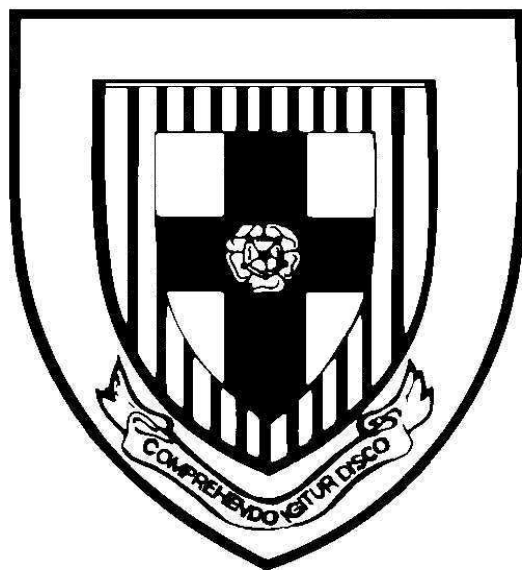


Oak Cottage Primary School



MATHS POLICY

June 2021

Mathematics Policy

Policy Statement

This policy outlines the teaching, organisation and management of mathematics at Oak Cottage School. The school's policy for mathematics is based on the introduction of the mathematics Curriculum in 2014, where we have adopted a 'Mastery Approach' to maths. The policy has been drawn up as a result of staff discussion and has the full agreement of the Governing Body. The implementation of this policy is the responsibility of all the teaching staff.

Following the introduction of the National Curriculum in 2014 the emphasis has been to ensure that all children:

- Become **FLUENT**
- **REASON** and **EXPLAIN** mathematically
- Can **SOLVE PROBLEMS**

This means that children need to be regularly exposed to opportunities involving increasingly complex problem solving which allows them to apply their maths knowledge. In doing so they should be encouraged to develop an argument and line of enquiry which they can prove and justify using mathematical vocabulary. This includes the ability to break down problems, both routine and non-routine, into a series of steps. Further emphasis is placed on being able to explain the mathematics and reason why certain aspects are the way they are.

Aims

Our aims in the teaching of mathematics are:

- deliver maths in line with National Curriculum guidelines;
- to promote enjoyment of learning through practical activity, exploration and discussion;
- to promote confidence and competence with numbers and the number system and develop mental strategies;
- to encourage children to use mathematical vocabulary to reason and explain;
- to develop the ability to solve problems through decision-making and reasoning; working systematically, co-operatively and with perseverance;
- to develop understanding in the appropriate underlying skills, concepts and knowledge of using and applying mathematics, number, measurement, geometry and statistics;
- to help children understand the importance of mathematics in everyday life;
- to develop the cross-curricular use of mathematics in other subjects;
- to enable the effective communication of ideas, experiences and questions, clearly and fluently, using the appropriate mathematical language;
- to challenge children to stretch themselves and take risks in their learning;

- to provide the opportunity for all to experience a sense of achievement regardless of age or ability.

Entitlement

The Early Years Foundation Stage

We teach mathematics in our Nursery and Reception classes through the mathematics area of learning. We have designed and created our curriculum based upon a few different documents to establish full coverage of all aspects. We have used the Development Matters non-statutory curriculum guidance for the EYFS, White Rose and the Solihull LA six term plan. We have ensured that the curriculum designed identifies the developing knowledge, skills, understanding and attitudes that children will need if they are to achieve the early learning goals by the end of the EYFS.

Key Stage 1 and Key Stage 2

Teachers are to provide adequate time for developing mathematical skills and each class teacher will usually provide a daily mathematics lesson. This may vary in length but lasts for about one hour. Links will also be made to mathematics within other subjects so pupils can develop and apply their mathematical skills.

Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum, and the programmes of study set out within each domain in the National Curriculum will be used to ensure children get the learning experience that is required.

Our medium-term mathematics plans, which are adopted from the White Rose Maths Hub planning, give details of the main teaching objectives for each term. They ensure an appropriate balance and distribution of work across each term.

