

# St Paul's Infant School



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## 2017-2018

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Member of Staff Responsible	Mrs A Pleace and Mrs S Aldridge
Position	Maths Leader and Deputy Head Teacher
Dated	February 2017
Date of next review	February 2018

### **What is calculation and why is it important?**

Calculation is the way in which numbers are used to solve a problem or answer a question. This can include addition (+), subtraction (-) multiplication (x) and division ( $\div$ ). At St Paul's, calculating is about using numbers in practical situations. This may involve comparing numbers of objects (subtraction), combining numbers of objects (addition), sharing objects equally between members of a group (division) and adding the same number of objects (multiplication). The objects could be actual items, e.g. pencils, but they could also be actions, e.g. the number of jumps. Regular practice is essential to help children develop an understanding of number patterns and relationships.

At St Paul's we believe that children should develop many different skills if they are encouraged to develop their ability to use calculation effectively.

- Fluency with basic number facts e.g  $5+5=10$  but  $4+6=10$
- Fluency in mental calculation
- Fluency in the use of written methods
- Understanding of the = symbol
- Inequality alongside teaching equality
- Don't count, calculate
- Look for pattern and make connections
- Use intelligent practice
- Use empty box problems
- Use mathematical structure and work systematically
- Move between the concrete and the abstract to support their understanding
- Reason and explain the mathematics
- Use questioning to develop their mathematical thinking and understanding
- Children to use correct mathematical terminology and speak in full sentences
- Identify problems and how these could be solved

### **How do we teach Maths at St Paul's?**

Since September 2015 at St Paul's we have been developing Maths Mastery to encourage and enable the children to not just be able to answer mathematical questions but to also be able to reason and explain their answer. Maths mastery means a deep, long-term, secure and adaptable understanding of the subject of Maths.

This way of learning is something that we want pupils to acquire, so a 'mastery Maths curriculum' aims to help pupils, over time, acquire mastery of the subject.

There a number of elements which will help children develop mastery of Maths:

- fluency (rapid and accurate recall and application of facts and concepts)
- a growing confidence to reason mathematically
- the ability to apply Maths to solve problems and to test hypotheses

Mastery of Maths, which will build gradually as a child goes through school, is a tool for life, and immeasurably more valuable than the short term ability to answer questions in tests or exams. The following statements explain what Maths Mastery is in more depth as well as how it is taught at St Paul's.

### Teaching for Mastery

A mastery approach to teaching and learning has been designed to support the aims and objectives of the National Curriculum.

A mastery approach:

- Has number at its heart. A large proportion of time is spent reinforcing number to build competency
- Ensures students have the opportunity to stay together as they work through the curriculum as a whole group.
- Sets challenges to extend pupils, ensuring that a depth and breadth of each key concept is gained.
- Provide plenty of time to build reasoning and problem solving elements into the curriculum.

### How is Maths Mastery Taught?

#### Concrete - Pictorial - Abstract

All students, when introduced to a key new concept within Maths, will have the opportunity to build competency in this topic by taking the approach Concrete - Pictorial - Abstract, described below.

- **Concrete** - children will have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.
- **Pictorial** - children will then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.
- **Abstract** - with the foundations firmly laid, children will be able to move to an abstract approach using numbers and key concepts with confidence.

At St Paul's we believe that all students can succeed in Mathematics. We do not believe that there are children who can do Maths and those that can't. A positive Growth mindset for mathematics and strong subject knowledge are important to the children succeeding.