# XII Apostles RCPS

## Maths Policy

## Mr Rowlands & Curriculum Team 2
## September 2024

# XII Apostles Maths Policy

**Our Mission statement**

Through Learning and Loving we will follow Jesus.

**Our Aims**

- To place Christ at the centre of everything we do
- To recognise that each child is unique and to ensure that each child is educated to fulfil their human potential
- To develop an understanding of Community; being able to recognise, respect and celebrate the diversity of all within it

The mission of Twelve Apostles creates a firm foundation that supports all curriculum areas and the policy for teaching Mathematics at our school has been written with this in mind. The Gospel values are an integral part in teaching and learning and so ensures that Christ is at the centre of everything we do.

The second aim of the mission statement is to recognise that each child is unique and to ensure that each child is educated to their full potential. At Twelve Apostles, all members of teaching staff recognise the uniqueness of each child and ensure that the Mathematics curriculum is taught in a way that suits their needs. At Twelve Apostles, high but realistic expectations are placed on each child so that they achieve their potential.

## 1. Statement of Intent

The 2014 National Curriculum for Maths aims to ensure that all children:

- become **fluent** in the fundamentals of mathematics
- are able to reason mathematically
- can **solve problems** by applying their mathematics

At Twelve Apostles, these skills are embedded within our Maths curriculum and are built upon consistently over a child's journey through our school. We are committed to ensuring that all children are able to recognise the importance of Mathematics within the wider world, its application in our lives and that they are ambitious in what they believe they can achieve in Maths. We aim to enable our children to apply the mathematical skills and understanding they develop within our curriculum to these real-life contexts. We aim to deliver an aspirational Maths curriculum which not only produces successful mathematicians but children with a confidence and enjoyment in Maths that is rooted in deep and secure understanding.

## 2. Legal framework

This policy has due regard to all relevant statutory and good practice guidance including, but not limited to, the following:

- The Education Act 2002
- The Children Act 2004
- The Equality Act 2010
- DfE (2017) 'Special educational needs and disability code of practice: 0 to 25 years'
- DfE (2014) 'The national curriculum in England'
- DfE (2017) 'Statutory framework for the early years foundation stage'
- Ofsted (2019) 'School inspection handbook'

This policy operates in conjunction with the following school policies:

'Teaching and Learning Policy'

'Assessment Policy'

'Marking and Feedback Policy'

## 3. Roles and Responsibilities

The SLT and Governing body are responsible for approving and monitoring this policy

Subject Leader's responsibility includes:

- Providing strategic leadership and direction for your subject
- Producing LTP
- Reporting termly to Governors on standards in your subject
- Supporting and offering advice to colleagues on issues relating to the subject or curriculum area
- Monitoring pupil progress in your subject and report to SLT
- Providing efficient resource management
- Ensuring the curriculum is inclusive and accessible to all
- Assisting teachers with the planning and implementation of the curriculum, ensuring their workload is manageable
- Ensuring the curriculum is implemented consistently throughout the school and ensuring any difficulties are addressed and mitigated as soon as possible
- Making any necessary adjustments to the curriculum where required
- Keeping up-to-date with any relevant statutory updates and taking action where required
- Creating and maintaining an up-to-date curriculum intent statement
- Ensuring the curriculum is created in accordance with this policy
- Updating and maintaining this policy

## 4. Organisation, Planning and Teaching

This policy sets out the progression of written procedures (Appendix 2) that the children will use as they progress in their understanding of the four operations. Note that in order for children to develop a full understanding of the written procedures, they must first have a firm understanding of place value.

One of the key learning principles behind this policy is the concrete-pictorial-abstract approach (CPA). The concrete-pictorial-abstract approach, is based on research by psychologist Jerome Bruner, and suggests that there are three steps (or representations) necessary for children to develop understanding of a concept.

For children to have a deep understanding of the mathematical concepts being developed, they need to 'master' all three phases of the CPA approach. If a child has moved on from the concrete to the pictorial, it does not mean that the concrete cannot be used alongside the pictorial as an additional scaffold. If a child is working at the abstract stage, 'proving' something or 'working out', then concrete or pictorial representations could be used to develop a greater depth as pupils articulate their thinking /reasoning. Reinforcement is achieved by going back and forth between these representations, linking abstract notation to pictorial/concrete representations and then the concrete/pictorial models to an abstract notation.

