



# Corporation Road Community Primary School

## Mathematics Strategy

### **The intent of Mathematics in our school:**

In our school, we know and understand, and want our children to know and understand, how maths has developed over many centuries and has provided the solution to some of history's most intriguing problems. We want our children to see maths as an essential part of understanding the world, and an intrinsic part of everyday life, important to science, technology and engineering and necessary for employment and managing the family budget. We want our children to reason mathematically and gain a sense of enjoyment and curiosity about the subject.

The intent therefore, is also that children can see it in the context of our key themes.

**Community**, to see how maths can be used to look at populations and statistics around community movement and interactions, populations and financial differences and how these may differ from past, present, near and far. **Citizenship**, how maths can bring about improvement in their own life chances in future education and employment. **Gender & Equality**, to ensure maths is accessible to everyone, regardless of any differences and that all should have equal access to a wide and varied maths curriculum to meet their individual needs. **Impact & Legacy**, to know the legacies of mathematical scholars and how their work influenced the maths curriculum we have today. Knowing too, that knowledge gained in maths can impact on their own futures and their own legacy.

- For our pupils to love maths and to be competent mathematicians. We desire our pupils to be able to work confidently with a range of number, representations and calculations.
- To deliver quality first teaching which equips our pupils with: a fluency of basic number facts and calculation methods; the ability to apply them to reason and solve problems; and the competence and confidence to use them in other subject areas.
- To use accurate and quality assured assessment which builds up an evidence based profile of pupils' attainment, which then informs our next steps for learning.
- Our Maths curriculum is designed with the intention of covering the full National Curriculum for Maths in a way that embeds learning by following a process of moving progressively from fluency through to reasoning and problem solving with pupils only being judged to have mastered a skill if they can display understanding on all of these levels.
- To have a curriculum that is mapped out in a progressive way that allows concepts to be linked together, for example teaching area and perimeter after multiplication/division, statistics after addition and subtraction, factors and primes before fractions.
- It is our belief that good mental maths skills underpin many other areas of Maths and therefore our curriculum and lesson structure maintain the need to teach quality mental arithmetic skills.
- It is our intention for our Mathematics Curriculum to be flexible and adaptive taking into that year's National Tests and our own data analysis – our Medium-Term Plans are adjusted to address any new issues that we have identified.

### **The implementation of our Mathematics intentions:**

- Our maths lessons are delivered in a sequence of learning mapped out in our medium-term plans, which are based around blocks of learning. These blocks of learning are sequenced in a progressive way so skills learnt are used and reinforced in the next block.
- Daily Maths lessons are structured in the following way:

- Each lesson starts with an element of counting, which can be either discrete to teach counting objectives identified in the National Curriculum or linked to the skills needed for main lesson - this counting could offer an element of pre-teach or reinforcement of learnt skills.
- Following on from this, we teach a ten minute block of mental arithmetic, which can again be discrete but ideally linked to the main lesson as means of teaching the smaller steps needed.
- A main lesson based on our school's medium-term plans.
- The main part of our maths lessons are based around teaching that ensures children are fluent with the basics of a concept and can then apply this to a range of representations (varied fluency). To get children to the point of being fluent we start our teaching using concrete objects before moving onto pictorial and abstract representations. When we are sure pupils are fluent, we teach them how to reason about the skills they have learnt and how to apply them to solve more complex problems.
- For pupils who have mastered a skill within maths, we ensure pupils are exposed to work at a greater depth. These pupils, who we deem as having mastered a skill to a sufficient standard that they can work at a greater depth, are taught how to engage with thinking at a greater depth and are not simply just left to have a go at the challenging work – they are taught! We find that this approach also allows more pupils to engage with greater depth maths.
- Following this process ensures that our pupils are secure in their maths and that they are 'over-taught' to take them beyond this. It also means that pupils in a class progress at a broadly similar pace and can therefore work on the same task, which means children are not labelled as lower ability.
- If pupils are identified as having not understood a concept, we have a system of 'must moves' where they are assisted with their learning by the class teacher or teaching assistant so that they can move forward with the rest of the class.
- Each week, every class has two thirty minute lessons dedicated to the teaching and learning of basic arithmetic skills. These lessons mainly look at written methods for calculation so that when these concepts are encountered in the main lesson, children are already fluent and can focus on deepening their understanding.

