Foundation Stage Curriculum, 2012. Each year group follows the White Rose scheme of work, which is tailored to meet the individual needs of each cohort and to fulfil our ambition for the children by the time they leave us.

The school's Curriculum places a strong emphasis on Fluency where we ensure children have a strong understanding of place value and key number facts. A key belief shared between all staff is that children must hold Mathematics in their hands before they can hold it in their heads. It is for this reason that a wide range of practical equipment is used in order to develop this conceptual understanding. These manipulatives include: Numicon; Base Ten apparatus, place value counters, counting sticks, bead strings, number lines and the one hundred square. Manipulatives are used when introducing children to formal written methods to ensure they have a secure understanding of these.

Once pupils demonstrate strong fluency within a unit of work, they are given many opportunities to deepen their learning through challenging Reasoning tasks. These tasks develop the children's ability to conjecture, generalise and justify. Pupils will demonstrate clear and succinct reasoning using the terms '**because'** and '**therefore'**.

Finally, to enable pupils to master each unit of Mathematics, the children are encouraged and shown how to apply their knowledge and skills to rich mathematical Problem Solving tasks. These tasks are open-ended and challenging in their design and are carefully develop to build grit, perseverance and resilience (some of the golden skills we promote in our school). As well as this, they are taught to use systematic ways of working and, at the end of a task, are always encouraged to evaluate the approach taken.

All units of work begin with a Pre-Learning task. Teachers use the pupils' responses to identify their starting point with each new unit. This ensures that every child receives precise teaching. Marking always informs planning for the next day to ensure that assessment always informs next steps in learning.

See also our Calculation Policy.

What does a typical Maths lesson look like at St. Joseph's Primary School?

All teachers use the same planning format as we strongly believe in consistency. Lessons always begin with a counting starter. Here, children will practise and develop their knowledge of place value, counting and knowledge of key number facts. Afterwards, a Mental/Oral starter is used to recap on prior learning; this

ensures that Mathematical concepts are not forgotten and practised regularly. Further to this, the Mental/Oral starter allows teachers to practise a skill which may be needed in the main body of the lesson.

The main body of the lesson is then taught. However, not all groups will receive the same teaching because we operate a 'fluid grouping' system. This means pupils do not always work in the same group; instead, they move around the groups fluidly and work where their next step in learning will be met. Therefore, precise teacher input is given to each group rather than to the whole class. Within a unit of work, teachers plan for deep coverage and mastery of the school's curriculum. A unit develops Fluency initially. Pupils are then given opportunities to solve Reasoning and Problem Solving tasks once this fluency has been sufficiently developed.

The teaching of arithmetic always follows the St. Joseph's Calculation Policy, which gives an overview of the development of addition, subtraction, multiplication and division from Reception to Year 6. Teachers are expected to use this detailed information on progression through each strand and follow the guidance of using practical resources and models to develop understanding at each stage.

To ensure that learning has been retained, and as a means of continually assessing prior learning, pupils complete a Friday Challenge task each week. Here, questions are provided based on four key areas of Maths: place value; calculation; fractions, decimals and percentages; and space, shape and measure. If pupils are unable to answer a certain question, or if it is clear that a previously taught concept has not been embedded, teachers will ensure these gaps are filled during the mental/oral starter in the following week's lessons.

Weekly homework supports the daily Maths lesson as it is always linked to the topic being taught in school. Teachers use homework to assess each child's understanding within that unit of work.

All children are encouraged to learn using concrete methods of calculation. Various resources are available in all classes and the children are encouraged to use these regardless of their age or ability. Children are taught a variety of methods for recording their work and are encouraged and helped to use the most appropriate and convenient. Sometimes work from the lessons will be recorded using photos or bard screen prints.

Special educational needs & disabilities (SEND)

Daily mathematics lessons are inclusive to pupils with special educational needs and disabilities. Where required, children's IEP's incorporate suitable objectives from the National Curriculum for Mathematics or development Matters and teachers keep these in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the mathematics lesson. Maths focused

intervention in school helps children with gaps in their learning and mathematical understanding. These are delivered by support staff and overseen by the SENCO and/or the class teacher.

Within the daily mathematics lesson teachers have a responsibility to not only provide differentiated activities to support children with SEND but also activities that provide sufficient challenge for children who are high achievers. It is the teachers' responsibility to ensure that all children are challenged at a level appropriate to their ability.

Equal Opportunities

Positive attitudes towards mathematics are encouraged, so that all children, regardless of race, gender, ability or special needs, including those for whom English is a second language, develop an enjoyment and confidence with mathematics. This policy is in line with the school's 'Racial Equality' policy.

The aim is to ensure that everyone makes progress and gains positively from lessons and to plan inclusive lessons. Lessons involving lots of visual, aural and kinaesthetic elements will benefit all children including those for whom English is an additional language (EAL).

Marking

Marking of children's work is essential to ensure they make further progress. Work is marked in line with the school marking policy, and includes next steps where appropriate. Children are encouraged to self-assess their work and given time to read teachers' comments and make corrections or improvements. Responses to marking are made in purple pen, ideally at the start of the next lesson or during the lesson. Some pieces of work in mathematics can be marked by children themselves, exercises involving routine practice with support and guidance from the teacher – particularly in KS2.

Books are marked by the teacher at the end of each lesson to indicate what the child will be addressing in the next lesson, in terms of Fluency, fluency (2), Reasoning or Problem Solving.

Assessment

Formative Assessment

We use 'Pre-learning tasks' to support formative assessment before teaching a new unit of work in Mathematics. Pupils complete a pre-learning task that address ¾ ojectives from the coming lessons, and the results of which are analysed to identify key gaps in understanding which are providing a barrier to progress. Pupils are set according to their next steps in learning for the following lesson, which is planned specifically to tackle those gaps for each group of pupils.

Following the delivery of these assessed objectives the children will complete a post-Learning Task. The results of these feed into intervention sessions in each class. We are able to use the Pre and Post learning task to show progress and any subsequent gaps. As previously stated, we operate 'fluid groupings' where marking and observational assessment continually inform which groups pupils will be placed in for the next lesson, depending on their success in the previous session. As a result of this, pupils are always grouped precisely, according to their learning needs.

Summative Assessment

At the end of each term, children sit assessment tests, based on that term's learning. We are currently using PUMA RS Assessment test in year 1,3,4,and 5. Years 2 and 6 use previous SATS papers. From these tests we track summative data in the form of standardised scores. Assessment information is then obtained from the tests and is used to dictate provision and set targets for the next half term. These assessment tests also inform teacher's assessments of pupils' attainment and progress and are analysed by Cathy Walsh, the Mathematics Subject Leader and used to inform target-setting.

Role of the Maths Subject Leader

- To lead in the development of maths throughout the school.
- To monitor the planning, teaching and learning of mathematics throughout the school.
- To help raise standards in maths.
- To provide teachers with support in the teaching of mathematics.
- To provide staff with CPD opportunities in relation to maths within the confines of the budget and the
- School Improvement Plan
- To monitor and maintain high quality resources.
- To keep up to date with new developments in the area of mathematics

Maths policy reviewed: April 2019

Next review: August 2020

Signed: C Walsh

(Mathematics Subject Leader)