Maths

Policy

2017/18

Handsworth Primary School

Aims of Handsworth Primary School

"Branching out, growing tall, hand in hand, one and all"

At Handsworth Primary School we aim to provide a safe, caring and stimulating environment, which offers opportunities:-

- For everyone within the school to reach their full potential and develop self-worth, self-confidence, the ability to take responsibility for their own individual actions and resilience.

- For everyone within the school to have a sense of wonder, an enthusiasm for learning and help children to develop as independent thinkers and learners with enquiring minds.

- To encourage and develop a respect and understanding for others.

- To develop all partnerships, small and large, from the individual parent to the wider community and beyond to support children's learning.

- To give children access to a broad and balanced engaging curriculum in order to attain the highest possible standards in relation to prior attainment through assessment and learning.

Equal opportunities

At Handsworth Primary school we believe that every child is entitled to equal access to a broad and balanced engaging curriculum, regardless of race, gender, class or disability. We positively celebrate diversity and difference.

Inclusion

We are committed to promoting a learning and teaching environment for all that embeds the values of inclusive educational practices.

We aim, through a child centred approach, to ensure that education is accessible and relevant to all our learners, to respect each other and to celebrate diversity and difference.

Rationale

Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information, ideas and to tackle a range of practical tasks as well as real life problems. It also provides the materials and means for creating new imaginative worlds to explore. Research shows that children begin school equipped with mathematical powers which they naturally use when engaging in mathematical tasks. It is the challenge of the teacher to recognise and nurture these mathematical powers to help them fulfil their potential. At Handsworth Primary, we aim to inspire all children to develop their mathematical powers by providing a curriculum that is fully inclusive of all children.

Aims

At Handsworth, we believe that all children should enjoy maths, achieve well in maths, make excellent progress and reach their full potential.
In our teaching of mathematics we aim to:

- Develop a confident and positive attitude towards mathematics
- Inculcate a sense of enjoyment and love of mathematics
- Develop competence and confidence in mathematical knowledge, concepts and skills
- Ensure that pupils become **fluent** in the fundamentals of mathematics so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- Ensure that pupils can **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, developing an argument, justification or proof using mathematical language
- Ensure that pupils can **solve problems** by applying their mathematics to a variety of problems with increasing sophistication including breaking down problems into a series of simpler steps and persevering in seeking solutions
- Develop pupils initiative and ability to work independently and cooperatively with others
- Encourage efficiency in using and selecting the appropriate written or mental methods
- Have access to a range of practical, concrete resources to support learning
- Develop pupils ability to solve problems, reason, think logically, work systematically and accurately
- Develop pupils ability to use and apply mathematics across the curriculum, in their future learning and in real life

Teaching and Learning
This policy is set within the context of the school's vision, aims and policy on teaching and learning.

Planning

- Handsworth's Maths Curriculum is based on the New Primary National Curriculum 2014. Medium term planning outlines the areas of mathematics that will be taught during the term to ensure coverage of the National Curriculum

- Planning begins from a thorough understanding of children's needs gleaned through effective and rigorous assessment and tracking, combined with high expectations and ambition for all children to achieve.

- Plans are produced weekly and amended daily based on pupil progress and understanding. Pitch and Expectation is used to ensure that all levels are accurately targeted. Activities are differentiated and personalised to meet the individual needs of all children.

- Each class organises a daily effective maths lesson which provides opportunities for: problem solving, practical activities, reinforcing and applying basic skills, P4C - individual, partner, group and whole class discussions, open ended tasks, investigations, using and applying mental and written strategies, using a range of methods of calculating and recording, outdoor learning activities and a range of suitable resources including ICT and self/peer-assessment.

- Activities reflect a balance between different modes of learning:
  - listening/looking (understanding explanations, instructions, questions, answers)
  - reading (using textbooks, work-sheets, reference books; comparing methods or solutions)
  - writing (making jottings; pencil and paper calculations; drawing sketches and diagrams; recording results; reporting on an investigation)
  - talking (oral work; describing; reporting; explaining; clarifying ideas; giving examples; predicting; questioning; discussion with the teacher and-peers)
  - reflecting (considering approaches to problems; thinking about own work in relation to what has already been learned)
  - carrying out practical work (sorting; counting; measuring; constructing models; making a survey; etc.)
  - observing (spotting patterns; watching what is happening; noting similarities or differences; looking for consistencies or inconsistencies.)
  - drafting (plotting a series of steps needed for a particular assignment)
  - variety of board and other games
  - use of ICT

The Daily Maths Lesson

At Handsworth, we follow the Abacus Scheme linked to the New National Curriculum as well as a range of challenge material eg. Nrich. A typical daily maths lesson can be structured like this: Oral/Mental Starter- 10 minutes, Main Teaching / Learning - 40 minutes and Plenary – 10 minutes. Time and groupings may vary according to the learning objectives, activities and needs of the children.