#### **Our Mathematics planning includes:**

- Long-term yearly overviews for each year group, which map out when each strand of maths will be taught (see Whole School LTP). These have been carefully sequenced so that skills can build on previous learning, for example area following work on multiplication. This is based on the idea that for children to retain learning, they need to constantly bring it back out of long-term memory and into the working memory.
- Long-term planning that breaks each block of learning down into smaller, sequenced blocks of learning. Teachers then use this develop their own medium-term sequence for that block of learning.
- Teachers create their own medium term planning which breaks down the objectives into smaller steps which follow a coherent journey. Key objectives are revisited throughout the year to ensure there is sufficient depth of learning.
- Short-term daily planning that not only breaks a block of learning down into a sequence of lessons but also ensures appropriate counting and mental arithmetic are matched to main lessons.
- Arithmetic medium-term planning for our afternoon arithmetic lessons (see appendix 3). These plans map out the core arithmetic skills over a year.

#### **Our Mathematics assessment includes:**

- Formative, ongoing assessment is carried out by teachers daily and is used to inform planning and intervention. This is recorded using our post-lesson observation sheets. The main aim of this is to ensure each child is ready to access the teaching and learning in the next lesson.
- Summative assessment is carried out away from the point of teaching using our agreed MAT mini-assessments. There are questions which show mastery and a greater depth standard. The questions are presented in a range of styles and representations to show a depth of knowledge. These are then used to update our trust-wide tracking tool of twenty-five objectives.

## **Maths teaching of children with SEND**

Our Mathematics curriculum is designed around the intention that all pupils can succeed and this includes children with special education needs and/or disabilities (SEND). It is with this in mind that we recognise in our maths teaching that not all SEND pupils are low attainers. If some other pupils are working one or two years behind the expectations for their year group then our curriculum gives us the flexibility to teach them what is appropriate, given their needs, in terms of catching up and keeping up. Therefore, we ensure that if a SEND pupil is working below, at or above the expected standard they are given the appropriate support and resources needed to ensure they reach their full learning potential, and wherever possible, catch up to their peers over time.

## **Maths teaching of children who are more able**

In the same way that our curriculum allows us the flexibility to cater for the needs of pupils with SEND, it also allows us the chance to push pupils who are more able to work at a greater depth and develop their full potential.

Children who are more-able within the Maths Curriculum and who consistently work at greater depth can:

- Find multiples ways to solve a question / problem.
- Work confidently and independently.
- Deal with increases in complexity, deduction and reasoning.
- Ask their own mathematical questions and follow their own lines of enquiry.
- Apply their knowledge consistently, confidently and fluently in other subjects.
- Be able to explain what they have been doing to others.

Such pupils are developed further and given the chance to show their full potential with teaching and tasks that challenge them to work at a greater depth without needing to move beyond their year group curriculum. This approach ensures that they understand the maths curriculum to a greater depth, rather than simply knowing lots of maths earlier than other pupils but to a shallow level – which can happen when children work quickly through a higher year group's curriculum.

As a school we are also aware that different pupils can understand some parts of the curriculum better than other parts. With this in mind, we do not have to set higher ability / greater depth groups, instead if a pupil has mastered a concept and is able to apply their fluency to confidently reason and solve problems then they are exposed to teaching and tasks that require and develop understanding at a greater depth.

Our shared trust mini-assessments always have a built in greater depth question which allows pupils to show that they have mastered a concept to a greater depth.

