



Stocksfield Avenue Primary School



CALCULATION POLICY

When children leave Stocksfield Avenue Primary School our aim is for them to:

- have a secure knowledge of number facts and a sound understanding of the four operations;
- be able to use this knowledge and understanding to carry out calculations mentally and to apply general strategies when using one-digit and two-digit numbers and particular strategies to special cases involving bigger numbers;
- make use of diagrams and informal notes to help record steps and part answers when using mental methods that generate more information than can be kept in their heads;
- have an efficient, reliable, compact written method of calculation for each operation that children can apply with confidence when undertaking calculations that they cannot carry out mentally;
- be able to solve mathematical problems using a bar model to 'show what you know' (English to Maths and vice versa)

This is in line with the aims of the **2014 National Curriculum for Mathematics** which are 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 solutions.

As can be seen in these aims, the ability to calculate confidently is fundamental to success.

The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school. Please note that early learning in number and calculation in Nursery and Reception follows the "Development Matters" EYFS document, and this Calculation Policy is designed to build on progressively from the content and methods established in the Early Years Foundation Stage.

Age related expectations

The Calculation Policy is organised according to age expectations as set out in the National Curriculum 2014. Children's progress should be closely monitored by class teachers and SLT using Cornerstones Assessment Materials at the end of each term. It is our aim that by using a Mastery approach the majority of children should reach the end of year expectations for their year group and be 'next year group ready'. Targeted interventions must be used to ensure pupils have the opportunity to keep up with the rest of the class.

Strengthening Teacher Subject Knowledge

Progression in calculation should be researched in-depth by Teachers and Teaching Assistants prior to introducing a new topic using the nctm website and White Rose materials. Website links are included at the end of the policy to give teachers vital knowledge, support, ideas and video footage to help teach each topic and ensure progression of skills and knowledge. The 'Progression in Reasoning' document provides ideas for essential questioning and suggests activities to help children meet the second aim of the National Curriculum. 'Mastery Assessment' (nctm) booklets for each year group also provide guidance and activities for deepening understanding of key concepts.

At Stocksfield Avenue Primary we are committed to using and sharing precise mathematical vocabulary and terms. An extensive New Curriculum Glossary containing age appropriate mathematical language can be found in the 2014 Calculation Policy Folder in 'Mathematics Resources' on the Network.

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 when faced with problems. This must be a priority within calculation lessons. This is particularly essential when teaching missing number problems.

Choosing a calculation method

Children need to be taught and encouraged to use the following processes in deciding what approach they will take to a calculation, to ensure they select the most appropriate method for the numbers involved:

Estimation and checking using the inverse should be an integral part of all calculations.

Can I do it in my head using a mental strategy?

Can I use a picture or bar model?

Can I show what I know?

Should I use a written method?

To work out a tricky calculation:

Approximate,

Calculate,

Check it mate!

The use of practical apparatus, such as Numicon, and interactive resources, such as the ITP programmes, are crucial to secure understanding. In Teachers on the Network, in the folder 'Maths Resources' is a document: **ITP (Interactive resources) link**. This website has most of the archived ITPs but missing ones that are referenced can usually be found by a web search such as 'ITP multiplication arrays'.

Addressing weaknesses in Fluency

Discrete 5-a-day style Arithmetic lessons are taught from Year One to Six. Teachers will model strategies for calculating in all four operations and fractions. Pupils will then be given the opportunity to rehearse each calculation on a daily basis. This will give them the opportunity to make strong connections within and between operations. Children should be given the opportunity to explain their reasoning and methods. The five questions are self-marked to provide immediate feedback and to allow children to set individual goals. Questions must be well planned, in a coherent and logical sequence to create maximum opportunities for children to develop their thinking and understanding and make strong links between calculations. Particular focus will be given to missing number problems and calculations involving equality (=symbol in different positions) and inequality (comparisons $<$ $>$).

We firmly believe that good parental involvement is key to helping children reach their full potential in Maths. We will, therefore, on a termly basis, in every year group, film a clip from a 5-a-day lesson and upload it onto the school website to allow parents access to the methods and strategies used in class.

To aid fluency in the recall of basic number facts and times tables, our pupils have been issued individual login details to allow access at home and school, to online Number Gym materials.

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