



Leopold Primary School Maths Policy

Rationale

At Leopold, children are encouraged to enjoy Mathematics and become enthusiastic mathematicians by developing their skills, knowledge and understanding through practical experiences which have relevance and purpose in everyday situations. It is important that children develop the skills of numeracy to become lifelong learners. They should be able to apply these skills in different situations across the curriculum and in daily living outside school.

Aims and Objectives

- To promote enjoyment and enthusiasm for learning through practical activity, exploration and discussion;
- To become fluent in the fundamentals of Mathematics through varied and frequent practice of increasingly complex problems over time;
- To develop the ability to recall and apply knowledge rapidly and accurately;
- To develop the ability to solve problems through decision making and reasoning in a range of contexts;
- To develop mathematical language through speaking and listening, practical activities and recording work;
- To give children a wide variety of mathematical experiences;
- To promote confidence and competence with numbers and the number system;
- To enable children to become independent learners;
- To develop the ability to solve problems through decision-making and reasoning in a range of contexts;
- To develop a practical understanding of the ways in which information is gathered and presented;
- To explore features of shape and space, and develop measuring skills in a range of contexts;
- To understand the importance of mathematics in everyday life;
- To give all children equal access to mathematics in the National Curriculum regardless of race, culture, gender or any special educational need.

The National Curriculum

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 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 solution

What teaching Maths at Leopold looks like

What we do?	Why are we doing it?	What does it look like in practice?
1. Whenever appropriate, we use real-life examples as a context for learning.	<ul style="list-style-type: none"> • Supports pupils to see maths as relevant to their own lives now and in the future. • Children are given opportunities to discuss and share their experience to develop their understanding further. 	<ul style="list-style-type: none"> • Where appropriate, we make cross-curricular links between maths and other subjects. • Displays link on learning wall to a real-life context, where appropriate. •
2. We plan sequences of lessons using central resources : NCETM website, White Rose and mAthEmaTics toolkit, maths mastery, maths-no problem (Singapore maths)	<ul style="list-style-type: none"> • Planning is consistent with teaching for mastery principles. • Methods used are consistent across KS2 • There is a clear focus on building concepts using a CPA approach and the use of resources. • There is a clear focus on using precise mathematical language alongside appropriate representations of concepts. • A secure understanding of number and place value is the core of all teaching. 	<ul style="list-style-type: none"> • Curriculum coverage is flexible and led by the understanding of the pupils. • Weekly plans are amended where appropriate to address the misconceptions presented in main class teaching.
3. We teach using a CPA	<ul style="list-style-type: none"> • Use of concrete resources is a foundation for 	<ul style="list-style-type: none"> • Teachers systematically model building

<p>(Concrete, Pictorial, Abstract) approach.</p>	<p>conceptual understanding.</p> <ul style="list-style-type: none"> • Pupils learn to use pictures and diagrams to represent concepts, their thinking and their working through problems. • As a result of their work with concrete resources and pictures, pupils have a better understanding of using notation and symbols to represent concepts and solve problems. • Visualisation is developed through the use of concrete resources to support the pictorial and abstract approaches. 	<p>concepts using a CPA approach through their teaching.</p> <ul style="list-style-type: none"> • A range of resources are readily available and pupils are well practiced at using them appropriately. • Sometimes pupils choose which resource would be suitable for building a concept and working through a task. • Pupils record their thinking and methods using pictures and diagrams (representations).
<p>4. We expect pupils to explain their thinking and answer questions in full sentences.</p>	<ul style="list-style-type: none"> • Encourages pupils to tell the ‘story’ of their thinking and working out in sequence. • Helps teachers and adults to assess precisely whether any mistakes have been made or misconceptions exist and what they are (formative assessment tool). • Supports the use of mathematical language skills of all pupils. • Supports the reasoning aspect of skills of all pupils. 	<ul style="list-style-type: none"> • Adults ‘think out loud’. They model responding or giving an explanation of thinking through their teaching. • Child are presented with problems or scenarios to explore their understanding of concepts taught. • We sometimes ask a pupil to repeat another pupil’s sentence in full: “Sam, what did Tom say?”. • Adults encourage pupils to make their sentences precise and concise.
<p>5. Pupils are not grouped by ability.</p>	<ul style="list-style-type: none"> • Mixed ability teaching is inclusive. • Pupils are not given the message that there is a ‘ceiling’ put on their ability to achieve. • Encourages a growth mindset. • Teachers are challenged to manage personalised learning effectively. 	<ul style="list-style-type: none"> • Seating plans are mixed ability. • Pupils are taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time. • Pupils discuss their maths learning and sometimes work collaboratively in mixed ability groups and pairs.

