

Beecroft Primary School Numeracy Policy

December 2016 (see Calculation And Arithmetic Policy)

INTRODUCTION

This policy document is a statement of the aims, principles and strategies for the teaching and learning of Mathematics.

PURPOSE

We aim, in our teaching of Mathematics, to develop children's understanding of number, shape, measurement, graphical representation and problem solving techniques and to make mathematics an enjoyable, worthwhile and relevant experience for all our pupils.

We aim, in our teaching:-

- to foster a positive attitude and enthusiasm for mathematics
- to develop the mathematical skills necessary to link mathematics to everyday life
- to ensure that pupils have the skills and understanding to ensure economic well-being in adult life
- to provide the children with the basic skills needed to develop confidence in their mathematical ability and enhance their independence when working
- to encourage a spirit of inquiry and exploration
- to stimulate an interest and fascination for mathematics
- to develop the ability to communicate using appropriate mathematical language
- to develop logical thinking and reasoning skills through natural curiosity and an investigative approach
- to develop a methodical approach to solving problems and resilience when tackling problems
- to encourage accuracy in working and the importance of self-checking
- to develop mathematics through a cross curricular approach
- to help the children to describe the methods and ideas in verbal and written form.

BROAD GUIDELINES

All work is planned using the National Curriculum relevant to the 5-11 year age range and the Early Years Foundation Stage Curriculum for reception and nursery pupils.

The mathematical areas covered are number, measurement, geometry and statistics.

Our approach for teaching mathematics is teacher planned work with assistance from the curriculum materials and practical resources that we have in school.

In order to ensure appropriate learning experiences for all children, it is important to provide a range of resource material, well distributed for use throughout the school, including teacher resources, computer based activities and assessment materials.

Cross curricular links are used extensively across the school to ensure the application of skills and the understanding of real life context or experiential learning.

PROGRAMMES OF STUDY

The fundamental skills, knowledge and concepts of the subject are set out in the National Curriculum where they are divided into the programmes of study for KS1 and KS2.

Number Aims

- to give the children the confidence to use and apply the 4 rules of number
- to encourage the exploration of numerical patterns
- to develop the skill for solving mental problems
- to develop the understanding of place value and the relationship between numbers and the methods of computation
- to encourage the skills of reasoning, accuracy, estimation and approximation
- to enable the children to gain the experience of using appropriate equipment

Geometry And Measure Aims

- to develop the use of appropriate mathematical language in reference to shape and measure
- to understand the concept of measuring and the need for standard and non-standard measures

- to develop the awareness and identification of the properties of shape through practical activities
- to give the opportunity to investigate pattern making with shape
- to increase children's spatial awareness and powers of observation

Statistics Aims

- to enable children to confidently collect, sort and classify a range of data and develop a systematic way of recording
- to encourage children to use different ways of representing and interpreting data

STRATEGIES FOR THE TEACHING OF MATHEMATICS

The mathematics curriculum is organised on a subject basis outside the main topic framework of the curriculum (although topic work will often also include mathematical activities). Mathematics is taught by the class teacher and where possible ability grouping and setting is in place to reduce the class size and allow differentiated teaching to take place.

The pupils have a timetabled arithmetic lesson four times a week and a daily mathematics lesson.

The teaching structure of the maths lessons is based on the three part lesson (mental/oral starter, main teaching activity and plenary).

Arithmetic lessons are more formally structured and concentrate on teaching context free calculations.

Mathematics is taught for approximately 7-8 hours per week across the school in mixed ability classes and groupings. Sets are organised on an annual basis.

The method of working in the main mathematics lesson is a combination of individual work, group work and whole class teaching. For the introduction of new concepts the children will be taught as a whole class before in depth and differentiated work is continued in small groups, in pairs or as individuals as appropriate.

Each week mathematics lessons include opportunities for:

- demonstration, explanation and instruction by the teacher to groups, individuals and the whole class
- whole class or group discussions encouraging the use of accurate and technical vocabulary
- practical activities to provide a meaningful context to learning

- practical activities to consolidate skills which have been learnt and the use of mental mathematics involving quick recall of mathematical facts
- the learning, revision and rehearsal of key mathematical facts e.g. number bonds, measurement and shape facts
- problem solving and investigative activities
- pupil explanation of methods to their peers and the class

Calculators are used at key stage 2 to enable children to work on investigating activities and also giving the pupils the chance to check their working out. They are not a substitute for pencil and paper or mental methods of calculation which are widely practised.

Work is carried out mostly in exercise books or on sheets (to be placed in the pupil's exercise book or an individual folder). The recording of work will enable children to clarify their own thinking, act as a point of future reference, communicate their mathematical thoughts to others and provide evidence, to a variety of audiences, of their work.

All maths work is to be written in pencil, highlighting the importance of neatness to enhance accuracy and the correct use of squared paper exercise books (e.g. 1 number in 1 square) to consolidate the understanding of place value. Pupils up to Year 5 write in 1cm squared paper books. In Year 5 the use of fountain pens is introduced into numeracy books.

PROGRESSION

In the early stages of learning a great deal of talking about mathematical concepts takes place as it is seen as being as important as recording. Much of a child's learning takes place through first hand experiences; mathematical vocabulary is introduced and modelled from the start and as a child develops so the means of investigating and recording becomes more complex.

Throughout the school, but especially in KS2 elements of an open ended approach to problem solving is developed allowing our pupils to investigate their own theories, stimulating skills such as questioning, predicting, estimating and recording.

PLANNING

Long Term Planning

The planning of the curriculum is based on the learning objectives outlined in the national curriculum.

Medium Term Planning

The programmes of study for each year group are broken down into termly medium term plans. Model plans are provided for staff and repetition of key skills alongside introducing new skills is strongly emphasised.

Short Term Planning

Teachers hand their weekly maths planning in to the Headteacher; these plans are also looked at by the Numeracy leader and discussed with teachers. Assistance with planning from the numeracy leader or other members of experienced staff is available and encouraged. Coaching sessions about planning are part of the induction programme for NQTs.

ASSESSMENT

The children are assessed by their class teacher on the daily work carried out in lessons. This helps the teacher monitor the child's progress and to identify any misconceptions in areas of their learning. Half-termly assessments (age appropriate tests covering arithmetic and problem solving) are also used to aid the teacher in their assessment and monitoring role. This data is recorded on our internal computer-based tracking system which allows teachers to monitor the progress of their pupils against targets set for the children and to track demographic and ability based intervention groups within their class.

A curriculum portfolio of work, dated and annotated with teacher comments, where appropriate, will be collected by the Maths Leader in negotiation with the staff to illustrate achievement and progress in the subject.

Reporting to the parents is completed on a formal basis three times in an academic year - Parents' Consultation Evenings in the autumn and spring terms where targets can be set and then reviewed and a written report of a child's progress and achievement is given to parents in the summer term. However, teachers are always available for informal discussions with parents at a mutually convenient time during a normal school week.

TARGETS

Targets are set for pupils at the start of each year based on end of key stage and previous class data and reviewed at the end of each term. In Nursery targets are completed in the term when the pupils enter the setting. Pupils are aware of their targets and what they have to be able to do to achieve these.

MATHS VOCABULARY AND KEY FACTS

We believe that vocabulary and a thorough grasp of key mathematical facts is pivotal to pupils' understanding and progression in maths. Each year group has specific vocabulary targeted for their age group and this forms the basis of what is taught in every class. Every lesson starts with sharing vocabulary for the

lesson/topic and this is developed throughout the school. Good use of vocabulary is modelled by all teachers and is used in mental starters and quality questioning to ensure that the pupils make the links between the different words, facts, their meaning and application.

We believe that time needs to be spent teaching our pupils key facts and how to use specific maths vocabulary to explain their work and learning. This is modelled in all lessons and helps the pupils to feel in control of their learning and also how to explain their own difficulties or misconceptions therefore helping them to improve their understanding.

When tackling a word problem our school approach incorporates the following steps – RUCSAC.

- Teacher **reading** the question
- Pupils **reading** the question
- Addressing as a class any words which are not **understood** (especially important for words with more than one meaning and for EAL pupils)
- **Underlining** key vocabulary and discussion of this in context
- Paired talk discussing how they know which **calculation** to use to solve the problem
- Pupils are then expected to **solve** the problem and be able to explain their working out using appropriate vocabulary. This will have been modelled by the teacher and may include speech starters on the board.
- **Answer** the question ... does the solution of a division calculation produce a remainder that needs either rounding up or down to produce a final **answer**?
- **Check** the calculation and answer

MENTAL MATHS SKILLS

Mental maths skills are taught in maths lessons and also in short (15-20 minute) sessions during the afternoon. Opportunities for short burst sessions of maths – e.g. when lining up, getting ready for lunch are not to be missed.

