



ST. NICHOLAS SCHOOL CHILD OKEFORD

A CHURCH OF ENGLAND VOLUNTARY AIDED PRIMARY SCHOOL

MISSION STATEMENT

‘At St. Nicholas, we nurture everyone *to be the best we can be*, in a caring and inclusive Christian environment.’

MATHS AND CALCULATION POLICY

POLICY SUMMARY

This policy outlines the teaching, learning, organisation and management of mathematics, including progression in calculation, at Child Okeford School.

DATE ADOPTED
March 2018

REVISION NUMBER
1

LAST REVIEW

NEXT REVIEW
March 2020

1. **Aims**

- (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 that maths can be an exciting and stimulating subject to learn which has relevance to their own everyday lives. Problem solving, including using and applying mathematics, is central to our teaching of mathematics.
- (2) At Child Okeford School, we are committed to raising the standards of learning and teaching of mathematics.
- (3) We aim to:
 - (i) meet the statutory requirements of the New National Curriculum 2014;
 - (ii) develop fluency in basic number concepts;
 - (iii) develop positive attitudes towards mathematics and lifelong learning;
 - (iv) develop an ability in the children to choose and explain appropriate methods or strategies for their calculations and when solving real-life problems;
 - (v) develop ability to think clearly and logically with independence of thought and flexibility of mind;
 - (vi) promote enjoyment, enthusiasm and motivation for learning through practical activity, exploration and discussion;
 - (vii) promote confidence and competence with numbers and the number system;
 - (viii) develop the ability to solve problems in a logical way through decision-making and reasoning in a range of contexts;
 - (ix) make children aware of the patterns and relationships in the structure of mathematics; and
 - (x) demonstrate the importance of mathematics in everyday life and its links with other areas of the curriculum.

2. **Learning and teaching**

- (1) The school uses a variety of teaching styles to cater for the variety of learning styles of pupils in mathematics lessons.
- (2) 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 vocabulary and resources to support their learning. Children use computers and technology in mathematics lessons where it will enhance their learning, as in modelling ideas and methods.
- (3) At Child Okeford School, based on the latest ideas and research in maths teaching, we have recently adopted a mastery approach to teaching mathematics. The main ideas that underpin this approach are:
 - (i) the importance of fluency;
 - (ii) in-depth knowledge of mathematical ideas based on conceptual understanding rather than procedural techniques;
 - (iii) applying that understanding in multiple and unfamiliar problem-solving contexts;
 - (iv) use of mathematical vocabulary to explain thinking;
 - (v) development of reasoning skills; and
 - (vi) a focus on whole class teaching with immediate interventions.
- (4) These objectives are achieved through the following techniques:
 - (i) teacher modelling;
 - (ii) speaking and listening techniques;
 - (iii) real-life models and scenarios;

- (iv) cross-curricular links;
- (v) the development of mental/ oral strategies;
- (vi) written methods and questioning techniques;
- (vii) appropriate and challenging practical work;
- (viii) investigative work;
- (ix) problem solving;
- (x) mathematical discussion;
- (xi) consolidation and practice of fundamental skills and routines;
- (xii) whole class, grouped, paired and individual work;
- (xiii) reflective learning, cooperative learning; and
- (xiv) self and peer assessment strategies.

3. **Planning and assessment**

- (1) Maths at Child Okeford School has a strong concrete, pictorial and abstract thread running throughout. This means that children are exposed to conceptual ideas at a **concrete** level with a range of apparatus (e.g. counters, beads and Deines) before moving on to **pictorial** representations. This may mean diagrams, sketches or using the Singapore bar model. Doing so develops children's deep conceptual understanding and skills proficiency which supports the next move into **abstract** mathematics, such as long division.
- (2) Maths lessons are designed to be interactive with a significant emphasis on children's talk. Through discussing their ideas, children construct new understanding, engage in a supportive community of practice, take responsibility for their learning and allow the teacher a window into their thinking which enables appropriate action to help them progress. Fluency, reasoning and problem solving are three themes of the maths National Curriculum (2014) and inform all maths teaching in our school.
- (3) Long term planning is provided by the aims and objectives of the National Curriculum 2014. Medium term plans signal which strands or blocks of that curriculum will be taught when. Weekly plans are produced with specific teaching and learning objectives and activities. These are working documents which are constantly annotated and updated being informed by formative assessment in the classroom.
- (4) Before a new strand of mathematics is taught, an assessment is made against the National Curriculum objectives for that year group (and previous year groups if necessary). These 'SNAPPs' (St Nicholas Assessing Pupil Progress) are used to identify whole class, group and individual next steps. This ensures that teachers are planning and teaching specifically to the needs of individual children. At the end of that strand we then have an immediate measure of progress in that area of mathematics for each individual child.

4. **Pupil targets**

- (1) Based on pupils' KS1 teacher assessments we forecast the National Curriculum Age Related Expectations (ARE) that we expect each child to reach at the end of KS2 in Mathematics and record this on 'School Pupil Tracker Online'.
- (2) The teacher and Headteacher then set targets for the intervening years. Teachers discuss with the Headteacher these targets during regular pupil progress meetings and reflect on the quality of the teaching and learning, including pupils work and attitudes, to ensure our pupils make good progress across the school.
- (3) In Maths, 'Learning Ladders'-derived from 'SNAPPS'-are used for each new concept. This makes targets very visual for the learner and children and teachers can clearly measure their progress against them.

5. **Assessment and marking**

- (1) Marking in maths follows the school's Marking Policy. Ideally work should be marked and assessed within the lesson and misconceptions immediately addressed and intervention provided if required. We use a variety of *Assessment For learning (AFL)* techniques including self and peer assessment. Children are given time to reflect on any feedback they receive and respond to it if necessary. Ongoing formative assessment is achieved through discussion, questioning and observation. Next steps are also provided as part of the feedback process, if appropriate.
- (2) As well as ongoing formative assessment and SNAPPs, we also carry out summative assessment at the end of each term. This takes the form of short tests that are linked to the objectives of the National Curriculum or past SATS papers in years 2 and 6.

6. **Monitoring**

- (1) It is the responsibility of the maths leader to monitor teaching and learning in maths throughout the school. This takes the form of termly monitoring activities, usually in conjunction with the appointed maths link governor. Monitoring may include: lesson observations, learning walks, book & planning scrutiny, discussions with children or teachers and data analysis.
- (2) In addition, the maths leader attends conferences, forums and training throughout the year. Information from these is then fed back to staff in staff meetings. Specific training or other maths related activities may also take place in staff meetings throughout the year, e.g. sharing of planning and moderation.
- (3) The maths leader is also responsible for whole school initiatives, parental communication and engagement and generally being a champion for maths in the wider school community.

7. **Resources, displays and computing**

- (1) Materials are constantly updated as new and relevant items become available. The orders of new resources are made by the Mathematics Leader in consultation with staff. At Child Okeford School, there are a range of resources available to support the teaching of mathematics. All classrooms have a range of appropriate small apparatus. Additional equipment and topic specific items are stored centrally.
- (2) Children are encouraged to work independently where appropriate within the classroom, selecting the equipment they need, using it properly and appropriately and returning it to its correct place when an activity is completed.
- (3) We recognise the importance of a stimulating learning environment. The school provides an environment, which is rich in a wide variety of print, pictures, diagrams, charts, tables, models and images.
- (4) Each classroom has a mathematical display area, which includes a working wall with mathematical vocabulary, visual aids and interactive activities where appropriate.
- (5) Computer based resources will be used in various ways to support teaching and motivate children's learning across all aged groups.
- (6) In addition, 'Learning Ladders' are displayed in each classroom. These are derived from the SNAPPs objectives for the strand being worked on (which are themselves derived from the National Curriculum). This provides a visual stimulus and target wall for the pupils to see their progression and next steps.

8. **Inclusion**

- (1) Child Okeford School believes that every child has the right to develop their full potential, irrespective of ability, race, gender, religion or physical ability. We aim to

ensure that, in partnership with parents, we offer all pupils equality of access and opportunity for successful learning.

- (2) All pupils are entitled to a broad, balanced and relevant curriculum. They will be given every opportunity to be successful in their learning and achieve as high a standard as possible. We actively seek to remove barriers to learning and participation so each pupil can achieve their personal potential.
- (3) In planning for SEND pupils' learning, we consider the curriculum, the physical and social environment and the nature of support from peers and adults. The selection of appropriate learning objectives, teaching styles and resources will enable access to curriculum, according to each pupil's specific needs. Support from the teacher or TA will be used effectively to achieve these aims. The SENCO is available to advice on differentiation in planning and classroom strategies.

9. **Early Years Foundation Stage**

We teach Mathematics in the Early Years Foundation Stage as an integral part of the school's work. In Reception, we relate the Mathematics aspects of the children's work to the objectives set out in the Early Learning Goals. We give all the children 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.

10. **Calculation**

- (1) '**Progression in Calculation**' (Appendix in accompanying document) has been written in line with the programmes of study taken from the National Curriculum for Mathematics (2014).
- (2) This is an important document as it shows the required conceptual progression for arithmetic reasoning. It provides guidance as to how the four operations of arithmetic should be taught in each year (both formal and mental) from the Early Years Foundation Stage (Reception) to the end of Key Stage 2 (Year 6). In addition, it is useful for parents in understanding the methods taught.
- (3) Through the Mathematics National Curriculum, we aim to ensure that all pupils:
 - (i) **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.
 - (ii) **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
 - (iii) 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.
- (4) This guidance will ensure consistency and progression in our approach to the learning and teaching of calculations across the school. It will enable our children, teachers and parents to work in partnership, developing an efficient, reliable, formal written method of calculation for all operations and to use these methods accurately with confidence for understanding.