		<ul style="list-style-type: none"> Where pupils need more personalised support to grasp a concept or method, intervention within the lesson and sometimes outside of it, ensures that they are ready to move forward with the rest of the class.
6. We teach mental maths strategies daily.	<ul style="list-style-type: none"> Number and place value are embedded to develop secure foundations of understanding the other mathematical domains. Supports children speed of being able to calculate. 	<ul style="list-style-type: none"> Children knowledge of number is built upon through a range of algorithms presented to them. An 'intelligent practice approach' is used so that exercise and activities are not random but have a purpose. Pictorial representations are used to as visuals to practice arithmetic daily. Interactive games as used as tools to practice mental calculations.
7. We provide ample opportunities for practice and consolidation of skills taught.	<ul style="list-style-type: none"> Children understanding need to be secure of concepts being taught before progression can take place. Practice shows progress of the children in your class Misconceptions can be addressed 	<ul style="list-style-type: none"> CPA approaches are used to create activities where children can develop their understanding.
8. Reasoning is an aspect of all lessons	<ul style="list-style-type: none"> Children application of skills is developed. Children are challenged to articulate their understanding and misconceptions can be addressed. Reasoning through maths talk supports children ability to visualise and problem solve. 	<ul style="list-style-type: none"> Children are presented with real-life problems at the start of whole class teaching and is used as a point of formative assessment. Planning is adapted to provide support with reasoning for all learners. CT use questioning and sentences to facilitate maths talk.

<p>9. We use resources for all learners to provide support and challenge.</p>	<ul style="list-style-type: none"> • A range of resources are available to all pupils in their classes to support with everyday teaching. • Helps to develop children’s concrete and understanding of concepts taught. • Children need a range of representations at all stages of their understanding to ensure that is secure (fluency, reasoning and problem solving) 	<ul style="list-style-type: none"> • Children respond using full sentences. • Resources trays are used in everyday teaching where possible. • Children have concrete objects to support with their learning. • Stem sentences are used to elaborate on aspects of resources to deepen the children understanding eg: ‘Why do we have to bridge into the tens columns for this calculation?’
<p>10. We follow the calculation policy.</p>	<ul style="list-style-type: none"> • Children ensure a depth of progression of skills and coverage during main teaching • To provide a framework for our families to actively use when engaging in their child learning. • To identify gaps that should be addressed in teaching • To ensure pitch of planning and lessons is appropriate for each year group. 	<ul style="list-style-type: none"> • Calculation policy is referred to in planning. • CT have a clear structure of skills that need to be taught and how to teach them.

We believe that knowledge is not fixed and explicitly embed a growth-mindset approach into all our children do – through hard work, practice and a willingness to see mistakes as part of their journey - they can succeed. Mathematics is taught in mixed-ability groupings which we believe necessitates vital discussion: the use of accurate and specific mathematical language to explain what is known; validate an idea or reason, develops in our children a deep understanding that underpins all future learning.

Within lessons, reflection time is built in; this allows opportunities for children to make links and focus. Where possible, working in mixed-ability pairs or small-groups, children are encouraged to explain what they know using complete sentences and key mathematical language to discuss and express concepts precisely - this is empowering when clarifying understanding and can highlight any possible misconceptions. Maths talk is integral to the structure of teaching at Leopold.

