

Sir Alexander Fleming Primary School and Nursery

'Belonging, Being, Becoming'



Maths Policy

Updated: January 2024
Review Date: January 2025

Our school values



SAFE – keep ourselves and others safe by making sensible choices within school, online and in the community.



RESPECT – have the social, emotional and nurturing skills to respect ourselves, our families and our communities.



PRIDE – be proud of what we all achieve by aspiring to work hard and become your 'best self'



BRAVERY – to overcome barriers by attempting difficult challenges by being resilient, independent and inquisitive.



SUCCESS – achieving high standards with a belief that with effort anything is achievable.

Contents

1. Intent
2. Implementation
3. Impact
4. Assessment
5. Planning and Resources
6. Early Years Foundation Stage
7. Equal Opportunities and Inclusion
8. Policy Links

1. What is the intent of the Maths curriculum at Sir Alexander Fleming Primary School?

Our long-term aim is to produce an ambitious, connected curriculum accessible to all pupils from Reception to the end of Year 6. We aim to ensure all pupils find mathematics achievable and develop pupils into mathematical thinkers. We want pupils to enjoy opportunities to become fluent in the fundamentals of mathematics, to be able to reason and to solve problems. It is our ambition to make substantial links between mathematical understanding and the real world, using mathematical language in a cross-curricular manner, supporting pupils to articulate their knowledge and learning.

Our curriculum embraces these National Curriculum aims, and provides guidance to help pupils to become confident and resilient:

Thinkers – all lessons will build on prior knowledge, ensuring they become fluent in their mathematical ability and to ensure they have the belief that they can achieve anything.

Visualisers – we use the Concrete – Pictorial – Abstract (CPA) approach to help pupils understand mathematics and to make connections between different representations (models, images and graphics), this helps children overcome barriers when facing difficult challenges.

Describers – we place great emphasis on mathematical language and questioning so pupils can discuss the mathematics they are doing, and so support them to take ideas further, ensuring they question and become resilient, independent and inquisitive learners, with the use of STEM sentences to really deepen their understanding.

Experimenters – as well as being fluent mathematicians, we want pupils to love and learn more about mathematics - to be proud of their achievements and want to learn more, knowing they are safe to explore without judgement in their environment and showing respect when exploring new ideas along with their peers. This will enable them to reach their highest potential without fear of failure.

Progression through the mathematics curriculum:

To learn mathematics effectively, some things must be learned before others, e.g., place value needs to be understood before working with addition and subtraction; addition needs to be learnt before looking at multiplication (as a model of repeated addition). We place a significant emphasis on number skills, carefully ordered, throughout our primary curriculum. For some other topics, the order is not as crucial, e.g., Shapes and Statistics need to come after number, but do not depend on each other. However, we ensure that all areas are revisited regularly, to help embed these skills and to ensure that the children know more and remember more, enabling them to be successful mathematicians.

We mix these so pupils have as wide a variety of mathematical experiences as possible in each term and year, exposing them to contextual experiences to equip them for mathematics in the real world.

Ultimately, through a carefully planned low ceiling, high threshold approach, our aim is for children to leave primary with the foundations they need to succeed in their next steps, with the knowledge and belief that they are successful mathematical thinkers, with a passion and thirst for maths.

2. Implementation

Teachers reinforce an expectation that all children can achieve high standards in Mathematics.

Most of the children progress through the curriculum content at the same pace. Adaptation is achieved by emphasising deep knowledge and through individual support and intervention.

Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.

Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts.

Teachers use precise questioning in class to test declarative, procedural and conditional knowledge and assess children regularly to identify those requiring intervention or extension.

At Sir Alexander Fleming Primary School and Nursery, the children take part in a minimum of 4 maths sessions a week. We ensure that children have opportunities to practise their fluency skills and know those key important facts as well as exposing children to variations; procedural and conceptual. Reasoning and problem-solving is seen weaved through every lesson through mathematical discussions and carefully planned tasks. Children have the opportunity to really unpick the problem and discuss ideas with their peers. Here at Sir Alexander Fleming Primary School, we understand the importance of ensuring children are ready for the wider world of maths, for this reason we dedicate an explicit reasoning and problem-solving lesson once a week to help them develop these skills.

We also understand the importance of coherence and ensuring we revisit areas to really embed them and build on prior knowledge, the beginning of each lesson starts with a maths arithmetic starter to ensure that the children become fluent in all areas of arithmetic. The end of each lesson focuses on fast fluency using known facts. Blocks are carefully planned, we work closely with the maths hub, ensuring teachers using national curriculum objectives combined with the mastery approach to inform coverage. Problem-solving activities prompt discussion and reasoning, as well as promoting an awareness of maths in relatable real-life contexts that link to other areas of learning. To help children achieve automaticity we are also taking part in the mastering number programme in KS1 and KS2.

In KS1, these problems are almost always presented with objects (concrete manipulatives) for children to use, these manipulatives are used to expose the structure of the mathematics. In KS2 manipulatives are carefully chosen to help children see patterns in structure and understand the underlying concepts within the mathematics. Adults use careful questions to draw out children's discussions and their reasoning. The class teacher then leads children through strategies for solving the problem, including those already discussed. Independent work provides the means for all children to develop their fluency further, before progressing to more complex related problems. Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time, with more able children being offered rich and sophisticated problems, as well as exploratory, investigative tasks, within the lesson as appropriate.

