Grand Avenue Primary and Nursery School

A Policy for Mathematics

Contents

Introduction

This policy outlines the teaching, organisation and management of the Mathematics taught and learnt at Grand Avenue Primary and Nursery School.
The school's policy for Mathematics is based on the document the 'National Curriculum' published in September 2014. The policy has been created as a result of staff discussion and has the full agreement of the Governing Body.

Statement

At Grand Avenue, we strive for children to become fully numerate and to develop a life-long love of Mathematics. In Key Stages 1 and 2 we teach according to the National Curriculum. In the Early years we follow the Early Years Foundation Stage Curriculum. The implementation of this policy is the responsibility of all teaching staff.

At Grand Avenue, we believe that Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality Mathematics education therefore 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. (National Curriculum Purpose of Study)

Aims and objectives

At Grand Avenue, we believe that each child should be able to think and solve problems mathematically by using the appropriate skills, concepts and knowledge. Children will be provided with rich and enjoyable experiences related both to individual needs and to the wider requirements of society.

At Grand Avenue, we:

- Use active and involving teaching approaches.
- Actively encourage reflection on learning.
- Use rich questioning and discussion.
- Take time to explore each new concept.
- Focus on Using and Applying skills in order to extend mathematical knowledge.
- Identify misconceptions as starting places for concept building.
- Are responsive to needs of each pupil and allow additional time before moving on, when required.
- Ensure that children enjoy challenging Mathematics.
- Use a range of individual learning strategies.
- Make cross curricular links, where appropriate, to extend the children's knowledge and understanding.

We aim for each child to:

- Have a positive attitude towards Mathematics.
- Have self-confidence in their ability to deal with Mathematics.
- Work systematically, co-operatively and with perseverance.
- Think logically and independently.
- Experience a sense of achievement regardless of age or ability.
- Apply previously acquired concepts, skills, knowledge and understanding to new situations both inside and outside of school.
- Understand and appreciate pattern and relationship in Mathematics.
- Communicate with peers and adults, ideas, experiences, questions, clearly and fluently, using the appropriate mathematical language.
- Explore problems using the appropriate strategies, predictions and deductions.
- Have equality of opportunity regardless of race, gender, or ability.

- Be aware of the uses of Mathematics beyond the classroom.
- Encourage the use of mental and written calculations and efficient strategies to work out answers.
- Understand the appropriate underlying skills, concepts and knowledge of place value - number, measurement, shape, position and handling data.

We aim for parents to:

- Be actively involved in their children's mathematical learning both in school and at home.
- Understand and support the school's Mathematics and Home Learning policy.

Equal Opportunities

The teaching of Mathematics at Grand Avenue reflects the school's Equal Opportunities Policy. We ensure that every child has equal access to the Mathematics curriculum regardless of physical, sensory, intellectual, emotional and behavioural needs, gender, social and cultural background, religion, ethnic origin or home language.

SEN/More Able/EAL

We ensure that:

- Differentiated activities are planned into units of work to support less able and broaden and deepen the understanding of more able children and support those with EAL.
- Children with learning difficulties are diagnosed and provision is made for individual needs.
- Where necessary outside agencies are involved (SEN policy).
- Adult support is used in school to support groups/individual children.

How we cater for pupils who are more able:
Where possible, more able pupils will be taught with their own class and challenged through differentiated group work, targeted questioning and through challenges to broaden and deepen understanding of concepts. Very occasionally special arrangements will be made for an exceptionally gifted pupil, e.g. they may be taught with children from a higher age range or may follow an individualised programme with more challenging problems to tackle.

How we cater for pupils with EAL needs:
The daily Mathematics lesson is appropriate for almost all pupils. Teachers will involve all pupils through differentiation. Please refer to the EAL policy.

Pupils with special educational needs and individual provision maps:
Teachers will aim to include all pupils fully in their daily Mathematics lessons. All children benefit from the emphasis on oral and mental work and participating in watching and listening to other children demonstrating and explaining their methods. However, a pupil whose difficulties are severe or complex may need to be supported with an individualised programme in the main part of the lesson. Please refer to the SEN policy.