Inclusion

Handsworth is an inclusive school and we work hard to meet the needs of all our children. Class teachers are responsible and accountable for the progress and development of all pupils in their class. High quality teaching is available to all children, including those with additional needs within the daily mathematics lesson. The use of practical resources is essential for all children, especially when experiencing difficulties. We support children with English as an additional language in a variety of ways: repeating instructions, speaking clearly, emphasising key words, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, rhymes etc. Opportunities are provided for practise and consolidation as well as the development of vocabulary. We work hard as a school to ensure that all additional support in the classroom is deployed effectively. Where a child is not making the expected progress the class teacher will work alongside the Inclusion Leader, parents and external agencies (where appropriate) to plan tailored support. We use Learning Passports where specific targets are set with the child and parents and are reviewed with the child and parents termly. Children who are exceeding above age related expectations/mastery (gifted and talented are challenged at their own level. All children are encouraged to achieve their best and become confident individuals living fulfilling lives. See separate **SEND policy** for more information.

Teaching Strategies

Mathematics teaching at all levels should include opportunities for:

- exposition by the teacher (using board, interactive board and computer)
- to include:
    - directing - sharing the teaching and learning objectives, drawing attention to particular points
    - instructing - giving information on how to do a particular process/activity
    - demonstrating - showing, describing and modelling mathematics
    - explaining and illustrating - accurate, well-paced explanations referring to previous work or methods
    - evaluating pupils' responses - identifying mistakes and using them as positive teaching points
    - summarising - reviewing during the lesson what is being taught/learned
- discussion between teacher and pupils
- interactive involvement of pupils through carefully planned questioning
- appropriate practical work
- consolidation and practice of fundamental skills, vocabulary and routines
- problem-solving, including the application of maths to everyday situations
- investigational work
- rehearsal of mental strategies

***Mathematics is a search for patterns and relationships.* We will endeavour to:**

- provide opportunities to discover and investigate patterns and describe and record relationships
- encourage exploration and experiment, trying things out in as many different ways as possible
- encourage ways of ordering or arranging, combining or separating; looking for similarities or differences
- help children generalise from their discoveries using correct vocabulary
- help children understand and see connections between mathematical ideas

Mathematics is a creative activity, involving imagination, intuition and discovery.
We will endeavour to:

- value and allow time for trial-and-adjustment approaches
- view unexpected results as a source of further enquiry rather than mistakes
- encourage the creation of mathematical structures and designs
- encourage the formation and manipulation of mental images
- foster initiative, originality and divergent thinking
- encourage questions, conjectures and predictions
- encourage children to find and explain their own methods

Mathematics is a way of solving problems. We will endeavour to:

- help children identify information and ways to obtain it
- encourage logical reasoning, consistency and systematic working
- ensure the development and use of skills and knowledge necessary for solving problems
- help children know how and when to use different mathematical tools
- help children discover and invent their own mathematical problems

Mathematics is a means of communicating information or ideas. We will endeavour to:

- make time for both informal conversation and formal discussion about mathematical ideas
- introduce appropriate and varied mathematical vocabulary
- create opportunities for describing properties, for giving examples, for clarifying or explaining, for predicting results.....
- encourage reading and writing about maths, and representing and structuring ideas using pictures, symbols, diagrams, graphs.....
- value and support the diverse cultural and linguistic backgrounds of all

Pupil's Records

Mental work does not exclude a written record of methods or results. It should be noted that jottings and rough workings do not need to be set out with the same formality as standard written methods. However – children should always be encouraged to form numerals correctly and legibly and reversals should always be pointed out and corrected by the child.
As the children move through KS2, they will be taught to record their work in a variety of forms, including standard written algorithms. **Refer to Calculation policy.**

The children use books, paper, worksheets, games, ICT, real life equipment and workbooks for mathematics. They will be encouraged to have good work habits, to set work out neatly and to show their method of working out (algorithm) so that the work can easily be talked through. When using squared paper, children will be expected to write one digit

per square. The date will be written digitally (24.02.13) and underlined. All titles or headings will be underlined. Work will be marked with a tick if correct and a dot if incorrect. Staff will decide on their own rewards for good work or effort (praise, smiley faces, stickers, etc.) **See Marking policy**

