

Dean Bank Primary and Nursery School



Mathematics Policy

September 2019

Introduction:

The governors of Dean Bank Primary and Nursery School accept fully the designation of Mathematics as a core subject of the National Curriculum and this Statement of policy takes into account the statutory and the non-statutory guidelines relating to this.

The governors of Dean Bank Primary and Nursery School are of the view that the development of the mathematical skills is a crucial core entitlement for all pupils within statutory education age.

Scope

This policy statement applies to all pupils in Dean Bank Primary and Nursery School throughout their compulsory schooling, where the development of skills and concepts must be seen as a continuous process.

The Early Years' child is outside National Curriculum requirements. However, children should be experiencing activities giving opportunity to develop mathematical skills, following the early learning goals from the Foundation Stage.

Our Vision:

Through a positive caring environment, we provide the opportunity for every child to reach their full potential and to ensure all children are ready for their next steps.

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 order for mathematics describes in detail what pupils must learn in each year group. Combined with the School Calculation Policy, this ensures continuity and 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 Dean Bank Primary and Nursery 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 and the development of mathematical thinking and a rigorous approach to the development of teacher subject knowledge are therefore essential components of Dean Bank Primary and Nursery School's approach to this subject.

Aims

We aim to provide the pupils with a mathematics curriculum and high-quality teaching to produce individuals who are numerate, creative, independent, inquisitive, enquiring and confident. We also aim to provide a stimulating environment and adequate resources so that pupils can develop their mathematical skills to the full.

Our pupils should:

- have a well-developed sense of the size of a number and where it fits into the number system
- 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

-Have the ability to independently select and use a range of resources to support and improve their understanding

- 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

- **Provision**

Pupils are provided with a variety of opportunities to develop and extend their Mathematical skills, including:

- Group work
- Paired work
- Whole class teaching
- Individual work including 1:1 tuition
- Receive well planned, targeted intervention when necessary
- Use a range of resources to develop and improve their understanding.

- **Pupils engage in:**

- the development of mental strategies
- efficient written methods
- practical work
- investigational work
- problem solving
- mathematical discussion
- consolidation of basic skills and number facts
- maths games

- Real life maths

- cross curricular maths linked to topic work and English writing and reading

We recognise the importance of establishing a secure foundation in mental calculation and recall of number facts before standard written methods are introduced. We use accurate mathematical vocabulary in our teaching and children are expected to use it in their verbal and written explanations.

Mathematics contributes to many subjects and it is important the children are given opportunities to apply and use Mathematics in real contexts. It is important that time is found in other subjects for pupils to develop their Mathematical Skills, e.g. there should be regular, carefully planned opportunities for measuring in science and technology, for the consideration of properties of shape and geometric patterns in technology and art, and for the collection and presentation of data in history and geography.

We endeavour at all times to set work that is challenging, motivating and encourages the pupils to think about how they learn and to talk about what they have been learning. Additional enrichment opportunities are provided for pupils to further develop mathematical thinking e.g. through cooking, music, and maths investigations, games and enterprise projects. Strong links have been made with our local secondary schools who provide gifted and talented maths sessions.

Teachers plan problem solving and investigational activities into every unit of work to ensure that pupils develop the skills of mathematical thinking and enquiry ensuring all children, at all levels, are given the opportunity to access and develop these skills on a regular basis.

To provide adequate time for developing mathematics, maths is taught daily and discretely. Maths lessons may vary in length but will usually last for about 45 minutes in Key Stage 1 and 60 minutes in Key Stage 2. It is expected that children are given opportunities on a daily basis to apply their learning in maths within a problem solving context. An additional lesson is also timetabled each week in KS1 to focus specifically on the development of various problem solving and reasoning skills appropriate to age expectations.

At Dean Bank Primary and Nursery School, we believe that if firm foundations are established in key mathematical concepts then children are able to develop a deeper and more cohesive understanding of complex mathematics as they develop. Therefore, throughout EYFS/KS1/2 each class devotes 20 minutes per day developing calculation methods and non-negotiable objectives.

Teaching Approaches

Teachers use a range of teaching strategies to engage the children in maths and ensure progress is made by all children within a class; no set formula is used. A typical lesson would include:

- Both teaching input and pupil activities,

- A balance between whole class, guided grouped and independent work, (groups, pairs and individual work)

- Effectively differentiated activities/objectives and appropriate challenge.

-A range of self, peer and teacher assessment taking place during the lesson

-Evidence of children's learning being moved forward during the lesson – challenge cards, open ended questions, reasoning/problem solving activities

-All misconceptions being picked up on and quickly addressed

Teachers ensure they use a range of resources to support learning prior to moving children onto the abstract form. We aim to follow this pattern for each unit of work (including children working at mastery and greater depth):

-concrete

-pictorial

-abstract

Sometimes the focus for the lesson is new learning, at other times pupils may be practising, to master the application of a concept they have learned earlier. The focus of the session may vary for different children depending on their learning needs.

At times there may be opportunities to develop skills and understanding of mathematics through additional activities, some of which may take place at home. The school has invested in 'ActiveLearn' which is an accessible learning platform that can be used to set differentiated homework for pupils.