The role of the Co-ordinator
The Mathematics Co-ordinator will:

- Create, review and monitor the Mathematics Policy, especially with regard to National and Local agendas.
- Keep up to date with current developments and initiatives.
- Support staff in the planning and delivery of the Mathematics Curriculum.
- Observe Mathematics lessons and feedback to staff.
- Attend relevant courses and disseminate information in school.
- Manage, update, order and monitor resources.
- Monitor planning to ensure continuity, coverage and progression.

- Deliver INSET.
- Ensure moderation of assessments takes place between year groups and across key stages.
- Analyse the SATS papers each year and report findings to SLT regarding strengths and areas for development.

The role of the Governors

Governors will:

- Become familiar with the key issues surrounding the teaching of Mathematics.
- Be familiar with the Mathematics policy.
- Review the policy at the appropriate time.
- Support the implementation of the policy.
- Visit the school to observe the teaching of Mathematics.
- Ensure budgetary provision to support the teaching of Mathematics.
- Meet with the Mathematics coordinator on a regular basis.

The role of the Class Teacher

The class teacher will:

- Plan and teach the Mathematics objectives, during daily lessons, as stated in the National Curriculum and Early Years Foundation Stage.
- Plan differentiated activities to meet the needs of all pupils including SEN, More Able and children who have English as an additional language.
- Record each child's progress in Mathematics as set out in the Assessment policy.
- Set a Mathematics target for each child using the National Curriculum as criteria.
- Mark Mathematics work regularly noting 'next steps' according to National Curriculum criteria.
- Inform parents of their child's progress in Mathematics.
- Undertake moderation exercises with year group partners to ensure consistency in approach to assessment.
- Provide examples of children's work to be monitored on a termly basis.
- Alert the SENCO to any child showing severe learning difficulties which cannot be managed through differentiation within the classroom.
- Alert the ABCO to any child who showing exceptional high ability which cannot be managed through differentiation within the classroom.
- Alert the EAL coordinator to the needs of the children in the class for whom English is an additional language.

Organisation and Time Allocation

Teaching time

To provide adequate time for developing Mathematics skills, each class teacher will provide a daily Mathematics lesson for their class. This may vary in length but will usually last for about 20 minutes in Reception and 60 minutes in Key Stages 1 and 2.

Links between Mathematics and other subjects

Mathematics contributes to many subjects within the primary curriculum and opportunities will be sought to draw mathematical experience from a wide range of activities. This will allow each child to begin to use and apply Mathematics in real contexts. A topic-based curriculum is planned including appropriate Mathematic sessions.

A typical lesson

A typical 45 to 60 minute lesson in Year 1 to 6 will be structured as follows:

- Oral work and mental calculation (about 5 to 10 minutes)
  This will involve whole-class work to rehearse, sharpen and develop mental and oral skills.
- The main teaching activity (about 30 to 40 minutes)
  This will include both teaching input and pupil activities and a balance between whole class, grouped, paired and individual work.
- A plenary (about 10 to 15 minutes)
  This will involve work with the whole class to clarify any misconceptions, identify progress, summarise key facts and ideas and what to remember, to make links to other work and to discuss next steps.
- Mini-plenaries may be used throughout the lesson. They are used as good practice to address misconceptions or move learning on.

Foundation Stage

In Nursery and Reception, the class will be organised to promote social skills and the development of mathematical language and understanding. The children learn through whole class teaching and then explore mathematical concepts through structured activities and child-initiated play.

Learning wall and Learning Journey

Each class will have displayed a learning wall which shows current vocabulary, examples of concepts being explored, explanations of strategies to be used and children's work.
A learning journey will also be clearly displayed showing the stages and steps of the exploration of a concept and the aim of the unit of learning, i.e. I will be able to …..

Planning

Long term and medium term

Long term and medium term planning is structured following guidance set out in the National Curriculum. To support teachers with their medium term planning, they refer to the Rising Stars mapping document which ensures complete coverage of the skills and objectives as stipulated in the National Curriculum. There are end of year expectations for each year group; teachers plan units of work to enable the children to learn, develop, practise and consolidate the key skills needed to achieve these end of year expectations.

