Christ Church CE VC Primary School

"Together we learn - Together we grow - Together we flourish"

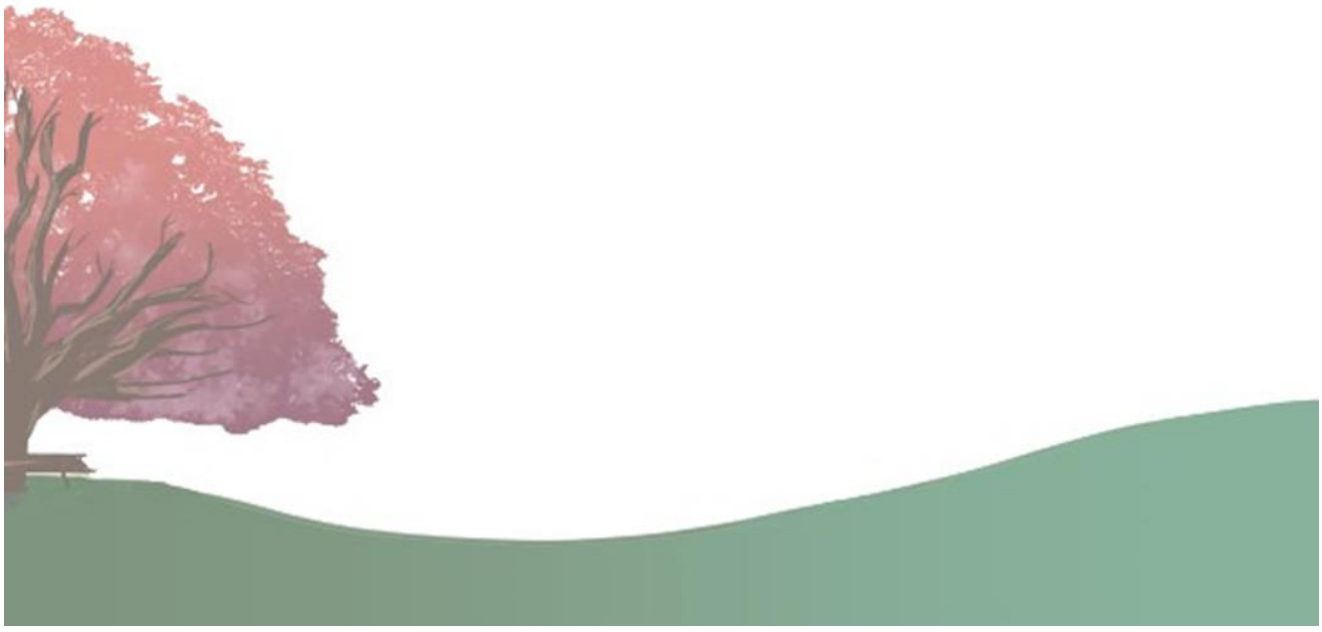
Some seeds fell on good earth and produced a harvest beyond wildest dreams.

Matthew 13:8

Mathematics Curriculum Policy

Date agreed:

Review date:



Intent

Our intent for our mathematics curriculum is for that all pupils **learn, grow and flourish together** as mathematicians and as problem-solvers:

Together we learn:
Our curriculum for mathematics aims to ensure that all pupils master the fundamental concepts of mathematics in order to:

- *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 looking for patterns and relationships, connecting ideas, reasoning logically, explaining, conjecturing and proving.*
- ***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.*

Together we grow:
Our curriculum for mathematics aims to give all children *a solid 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.* Good mathematicians can communicate their ideas effectively with others, so we aim to give children the experiences and tools necessary to problem-solve alone and with others, defend their ideas and express their thinking in a variety of ways.

Together we flourish:
Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. Our curriculum for mathematics aims to equip all children with the confidence and curiosity to apply mathematics across different subjects and contexts, to continue learning mathematics successfully in the next stage and beyond, and to go on to use and explore mathematics not just for everyday life, but also for the sheer pleasure of it.