**a. Concrete Representation**

The enactive stage. Children are first introduced to an idea/skill/concept by acting it out with real objects, this could include large scale with the pupils themselves and also utilising resources available in the outdoor environment. This is a 'hands on' stage using real objects linked to real-life and the wider curriculum and/or mathematical equipment, (i.e. Numicon, counters, cubes, bead string, five and ten frames, Base ten etc.) and it is the foundation for CONCEPTUAL UNDERSTANDING.

**b. Pictorial Representation**

The iconic stage. A child has sufficiently understood the hands-on, CONCRETE experiences performed and can now relate them to PICTORIAL representations, such as a DIAGRAM or PICTURES of the problem. PICTORIAL representations, such as the bar model, can also be used to scaffold understanding.

**c. Abstract/ Symbolic Representation**

The symbolic stage. A child is now capable of representing problems by using ABSTRACT mathematical notation, for example: 12 ÷ 2 = 6. This is the ultimate mode.

**d. Reasoning and Problem Solving**

When children are fluent with a concept, their understanding will be secured using reasoning and problem solving activities. This will ensure that the children have a deep understanding of concepts.

Reasoning activities will be used for the children to 'prove it' or 'explain' their understanding. Reasoning about a concept will depend on the children's use and understanding of mathematical vocabulary.

The children will be introduced to the 5 different types of problem solving- word problems, visual puzzles, logic problems, finding all the possibilities problems and finding patterns and describing rules problems. The visual representations such as Bar Model will be introduced from Reception and will be used to enable children to solve complex problems by the end of Key Stage 2.

**Planning**

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals (Number, Shape Space & Measure) are used to create a long-term plan or yearly plan of mathematical units. This ensures the coverage of all aspects of mathematics across the year. This is then used to create a medium-term plan which indicates the key objectives that will be covered within each unit of Maths. Short term plans are created weekly and in some cases daily. A prior learning assessment is carried out at the beginning of each unit of Maths and is used to identify a starting point and direct teaching. Daily, formative assessments are used to inform daily planning to ensure children make progress at all levels. There is no set planning format for Maths but to ensure planning is effective it has the following elements: Learning Objectives for oral and mental and main teaching unit, input description, description of adaptive teaching strategies - using concrete, pictorial and symbolic stages, deployment of teaching support staff, resources, key vocabulary and assessment outcomes/ criteria.

**Teaching Time**

A daily mathematics lesson may vary in length but will usually last for 50 to 60 minutes in Key Stage 2 and about 45 to 50 minutes in Key Stage 1. Alongside these sessions, children in KS1 and Year 3 will receive an additional 10-30 minute session through the 'Mastery in Number programme.' In Reception, children will receive a short 10-30 minute session through the 'Mastery in Number programme' which forms the basis of their Maths curriculum. However, they will work on a variety of mathematics activities throughout the day through their continuous provision. By the end of the summer term, the children will experience a more sustained period of mathematics in order to prepare them for the structure of the daily mathematics lesson in Key Stage 1. Links will also be made to mathematics within other subjects in order for pupils to develop and apply their mathematical skills. Opportunities will be sought to draw mathematical experience out of a wide range of activities to enable children to use mathematics in real contexts.

**Adaptive Teaching**

When new concepts are introduced, teachers will carry out a prior-learning activity to assess children's starting point. The children will then receive learning opportunities according to stage of development. Teachers will plan learning opportunities according to the needs of the children. Appropriate resources will be selected to ensure children are given the best opportunity to master mathematical concepts. Teaching assistants will be used to facilitate adapted inputs to support children who are struggling and further stretch higher achievers.

**5. <u>Cross Curricular Link</u>**

Where possible, we teach using a cross curricular approach, enabling learning to be more meaningful for children. It draws upon skills in Literacy, Computing, Science, Design Technology and PSHE.

## 6. Assessments and Reporting

Assessment of children's learning in Maths is an ongoing monitoring of children's understanding, knowledge and skills by the class teacher, throughout lessons. This assessment is then used to utilise adaptive teaching methods to support and challenge the children. See appendix 1

The progress and development of pupils within the EYFS is assessed against the early learning goals outlined in the 'Statutory framework for the early years foundation stage'.

The progress and development of pupils within KS1 and KS2 is assessed against the descriptors outlined in the National Curriculum.

Assessment will be undertaken in various forms, including the following:

- Assessment is used to inform teaching in a continuous cycle of planning, teaching and assessment. AFL through observations and quick assessments are an informal part of every lesson to check children's understanding and are used to inform teachers' daily lesson planning.
- Three times a year (December, April and June) children will complete a summative progress check assessment.
- Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils' understanding of subjects and inform their immediate lesson planning.