## **Progression in Mathematics**

The trust has designed this document to ensure that mathematics is progressive across the curriculum, from an exemplification of the Early Learning Goals from our 'Trust Ready' curriculum through to Year 6 expectations. From Year 1 onwards, individual strands of national curriculum mathematics are mapped across the year groups, so teachers can see prior learning expectations and the foundations of their current curricula. In addition to this, staff identify on their weekly planning document prior learning in relation to the maths focus. This enables teachers to see what has been retained or any gaps in learning. The 'Ready-to-progress' criteria for all groups produced by the DFE summarises the most important knowledge and understanding within each year group and the important connections between the mathematical topics. Teachers will use the document to bring greater coherence to the National Curriculum by exposing core concepts and demonstrating progression from Y1 to Y6 thus closing the gaps in learning. Not all aspects of the Mathematics primary curriculum are included but only areas that have been identified as a priority (see Trust's progression in mathematics R-Y6)

## **Mathematics Vocabulary**

As a school teaching children how to extend their vocabulary is a core aim and in Mathematics lessons this is no different. The vocabulary that the children are expected to understand and use is progressive across the mathematics curriculum. This is identified in our whole school Mathematics vocabulary list and is planned for using our short-term, daily lesson plans.

## **Multiplication Tables Teaching**

The quick recall of multiplication and division facts (x tables) is an essential skill for children so that they can make progress in their mastery of the maths curriculum. The ability to instantly recall these facts enables children to free up mental space to answer more complex questions that involve the use of multiplication facts.

The progression in our teaching, practise and assessment of multiplication tables across school is as follows:

- Counting in steps from EYFS, to enable our children to be times-table ready!
- Reception: counting in 1s, begin to count in 2s, 10s, 5s
- Year 1: count in 1s, 2s, 5s and 10s
- Year 2: count in 3s, x1, x2, x5 and x10 table
- Year 3: x3, x4, x8 and x11table
- Year 4: x6, x7, x9, x12 table – in line with National Times Table Tests
- Year 5 All x and  $\div$  facts (up to  $12 \times 12$ )
- Y6 All x and  $\div$  facts (up to  $12 \times 12$ )

All pupils have access to 'Times Table Rock Stars' (TTRS) which is a carefully sequenced programme of daily times tables practice both in school and at home. This allows and engages children to take part in a fun and competitive way.

Multiplication facts are assessed through weekly tests, which are differentiated to the needs of each pupil: some pupils in one class maybe working on their x3 table while others in the same class could be working on their x4 table. Pupils progress through the tests when they have shown fluency in their current multiplication table.

As mentioned in the teaching section, each lesson starts with an element of counting and it is in this block of time that multiplication tables are taught.

## **Mathematics Homework**

The main focus of our maths homework is for the children to practise their multiplication table facts, which are then tested in a progressive manner across the year in class.

## **The Maths Environment**

As a school, we believe that pupils should have access to ongoing visual support within the classroom for their maths learning therefore we have developed a classroom checklist of non-negotiables to ensure that each classroom has a maths environment that supplements their maths learning. These expectations are a minimum and teachers are of course free to add to it as they see fit for their children. Our classrooms will have the following learning prompts to support learning:

- a number line
- a hundred square
- number words
- appropriate number facts (number bonds / times tables / division facts, etc.)
- key vocab for four operations



- key vocabulary for other areas of maths, for example, shapes names and properties, days of week, months of years
- working wall – showing models and methods
- a working clock
- a display showcasing pupils' work

### **Calculation Policy**

All teaching of calculation is in line with our agreed school calculation policy. This document breaks each of the four operations down into the methods – both mental and written - that are to be taught in each year group. The sequencing of the methods is progressive both between year groups and within year groups. It is also built around the idea of pupils moving from concrete to pictorial to abstract representations.

### **Number Formation**

All number formation teaching uses our agreed school number writing mantra. This mantra is used from Early Years up to Year 6 where necessary. The number writing mantra is displayed in all EYFS & KS1 classes.

### **Intervention**

Maths intervention is at the discretion and direction of the class teacher. Target groups selected for intervention will be fluid and be identified by class teachers based on their ongoing and summative assessments. Intervention will be carried out by Teachers or Teaching Assistants.

