

# Mathematics

## Curriculum Intent

Our children will be young mathematicians, developing curiosity and securing the skills and knowledge required to understand the world around them.

By gaining fluency and a deep understanding of the fundamentals of mathematics, our children will develop the ability to abstract patterns, reason mathematically, solve problems, follow lines of enquiry, conjecture generalisations and justify decisions based on proof.

They will apply their mathematical knowledge through all areas of their studies including science, technology and the arts and gain skills necessary for financial literacy and to everyday life.

## Curriculum Implementation

Mathematics is taught daily, for all children. Throughout PACE Academy Trust we teach for mastery of mathematics. Building on our Early Years curriculum, attention is drawn to the five big ideas: developing fluency; mathematical thinking; exploring structure through careful use of concrete, pictorial and abstract representations; the use of variation theory and intelligent practice; and through the mapping of a coherent, interconnected learning programme of study.

Long term maps and the calculation policy provide the structure for a cohesive, stepped curriculum. They guide the use of key resources chosen to support teachers in their planning. The curriculum is broken down into five distinct areas (Number and Place Value, Calculation, Measurement, Geometry and Statistics) and each area subdivided into 'topics' (e.g. Fractions, decimals and percentages) which are reflected in the Trust's formative assessment structure.

Medium term plans are written by teachers based on the long term planning package. Teachers are encouraged to use and improve their subject knowledge to identify the small steps required to reach the objectives. They identify the key misconceptions that can occur; the mathematical language and stem sentences children will need to develop; the key Concrete, Pictorial and Abstract experiences to unpick the structure of what is being taught; and the relevant, connected concepts and contexts that will ensure the mathematics is learned is purposeful, relevant and deeply embedded. Learning is pitched to include rapid revision of previous concepts and includes ambitious levels of challenge to deepen understanding and mastery.

Working walls are used to record steps in learning, key language and stem sentences, representations and misconceptions. They are used as live, interactive records, supporting pupils own formative self –assessment of 'what I need to do and 'what I need to know' (factual and procedural fluency).

Lessons are structured into relevant episodes to support guidance through the learning. Mathematical discussion and explanation form a significant part of each lesson, alongside the use of concrete materials to explore and model structure. Conceptual and procedural variation is used to deepen children's understanding, (using standard, non-standard and non-concept examples, and intelligent practice questions). All children have access to additional questions, designed to challenge and deepen thinking.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. Decisions about when to progress are based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly are challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material consolidate their understanding, including through additional practice, before moving on.

Each school also implements a programme of wider, more investigative maths that allows children of all abilities to explore the big ideas in maths and develop a growth mindset and curiosity for the subject.

## Curriculum Impact (including pupil outcomes)

Pupils achieve mastery of their age-related mathematics expectations. They:

- develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- become fluent in the fundamentals of mathematics, including through varied and frequent practice and with increasingly complex problems over time
- 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
- display an enjoyment and appreciation of mathematics