Summative assessments will be used alongside teacher assessments to give a judgement on where the children are working at two key points in the year (December and June). Discussions will take place around the progress of children between class teachers and SMT at pupil progress meetings 3 and 4. Children who are not making appropriate progress will be identified and provision will be adapted to meet their needs. This is recorded on Otrack and shared with the next teacher and subject leader.

Parents will be provided with an annual report in the Summer Term which will grade children's attitude and attainment in Maths. Verbal reports will be provided at parents evening.

Maths is also monitored by the subject leader throughout the year in the form of lesson observations, book monitoring, looking at outcomes and pupil interviews to discuss their learning and understanding and establish the impact of the teaching taking place.

## 7. Resources

The resources and for Maths are kept in organised labelled cupboards in both the Key Stage 1 and 2 resource areas. These are supplied with appropriate materials to support teachers in the delivery of the Maths curriculum and provide children with not only multiple concrete representations of numbers but also equipment to support their learning in practical Maths lessons such as measurement resources and shapes. Additionally, in Key Stage 1 and EYFS, staff have access to rekenreks to allow them to deliver the Mastery in Number scheme.

**Inclusion Supporting Pupils with SEND**

Maths is adapted to meet the needs of individual children, taking into account their primary need, making reasonable adjustments and through adaptive teaching. Children who have a particular weakness in Maths will be identified through teacher assessment. They will be brought to the attention of the SMT and the SENCO and extra provision will be made for them.

8. **Equal Opportunities**

We are an inclusive school that ensures all pupils are provided with equal learning opportunities, regardless of social class, gender, culture, race, disability or learning difficulties. In order to ensure pupils with SEND achieve to the best of their ability, outcomes are adapted and the delivery of the Maths curriculum is adapted for these pupils. The planning and organising of teaching strategies for each subject will be reviewed by the subject leader to ensure that no pupil is at a disadvantage.

We recognise that we have children of differing abilities in Maths and we seek to provide suitable learning opportunities by utilising adaptive teaching methods. We achieve this by:

- Setting open-ended tasks which can have a variety of responses.
- Grouping children by ability and setting different tasks for each ability group.
- Providing resources of different complexity depending on the ability of the child.
- Using Teaching Assistants to support children individually or in groups.
- Organising children in such a way that they receive support from their peers.

For further information, please see appendix 1.

**9. Parental Involvement**

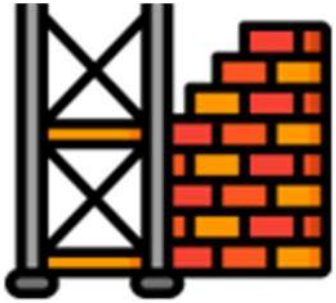
In Key Stage 1, children use the 'NumBots' app to practice their number bonds with any additional homework set given to children to consolidate learning, as and when appropriate.

In Key Stage 2, children are set weekly multiplication practice through the 'Times Tables Rock Stars' app in order to develop their knowledge of these tables.

**Reviewed: Every 2 years**

**Next review date: September 2026**

**Appendix 1**

| Strategy: | Scaffolding | Explicit Instruction | Cognitive and Metacognitive Strategies | Flexible Groupings | Use of Technology |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| | • Quality First Teaching<br>• Clear lesson sequence<br>• Tasks focused on acquiring knowledge or skills and avoids cognitive overload<br>• Word banks<br>• Writing frames<br>• Sentence starters<br>• Vocabulary with definitions<br>• Different ways to record<br>• Labelled diagrams<br>• Verbal - identifying and reacting to misconceptions | • Adult Modelling<br>• Learning broken into appropriate chunks.<br>• Guided practice e.g. answering comprehension questions.<br>• Repetition | • Chunk content into smaller steps<br>• Success criteria<br>• Retrieve - learning repeated throughout lessons and units<br>• Self-marking<br>• Directed questioning<br>• Live feedback given constantly | • Mixed ability grouping<br>• Mixture of support throughout the lessons - rotation of adults support/ whole class<br>• Peer feedback<br>• Flexible pre-teach groups where appropriate<br>• Opportunity to work with different children in different sized groups.<br>• Sharing of learning with peers. | • Visualiser<br>• Google maps /Digimaps<br>• Research online - secondary sources<br>• Youtube - to help children understand different places around the world |

**Appendix 2**

# XII Apostles RC Primary School

## Progression to Written Calculations Policy

Policy available within school.