What does a lesson look like using Maths-No Problem!?

There are 5 main components to most mathematics lessons:

- 1: In Focus Task (followed by unpicking the key methods needed for the lesson)
- 2: Guided Practice
- 3: Independent Practice
- 4: Challenge
- 5: Journaling (this could happen at any point during the lesson)

*Children do not move onto their Independent Practice until they are secure in their understanding. This may result in some children working with the teacher in a focus group before they start their independent work.



Times Tables

The teaching of times tables facts should be planned as a series of lessons and consolidation should be part of the daily Maths lesson thereafter across all areas of Maths. Children should understand the times tables facts and related division facts. They should be able to explain methods used and patterns identified, using mathematical language.

Reception 1 and 10
Year 1 2 and 5

Year 2 3 and 6

Year 3 4 and 8

Year 4 up to 12 x 12

Early Years Foundation Stage

In EYFS, we provide children with opportunities to practice and improve their skills in counting numbers, calculating simple addition and subtraction problems and to describe shapes, space and measures.

Inclusion

All children have equal access to the Mathematics curriculum. Our school strives to meet the needs of pupils with special educational needs, with disabilities, those who are very able, gifted and talented and those learning English as an additional language

While the National Curriculum suggests children move through the programmes of study at a similar rate, we recognize that children sometimes need work that is ,“other and different” to support and/or challenge – their mathematics “stage” not “age.” This is done in a variety of ways:

- the use of a greater variety of concrete items to support consolidation
- real-life planned links to support abstract concepts
- the use of problem-solving activities to further develop reasoning
- timely support and intervention, systematically checking understanding throughout every lesson to embed conceptual development
- small differentiated tasks to suit learning needs of all
- effective AFL throughout every lesson, picking up misconceptions and moving others to deepen understanding with a range of tasks
- marking and verbal feedback throughout every lesson
- booster sessions delivered by class teachers to address misconceptions on a daily basis
- SEND Toolkit that ensures children are given work and challenged at the right level for them. This banded toolkit is aligned to our tracking system and allows teachers to show progress with SEND pupils and closely match the objectives to the level of understanding for key children.

Marking and Feedback of Mathematics

Children's work is marked and feedback given according to the school's agreed marking policy.

Assessment

Assessment takes place in line with the school's agreed assessment policy. Assessment is regarded as an integral part of teaching and learning and is a continuous process. Teachers assess children's progress using Target Tracker and their attainment is recorded half termly. Each term pupil progress meetings are held with the Senior Leadership Team and class teachers where attainment and progress of each class is discussed and additional needs are identified.

Monitoring

Teaching staff monitor their pupils through observation, discussion, teacher assessment, marking work and testing.

The teaching of Mathematics is monitored through:

- Lesson observations
- Scrutiny of work
- Scrutiny of planning
- In-school and Locality moderation
- Tracking children's progress on Target Tracker

Display

We recognise the important role classroom display has in the teaching and learning of mathematics. Each class has mathematics board in the main teaching area which is a 'working wall' and has mathematical vocabulary and relevant materials that provide visual support for the children's mathematical thinking.

Role of the Subject Leader

- Ensures teachers understand the requirements of the National Curriculum and helps them to plan lessons.
- Leads by example by setting high standards in their own teaching.
- Prepares, organises and leads CPD and joint professional development.
- Works with the SEND Co-coordinator.
- Observes colleagues from time to time with a view to identifying the support they need.
- Attends and delivers appropriate CPD
- Keeps parents informed about Mathematics issues
- Discusses regularly with the Headteacher the actions and impact of the actions taken.
- Deploys support staff to address mathematics related needs within the school.
- Monitors and evaluates mathematics provision in the school by conducting regular work scrutiny, learning walks and assessment data analysis.