Phrases in italics are taken from the National Curriculum for Maths.

Implementation

At Christ Church, we use the long-term plans, teaching points and planning guidance from the National Centre for Excellence in **Teaching Mathematics (NCETM)'s Curriculum Prioritisatio**n **materials** to sequence our learning in EYFS, Key Stage 1 and Key Stage 2. These materials have been drawn up by experts in primary mathematics to respond to the DfE's Guidance on the Teaching of Mathematics in Primary Schools (2021), and are built upon the idea of prioritising the concepts within the National Curriculum that are the most important for future learning. By following one scheme closely, we know that our children are following a well-sequenced, progressive curriculum and meeting a consistent set of representations, manipulatives and vocabulary year-on-year to support the incremental building of a solid understanding of mathematics.

These materials cover the full mathematics National Curriculum (except for a few areas detailed below), but priority is given to those areas covered by the ready-to-progress criteria from the DfE guidance. These areas are given more time and appear earlier in the year. Some content has been moved from one year group programme of study to another within the same key stage. This is to improve coherence and to align with the ready-to-progress criteria contained within the DfE guidance. Apart from 'Roman numerals' and 'Constructing and presenting data', all the national curriculum content is included within the key stage. Objectives that are not covered through the NCETM materials are either covered through other subjects (such as using data handling in Geography and Science) or in standalone maths lessons.

In EYFS and Key Stage 1, our curriculum is supplemented and supported by daily sessions focussing on addition and subtraction within 20, following the NCETM's Mastering Number programme.

Pedagogy

At Christ Church, we are developing a Teaching for Mastery approach to teaching maths, with the support of the NCETM and the Mobius Maths Hub, through participation in a Developing Mastery Work Group and the Mastering Number programme. The following paragraphs set out how the core principles of Teaching for Mastery, as set out by the NCETM, are likely to look in a maths lesson at Christ Church:

Principle 1: Maths teaching for mastery rejects the idea that a large proportion of people 'just can't do maths'. All pupils are encouraged by the belief that by working hard at maths they can succeed.

- All adults involved in our pupils' maths education are careful about the language that they use about maths, recognising that this is a subject that historically many people have had a difficult relationship with. We avoid and challenge the use of phrases such as 'I was never much good at maths' or 'maths just isn't my thing'.

- The view that every child is a mathematician is reinforced through mixed-attainment teaching, and avoiding describing pupils as 'low ability' or 'high ability', which are seen as fixed concepts. We refer instead to their prior attainment and experiences, readiness for new concepts, and mathematical fluency, recognising that these factors are not fixed and can change over time.
- Common misconceptions and difficult points are identified when planning a lesson, and discussed during a lesson in order to help children to see that mistakes are an important part of learning.

Principle 2: 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

- Within a lesson, children will broadly work on the same activities and outcomes. A small proportion of SEN pupils, who have been identified with the inclusion team as currently being unable to access the same learning as the rest of the class, are taught maths separately at their level.
- Children are guided through a variety of activities within a lesson in order to fully explore the concept being taught, which may include the use of manipulatives, explaining their understanding to a partner, drawing different representations of the structures being taught, practising the use of precise language, and more extended independent work.
- Children who need support to access the learning activities are given that support during the lesson, for example through the use of varied representations, scaffolded sentence stems, and adult intervention.
- Children who grasp new concepts quickly are given opportunties, through 'deepening' questions and activities, to further strengthen their understanding of the concept at hand, rather than moving on to the next step in learning ahead of the rest of the class.
- Opportunities for reasoning and problem-solving are embedded in Maths teaching, and are tackled and discussed together by the whole class throughout the lesson – not just by those who finish other work quickly.
- Pupils are supported to embed, retain and retrieve knowledge through the use of daily retrieval practice. This may be drawn from materials such as White Rose's 'Flashback Four', or created by teachers to be closely aligned to taught content.

