

Old Bank Academy Mathematics Policy



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Introduction:

At Old Bank Academy we value every pupil and the contribution they have to make. As a result, we aim to ensure that every child achieves success and that all are enabled to develop their skills in accordance with their level of ability.

Purpose of Policy:

Mathematics is a creative and highly inter-connected discipline... It provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. (DfE, 2014)

The National Curriculum describes in detail what pupils must learn in each year group. Combined with our Calculation Policy and non-negotiable targets this ensures continuity, progression and high expectations for attainment in mathematics.

The programmes of study that the children follow are organised in a distinct sequence and structured into separate domains. Pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that almost all pupils will move through the programmes at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage.

Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.

Those who are not sufficiently fluent with earlier material should be given opportunities to consolidate their understanding, including through additional practice, before moving on.

National Curriculum aims:

In teaching mathematics, we aim to ensure 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 non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Our Aims:

- To foster a positive attitude to mathematics as an interesting and attractive part of the curriculum.
- To develop children's ability to think clearly, logically and with confidence
- To develop a deeper understanding of mathematics through a process of enquiry and investigation.
- To develop an understanding of the connectivity of patterns and relationships within mathematics.
- To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom and become aware of the uses of mathematics in the wider world.
- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems.
- To develop personal qualities such as resilience, independent thinking, cooperation and self-confidence through a sense of achievement and success.

Our Pupils Should:

- Have a well-developed sense of the size of a number and where it fits into the number system (place value)
- Know by heart number facts such as number bonds, multiplication tables, doubles and halves
- Calculate accurately and efficiently, both mentally and in writing, drawing on a range of calculation strategies
- Recognise when it is appropriate to use a calculator and be able to do so effectively
- Estimate appropriately and do so to check calculations
- Make sense of number problems, including non-routine/'real' problems and identify the operations needed to solve them
- Explain their methods and reasoning, using correct mathematical terms
- Follow a line of inquiry or investigation deciding on the best approach
- Judge whether their answers are reasonable and have strategies for checking them where necessary

See Appendix 1 and 2 for Guidelines to teaching methods and teaching sequence.

Maths Curriculum Planning:

Mathematics is a core subject in the National Curriculum, and we use the objectives from this to support planning and to assess children's progress.

Here at Old Bank Academy we are following the guidance of the White Rose Maths Hub. Staff use a long-term overview to ensure coverage of all areas of the National Curriculum and medium term planning schemes of work to ensure coverage of objectives for their year group. A tailored curriculum provided, which meets the needs of all our pupils, ensures that expected progress is made by all.

It is the responsibility of the class teacher to ensure that lessons are pitched appropriately and are both accessible and challenging for all learners.

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 that children are given opportunities to apply and use mathematics in real contexts. We always endeavor 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.

Assessment:

Our aims in assessing pupils' progress are to:

- Inform teaching and planning
- Assist pupil progress
- Set suitable, challenging targets
- Match activities to pupils' abilities

Formative Assessment (AfL) - (monitoring children's learning) See Appendix 3 for Marking and Feedback policy.

Assessment is an integral and continuous part of the teaching and learning process at Old Bank and much of it is done informally as part of each teacher's day to day work. Teachers integrate the use of formative assessment strategies such as: pre-topic assessments, effective questioning, clear learning objectives, effective feedback and response in their teaching and marking and observing children participating in activities. Findings from these types of assessment are used to inform the structure and support within a lesson as well as future planning.

Summative Assessment – (evaluating children's learning)

EYFS: Assessment in Early Years takes the form of both formal and informal observations using the Early Excellence Assessment Tracker (EExAT). Children are assessed on entry no later than 4 weeks after starting. Subsequently, an assessment is then made at the end of 3 assessment windows (1st September to 31st December, 1st January to 30th April, 1st May to 31st August) as well as an assessment check at 6 month intervals

Years 1 – 5: Termly, class teachers use the electronic assessment spreadsheet to assess whether a child is emerging, expected or exceeding the year group's objectives that they have been working from; along with the results from assessments carried out twice a year using Testbase assessment materials. These results are then moderated within year groups before awarding grades termly.

Year 6: Alongside the teacher assessment informed by the electronic assessment spreadsheet, fortnightly arithmetic and mental maths test results and assertive mentoring, pupils in year 6 will complete practice SATs papers termly to prepare and expose them to the Statutory End of Key Stage Assessment.

Statutory End of Key Stage Assessment:

The National Curriculum requires that each child is assessed and assigned a stage of attainment for Mathematics.