The children's books/folders/displays/website/photo evidence/teacher's planning folders will demonstrate the wide variety of mathematics work undertaken throughout the year. These may contain examples of symbolic, graphical, diagrammatic, pictorial, written and group (photocopied) work. They may also contain a teacher's note about oral work and there may also be a note about (or photograph of) examples of construction work, mathematical models and maths games played and any assessment tests or check-ups the child may have completed. Teachers' weekly planning sheets/record keeping books/book scrutiny/ pupil profiles/observation records will show the results of tests and assessments.

Cross-curricular links:
At Handsworth, we believe that if maths is embedded in a context and used to solve problems across the curriculum then children will understand that maths is not just about learning and memorising facts but it is a vital component of everyday life. Therefore, maths skills are embedded across other subjects as part of our creative curriculum.

Classroom Resources/Organisation
All classes must have a clearly defined Maths Area to include resources and a display. Classroom organisation for mathematics will be such that the children are encouraged to show independence in choosing the resources/materials needed for a task and to promote self-motivation/organisation. We will endeavour to:

- ensure the environment is stimulating and supportive
- ensure that maths equipment are clearly labelled and easily accessible
- ensure that labels include pictures for younger children
- resources are clean and attractive
- resources may include: number fans, digit cards, 100 squares, multiplication squares, counters, bead strings, diennes, numicon.

Maths Displays
Maths displays are a valuable aid to learning and an opportunity to celebrate children's work. We will endeavour to:

- update maths displays regularly and link to maths planning
- provide opportunities for interaction by setting puzzles, problems or practical activities to engage children
- provide models and images to help children understand mathematical concepts eg. Bar model to support problem solving, number line to support finding the difference and a number square to help children count on or back from a number.
- Display mathematical vocabulary to enhance their understanding
- Celebrate children's work by displaying samples of work showing a range of abilities
- Encourage a positive attitude and enthusiasm towards mathematics for all groups of children

Homework

The daily mathematics lessons provides opportunities for children to practice and consolidate their skills and knowledge, to develop and extend their techniques and strategies, and to prepare for their future learning through homework set by the class teacher. These activities can be practical, problem solving, ICT, research, games etc. We recognise that parents make a significant difference to children's progress in Maths and encourage this partnership. Refer to the **homework policy** which outlines how parents can support their children.

Early Years

Children in Nursery and Reception follow the Development Matters in Early Year Foundation Stage (EYFS). At Handsworth Primary School, children develop a growing understanding of problem solving, reasoning and numeracy in a broad range of contexts such as through stories, songs, games and imaginative play; in which they can explore, enjoy, learn, practise and talk about their developing understanding. Opportunities are provided for the children to practise and extend their skills in these areas and gain confidence and competence in their use. Indoor and outdoor facilities are available for children to explore new learning.

Early Learning Goal - Number

Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.

- **By the end of the EYFS children should**
- Recognise some numerals of personal significance.
- Recognises numerals 1 to 5.
- Count up to three or four objects by saying one number name for each item.
- Count actions or objects which cannot be moved.
- Count objects to 10, and beginning to count beyond 10.
- Count out up to six objects from a larger group.
- Select the correct numeral to represent 1 to 5, then 1 to 10 objects.
- Count an irregular arrangement of up to ten objects.
- Estimate how many objects they can see and checks by counting them.
- Use the language of 'more' and 'fewer' to compare two sets of objects.
- Find the total number of items in two groups by counting all of them.
- Say the number that is one more than a given number.
- Find one more or one less from a group of up to five objects, then ten objects.
- In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting.
- Record, using marks that they can interpret and explain.
- Begin to identify own mathematical problems based on own interests and fascinations.

Early Learning Goal: Shape Space Measure

Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.

By the end of the EYFS children should

Begin to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes.

- Select a particular named shape.
- Can describe their relative position such as 'behind' or 'next to'.
- Order two or three items by length or height.
- Order two items by weight or capacity.
- Use familiar objects and common shapes to create and recreate patterns and build models.
- Use everyday language related to time.
- Begin to use everyday language related to money.
- Order and sequences familiar events.
- Measure short periods of time in simple ways.

