

Christ Church C.E. Primary School, Walshaw

Mathematics Policy

1 Aims and objectives

1.1 Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

1.2 The aims of mathematics are:

- to promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion;
- to promote confidence and competence with numbers and the number system;
- to develop the ability to solve problems through decision-making and reasoning in a range of contexts;
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, and develop measuring skills in a range of contexts;
- to understand the importance of mathematics in everyday life.

1.3 Principles of teaching for mastery.

- All children are encouraged to believe that by working hard at maths they can all succeed. Pupils are taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time. This ensures that all can master concepts before moving to the next part of the curriculum sequence, allowing no pupil to be left behind. There are five key or 'Big Ideas' : Representations and Structure, Mathematical thinking, Fluency and Facts, Variation, and Coherence. If a pupil fails to grasp a concept or procedure, this is identified quickly and same day intervention ensures the pupil is ready to move forward with the whole class in the next lesson.

2 Teaching and learning style

2.1 In a typical lesson pupils sit facing the teacher and the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion. Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.

It is recognised that practice is a vital part of learning, but the practice used is intelligent practice that both reinforces pupils' procedural fluency and develops their conceptual understanding.

Significant time is spent developing deep knowledge of the key ideas that are needed to underpin future learning. The structure and connections within the mathematics are emphasised, so that pupils develop deep learning that can be sustained.

Key facts such as multiplication tables and addition facts within 10 are learnt to automaticity to avoid cognitive overload in the working memory and enable pupils to focus on new concepts.

In KS1 lesson design includes a break before independent practise to allow children to process new information. This may be split across a break, assembly or next day. Whereas KS2 will complete the session when timetabled in.

Daily intervention allows for the slower graspers to keep up with the class, and prevent gaps from occurring. Rapid graspers are challenged through greater depth, not acceleration.

2.2 Typical lesson structure-

10 minutes 'Flashback' starter

10 minutes In Focus task

10 minutes let's learn

10 minutes guided practice

10 minutes independent work

10 minutes journal (can be anytime during the session).

2.3 Journaling: Journals are used to further enhance the children's learning from the lesson. There are four different types of journals: descriptive, reflective/evaluative, creative and investigative. Usually the teacher will produce the title but sometimes children may be asked to think of a title which can be used for assessment. Children are encouraged to use everyday language but then the next day asked to use mathematical language. Diagrams are also encouraged whenever possible.

- 2.4 Each teacher uses a variety of teaching and learning styles in mathematics lessons. Our principal aim is to develop children's knowledge, skills and understanding in mathematics. We do this through a daily lesson that has a high proportion of whole-class and group-direct teaching. During these lessons we encourage children to ask as well as answer mathematical questions. They 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. Mathematical dictionaries are available in all classrooms. Wherever possible, we encourage the children to use and apply their learning in everyday situations.
- 2.5 In all classes, there are children of differing mathematical ability. We recognise this fact and provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this through a range of strategies - in some lessons through differentiated questioning, and in other lessons by organising the children to work in pairs on open-ended problems or games. To aid children questioning is matched to the needs of individuals either to challenge or to support.

3 Mathematics curriculum planning.

- 3.1 Lesson design identifies the new mathematics that is to be taught, the key points, the difficult points and a carefully sequenced journey through the learning, CPA (concrete, visual, abstract) is carefully planned to ensure a coherent learning journey, and for pupils to make connections. Procedural and conceptual variation is also incorporated into the lesson design.
- 3.2 We carry out the curriculum planning in mathematics in three phases (long-term overview, medium-term and short-term).
- 3.3 Our medium-term mathematics plans, which are adopted from the Maths No Problem and White Rose framework gives details of the main teaching objectives for each term and define what we teach. They ensure an appropriate balance and distribution of work across each term. These plans are kept and reviewed by senior leaders.
- 3.4 It is the class teacher who completes the weekly plans for the teaching of mathematics. These weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught.

4 The Foundation Stage.

4.1 We teach mathematics in our nursery and reception class. As the class is part of the Foundation Stage 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 children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

5 Contribution of mathematics to teaching in other curriculum areas.

5.1 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. 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.

5.2 Information and communication technology (ICT)

Children use and apply mathematics in a variety of ways when solving problems using ICT. 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. When working on control, children use standard and non-standard measures for distance and angle. They use simulations to identify patterns and relationships.

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

Mathematics contributes to the teaching of personal, social and health education, and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older

children with real-life situations in their work on the spending of money.

5.4 Spiritual, moral, social and cultural development

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, and we give them the chance to discuss their ideas and results. The study of famous mathematicians around the world contributes to the cultural development of our children.

6 Teaching mathematics to children with special educational needs.

6.1 At our school we teach mathematics to all children, whatever their ability. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels.

6.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors - classroom organisation, teaching materials, teaching style, and differentiation - so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.

6.3 Intervention through School Action and School Action Plus will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to mathematics.

6.4 We enable pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom, for example, a maths trail, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

7 Assessment and recording

- 7.1 Marking and evidence-recording strategies should be efficient, so that they do not steal time that would be better spent on lesson design and preparation. Neither should they result in an excessive workload for teachers.

It is important for teachers to distinguish between a pupil's simple slip and an error that reflects a lack of understanding. Slips should be corrected, errors can be addressed through intervention.

Pupils benefit from marking their own work when appropriate. Part of this responsibility is to identify for themselves the facts, strategies and concepts they know well and those which they find harder and need to continue to work on.

It should not be a routine expectation that next-steps or targets be written into pupils' books. The next lesson should be designed to take account of the next steps.

- 7.2 Across the school, we assess children's 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 are closely matched to the teaching objectives.

- 7.3 We make medium-term assessments to measure progress against the key objectives, and to help us plan the next unit of work.

- 7.4 We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents. We pass this information on to the next teacher at the end of the year, so that they can plan for the new school year. We make the long-term assessments with the help of end-of-year tests and teacher assessments. We use the national tests for children in Year 2 and Year 6, plus the NFER tests for children in each term for Years 1, 2, 3, 4 and 5. The outcome of the test provides support for teacher assessment. In 2021 Year 6 will be using PIXL as an assessment tool.

- 7.5 The mathematics subject leader keeps samples of children's work on Trello. This demonstrates what the expected level of achievement is in mathematics in each year of the school.

- 7.6 Class teachers or teaching assistants will mark children's independent workbooks straight after the lesson and identify who has achieved

the objective and who needs same day intervention. Journals are marked by the class teacher using codes:

I-initiative

C- creative

E- explained

I- misconception

8 Resources

- 8.1 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 to support children in the CPA approach linked to mastery maths.
- 8.2 Maths No Problem (MNP) lesson plans are available online for teachers to use to deliver the mastery curriculum as well as MNP CPD videos.

9 Monitoring and review

- 9.1 Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leaders. The work of the mathematics subject leaders 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 mathematics subject leaders give the head teacher an annual summary in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further improvement. The head teacher allocates regular management time to the mathematics subject leaders so that they can review samples of children's work and undertake lesson observations of mathematics teaching across the school.

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Maths subject leads.