Principle 3: If a pupil fails to grasp a concept or procedure, this is identified quickly and early intervention ensures the pupil is ready to move forward with the whole class in the next lesson.

- Where possible, is self-marked or live-marked throughout the lesson and discussion of errors and misconceptions is encouraged and celebrated.

- During classroom activities, adults focus on assessing pupils' understanding, and intervening where necessary, to provide support during the lesson.
- Children who need support beyond what is possible in class are targeted for same-day interventions, to give them more time and further adult support to embed their understanding of the concepts covered.
- Children who are significantly behind their peers and therefore at risk of struggling to access their year group's curriculum are assessed to identify gaps in their learning, and supported to make accelerated progress using structured programmes including Number Stacks and the NCETM's Ready-to-Progress materials.

Principle 4: 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.

- Lesson time is used to guide pupils through the small steps necessary to understand a new concept; this usually involves several short explanations and activities (sometimes referred to as 'ping-pong' teaching) followed by a longer period of practice of a new skill.
- The majority of planning time is used to read, understand and discuss the relevant planning materials. Teachers have a good awareness of the small steps that they are guiding the children through, and common 'sticking points' in the learning.
- Representations and manipulatives identified in the planning materials are used accurately to expose important structures and help children to make connections across different areas of mathematics. These representations are displayed in the classroom and regularly referred to.
- Learning activities are closely matched to the new learning in each lesson, and may be drawn directly from the NCETM materials, or created by teachers in a similar style to those exemplified in the materials, or drawn from other sources including White Rose worksheets.

Principle 5: Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.

- All pupils are guided to access fluency, problem-solving and reasoning activities – reasoning is not the preserve of the highest-attaining pupils.
- Variety of representation, consistent and accurate use of language, and discussion of the efficiency of different methods are central to teaching and evident in all Maths lessons.

Principle 6: 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.

- Children work hard in school and at home to attain fluency in basic number-facts, so that learning time can be focussed on new learning.
- Fluency sessions, focussed on number facts and mental calculations and separate from the daily Maths lesson, are timetabled at least four times a week. In EYFS/KS1, these are based around the Mastering Number programme.
- Children who are significantly behind their peers in terms of mathematical fluency are likely to struggle to take on new learning in Maths as their calculations will slow them down. These children are identified and targeted for interventions specifically to build number-sense and fluency.

Leadership and Management

The subject leader's role is to empower colleagues to teach maths to a high standard and support staff in the following ways:

- By keeping up to date on current issues;
- disseminating relevant information and providing training for staff members (either directly or through other professionals);
- Leading by example / modelling lessons or styles of teaching;
- Having a knowledge of the quality of mathematics provision across the school;
- Identifying and acting on development needs of staff members;
- Monitoring expectations, provision and attainment across the school;
- Providing feedback to develop practice further in order to raise standards.

National Curriculum

Our curriculum meets the National Curriculum for each key stage, so that by the end of Key Stage 1 and Key Stage 2 pupils will have been taught all content from the relevant programmes of study.

Our Early Years curriculum covers the EYFS Statutory Framework for mathematics.

SEND

Our teaching for mastery pedagogy aims to ensure that all pupils – including those with or without SEND –are supported to access the key learning; this includes through the use of manipulatives, language mats, adult support, and extra time outside of the lesson to

consolidate their learning. A small proportion of pupils, identified by class teachers and the inclusion team, may require a bespoke curriculum; the key framework for this is the Numberstacks intervention programme as well as the DfE's 'Ready-to-Progress' materials.

Useful links:

https://www.ncetm.org.uk/classroom-resources/cp-curriculum-prioritisation-in-primary-maths/

https://www.ncetm.org.uk/teaching-for-mastery/mastery-explained/

https://www.ncetm.org.uk/podcasts/debbie-morgan-discusses-differentiation/

https://www.gov.uk/government/publications/teaching-mathematics-in-primary-schools

https://www.ncetm.org.uk/maths-hubs-projects/mastering-number/

https://www.numberstacks.co.uk/