Short term

Short term plans are used on a weekly basis focussing on the children's learning journey throughout a concept; these may include examples from the National Curriculum, other published resources or the teachers' own ideas. These will be adapted to meet the needs of the children.
There is a consistent approach to planning across Grand Avenue and teachers use the school format to record their weekly planning which includes learning challenges, steps to success, resources, key vocabulary, key questions, support, tasks, activities and grouping for the lessons. There is an emphasis on repetition of basic number skills, as appropriate for each year group, through mental and oral practice. Where necessary, teachers will also plan times where pre-teaching of concepts is necessary for groups of children.

Assessment

Assessment will take place at three connected levels: day to day, in-school Summative and statutory Summative These assessments will be used to inform teaching in a continuous cycle of planning, teaching and assessment.

There are non-negotiables for number for the teachers to assess the children's skills across the academic year; children are expected to achieve these non-negotiables for their year by the end of the academic year. See Assessment policy for further detail.

Day to day

Assessment for Learning is an integral part of every lesson: it allows the teacher to check understanding and gives them important information. This assessment is used to adapt current and future lessons.

Teachers will also record each child's attainment using the schools adopted Symphony grids which allow monitoring of progress against key objectives (from the National Curriculum). This allows for accurate information to be reported to parents and the child's subsequent teacher.

In-school summative

In- school summative assessment will take place each half term. A point score is recorded for each child after a review of progress and attainment. Teachers consider the children's achievement against year group expectations and their achievements are then equated to a point score to show their current level of attainment. This information is used to produce a summative record which is recorded on SIMS Assessment Manager. Each child is expected to achieve 6 points each academic year.

Statutory Summative

These assessments will be made through compulsory National Curriculum Mathematics tests for pupils in Years 2 and 6 and baseline screening in the Foundation Stage. The school follows all Dfe guidance.

Self-Assessment

Where possible, children will be involved in assessing their own work. Teachers will adopt a variety of strategies to support self-assessment including: traffic lights, thumbs up and written reflections. Refer to the 'Response and Reflection' policy for further detail.

Peer-Assessment

Where possible, children will also be involved in peer assessing each other's work. This will be focussed on the learning challenge and/or steps to success for a lesson and present itself in a variety of forms: verbal feedback, two stars and a wish and written feedback.

Target Setting

Each year numerical targets are set for each child, by the class teacher, to achieve during that academic year. Target setting is also used each term to monitor the children's progress and set targets for the new term. Targets are based on information gathered from monitoring and evaluation. These targets are shared with pupils and their parents/carers and are considered during the lesson planning process.

Resources

A wide variety of resources are available throughout the school, including mathematical equipment and models and images. The main resource used is the National Curriculum.

Each classroom has a bank of resources to support the teaching and learning of Mathematics. This includes number squares, timers, dienes, dice, rulers, digit cards. There is also a shared central store of resources for all staff to use which include: Numicon, measuring cylinders and weighing scales.

ICT will be used in various ways to support teaching and motivate children's learning, e.g. computers, calculators and audio-visual aids. However, they will only be used in a daily Mathematics lesson when it is the most efficient and effective way of meeting the lesson challenges and support learning

Home Learning.

The daily Mathematics lessons will provide 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. These opportunities will be extended through out-of-class activities or Home Learning. These activities will be short and focused and will be referred to and valued in future lessons. Please refer to the 'Home Learning' Policy for further detail.

Appendix 1

Strategies to support pupils with English as an Additional Language:

Prior to the lesson

- Pre teach key vocabulary for specific topics in maths as well as reinforcing the technical vocabulary that is often used in maths but that may have a different meaning in other areas of the English language such as, take away.

During the Mental and Oral Starter

- Place pupils with English as an additional language (beginners) close to the teacher and consider very carefully how to use other adult support within the classroom.
- Use **flash cards** and **illustrated wall displays** to show specific vocabulary.
- Emphasise the **visual** element of maths i.e. using number lines and 100 squares.
- Reinforce meaning through gestures, mime and facial expressions. Use visual clues, such as signs, symbols, pictures, flash cards or diagrams. Give extra emphasis to important vocabulary.
- Ask particular questions to target pupils.
- Encourage pupils to **discuss answers in pairs before answering**.
- Encourage pupils to join in chorus, reading number sentences, chanting, finger games, songs and rhymes.
- Allow adequate thinking time.
- Use of adults to **model** spoken English and opportunities for careful listening, and exchange and support, shared repetition.
- Ask a range of questions, including more open-ended questions, to help pupils model their own questions and to help them think for themselves
- Provide opportunities for pupils to watch, listen and then try to copy actions and words.

