



**BROADWOOD PRIMARY
SCHOOL**

MATHEMATICS POLICY

Last review date
Reviewed by
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November 2016
J Smith
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Rationale:

At Broadwood Primary School we aim to inspire all children to reach their full academic potential. In mathematics this means ensuring a curriculum that is fully inclusive of all children which:

- Develops children's knowledge and understanding of Mathematical concepts whilst enabling them to practice and hone skills and methods;
- Enables them to think critically and communicate their understanding;
- Gives them opportunities to apply learnt mathematical skills in different contexts across the curriculum.
- Provides opportunities to develop problem solving skills useful for maths and across the curriculum.

As a result of their learning in mathematics and problem solving across the curriculum children will:

- Be prepared for applying their skills effectively in everyday life situations, in their future learning and in the work place.
- Have the building blocks in place and to provide a solid foundation to lead onto secondary, further and higher education.

Through teaching with a problem solving approach, children will learn to understand, distil and clarify information; consider what they know that will help them to solve problems, realising what they need to know next; create systems and strategies, organising information in a way that helps find patterns and ultimately solutions and to communicate and present their findings effectively.

This is in line with the aims of the **2014 National Curriculum for Mathematics** which are 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 develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Principles

Planning:

- 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.
- Medium term planning will outline the areas of mathematics that will be taught during the term to ensure coverage of the National Curriculum.
- Within short term planning, clear success criteria for each learning objective taught should be created – demonstrating the progression needed to reach and exceed the objective. This will enable the class teacher to follow a clear and systematic teaching sequence, where input and activities are differentiated by considering which parts of the success criteria individual children are ready for.

- Where children are working significantly above or below the objective the majority of the class need to work towards, and where extending this by expanding the success criteria seems inappropriate, objectives from higher or lower age-groups will need to be planned and taught.
- Planning, where possible, should involve real life contexts for maths, where children are problem solving with a purpose in mind.
- There should be whole class investigations planned regularly at the beginning of each term to practice different elements of problem solving, including: finding all possibilities, logic problems, finding rules and describing patterns, diagram/visual problems and exploring different aspects of number. During these investigations, there should be a honing in on specific problem solving skills that are transferable to other contexts.
- Class teachers should regularly plan for opportunities for children to apply their maths skills to different problems within maths lessons and across the curriculum. This will also allow children to revisit, practice and consolidate different areas of maths and apply them within different contexts.

Teaching:

- In the Foundation Stage, children are given the opportunity to develop their understanding of number, measurement, pattern and shape and space through a combination of short, formal teaching as well as a range of planned structured play situations, where there is plenty of scope for exploration.
- Children will become very competent 'counters' so that their fluency with the number system provides a foundation for mathematical understanding. Counting forwards and backwards in many different sized steps as well as from different starting and ending points is essential.
- Maths learning builds from a concrete understanding of concepts where children are manipulating objects. When children are able to see concepts this way, they then need to understand the same concepts represented pictorially. Children are then ready for abstract representation before being able to apply their knowledge to different situations.
- Children should be encouraged at all times to communicate their understanding of maths so that it clarifies their thoughts.
- Children's mental maths is of great importance, with number bonds, times tables facts and various strategies for calculation taught and practiced at school with support sought from parents through homework activities.
- A progression towards efficient written calculations should be developed and applied consistently in each year-group. The school Calculation Policy should be followed.
- Class targets should be used to ensure areas where the majority of the class have not grasped a concept can be revisited and mastered. Individual targets should be used to ensure groups of children can be targeted effectively for support.
- Though the nature of lessons will be very different depending on the needs of the class, children should be: active; practicing skills they haven't yet mastered (perhaps recapping on class targets); learning something new OR learning to apply their knowledge to different contexts. They should be: 'doing' very quickly; working at a good pace and being productive; sharing their thoughts and methods and being successful.
- When teaching problem solving skills across the curriculum, time (and sometimes whole lessons) should be given to each aspect of problem solving ensuring children get thorough practice at: 'preparing for problem solving', 'thinking through problems to establish what they know and don't know so far'; actually 'doing the problem solving' effectively AND

'communicating the answer effectively'. They should evaluate the process too. Over time children will improve at each aspect.