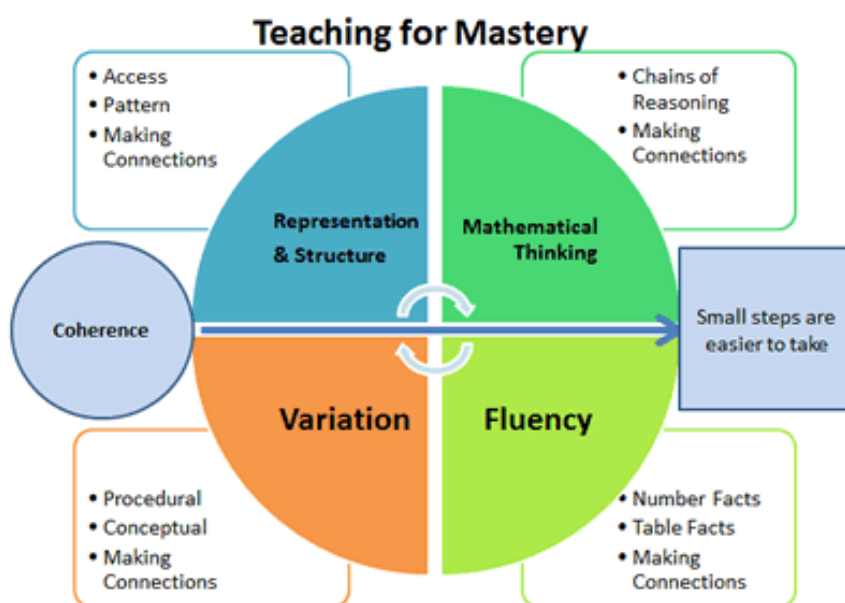
It is the class teacher who completes the short term plans for the teaching of mathematics to meet the needs of their class. These plans are completed using an agreed format which allows flexibility for the teacher and their teaching style.

Teaching and learning

Teaching and learning strategies

We use a variety of teaching and learning styles in mathematics, including direct teaching, modelling, enquiry, consolidation and application. Children will be presented with opportunities to be experimental, creative and co-operative, and to face challenges as individuals as well as in small groups or as a whole class. They have the opportunity to use a wide range of equipment relating to all areas of the mathematics curriculum, including Computing. We have White Rose Maths as our core published scheme but teachers should only use the scheme when it is the best resource to use for a particular activity. A number of other key resources are used to supplement or supersede the White Rose Maths planning, at the teachers' discretion.

At the forefront of all mathematics teaching are the 'Five Big Ideas' in Teaching for Mastery:



In conjunction with the 'Five Big Ideas', teaching and learning of mathematics at Oak Cottage Primary School should include aspects of the following Mastery approach strategies in every lesson and/or over a series of lessons:

'Concrete, pictorial, abstract (CPA) is a highly effective approach to teaching that develops a deep and sustainable understanding of maths.' (Maths - no problem!)

Concrete

Concrete is the "doing" stage, using concrete objects to model problems. Instead of the traditional method of mathematics teaching, where a teacher demonstrates how to solve a problem, the CPA approach brings concepts to life by allowing pupils to experience and handle physical objects themselves. Every new abstract concept is learned first with a "concrete" or physical experience.

For example, if a problem is about adding up four baskets of fruit, the pupils might first handle actual fruit before progressing to handling counters or cubes which are used to represent the fruit.

Pictorial

Pictorial is the "seeing" stage, using representations of the objects to model problems. This stage encourages pupils to make a mental connection between the physical object and abstract levels of understanding by drawing or looking at pictures, circles, diagrams or models which represent the objects in the problem.

Building or drawing a model makes it easier for pupils to grasp concepts they traditionally find more difficult, such as fractions, as it helps them visualise the problem and make it more accessible.

Abstract

Only once a child has demonstrated that they have a solid understanding of the “concrete” and “pictorial” representations of the problem, can the teacher introduce the more “abstract” concept, such as mathematical symbols. Pupils are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols, for example +, −, x, / to indicate addition, subtraction, multiplication, or division.

Pupils are expected to take care with the presentation of their written work. Staff should refer to the ‘Feedback on Learning’ policy.

All staff at Oak Cottage attend staff meetings that regularly have a maths focus, which provide information on current thinking and introduces them to new teaching methodologies and ideas.