During the Main Activity

Input:

- Setting suitable learning challenges.
- Repeated instructions for EAL pupils-clearly emphasising key words.

Group work:

- Provide opportunities for focus pupils to work in pairs or small groups with supportive peers in order to share understanding construct and rehearse ideas.
- Allow conversation with others with the same home language (pupils/staff).
- Promote peer group talk to help make sense of mathematical ideas.

Independent Work:

- Use picture cues.
- Put questions in a context that is relevant.
- Use bilingual dictionaries or glossaries.

During the Plenary

- If possible use TA to support and encourage pupil participation.
- Where appropriate set homework that reflects home languages and cultures.
- Use formal language children know and gradually extend to more formal mathematical vocabulary.
- Teachers and other adults need to take the child's words and refine them to give more precise meaning.
- Encourage pupils to demonstrate methods and explain meaning.
- Encourage pupils to answer in full sentences.

Appendix 2

Working Effectively with Teaching Assistant in Maths Lessons:

In general terms the role of a teaching assistant is to:

- Facilitate access to the curriculum
- Motivate and encourage pupils
- Focus pupils on the task
- Meet the physical needs of the pupils
- Promote inclusion and pupils self-esteem
- Promote independence

It is important that Teaching Assistants:

- Should be entitled to give rewards and sanctions within the school set up
- Need to be seen as a partner of the teacher, equal status in pupils' minds, (and class teacher)
- Need to be clear of their role.

During the mental and oral starter a teaching assistant could:

- Repeat modelling to small group of pupils within the classroom.
- Make concepts more visual – using additional resources.
- Model questioning.
- Facilitate to allow pupils access i.e. signing, translating, clarifying vocabulary.
- Monitor and check behaviour.
- Rephrase statements/questions or request a different way of explaining
- Answer pupil queries.
- Support use of resources i.e. manipulation of digit cards and fan cards.
- Ask/focus individual pupils i.e. closed question to check pupils knowledge, facts understood or known.
- Make observation of particular pupils/assessment.

It is important that Teaching Assistants:

- Do not give pupils the answer but give support in decoding questions.
- Know how to use the resources.
- Know what the objectives are.
- Are aware of the key language and appropriate probing questions.

During the main part of the lesson a teaching assistant could:

- Work with a focus group to support them accessing the activity i.e. SEN pupils, EAL catch-up pupils.
- Guide pupils to use appropriate resources and language.
- Use probing questions to check understanding.
- Undertake 'trouble shooting' to enable teacher to work with a focus group.
- Make suggestions of alternative for materials/resources.
- Suggest extension activities for groups of pupils who complete tasks.
- Suggest strategies to alter/support activities if too difficult.
- Promote group work skills and pupils ability to work individually and independently.

It is important that Teaching Assistants;

- Have access to planning and, if possible, a discussion about the planning before the lesson, so there is clear understanding of what the activity involves and any resources of differentiation that will be needed.
- Are aware of resources that could support pupils and where they are located (to supplement what teacher has suggested).
- Provide feedback information to class teacher regarding pupil progress and understanding

During the plenary a teaching assistant could:

- Encourage participation and sharing work/strategies.
- Team teach by interjecting ideas/questions.

- Monitor behaviour.
- Discuss with the children what they have learnt.
- Make observations of particular pupils.
- Undertake some assessment.
- Record for pupils what they have done (depending on school requirements).

It is important that Teaching Assistants:

- Are aware of key questions to be asked of pupils and are prepared for possible questions that may arise during the plenary

Other possible ways teaching assistants can support learning away from the classroom:

- Support differentiation of work, for example preparing resources, providing equipment.
- Prepare work and activities in advance to allow children to meet the learning challenge eg games
- Gather useful resources to support pupils learning/access.

TA's to be mindful of advice from DFe
'It is really important that you remember that your role is to promote independent learning and that encouraging too much dependence on an assistant is not helpful for the child.' Teaching assistants file: 'DfE Induction Training for Teaching Assistants'.