Teachers plan learning that is differentiated to meet the needs of all pupils, whether they have a specific learning difficulty in maths or whether they are particularly able. Teachers should plan a range of independent and supported activities and clearly label work depending on the level of support required to complete the task.

Teachers endeavour to differentiate learning appropriately for high attaining, middle attaining and low attaining pupils – possibly with individual work for an SEN pupil at one end of the achievement spectrum, to individual work for a gifted pupil at the other. Whilst catering for all levels, the teacher can, at times, be teaching the same learning objective to all children but will have different expectations from each group. Groups should be kept flexible allowing all children to be challenged when they are achieving and to receive support when necessary.

Teaching assistants and support staff are used in a variety of ways and not just for low ability or SEN children. They should have clear guidance prior to the lessons and have time to feedback to the class teacher and plan next steps for specific children. All intervention should be personalised and evaluated on a regular basis to assess outcomes and impact.

Practical Activities

Skills

Setting up equipment and using measuring instruments are a necessary part of any practical exercise. There will be occasions when skills are practised in isolation, but the aim of such practice will be to enable pupils to

use them in a relevant context; for instance, by knowing what equipment to select and when and how to use it.

Observation

Where pupils use any of their senses, together with their existing experience and understanding, to select the mathematically important features of an object or event.

Illustrative

In which pupils follow a detailed set of instructions. They may use basic skills and observation as part of an experiment which is designed to help them understand or concept.

Investigation

In which pupils are set a task, by the teacher or themselves, with little in the way of instructions. They make their own decisions as to the choice of route to a solution. Again, they use basic skills and observations. They also use their existing ideas and concepts in helping to plan and interpret their practical work.

All four are a necessary part of a broad and balanced curriculum.

Target Setting

Teachers set individualised targets for each child which allow children to focus on a key concept identified as posing a problem to the individual. Targets should be updated when a child achieves one. Targets should be shared with parents on a regular basis. Children should have their targets discussed with them and be made aware when they have achieved them. They should be able to verbalise their targets and give examples of how they can achieve them.

Assessment

The assessment of mathematics will include formative, diagnostic, summative and evaluative elements to enable effective planning of individual's programmes of study.

Assessment will incorporate Teacher Assessment and SATs in line with National Curriculum guidelines.

- Short Term Assessment

Informal assessment built into daily lesson

Diagnose errors and put them right as soon as possible

Mark children's work and give good feed back

-Medium Term Assessment

Plan assessment activities for each half term or at the end of each unit work.

Assess mental maths each half term.

- Long Term Assessment

Use end of term assessments alongside teacher assessment to help find out what children have learned.

Formative Assessment

Teachers integrate the use of formative assessment strategies such as effective questioning, clear learning objectives, the use of success criteria and effective feedback and response in their teaching.

See marking and feedback attached below to understand how teachers should evidence formative assessment in their marking and feedback.

Summative Assessment

Using half termly tests, pupils are assessed against yearly objectives every half term. The school's progress tracking system is updated termly.

Official tests are used at the end of KS1 and 2; teachers use past and sample papers to inform their assessments as they prepare pupils for these assessments.

The school's Assessment and Marking Policies inform high quality feedback and pupils' response to it in Mathematics.

Early Years Foundation Stage (EYFS)

We follow EYFS curriculum guidance for Mathematics. However, we are committed to ensuring the confident development of number sense and put emphasis on mastery of key early concepts. Pupils initially explore numbers to 20 and the development of models and images for numbers as a solid foundation for further progress.

Resources

A bank of essential mathematics resources including capacity containers and Cuisenaire rods is kept. Further resources relating to key whole school topics for example 'Fractions' are kept in classes where these topics are covered.

As stated previously, teachers should use resources to support all units of work, beginning with the concrete form, moving to pictorial and then to the abstract form for all abilities. Children should be encouraged to use the resources to explain their reasoning at all levels. Resources may be used to support learning. They should also be used to extend learning and develop a deeper understanding of maths.

To enhance learning and support planning, we have Abacus textbooks and we make good use of White Rose, NRich and NCETM problem solving activities. We do not use any of these resources as a scheme of work. They are used when appropriate and teachers have the freedom to use any high-quality resources they can to support their children's learning.

Role of the Subject Leader

- Ensures teachers understand the requirements of the National Curriculum and helps them to plan lessons and targeted intervention
- Leads by example by setting high standards in their own teaching.
- Prepares, organises and leads CPD and joint professional development for teachers and support staff
- Works and communicates regularly with the SENDCO.
- Observes colleagues from time to time with a view to identifying the support they need.
- Attends CPD provided by Durham County and other providers and shares information with staff on a regular basis
- Keeps parents informed about Mathematics issues
- Discusses regularly with the Headteacher and the mathematics governor the progress of implementing National Curriculum for Mathematics in school
- Monitors and evaluates mathematics provision in the school by conducting regular work scrutiny, learning walks and assessment data analysis
- present outcomes and developments to school governors on a regular basis

This policy will be reviewed at least every two years.

Signed: Hannah Kirkwood (Mathematics coordinator)

Date: