

Newlands Primary School

Mathematics Policy



THE KEMNAL ACADEMIES TRUST

Headteacher: Mr C Markham

Date: November 2014

To be reviewed: July 2018

SIGNED BY CHAIR/HEADTEACHER.....

DATE.....

<p style="text-align: center;">Newlands Primary School Mathematics Policy</p>

This document is a statement of the aims, principles and procedures for the use of mathematics throughout the school.

Purpose

The purpose of this policy is to ensure that all staff are fully able to implement the teaching of maths to a high standard in order for our pupils to achieve to the best of their abilities.

Our specific objectives in the teaching of mathematics are:

- to promote a positive attitude and enjoyment towards mathematics through practical activity, exploration and discussion;
- to develop fluency in the fundamentals of mathematics, especially with numbers and the number system (place value);
- to develop competence and confidence in mathematical knowledge, concepts and skills;

- to develop the ability to solve problems, to reason, to think logically and to work systematically and accurately in a range of contexts (through a process of enquiry and experiment);
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, and developing measuring skills in a range of contexts;
- to work both independently and in cooperation with others, communicating mathematics;
- an ability to use and apply mathematics across the curriculum and in real life contexts (understand the importance of mathematics in everyday life).

Context

Mathematics is a tool for everyday life. It is a whole network of inter-connected concepts and relationships which provide a way for our children to view and make sense of the world through developing their ability to calculate, reason and solve problems. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real life problems. It also provides the materials and means for creating new imaginative worlds to explore. Mathematics is a core subject with a

range of cross-curricular links but most often, is best taught discretely, using opportunities from other subjects to rehearse skills in a context. Maths involves developing confidence and competence in number work; shape, space and measure; statistics and the using and applying of these skills. We aim to support children in achieving economic well-being by equipping our children with a range of computational skills and the ability to solve problems in a variety of contexts using the Statutory Framework for the Early Years Foundation Stage and the National Curriculum to guide teaching in Key Stages 1 and 2.

Aims

Using the Purpose of Study to implement the current legal requirements of the 2014 National Curriculum for the Teaching of Mathematics, we aim to fulfil those requirements and ensure each child has the opportunity to attain all key objectives appropriate to their ability.

The National Curriculum for Mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 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.

Principles for the teaching and learning of Mathematics

Breadth of Study

Through careful planning and preparation we aim to ensure that throughout the school children are given opportunities for:

- practical activities and mathematical games
- problem solving

- individual, group and whole class discussions and activities
- open and closed tasks
- a range of methods for calculating e.g. mental, pencil and paper and use of a calculator (once mental methods are secure)
- Working with computers as a mathematical tool.

Scheme of Work

The Early Years Foundation Stage Curriculum feeds into the new National Curriculum. Key Stage 1 and Key Stage 2 teachers use Kent medium term plans to ensure that all parts of the National Curriculum Programme of Study are taught. Ongoing plans particularly focus on the following areas, as identified within the National Curriculum:

- 1. Number (place value)**
- 2. Number (addition and subtraction)**
- 3. Number (multiplication and division)**
- 4. Number (fractions)**
- 5. Measurement**
- 6. Geometry (properties of shapes)**
- 7. Geometry (position and direction)**
- 8. Statistics**

Pupils are given plenty of opportunities within a range of lessons to use and apply the mathematical skills and concepts they have learned. We stress the importance of providing children with an increasingly deeper understanding of mathematical content and method (See Calculations Policy).

Skills

Pupils are taught to develop:

Communication skills

- By discussing the content, processes and findings of their work in maths.

Reasoning Skills, including:

- Thinking logically
- Being systematic in approach
- Drawing inferences and conclusions
- Justifying methods, reasons, strategies, results.

Problem Solving Skills, including

- Identification of the problem
- Analyse what needs to be done
- Use of previous knowledge and experience
- Simplification of problem
- How to plan strategies
- Checking solution for sense.

Investigational Skills, including

- Making and testing hypotheses
- Sorting relevant information
- Collecting, organising and recording information
- Ordering
- Counting possibilities
- Recognising patterns and relationships
- Expressing results

Algorithmic Skills, including:

- Describing a familiar procedure
- Finding ways to recording procedures/instructions
- Detecting and analysing errors
- Explaining how or why a procedure works
- Comparing and evaluating different procedures

Attitudes

Pupils are encouraged to develop:

- A positive and enthusiastic attitude to maths as an interesting and attractive subject
- An appreciation and an awareness of the creative aspects of maths
- A persistence through sustained work in maths which requires some perseverance over a period of time.

Early Years Foundation Stage

The Early Years Foundation Stage (2012) identifies mathematics as a specific area of learning. Pupil's mathematics is developed through a wide range of activities and learning experiences. Pupils are provided with an 'open' learning environment, enabling pupils to access maths in child and adult initiated play. Our mathematics programme also provides children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measures through a daily structured mathematics session.

Teachers' Planning and Organisation

Through our mathematics planning and teaching, we provide learning opportunities that enables all pupils to make good progress. Each class teacher is responsible for the mathematics in their class. The approach to the teaching of mathematics within the school is based on three key principles:

- A mathematics lesson every day approximately one hour (including 10 minutes Response to Marking time). There may be times when it is more appropriate for Foundation Stage or Key Stage 1 sessions to be approximately 45 minutes in length and for Key Stage 2 sessions to be an hour.

- A clear focus on direct, instructional teaching and interactive oral work with the whole class and group
- An emphasis on mental calculations

Lessons are planned ensuring children have the opportunity for: practical work, consolidation and practice of fundamental skills and routines, problem solving, reasoning and investigative work. Daily lesson plans are provided which are adapted to the needs of our children, using objectives laid down in the Medium Term Plan. Teachers use a common planning format (see appendix). These plans are monitored by Senior Leadership and the Maths Coordinator.

Teaching Strategies

Mathematics is taught by a qualified teacher within the classroom and may be supported by a teaching assistant (TA) within the class during the maths lesson or at other times in the day through interventions. The level of TA support is determined by the needs of the children. Should a teacher not teach a maths lesson (perhaps due to PPA or professional development opportunities), the class teacher remains responsible for the effective delivery of the learning outcomes.

A range of styles and strategies will be used as appropriate to what is being taught, and the needs of the pupils. A combination of whole class, group and individual methods will be employed as required. Maths teaching at all levels should include opportunities for:

- Exposition by the teacher
- Discussion between teacher and pupils, and pupils among themselves.
- Extension to provide appropriate challenge.

Children not in line to achieve two levels of progress from Key Stage 1 to 2 are prioritised for additional intervention, as are those who are working below the level of expectation for their age. Class teachers are responsible for working alongside the SENCO to plan the content of these sessions although they may be delivered by a different teacher, HLTA or TA. Additional small group intervention may also be used, to support individual pupils, to fill gaps in

understanding. Intervention coverage is planned to be in line with week of teaching.

Additional Educational Needs

We are committed to providing equal access to mathematics for all children and there will be activities organised to enrich and vary the maths curriculum experience for all pupils, including those identified as having Additional Needs. Children with Additional Needs are taught within the daily mathematics lesson and are fully encouraged to take part as much as possible. Where applicable, children's Provision Maps incorporate suitable targeted objectives from the curriculum and teachers keep these objectives in mind when planning work. When additional support staff are available to support groups or individual children they work collaboratively with the class teacher. Therefore within the daily mathematics lesson teachers provide activities to support children who find mathematics difficult but also activities that provide appropriate challenges for children who are high achievers in mathematics, who may require extension activities.

Gifted and Talented pupils are given greater challenges in lessons. There will be added breadth and range through activities and experiences that consolidate and widen the child's knowledge, skills and understanding. Pupils will have further opportunities to develop their gifts or talents outside of the normal timetable (See Gifted and Talented Policy).

The school provides a wide range of Intervention Programmes and qualified staff to support the teacher in delivering these programmes.

Differentiation

To enable all pupils to take appropriate progress through the new curriculum, mathematical concepts and approaches to learning are differentiated to their personal needs and abilities. This should always be incorporated into all mathematics lessons and can be done in various ways:

- Stepped Activities – which become more difficult and demanding but cater for the less able in early sections.

- Common Tasks – which are open ended activities/investigations where differentiation is by outcome.
- Resourcing – which provides a variety of support and resources depending on abilities e.g. counters, cubes, 100 squares, number lines, bead strings.
- Grouping – according to ability so that the groups can be given different tasks when appropriate. Activities are based on the same theme and usually at no more than three levels.

Equal Opportunities

The teaching of maths will be in accordance with the present policy for Equal Opportunities. It will reflect the schools intention to give equal opportunities to all pupils regardless of gender, ethnicity, disability, social status or level of attainment. We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multi-cultural aspects of mathematics. In the daily mathematics lesson we support children with English as an additional language in a variety of ways e.g. repeating instructions, speaking clearly, emphasising key vocabulary, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, finger games and rhymes.

Pupils' records of their work

There are occasions when it is both quick and convenient to carry out written calculations. It is also important to record aspects of Mathematical investigations. Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording.

Presentation of maths work is in accordance with the school policy. All children are encouraged to work tidily when recording their work (e.g. one digit per box, folding of page to maximise calculation space, work vertically). Children should identify the date and learning objective for the lesson at the start of each piece of work.

Marking and Feedback

The quality of marking is crucial and must follow the school's Marking and Feedback Policy. A simple 'X' is of little assistance to a child unless accompanied by an indication of where the error has occurred, with possibly an explanation of what went wrong. Marking should be both diagnostic and summative. Questioning (where appropriate) as a method for extending and supporting next steps in learning is fundamental. The children can mark exercises which involve children's self-assessment to foster their independence. A daily 10 minute session is timetabled at the beginning of each lesson for pupils to respond to marking.

Cross – Curricular Opportunities

Throughout the whole curriculum opportunities exist to extend and promote mathematics. Teachers seek to take advantage of all opportunities, especially those involving Computing.

Computing can enhance the teaching of mathematics significantly. It has ways of impacting on learning that are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. A range of software and resources are available to support work with the computers. All classrooms are equipped with an interactive whiteboard. Our Computing Suite is timetabled so as to be available if whole class work in maths using computers is required. There is also a 'sign in' timetable for additional sessions as required. Appropriate software is provided to enhance maths teaching, as well as children's enjoyment in learning.

Maths skills are key to developing everyday skills and links can be made to the curriculum through data handling, position and measurement, especially in Science, DT and Geography.

Assessment

Teachers are expected to make regular assessment of each child's progress and to record these systematically. Assessment for Learning is fundamental to raising standards and enabling children to reach their potential.

Assessment in mathematics takes place daily using a range of strategies such as marking and feedback of work and verbal discussions with children. This information informs subsequent planning and next steps in teaching and learning. The following is the school policy for assessment in mathematics:

- Mental Arithmetic – this involves between 10 – 20 questions are delivered orally every week, throughout Key Stage 1 and 2. The test is followed immediately by discussion with the whole class so that any misconceptions can be corrected and the variety of methods discussed.
- Formal Written Tests – We take particular care to ensure that some assessments are standardised so that we can measure our children against a National Standard. Summative Assessment will take place on a regular basis, as a means of assessing children's ability to use and apply their overall termly knowledge of maths. The evaluation of termly plans shows what has been taught and what has yet to be learnt, and it will provide children with further opportunities to progress. Teachers will keep a class record of progress.
- Assessing Pupils Progress – the written assessments set, combined with the scrutiny of children's recorded work over a term, enables teachers to assess children's attainment through APP grids; which records the record of each child's attainment against key objectives.
- Formal Assessment – Years 1-6 are formally assessed as part of the School's Assessment Policy. Years 2 and 6 will take part in the Statutory Assessment tests (SATs) in May and years 3/4/5 will complete optional tests.
- Teachers meet regularly to review individual samples of work against APP statements and moderate judgements.

Targets are set at the beginning of each year. The progress towards meeting them are reviewed during pupil progress meetings, 1:1 Assertive Mentoring meetings and moderation meetings and updated when appropriate using Assertive Mentoring. Maths assessments are updated on a six weekly basis onto Target Tracker. Target Tracker is then used by SLT, the maths subject leader and class teachers to analyse results and track individual children, groups and cohorts as necessary. This data is used to review Average Point Score (APS) and progress towards end of year targets.

Monitoring

The quality of teaching and learning is monitored as part of the appraisal process through lesson observations and monitoring progress and attainment towards end of year targets. In addition, continuity and progression across the school is monitored by the maths subject leader. Actions identified in the SIP and Maths Action Plan, intended to raise standards, are also monitored for implementation and, when appropriate, impact.

The Maths Subject Leader will also provide an annual summary report to the Head Teacher in which evaluates the strengths and weaknesses in mathematics, and indicates areas for further improvement.

Opportunities for teachers to review the scheme, policy and published materials are given on a regular basis during staff meetings.

Resources

The school is well resourced for maths. All teachers should organise an area in their classrooms dedicated to mathematics resources. This area needs to be easily accessible to all children to allow them to become familiar with all resources and support independent learning. Resources which are not used or required regularly are stored centrally. An up-to-date list of resources is attached in the appendix.

Homework

It is our School policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in mathematics. Activities are sent home on a regular basis to reinforce class work and will usually provide an example of any processes used by the children to support such work. (See the schools Home Learning Policy).

Written: September 2014

Revise: July 2018

Signed Head teacher/Chair of Governors

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Date