Record Keeping:

Record keeping alongside formative assessment is an invaluable tool for informing future planning. Within each class there will be a record of arithmetic scores. This information is also recorded in planners to be shared with parents. Each class teacher is also responsible for keeping a record of assessment data including scores from assessments and an objective assessment sheet which should be updated regularly.

EYFS:

We follow the EYFS curriculum guidance for Mathematics and follow the Maths Hub scheme of learning in Reception class. However, we are committed to ensuring the confident development of number sense and put emphasis on pupils being secure with basic key skills. Mathematics skills and language are developed throughout the day in a variety of provision areas and children's reasoning and explanations of their understanding are encouraged through effective questioning.

Links with Other Subjects:

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 mathematics 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. There will be problem solving opportunities, whereby children can apply their mathematical knowledge and understanding in a variety of contexts, arranged throughout the year. This could be during themed days/weeks, whole school maths events such as NSPCC's Number Day or through mathematics workshops.

ICT:

Teachers should use their judgement about when ICT tools should be used. Calculators should not be used as a replacement for effective written methods and should only be introduced later on in key stage two as a tool to support pupils' conceptual understanding of more complex number problems, if written and mental arithmetic are secure.

Monitoring and Evaluation:

The Maths Co-ordinator and team will monitor and evaluate mathematics provision throughout the school in terms of coverage, continuity and provision.

New systems and schemes introduced by SLT or the Maths Co-ordinator will be monitored and reviewed regularly.

CPD:

Professional development opportunities will be provided according to individual needs linked to the implementation of this policy. Funds for professional development may be used to support a range of activities both within and outside school, as outlined in the School Improvement Plan.

Role of Subject Lead: *The role of the Subject Lead is to:*

- Set high expectations and monitor teaching and progress
- Moderate the standards of children's work and of the quality of teaching in mathematics
- Encourage a whole school approach, keeping parents, governors and all support staff well informed
- Support individual teachers in planning, teaching and assessment
- Encourage and share good practice
- Identify INSET needs, plan and deliver INSET
- Regularly review the Mathematics action plan

Mathematics Procedure – Appendix 1

Guidelines for Teaching and Learning Methods: To provide adequate time for developing mathematics, maths is taught daily. Maths lessons may vary in length but will usually last for about 60 minutes in Key Stage 1 and Key Stage 2, with 10 mins dedicated to basic skills during early morning work.

In Key Stage 1 and 2 teachers will:

- Use the White Rose Maths Hub schemes of work to aid planning.
- Use a range of teaching styles to incorporate:
 1. A high proportion of whole class oral / mental sessions
 2. Direct teaching (**I do**)
 3. Group / paired work (**We do**)
 4. Individual work (**You do**)
- Mental math skills will be addressed, along with non-negotiable targets through weekly mental maths tests, through basic skill slots and often during the mental /oral part of the lesson (Kung Fu Maths)
- Mental/ oral starters will be used to develop fluency skills linked to the lesson and/or used to recap previous learning
- Assertive Mentoring and Rockstar Maths (Numbots for EYFS and Key Stage 1) will also be used during basic skill slots/ MOS
- Reception teachers will use the White Rose Maths Reception scheme and have whole class input, mostly small group activities with some independent tasks. Children will also learn through play including planned activities within provision areas

Teaching sequence Appendix 2:

Within lessons and over sequences of lessons teachers plan a coherent teaching and learning programme based on the model:

Revisit -> Review -> Teach -> Practise -> Apply

- When starting new learning in maths, it is important that teachers plan opportunities to 'Revisit' previous year groups' objectives linked to that area of learning.
- Teachers will use pre-topic assessments when necessary to identify misconceptions and gaps in learning and inform planning ('Revisit & Review')
- Teachers will plan learning that is pitched to an expected standard for that year group, through formative assessment strategies and information gained during the 'Revisit & Review' phases; support will be allocated where it is needed for that new area of learning.
- Support for children struggling to grasp a concept will take many forms, E.g. immediate adult intervention, the use of practical resources, longer time spent on developing fluency and the use of visual aids.
- Children identified as being secure and confident with a certain concept will have their understanding assessed through effective questioning from the class teacher, before being moved on to more challenging activities.
- When scrutinising work in maths books, the maths co-ordinator will expect to see work from any one lesson being personally tailored to suit the ability of individual children in order to develop their understanding. There should also be evidence of misconceptions being addressed and all children reasoning and problem solving at an appropriate pace.

