



## **Calculation Policy**

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### **Introduction**

The 2014 National Curriculum provides a structured and systematic approach to the teaching of calculation. The aim is for mental calculations and written procedures to be performed efficiently, fluently, accurately with understanding. Procedures and understanding are to be developed in tandem. End of key stage expectations are explicit in the programme of study.

At Worth Primary School we have a consistent approach to the teaching of written calculation methods in order to ensure continuity and progression across the school.

### **Age related expectations**

This calculation policy is organised according to age appropriate expectations as set out in the national Curriculum 2014. However it is vital that pupils are taught according to the stage that they are currently working at, being moved to the next level if appropriate, or working at a lower stage until they are secure enough to move on.

### **Providing a context for calculation**

It is important that any type of calculation is given a real life context or problem solving approach to help build children’s understanding of the purpose of calculation, and to help them recognise when to use certain operations and methods. It is also important for children to be confident to use mental and written strategies to explain their thinking. This must be a priority within calculation lessons. Written methods need to be viewed as tools to enable children to solve problems and record their thinking in an organised way.

### **Aims**

Children should be able to use an efficient method, mental or written, appropriate to the given task, with understanding. By the end of year 6, children will have been taught, and be secure with, a compact standard method for each operation.

**To develop efficient written calculation strategies children need:**

- Secure mental methods which are developed from early years
- A solid understanding of the number system
- Practical hands on experience including a range of manipulatives
- Visual models and images including number lines and arrays
- Experience of expanded methods to develop understanding and avoid rote learning
- Secure understanding of each stage before moving onto the next

**Before carrying out a calculation, children will be encouraged to consider:**

- Can I do it in my head? (using rounding, adjustment)
- The size of an appropriate answer (estimation)
- Could I use jottings to keep track of the calculation?
- Do I need to use an expanded or compact written method?

**Pre requisite skills for written calculations****Addition and subtraction:**

- Do they know all the addition and subtraction facts for all numbers to 20?
- Do they understand place value and can they partition and then re-partition numbers?
- Can they add three single digit numbers mentally?
- Can they add and subtract any pair of two digit numbers mentally?
- Can they explain their mental strategies orally and record them using informal jottings?

**Multiplication and division:**

- Do they know the 2, 5 and 10 times tables and corresponding division facts?
- Do they know the result of multiplying by 1 and 0?
- Do they understand 0 as a place holder?
- Can they multiply two and three digit numbers by 10 and 100?
- Can they double and halve two digit numbers mentally?
- Can they use multiplication and division facts they know to derive mentally other multiplication and division facts they do not know?
- Can they explain their mental strategies orally and record them using informal jottings?

These lists are not exhaustive but are a guide for the teacher as they structure the move from informal to formal methods of calculation. It is vitally important that children's mental methods of calculation continue to be practised and secured alongside their learning and use of an efficient written method for each operation.

### **A pathway to teaching calculation methods:**

Expanded methods should be viewed as steps towards a standard method and not as methods in themselves. Children will always be encouraged to compare expanded and written methods. What do they notice is the same? What is different?

Before beginning to record in a more refined written format children must have had significant practical work reinforced with appropriate manipulatives, models and images. Teachers will guide pupils to refine their written methods of recording by modelling and asking questions such as “What is the same? What’s different?”

Learning will be planned to ensure pupils are encouraged to use and apply what they have learnt to problem solving tasks.

As children move along the progression pathway it is vital that they practice, reinforce, consolidate, use and apply it to mathematical learning and NOT simply move onto the next step.