Assessment:

- Assessment for learning should occur throughout the entire maths lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This feedback should be incisive and regular.
- On a daily basis children should self-assess against the learning objective and success criteria, giving them a sense of success. Children should know when they are meeting their targets and be self-assessing against those too.
- Pupil's work should be marked in line with the Marking Policy and should model how corrections should be made, giving children a chance to learn from their misconceptions or incorrect methods. At the beginning of each lesson time should be given for pupils to reflect on marking and comments on the previous day's work.
- Future lesson design should depend on class success evaluated through marking and observations made during the lesson.
- Assessment of pupil work and progress is on-going by the class teacher and informs future planning. Teachers mark work in mathematics in line with the school marking policy. Teachers use APP (Assessing Pupil Progress) and this allows teachers to level children's progress in mathematics, gathering evidence over the course of the year. Teachers use this information to inform planning for groups and individual pupils.
- Summative assessments are made at least once per term in order to provide further understanding of the level a child is working at and to inform a more rounded judgement of their abilities.
- Tracking is used in order that children who are not making good progress over time can be targeted for support in one form or another. What that support will be and how intensive, depends upon the child's needs and it may be a simple strategy within whole class teaching that is needed. Where further support is deemed necessary, children can access interventions, explained below.

Display and Resources:

- In the classrooms there should be, either on display or easily accessible to children, level appropriate resources, particularly concrete and pictorial apparatus to support children to grasp concepts.
- Mathematical vocabulary should be displayed so that children use this in the communication of their understanding.
- There should be maths work on display in classrooms and in other areas of the school in order to encourage a positive attitude and enthusiasm towards mathematics for all groups of children

Guidance for Teachers and TAs

- Class teachers should complete medium term plans which will consist simply of objectives that they plan to teach during the term (based on their understanding of what children need to learn next). From this, weekly short term plans should be completed using the agreed pro-forma.
- Maths should be taught every day (KS1 – 45/ 50 minutes, KS2- 60 minutes a day).

- There are two published schemes (Scholastic and Collins) to support with the teaching of mathematics (Year1 – 6). However, teachers should use resources which best fits the success criteria – these might come from the published schemes but might come from elsewhere.
- Various resources to assist with the planning and teaching of mathematics can be found in the shared area of the school's computer network such as interactive activities, investigation ideas, etc.

Tracking and Intervention

At Broadwood we aim to provide children who are not making good progress, with extra support through interventions. Interventions in maths should be based on developing key number skills that are appropriate for the children involved.

Intervention provided to boost children's progression in maths should be tightly planned, with success criteria set and assessments made frequently to ensure progress is being made. (The Sandwell Early Numeracy Test can be used before and after intervention to check accelerated progress has been made and First Class @ Number should be used particularly in Y2 and Y3 where needed.) Whilst interventions could be carried out by Teaching Assistants, for example, what is being taught and how it is delivered is the class teacher's responsibility and communication is essential.

We identify from tracking any SEN, EAL, FSM / Pupil Premium, attendance, behaviour, summer birthday or gender issues that exist and plan initiatives that would address these. We also consider the needs of the higher ability children and make sure they are extended and challenged.

Monitoring

Monitoring happens through examination of work in books (either by the Maths Coordinator, or the Maths Focus Group), analysis of assessment results, lesson observations, termly planning scrutiny of a sample week, and through other means depending on what information needs to be gleaned.

Following monitoring activities feedback is given to staff about how they can strengthen their practice and CPD (professional development) opportunities built in where it would be deemed valuable. These might take the shape of inputs during staff meetings or by a variety of other means.

Where specific initiatives have been put in place through action planning for school development, these are monitored by the subject leader in order to evaluate their impact.

Findings are reported to the head teacher and governors in the termly report to governors.

Parents and Homework

We recognise that parents make a significant difference to children's progress in Maths and encourage this partnership.

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

Calculation policy

National Curriculum 2014

Marking Policy

SEN Policy

Homework Policy