Here at Sir Alexander Fleming, we believe that creating curriculum links is very important. Teachers carefully plan at least once a term maths into a curriculum topic to ensure that children make those important links, for example statistics in science. This enables children to understand the use of mathematics in the wider curriculum and begin to make important cross-curricular links.

3. Impact

Sir Alexander Fleming Primary School and Nursery has a supportive ethos and our approaches support the children in developing their collaborative and independent skills. Children can underperform in Mathematics because they think they can't do it or are not naturally good at it. We address these preconceptions by ensuring that all children experience challenge and success in Mathematics by developing a growth mindset. Regular and ongoing assessment informs teaching, as well as intervention, to support and enable the success of each child. These factors ensure that we can maintain high standards, with achievement at the end of KS2 in line with National Average.

The impact of classroom teaching is regularly monitored through use of classroom observations, learning walks, book looks and pupil voice questionnaires.

4. How is mathematics assessed at Sir Alexander Fleming Primary School?

Children receive effective feedback through teacher assessment, and Assessment for Learning (AfL) is integral to the design of each lesson. Most of this feedback is given orally, at the point in time of teaching. The structure of the teaching sequence ensures that children know how to be successful in their independent work. Guided practice provides further preparation for children to be able to apply the skills, knowledge and strategies taught. Common misconceptions are addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the teacher and the children before progression to further depth. Opportunities for additional practice and consolidation are provided by adults, as appropriate, during marking, with a focus on promoting and achieving a growth mindset and resilience.

Formative assessment: short term assessment is a feature of each lesson; children start each lesson with a recap activity before they start their learning. The recap activity is quick and is used as an assessment opportunity and to start the discussion for the learning process. Observations and careful questioning enable teachers to adjust lessons and review the use of adult support. At the end of each unit of work, the children also complete an end of unit check through a contextual learning lesson. Ensuring that the children can make connections with maths in the wider world. At the end of each term, children will complete a carefully aligned progress test. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught. This also informs dialogue with parents and carers during parent consultations, as well as the judgements made at the end of the term as to the extent that each child has demonstrated their ability: 'working towards the expected standard', 'secure at the expected standard', or 'working at a greater depth within the expected standard'.

Assessment data in maths is reviewed throughout the year to inform bespoke interventions and to also ensure that provision remains well-informed to enable optimum progress and achievement. End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the upcoming academic year.

5. Planning and Resources

The use of Mathematics resources is integral to the concrete – pictorial – abstract approach and thus planned into teaching and learning. The school has a wide variety of good quality equipment and resources, both tangible and ICT based, to support our learning and teaching. These resources are used by staff and children in several ways including:

- Demonstrating or modelling an idea, an operation or method of calculation. Resources for this purpose could include: a number line; place value cards; dienes; place value counters and grids; money or coins; measuring equipment for capacity, mass and length; 5 bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; multilink cubes; clocks; protractors; calculators; dice; number fans etc.

- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required. Banks of standard resources such as number lines, multi-link cubes, dienes, hundred squares and counters are located within individual classrooms. Resources within individual classes are accessible to all children who should be encouraged to be responsible for their use. Further resources (often larger items shared by the whole school) are also available as part of a central supply.
- Teachers are encouraged to use any school space as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

6. Early Years Foundation Stage (EYFS)

We know that our children come to nursery with varying degrees of mathematical experiences. We recognise this and provide more experiences for children who require it. We work with parents in order to develop their understanding of the three crucial aspects named above.

We recognise that mathematics is everywhere. We plan for it explicitly in direct teaching, through routines, the environment and through high quality interactions with adults during play. Enhancements are made to continuous provision each week so that children can practise and apply their mathematical knowledge which aids fluency and varied fluency. We utilise every moment and turn it into a mathematical moment!

In Reception, we follow Mastering Number, which teaches the children the 5 key components of mastery; mathematical thinking (represented language and gesture aid understanding), representation (strong models and images), variation, fluency and coherence. Whole class teaching is followed by smaller group work so that children have time to practise and embed this knowledge and the skills needed. This adopted style supports daily formative assessment, in which children receive immediate feedback, ensuring that gaps in knowledge are addressed.

We know that understanding, using and applying mathematical language is crucial for children to make progress. We use consistent, technical and everyday, vocabulary to teach mathematics. Adults use stem sentences to support children to talk about their knowledge. Adults equip children with ***the power of noticing*** and discussion as a strategy to enable them to make connections between what they already know and how they can tackle mathematical problems and challenges. Adults are skilled at modelling, questioning and posing challenges for children. Gesture is a huge part of our good mathematical teaching.

The way mathematics is presented to children is important. Puppets, games, songs, routines and activities are the vehicles through which mathematics is taught here. We use strong physical models and pictorial images in order to develop children's conceptual understanding.

7. Equal Opportunities and Inclusion

At Sir Alexander Fleming Primary School and Nursery, we plan to provide for all pupils regardless of gender, ethnicity, socio-economic status, cultural background, academic ability, special educational need/disability or vulnerability to achieve their full potential. We are committed to ensuring that children and staff are happy and that they enjoy

coming to school. This policy will underpin excellent teaching, learning and progress. It will promote the high standards and high expectations set out in the school's aims and code of conduct. We are committed to meeting the needs of each individual especially those identified in the 2010 Equality Act.

8. Policy Links

This policy should be read in conjunction with:

- Calculation Policy
- Long Term Overview
- Progression of Knowledge for Mathematics
- Equality Objectives documentation
- SEND Policy
- Marking and Feedback Policy