Assessment

Aims of the new National Curriculum

Following the announcement, by the Department for Education, of the removal of levels for the attainment and progress of children (2013) and the relaxation of restrictions on centrally led reporting requirements (Department for Education and Gibb, 2015 and Ofsted, 2015), schools have now been given the opportunity to conduct more 'assessment of the right kind', to offer task specific, personalised feedback and to become 'Assessment Professionals' by creating an assessment system that supports the learning of the individual children in their school. (Tim Oates, Chair of the expert panel for NC review).

Assessment at Handsworth

Staff at Handsworth have worked together to develop an assessment system that takes into account the criteria of the new National Curriculum, whilst providing a greater focus on mastery. Assessment takes into account children's strengths as well as areas where they need support.

How do we assess?

Early Years Foundation Stage-EYFS

Assessment in Mathematics in early years is continuous and on-going based on observations, child initiated or adult led recorded work. ICT – mini Ipads are also being used to record children's learning. Throughout the Foundation Stage, as part of the learning and teaching process, practitioners need to assess each child's development in relation to the Development matters in Early Years Foundation Stage. These assessments are made on the basis of the practitioner's accumulating observations and knowledge of the whole child. By the end of the final year of the Foundation Stage the Foundation Stage Profile will provide a way of summing up that knowledge. Assessments are carried out in a variety of ways in the Foundation Stage.

Nursery and Reception

- Continuous observations of each child. Notes made in relation to the Development Matters. in Foundation Stage .
- Annotated photographs.
- Notes/comments recorded on planning formats.
- Target specific assessment sheets filled in by Classroom Assistants/Teacher during each activity.
- Foundation Stage Profile (entered termly onto e-profiles)

Years 1 - 6

Assessment For Learning
Assessment takes place on a daily basis through: questioning, discussion with children, children's self-peer assessment feedback, marking and intervention. This is used to inform subsequent planning. Each child also has a target sheet pasted in their book which details the targets to be attained to achieve the next phase. Teachers highlight the areas which has been achieved.

Formal Written Tests
Children are formally assessed at the end of each half term as well as the end of the academic year. Our formal assessments follows the requirements of the National Curriculum which is linked to our School Scheme of Work (Abacus). Years 2 and 6 will be formally assessed in May (compulsory national assessment - SATS).

Marking
Quality and consistency of marking is crucial in helping each child's mathematical development. We aim to provide feedback to children through marking so that they have specific advice about improvements to their work. Children are given time to read and review their work following marking. Every piece of work must be acknowledged by the teacher and marked against the learning objective. The agreed conventions regarding the marking of children's work are detailed in the **Marking policy.**

Tracking and Intervention
At Handsworth, we aim to provide children who are not making good progress with extra support through interventions carried out by the teaching assistant in small groups. In Pupil progress meetings, we examine the progress of all children and identify ways to 'narrow the gaps' taking into account EAL, Pupil Premium and SEND. Children who are achieving confidently above age related or mastery expectations are part of intervention groups allowing them to access material suitable to their ability and opportunities for further challenge enabling them to achieve their full potential.

Monitoring
The Maths subject leader, with the support of the headteacher, SLT and maths curriculum team, will ensure that the Maths learning and teaching at Handsworth Primary provides the best possible outcomes for all our children. We will strive to rigorously ensure consistent provision and continued improvement by:

*sharing outstanding practice (learning walks, peer-observations)
*regularly reviewing provision and planning for improvement (Maths Action Plan , Pupil Progress meetings, School Priorities and the impact of interventions)

*providing a regular programme of staff inset for both subject knowledge and pedagogy
*carrying out scrutiny of maths planning and children's books to ensure progression and challenge
*Evaluating the impact of whole school initiatives eg. Rainbow Maths, Active Maths

The Role of the subject leader

- To undertake monitoring of standards in Maths and use this to inform the Maths action plan.
- Provide leadership and management of their subject to secure high quality teaching and learning.
- Play a key role in motivating, supporting and modelling good practice for all staff.
- Take a lead in policy development and review
- To liaise with outside agencies and attend subject specific courses.
- To report to the Head teacher and Governing Body on Maths-related issues
- To plan and organise the allocation and purchase of resources in accordance with available budget.

Other policies and documents to be read in conjunction with the Maths Policy

Calculation Policy
Marking Policy
Teaching and Learning Policy
Homework Policy
Inclusion Policy
Assessment Policy
National Curriculum 2014

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Maths Subject Leader: Kathrine Chetty