Pilgrims School

Mathematics Policy

Including Appendix, A - Calculation Policy

June 2022

Next review date: June 2023 / N Woodworth

Please note: 'School' refers to Early Years Foundation Stage (Little Pilgrims and Pre School) and Pilgrims Main School.

Value and Aims
This policy reflects the school vision and values

At Pilgrims we inspire each child to love learning

We recognise the importance of making learning fun, interesting, meaningful and memorable. Therefore, we teach through a themed contextual approach enabling each child to connect ideas, build on prior knowledge and deepen understanding.

Our mathematical policy aims to:

- Promote understanding and knowledge of concepts before teaching methods of computation.
- Help children make sense of the world in which they live and to become aware of the resources within it by making mathematics relevant to everyday situations.
- Make mathematics exciting and challenging in order for children to develop a sense of achievement.
- Offer a practical mathematics curriculum, which is accessible to all children, providing them with a full range of learning experiences in order that they can develop their full potential.
- Provide a stimulating environment in which children are happy and secure to explore a range of mathematical concepts through a process of inquiry and investigation.
- Help children to think and reason mathematically, applying their fluency in mathematics to solve a range of abstract and real-life problems.
- Familiarise children with appropriate vocabulary to be able to communicate mathematically.
- To foster enjoyment and love of mathematics.

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
• can 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.

Objectives

1. Learning
At Pilgrims we believe that children learn best through experimentation, practical investigation and play. Emphasis is therefore placed on the use of practical apparatus, interaction with other children and applying new skills in everyday, real life, situations. Questioning and discussion with staff is used to clarify children's thinking and so develop understanding. As they get older, recording also becomes a learning tool which reinforces newly acquired knowledge and skills. We therefore use the Concrete Pictorial Abstract (CPA) model, see Calculation Policy (appendix A). Children are introduced to new mathematical concepts through the use of **concrete** resources (e.g. fruit, Dienes blocks etc). When they are comfortable solving problems with physical aids, they are given problems with pictures – usually **pictorial representations** of the concrete objects they were using. Then they are asked to solve problems where they only have the **abstract** i.e. numbers or other symbols. Building these steps across a lesson can help children better understand the relationship between numbers and the real world, and therefore helps secure their understanding of the mathematical concept they are learning.

2. Teaching
In order to enable each child to develop their full potential we:

- Teach mathematics every day in accordance with the relevant levels within the Statutory Framework for the Early Years Foundation Stage, 'Development matters' and/or National Curriculum guidance. In Years 1 and 2, teachers follow a bespoke mathematics curriculum. This has been developed through following the White Rose Schemes of Work and Primary Stars Education resources.
- Use our school calculation policy carefully which states the calculation strategies taught in each year group, to ensure a consistent and progressive approach following the CPA Model.
- Use a variety of teaching styles including individual, small group, paired or whole class work. Setting by ability is used as appropriate.
- Use a range of straight forward and open ended practical, investigative, problem solving and theoretical tasks.
- Allow time for the children to look at mathematical displays to connect and focus children's mathematical understanding as well as celebrating individual achievement, discussion and consolidation of concepts.
- Use open ended questions, as well as those that require quick response answers, to encourage children to develop explanations for mental and written strategies.
- Allow opportunities to explore open-ended problem-solving tasks whilst applying fluency and mathematical reasoning and developing a growth mindset towards mathematics.

3. Assessment, Recording and Reporting
Observation, discussion and marking of children's work, in accordance with the school marking policy, are used on a daily basis to inform future planning. Every attempt is made to give immediate feedback to children in order to make this a valuable learning opportunity.
Each class teacher is responsible for keeping records of individual children's progress in accordance with the current assessment policy.
Termly assessments are carried out in Years R-2.
All relevant information is passed on to future class teachers.