Equality of opportunity and inclusion

Every pupil has a right to National Curriculum mathematics. We provide equal access for all learners through curriculum balance, curriculum time and use of resources. We take all reasonable steps to meet the needs of each pupil, including those with special educational needs, those with disabilities, those with special gifts and talents and those with English as an additional language. Where applicable, children’s learning is enhanced through activities that provide additional challenge and children’s IEPs incorporate suitable targets from the renewed frameworks.

In line with the School’s Inclusion Policy each child will have an equal entitlement to all aspects of the maths curriculum and to experience the full range of maths activities by providing suitable learning opportunities to enable all children to make good progress according to their needs. Therefore, in delivering maths, care will be taken to ensure that a variety of learning styles are accessed and teaching methods adopted.

Intervention groups will take place both within the maths lesson and outside; these sessions may be delivered by the teacher or teaching assistant and may involve individual or small group work, accessing both ends of the learning spectrum.

Homework

We recognise the importance of making links between home and school and actively encourage parental involvement with the learning of mathematics. We provide parents and carers with opportunities to work with their children at home. Activities are sent home on a regular basis (see Homework policy) and take the form of both number games and more formal tasks. For Key Stage Two, these may also be set on the Google Classroom.

Assessment for learning

Teachers will assess children’s work in mathematics from three aspects (day-to-day, periodic and transitional). We use day-to-day assessments to help us adjust our daily plans. Children are encouraged to make judgements about how they can improve their own and each other’s work through self and peer assessment. These short term assessments are closely matched to the teaching objectives. Marking is in line with the Feedback on learning policy.

We use a Key Performance Indicator (KPI) grid to make and record periodic assessments, monitor progress and inform next steps for teaching and learning. The KPI grid supports the end of term teacher assessment, alongside more formal assessment, which is recorded on the school tracking system. Teachers regularly meet to moderate KPI teacher assessment judgements. These judgements are also moderated regularly with other schools in the Local Authority. The KPIs support the identification of individual pupil targets for mathematics which are shared regularly with parents and carers.

We make transitional assessments towards the end of the school year, and we use these to assess progress against school and national targets.

To support teacher assessment we use the national tests for children in Year 2 and Year 6, along with the White Rose assessment papers those pupils in Years 1,3,4 and 5. We pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We also make a summary of each child's progress to share with parents and carers.

The mathematics subject leader keeps a portfolio of moderated work.

For further information, please see the 'Assessment' policy.

Contribution of Mathematics to teaching in other curriculum areas

Mathematics contributes to many subject areas within the primary curriculum and opportunities are sought to draw mathematical experience out of a wide range of activities. This will allow children to begin to use and apply mathematics in real contexts.

Mathematics and Computing

Computing technology enhances the teaching of mathematics significantly, because computing is particularly useful for many mathematical tasks. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Computing includes computers, calculators, interactive whiteboards and audio-visual aids. Computing will only be used in a daily mathematics lesson when it is the most efficient and effective way of meeting lesson objectives.

Resources

All classrooms have a wide range of appropriate small apparatus to support the teaching and learning of mathematics across the curriculum. Other resources are stored centrally. A range of software is available to support work with the computers. It is the responsibility of the mathematics subject leader to manage and organise resources. In consultation with the teaching staff, additional resources will be purchased as necessary.

Children should be encouraged to use whatever resources are available to them in the classroom and which they feel would be beneficial to help them when completing maths work.

Each classroom should have a display dedicated to maths; this could be in the form of a working wall, strategy board or problem solving area.

Monitoring and evaluation

The subject leader is responsible for improving standards of teaching and learning in mathematics through:

- the coordination and planning of the mathematics curriculum;
- the provision of support for colleagues in their teaching, by keeping informed about current developments in mathematics, and by providing a strategic lead and direction for this subject;
- giving the head teacher an annual summary report in which s/he evaluates the strengths and weaknesses in mathematics, and indicates areas for further improvement;
- using specially allocated regular management time to review evidence of the children's work, and to observe mathematics lessons across the school.

The quality of teaching and learning in mathematics is monitored and evaluated by the subject leader and head teacher. This will include the monitoring of planning and pupils' work as well as lesson observations to fit with the school's agreed monitoring cycle.

This policy will be reviewed in line with the cycle outlined in the School Improvement Plan.