A Typical Lesson : *(the following is to be used as a guide and not a prescriptive way of delivering every lesson)*

A typical lesson in Year 1 to 6 will often have the following components:

Oral and Mental Work Across the Range of Mathematics: This will involve work to rehearse, sharpen and develop mental and oral skills needed for the lesson ahead and may sometimes be linked to non-negotiable targets, or addressing misconceptions identified during an arithmetic lesson. It may also be used to recap and consolidate previous learning. During and outside of the maths lesson teachers will find opportunities for daily practice of mental skills including counting, rapid recall, newly learned facts and mental calculation strategies.

Main Teaching Session: This will include both teaching input (**I do**) and pupil activities (**We do/ You do**) and a balance between whole class, guided group/paired and independent work. Sometimes the focus for this session is new learning, at other times pupils may be consolidating, using and applying a concept they have learned earlier. The focus of this session may vary for different children depending on their learning journey and because of this, lessons across year groups may move at different paces.

In the Daily Maths lesson in Key Stage 1 and 2 teachers will:

- *Ensure children are aware of the learning objectives in both the oral and mental starter and the main activity.*
- *Maintain good pace and use effective questioning.*
- *Use and teach accurate mathematical vocabulary.*
- *Engage pupils in challenging activities using a range of resources including ICT and practical resources.*
- *Use a variety of teaching styles to motivate and encourage children's learning. (Concrete. Pictorial and Abstract)*
- *Ensure children have an opportunity to use their knowledge to solve problems, see patterns, present information clearly and interpret data.*
- *Provide ample opportunities for children to explore and investigate using practical and pictorial representations and encourage the use of them when children offer explanations*

Children will be encouraged to:

- *Understand exactly what is expected of them on a day-to-day basis.*
- *Develop mental calculation strategies.*
- *Use mathematical vocabulary accurately with confidence when discussing their methods and strategies.*
- *Give oral and written explanations of their methods and understanding*
- *Reason logically about their learning*
- *Explain their understanding to their peers and their teacher*
- *Be encouraged and feel safe to take risks and ask questions about their learning.*

Support staff will:

- *Be included in staff training for mathematics where appropriate*
- *Have a clear understanding of their role in each part of the lesson*
- *Share the learning objectives for each lesson and know the key vocabulary to be developed*

Parents will be encouraged to:

- *Develop positive attitudes to mathematics and actively support their children at home*
- *Be well informed of their children's progress through annual reports, target setting and Parents' Evenings*
- *Offered training and support to develop children's basic number skills through coffee mornings and 'count me in' sessions.*

Plenary/Mini Plenaries:

A plenary will involve work with the whole class to: address misconceptions; identify progress; summarise key facts and ideas; make links to other work; discuss next steps before moving on to a new objective; and to reason logically about their learning. This may not need to happen at the end of every lesson, but will need to happen at the end of a learning phase. Mini plenaries are to be used regularly throughout every lesson to assess pupils' understanding and whether they are ready to move on.

Marking and Feedback within Numeracy – Appendix 3

- All work will be marked regularly.
- If the child has rushed work or been careless with their presentation they will be asked to rewrite the work before it is marked.
- Children will regularly be given the opportunity to peer and self-assess and should be encouraged to identify their own next steps and errors.
- Staff mark in a **green** pen. Adults, other than class teacher, will initial their marking. Supply teachers will write ST next to the marked work.
- Comments should be positive, relate to the learning objective, recognise children's achievements and address misconceptions.
- When marking, teachers are not to correct children's errors for them too often, but indicate errors with a • not a ×.
- Marking should be used to inform future planning.
- All children should be given time to act on feedback and up level errors or discuss misunderstandings the next day. This can be done either as a part of early morning work or the first 5 minutes of the next math lesson.
- From Year 2 children should up level errors in **purple pen of progress**.
- If appropriate, children should be encouraged to comment on the work themselves, using self-assessment techniques (smiley faces, reflective comments etc.) as well as initialing feedback to show they have read and understood your comments.
- Stamps or the letters WS (with support) should be used to indicate whether the work was supported and should be clearly displayed in the top right corner of each piece of work. Work does not need to be stamped to indicate that it was independent as most work should be independent.



- When immediate intervention has taken place during a lesson to support a child, indicate that piece of work with a 'T' when the support was given by the class teacher and 'TA' when the support was given by a member of support staff. When the child returns to working independently indicate with an 'I'.
- When children have worked well, please use the sticker system as a reward inside of their book.
- If a child has struggled with a particular piece of work, an intervention may be needed before moving on. If this is the case, this should be indicated in the book by the teacher. This will usually be a written comment with the date of when the intervention took place and the child's work done during the intervention underneath. It could also be in the form of a picture, or just an adult's comment depending on the age of the child or misconception being addressed.

