St Jude's Catholic Primary School Mathematics Policy

We live, love and learn together joyfully in Jesus' name.

Introduction

At St Jude's Catholic Primary school we value every pupil and the contribution they have to make. As a result we aim to ensure that every child achieves success and that all are enabled to develop their skills in accordance with their level of ability.

Mathematics is both a key skill within school and a life skill to be utilised throughout every person's day to day experiences.

Rationale: Why Teach Mathematics?

Mathematics equips pupils with the uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways. Mathematics is important in everyday life. It is integral to all aspects of life and, with this in mind, we endeavour to ensure that children develop a positive and enthusiastic attitude towards Mathematics that will stay with them.

The National Curriculum for Mathematics (2014) describes in detail what pupils must learn in each year group. Combined with our Calculation Policy, this ensures continuity, progression and high expectations for attainment in Mathematics. The National Curriculum for Mathematics (2014) intends for pupils to develop 'number sense' by which they have a full and rounded understanding of appropriate mathematical concepts. It aims to ensure that all pupils:

- 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.

It is vital that a positive attitude towards Mathematics is encouraged amongst all of our pupils in order to foster confidence and achievement in a skill that is essential in our society. At St Jude's Catholic Primary School we use the National Curriculum for Mathematics (2014) as the basis of our Mathematics programme. We are committed to ensuring that all pupils achieve mastery in the key concepts of Mathematics, appropriate for their age group, in order that they make genuine progress and avoid gaps in their understanding that provide barriers to learning as they move through education. Assessment for Learning, an emphasis on investigation and problem solving, the development of mathematical thinking and development of teacher subject knowledge are therefore essential components of the approach to this subject at St Jude's Catholic Primary School.

Aims

- To foster a positive and enthusiastic attitude to Mathematics as an interesting and attractive part of the curriculum.
- To develop flexibility, the ability to think clearly and logically, with confidence, and independence of thought.
- To develop a deeper understanding of Mathematics through a process of enquiry and investigation.
- To develop an understanding of the connectivity of patterns and relationships within Mathematics.
- To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the uses of Mathematics in the wider world.
- To develop the ability to use Mathematics and mathematical language as a means of communicating ideas and self-expression.
- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems.

- To develop personal qualities such as resilience, perseverance, independent thinking, cooperation and self-confidence through a sense of achievement and success, and by fostering a 'growth mindset' approach.
- To develop an appreciation of, and fascination about, the creative aspects of Mathematics and an awareness of its aesthetic appeal.

Principles of Teaching and Learning in a Mastery Curriculum

The school uses a variety of teaching and learning styles in Mathematics lessons during each lesson. Children are taught in year groups. Pupils are seated in mixed ability groups as we believe that all pupils can attain highly in Mathematics and every pupil will have different strengths and development areas. Therefore groupings within classes are flexible from lesson to lesson and pupils will work in different groups dependent on their need.

The large majority of pupils progress through the curriculum content at broadly the same pace. Differentiation is achieved by emphasising deep learning and through individual support and intervention. The questioning and scaffolding individual pupils receive in class, as they work through problems, will differ and pupils who grasp concepts rapidly are challenged through more complex problems which widen and deepen their knowledge and understanding further and require them to apply this and possibly make links with associated previous learning.

Practice and consolidation play a central role in Mathematics learning. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts in tandem. 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. Teachers ensure that concepts are modelled to pupils using multiple representations following the 'CPA' approach (Concrete - Pictorial - Abstract). This ensures that procedural and conceptual understanding is developed simultaneously.

The aim of a Mathematics lesson is to teach a child a skill or strategy that will provide a solution to a task or a problem. It is not simply to produce a page of correct number work, which is abstract to any real life situation. To support this approach we **do not erase incorrect answers or approaches** as they provide a valuable clue to the path a child is taking and becomes valuable informal assessment. In addition, we take a

'journalling' approach to how children record their learning. This means that once a pupil has practised a skill or strategy, they reflect on, and assess what they have learned, recording their thoughts and understanding in writing. The effect of this is to shift the instructional focus from computation to problem solving and real-life application whilst, at the same time, providing teachers with insight into a pupil's abilities, opinions, understanding and misconceptions and creating a documented portfolio of student growth and progress. This process is therefore open-ended and naturally differentiated.

Mathematics Curriculum Planning

Mathematics is a core subject in the National Curriculum and we use the objectives from this to support planning and to assess children's progress. We endeavour to set work that is challenging, motivating and encourages pupils to talk and reason about what they have been learning.

Curriculum Design

A detailed, structured curriculum is mapped out across all phases, ensuring continuity and supporting transition. Effective mastery curricula in mathematics are designed in relatively small carefully sequenced steps, which must each be mastered before pupils move to the next stage. Fundamental skills and knowledge are secured first. This often entails focusing on curriculum content in considerable depth at early stages. This longer and medium term planning is based on the yearly objectives set out in the National Curriculum for Mathematics (2014) and is supported by 'Power Maths' and the White Rose materials.

Lesson Design

Lessons are crafted with similar care and are often perfected over time with input from other teachers, drawing on evidence from observations of pupils in class and informed by previous assessment. Lesson designs set out in detail well-tested methods to teach a given mathematical topic. They are designed to be episodic, with a focus on questioning and doing, in order to support the learning journey of pupils and follow a 'discover', 'share', 'think together', 'reflect' structure. Lessons include a variety of representations following the 'CPA' approach (Concrete - Pictorial - Abstract) needed to introduce and explore a concept effectively and also set out related teacher explanations and questions

to pupils. This short term planning begins with the learning objective and clearly identifies the sequentially structured success criteria by which the children can achieve the intended outcome and the questions the teacher might ask in order to support this. Efforts are made by teachers to identify the anticipated misconceptions some children might make and to pre-empt these through their planning.

Pupil Support and Differentiation

Taking a mastery approach, differentiation occurs in the support and intervention provided to different pupils, not in the topics taught or activities completed, particularly at earlier stages. There is no differentiation in content taught, but the questioning and scaffolding individual pupils receive in class as they work through problems will differ, with pupils who understand more deeply being challenged through more complex problems which widen and deepen their knowledge and understanding of the same content and require them to apply this and possibly make links with associated previous learning. 'Deepen' activities which are 'low threshold, high ceiling' are used to challenge pupils in this way. Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support, preferably later the same day, but certainly at the start of the next lesson. 'Strengthen' activities are used to support this process. "Closing the gap" strategies should be focussed on where children have shown a minor misunderstanding, because there should be very few major gaps to close. If there are, then an intervention should be put in place in collaboration with the Subject Leader and the Inclusion Manager.

Productivity and Practice

Fluency comes from deep knowledge and practice. Pupils work hard and are productive. We recognise the importance of establishing a secure foundation in mental calculation and the recall of number facts before written methods are introduced. At early stages, explicit learning of number bonds and facts, and multiplication tables, is important in the journey towards fluency and contributes to quick and efficient mental calculation. Practice leads to other number facts becoming second nature. The ability to recall facts from long term memory and manipulate them to work out other facts is also important.

Our pupils should:

- have a well-developed sense of the size of a number and where it fits into the number system (place value);
- know by heart number facts such as number bonds, doubles and halves, multiplication tables;
- be able to fluently recite both the multiplication and related division facts of every times table up to 12x12 by the end of Year 4;
- be confident in the set of agreed non-negotiables for their year group;
- use what they know by heart to work out numbers mentally;
- use simple number facts they know to solve more complex calculations efficiently;
- calculate accurately and efficiently, both mentally and in writing on paper;
- draw on a range of calculation strategies;
- recognise when it is appropriate to use a calculator and be able to do so effectively;
- make sense of number problems, including non-routine/'real' problems and identify the operations needed to solve them;
- explain their methods and reasoning, using correct mathematical vocabulary, terms and language;
- judge whether their answers are reasonable and have strategies for checking them where necessary;
- suggest suitable units for measuring and make sensible estimates of measurements;
- explain and make predictions from the numbers in graphs, diagrams, charts and tables;
- develop spatial awareness and an understanding of the properties of 2D and 3D shapes.

To provide adequate time for developing mathematical learning, Mathematics is taught daily and discretely. However, application of skills is linked across the curriculum where appropriate. Fact fluency is taught, practiced and assessed outside of the daily Mathematics lesson.

Assessment

At St Jude's Catholic Primary School, we see assessment as an integral part of the teaching process and endeavour to make our assessment purposeful and impactful. It allows us to match teaching and learning to the needs of pupils in order to have the greatest benefit for pupils and impact on the progress they make. Various assessment

methods and practices are used through which we ensure that children are making appropriate progress and that the activities they take part in are suitably matched to their ability and level of development.

Formative Assessment (AfL) - (Monitoring Children's Learning)

Much of our assessment is done informally as part of each teacher's day to day work. Teachers integrate the use of formative assessment strategies in their teaching such as: effective questioning, clear learning objectives, the use of success criteria, effective feedback and response, marking, and observing children participating in activities. Findings from these types of assessment are used to inform future planning.

Summative Assessment – (Evaluating Children's Learning)

More formal methods are used to determine the levels of achievement of children at various times during the school year:

- ***Data Entry Point:***

Each term teachers evaluate the pupils' response to, and progress in, the objectives covered. Judgements are made based on the evidence gathered from the formative assessment carried out by teachers and outcomes from White Rose tests. This information is then updated onto Otrack as Teacher Assessment.

- ***Diagnostic Testing:***

Each term, the pupils in Years 1 to 6 are assessed in detail, based on the National Curriculum Objectives, using tests from White Rose. These are used to carry out a question level analysis in order to carefully track progress and identify where individuals and groups have gaps in their learning. In turn, this information is used to inform future planning and delivery to close any such gaps.

- ***Statutory End of Key Stage Assessment:***

The National Curriculum requires that each child is assessed in Mathematics. This is to be carried out at the end of each Key Stage. The majority of children will be working at the expected level for their age.

Early Years Foundation Stage (EYFS)

Mathematics within the EYFS is developed through purposeful, play-based experiences and will be represented throughout the indoor and outdoor provision. The learning will be based on pupils' interests and schemas or current themes and will focus on the expectations from EYFS Statutory Framework/Development Matters/Early Years Outcomes. As the pupils progress through, more focus is placed on representing their mathematical knowledge through more formal experiences. Pupils will be encouraged to record their mathematical thinking when they are ready and this will increase throughout the year. Mathematical learning in EYFS is supported by 'Power Maths Reception' and 'Number Blocks'.

Subject Knowledge and Continuing Professional Development

It is recognised at St Jude's Catholic Primary School that what is most important in helping develop their mathematical understanding is the subject knowledge of the staff with regard to both mathematical concepts and pedagogy. Therefore, we place a high priority on developing the subject knowledge of staff through ongoing and high-quality professional development. The focus of this professional development is based on an audit of need both as a school and as individuals and is delivered through formal INSET, staff meetings, moderation, collaboration and individual discussion. In all cases such professional development is supported by carefully selected, high-quality resources.

Mathematical Vocabulary

At St Jude's Catholic Primary School, we recognise that the development of vocabulary is an essential and fundamental part of learning generally throughout the curriculum and especially in Mathematics. Therefore, a progressive set of mathematical vocabulary has been identified to be used and reinforced in Years 1 to 6 that reflects the curriculum that is taught in order to consolidate pupils' learning and support their ability to explain and describe their understanding.

Display

Every class has a Mathematics 'working wall' which can be accessed by pupils and which reflects and supports the current learning in the class.

Resources

A bank of essential Mathematics concrete resources are kept in each classroom. Further resources relating to key whole school topics are kept in the Mathematics cupboard. Professional Development is provided for staff in the most effective ways of using the concrete resources in school to best support pupils' mathematical learning and development. All resources will be updated and renewed within appropriate budget allocations.

Information and Communication Technology

Teachers should use their judgement about when ICT tools should be used, including the use of calculators.

Equal Opportunities

As a staff, we endeavour to maintain awareness of, and provide for, equal opportunities for all pupils in Mathematics. We aim to take into account cultural background, gender, special educational needs and disabilities, and ability, both in our teaching attitudes and the resources and materials we use with pupils.

Children with Special Educational Needs and Disabilities

We aim to fully include pupils with SEN/D in the daily Mathematics lessons. Where necessary teachers will, in consultation with the Inclusion Manager, draw up Mathematics targets for that child. If a child's needs are particularly severe, they will work on an individualised programme written in consultation with the appropriate staff. When planning, teachers will try to address the child's needs through modified tasks or the use of additional support from an adult which should not always be the Teaching Assistant.

More Able Pupils in Mathematics

Children who regularly grasp concepts rapidly and have been assessed as having mastered objectives from their year group may be identified by their class teacher as 'more able'. Planning for these pupils will focus on enrichment, rather than acceleration, and the development of deeper mathematical thinking, rather than covering content more quickly.

Role of the Subject Leader

- Keeps informed about current developments in the subject.
- Provides a strategic lead and direction for the subject in the school.
- Ensures teachers understand the requirements of the National Curriculum and helps them to plan lessons.
- Leads by example by setting high standards in their own teaching.
- Supports colleagues in the teaching of Mathematics.
- Prepares, organises and leads CPD and joint professional development.
- Works with the SLT and Inclusion Manager.
- Plans CPD with colleagues with a view to identifying the support they need.
- Discusses regularly with the Headteacher and the Mathematics governor the progress and impact of implementing the National Curriculum for Mathematics in school.
- Monitors and evaluates Mathematics provision in the school by conducting regular work scrutiny, learning walks, pupil interviews and assessment data analysis.
- Moderates the standard of children's work and of the quality of teaching in Mathematics alongside members of the Senior Leadership Team.

Reporting

All parents receive an annual written report giving a summary of their child's effort, progress and attainment in Mathematics over the year. Similar information is discussed with parents at Parents' Evening each term and Mathematics targets are also shared with them.

At the end of Key Stage 1 and Key Stage 2, each pupil's achievement is included as part of their written report.

A report detailing the progress and impact of Mathematics at St Jude's Catholic Primary School, including standards and outcomes, is made by the Subject Leader to the Governing Body on a termly basis.

Monitoring and Review

The work of the Mathematics Subject Leader is monitored by the Head Teacher and Senior Leadership Team, as well as the Governing Body. Governors are briefed termly and oversee the teaching of Mathematics regularly with the Subject Leader to review the progress and impact of Mathematics at St Jude's Catholic Primary School.

Review date: 9th March 2023
This policy is to be reviewed in 2024