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Maths Policy

Introduction

At Weaverthorpe CE (VC) 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

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.

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 Weaverthorpe CE (VC) 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, problem solving, the development of mathematical thinking and development of teacher subject knowledge are therefore essential components of the Weaverthorpe CE (VC) Primary School approach to this subject.

Aims

- To foster a positive attitude to mathematics as an interesting and attractive part of the curriculum.
- To develop the ability to think clearly and logically, with confidence, flexibility 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 as a means of communicating ideas.
- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems.
- To develop personal qualities such as perseverance, independent thinking, cooperation and self-confidence through a sense of achievement and success.
- To develop an appreciation of 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 group sets. 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 and pupils will work in different groups dependent on their need.

The large majority of pupils progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge 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 demanding problems which deepen their knowledge further.

Practise and consolidation play a central role to 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. This ensures that procedural and conceptual understandings are developed simultaneously.

Curriculum design
A detailed, structured curriculum is mapped out across all phases, ensuring continuity and supporting transition. We use the progression planning documents from the White Rose Maths Hub. 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.

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. Lesson designs set out in detail well-tested methods to teach a given mathematical topic. They include a variety of representations needed to introduce and explore a concept effectively and also set out related teacher explanations and questions to pupils.

Pupil support and differentiation
Taking a mastery approach, differentiation occurs in the ***support and intervention provided*** to different pupils, ***not in the topics taught****,* 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 higher attainers challenged through more demanding problems which deepen their knowledge of the same content. Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support.

Productivity and practice
Fluency comes from deep knowledge and practice. Pupils work hard and are productive. At early stages, explicit learning of 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, multiplication tables, doubles and halves;
- use what they know by heart to figure out numbers mentally;
- calculate accurately and efficiently, both mentally and in writing and paper, drawing 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 terms;
- 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 mathematics, maths is taught discretely. However, applications of skills are linked across the curriculum where appropriate.

Maths 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. Staff use long term planning to ensure coverage of all areas of the National Curriculum and medium term planning to differentiate objectives.
The White Rose planning documents ensure objectives for each lesson and give details of how the lessons are to be taught. The class teacher keeps these individual plans, which they annotate according to the needed changes and the success of the learning.

Assessment
Formative Assessment (AfL) - (monitoring children's learning)
Assessment is an integral and continuous part of the teaching and learning process at Weaverthorpe CE (VC) Primary School and much of it is done informally as part of each teacher's day to day work. Teachers integrate the use of formative assessment strategies such as: effective questioning, clear learning objectives, the use of success criteria, effective feedback and response in their teaching and 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. We use the Sheffield STATs assessment system.

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 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 ready and this will increase throughout the year.

Resources
A bank of essential mathematics resources are kept in each classroom. Further resources relating to key whole school topics are kept in maths cupboard.

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

Role of the Subject Leader
- 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.
- Prepares, organises and leads CPD and joint professional development.
- Plan CPD with colleagues with a view to identifying the support they need.
- Monitors and evaluates mathematics provision in the school.