4. Planning

- At Pilgrims we use the 'Statutory Framework for the Early Years Foundation Stage' and/or the 'National Curriculum' as the basis for our planning.
- The White Rose Maths Scheme of Work is used to timetable mathematical units that are explored progressively and linked to our yearly overview, see Appendix B.
- Primary Stars Education is used to support our planning and resourcing of high-quality teaching and learning.
- Weekly plans are differentiated across year groups, with a greater emphasis on enabling all children to access the challenge activities.
- Maths plans are kept in Year Group planning files and monitored by maths co-ordinator, to enable continuity and progression to be monitored.

5. Management and Co-Ordination

The curriculum co-ordinator for mathematics supports staff in planning and delivering the curriculum through discussion, observation and monitoring of both plans and children's work and assessments. In service training is provided on particular aspects of mathematics as appropriate to keep staff up to date with current developments. The co-ordinator is also responsible for the budget and ensures that action plans for adequate resources are available.

A list of resources for the teaching of mathematics is found in the mathematics resource cupboard. This details which items are stored in the central cupboard. Wherever possible, resources are clearly labelled and easily accessible to the children in the classrooms. All classrooms in Reception and Key Stage 1 are equipped with a computer and Clever Touch Boards which afford opportunities for mathematical explanation and investigation.

6. Presentation

Not all mathematics is formally recorded by the children, especially in Little Pilgrims and Reception classes. However, children will record their mathematics where it is useful to:

- Communicate or remember information and results
- Practice number formation
- Clarify a thought process
- Assist with a calculation
- Demonstrate a particular method of calculation
- Aid teacher assessment of understanding

Recording will usually be:

- Verbal (in discussion with an adult or peer group)
- Symbolic (algorithmic recording of calculations) with emphasis on clarity and correct positioning of numbers
- Graphical (charts and diagrams)
- Pictorial (patterns)
- Written (narrative descriptions of methods)
- Constructional (creating 3 dimensional models)
- Computer generated
- Sheets

7. Cross curricular Issues

English, Design Technology, Geography, History, Science, Music and Information Technology all provide realistic contexts to develop further mathematical teaching and learning. Short term planning allows teachers to record possible links to these areas of

learning. Where possible, maths lessons will link to the Creative Curriculum topics and STEM activities.

8. SEND Provision

All planning will be differentiated to accommodate individual children's needs and incorporate Individual Provision Plans where relevant. Teaching and learning will consider the current policy for children with Special Educational Needs.

9. Able and Gifted Provision

Children who are exceptional at mathematics also have the right to develop at their own level and therefore more challenging work is set to broaden and enrich their understanding. In exceptional circumstances accelerating a child to the year above for their mathematics lessons will be considered. All planning will be differentiated to consider a child's Challenging Individual Programme where relevant. Gifted and talented enrichment groups are run across year groups where possible.

10. Inclusion

All children regardless of gender, ethnic group, culture, ability and EAL are entitled to full access to the mathematics curriculum (see equal opportunities policy).

11. Times Tables Rock Stars and NumBots

In Year 1 the children are introduced to a new online learning platform called NumBots. This program aims to develop understanding, recall and fluency in mental addition and subtraction, so that children can move from counting to calculating. All children start at the same place in 'Story Mode' after creating their own robot, and when they get to a certain stage they will unlock different challenges. In order to get the best out of NumBots children should play regularly for short bursts of time. Children are therefore expected to complete 10 minutes a week in 'Story Mode' at home.

In Year 2, children will also be given access to Times Tables Rock Stars which is a carefully sequenced programme of daily times tables practice. At home, the children are expected to complete 10 minutes in the 'Garage' every week to improve their times table recognition and progress through the levels of the online program. In class, they will complete the paper version three times a week which is a 60 question worksheet with a time limit of three minutes. Children will also have the opportunity to practise in the 'Garage' at school once a week following their ICT lesson.

Children in Year 2 will also be expected to continue accessing NumBots completing 10 minutes weekly in 'Story Mode' at home.