RESOURCES

The majority of the maths resources are kept in the Year 2 and 3 shared area. These are organised into trays and tubs and labelled for the different areas of learning. The resources are easily accessible and teachers borrow these and return them frequently. There are also age appropriate resources kept in each classroom. New resources are discussed with teachers and purchased out of the numeracy budget available.

ICT is a major resource which can be used in maths for:

- data handling (use of databases, spreadsheets and graph drawing packages)
- modelling (logo activities)
- rapid recall of basic skills and facts in a game context for individual pupils
- problem solving and investigating activities.

HOMEWORK

Homework is used to support mathematical learning and practise of key skills and facts. Throughout both key stages specific tasks are set by the class teacher to support, review and develop work started in class. A short piece of homework is set three times a week in Years 2 - 5 and daily in Year 6; homework is marked and discussed the following day in lessons. Homework books are a valuable tool to communicate with parents and show what the pupils are learning in school and how they can help their child. The amount of homework set is guided by the school Homework Policy.

The school website contains helpful information for parents about how they can help their child and has links to useful websites and PDF documents.

INTERVENTION GROUPS

The provision for those pupils with barriers to learning or SEND is met by the daily planning of the class teacher and by in class support from teaching assistants. Support for those more able pupils is similarly planned by the class teacher.

Groups of pupils will be organised in class so that extension tasks and discussions can be undertaken to extend understanding; where possible setting is used in KS2.

One to one/small group tuition is provided, these pupil groupings are based on vulnerable pupils or those whose achievement or confidence needs a boost. Pupil premium pupils are also targeted and additional teaching staff employed to ensure their progress across the school. Their progress is monitored half termly and tracked to ensure they progress well with their learning. There is ongoing dialogue between NQT mentors, class teachers and the school leadership team about the progress of pupils. All pupil premium pupils are invited to attend an ICT club before school to practise their key skills in maths.

Booster classes for year 6 are provided as additional support to children who, with intensive targeted support, achieve standards in line with expectations for their age; they are generally attended by 100% of Year 6. An additional high school teacher is employed in order to provide small group support to prepare the pupils for the KS2 test, high school and to stretch the more able pupils.

EQUAL OPPORTUNITIES

The school is committed to working towards equality of opportunity in all aspects of school life. Our aim is to offer all pupils a mathematical curriculum that is relevant and differentiated to their individual needs and abilities, so that every child may reach his/her full potential.

It is recognised that every child has a different knowledge base, cultural experiences and skill set, as well as varying aptitudes; and as a result there is a determination at Beecroft for every child's needs to be assessed and their talents and skills developed through diverse teaching strategies. This means teachers maintaining high standards in the basics and allying these with opportunities for enrichment and creativity. Activities in the classroom should enable pupils of all abilities to learn new skills and knowledge and to be able to make progress at their own pace towards their targets.

Provision for pupils who experience difficulties is tackled by:

- a. early intervention groups in each year group planned by the class teacher to ensure that children who have difficulties in learning receive the help they need as soon as possible
- b. removing barriers to learning by embedding inclusive practice
- c. raising expectations and achievements by developing teacher's skills and increasing the focus on children's progress
- d. by working together with parents
- e. lunchtime clubs especially for those who do not have access to a computer and the internet at home in Key Stage 2 to practice their skills in a fun and interactive way
- f. a before school ICT club runs three times a week for Pupil Premium pupils to help them with their numeracy and English skills

ROLE OF THE MATHS LEADER

The class teacher is responsible for the organisation of mathematics in his/her class based on the national curriculum. However, the Maths leader is responsible for:

- the matching of the planning to the curriculum
- the annual report to the Governing Body
- the annual action plan and termly/appropriate action plans for individual classes/groups of pupils
- coaching, planning and working with new members of staff

- the scrutiny of maths work from each class (books, homework and displays)
- lesson observations of teaching staff
- overseeing of target setting
- attending Numeracy courses regarding current issues and attending the annual Maths Leaders' conference
- keeping abreast of new initiatives
- organising and delivering INSET for teaching and non-teaching staff
- ordering maths materials/resources linked to the annual maths curriculum budget
- modelling of lessons
- analysis of data e.g. Raise, trends in O'track
- reviewing new materials

To be reviewed: July 2018