

# RAVENSCOTE JUNIOR SCHOOL

## MATHEMATICS POLICY

2024 - 2025



Date of Approval		Date of Review	
March 2024		July 2025	
Signed	Mrs A Wells Headteacher	Signed	Emily Gibson Chair of Governors



## Ravenscote Junior School Mathematics Policy

### Aims of mathematics teaching:

- to present mathematics as a challenging, exciting, creative and relevant subject and in doing so, promote a positive and confident attitude towards the subject
- to show children how mathematics relates to real life and that it is a key skill that helps make sense of the world around us

### Children will be able to:

- apply mathematical skills to problems and explain their reasoning, using correct mathematical vocabulary
- appreciate and understand the relationships in both number and space in their everyday lives
- have a sense of the size of a number and where it fits into our number system
- know and use number facts, such as number bonds and multiplication tables
- use information they already know to do calculations mentally
- make sense of number problems, including non-routine problems, and recognise the operations needed to solve them
- judge whether their answers are reasonable and have strategies for checking them where necessary
- suggest suitable units for measuring and make sensible estimates of measurements
- explain and make predictions from the numbers in graphs, diagrams, charts and tables.

### Implementation of policy

At Ravenscote Junior School, pupils are taught mathematics daily using a mixture of whole-class and group teaching. Children are taught in homogenous maths groups using a range of resources, depending on what is best for the topic and the children. Outside of these maths lessons, in Year 3 and Year 4, an additional multiplication table lesson is taught.

We teach The National Curriculum and children are taught objectives in an order, which is set out in the school's medium term plans. This ensures continuity and progression in the teaching of mathematics, where learning is built on from previous years.

Children have the opportunity to develop their learning through the use of a range of resources such as number lines, digit cards, number squares, and small apparatus.

Every child in the school will be exposed to the same content, however, the maths groups allow the children to cover this at a different pace, allowing for support or further depth. Unlike how mathematics was taught a few years ago, where advanced learners are accelerated through new content, those



pupils who grasp concepts quickly are challenged with rich and sophisticated problems within the topic. Those children who are not sufficiently fluent are provided additional support to consolidate their understanding before moving on.

Throughout the school, we ensure that children are given the opportunity to experience a range of mathematical learning:

- the development of mental and oral strategies
- the development of mathematical vocabulary
- problem solving
- individual, group and whole class discussions and activities
- open and closed tasks
- exposure to a range of methods
- the opportunity to take part in a range of practical activities

## Planning

At Ravenscote, learning is based on sequencing from the medium-term plans, which follows the National Curriculum but allows for a mastery style of teaching mathematics, where reasoning and problem-solving run alongside fluency. The sequencing of the medium-term plans has been well thought through and enables teachers to make links between different concepts.

Mathematics topics are spread out across the year and are split into blocks to consolidate the children's understanding. These topics are then revisited each year and the children draw upon their prior learning and extend it.

Progression of calculations has been discussed and agreed as a staff (see Calculation Policy 2021-2023) and is shared with the parents.

## School and Class Organisation

### Lesson Structure

A typical 60-minute lesson will be structured as follows:

- Flashback 4 (at least twice a week), general warm up (the other lessons in that week)

Children begin the lesson with a Flashback 4, this allows them to recall their knowledge from the previous lesson, week, month and year. Flashback 4s will be carried out at least two times a week. To begin the other lessons, teachers will give children a warm up that will use skills from a previous year but are ones they need to use in the lesson.

- Introduction to the concept

With the support of the teacher, the children explore the concept and the methods that can be used to support them.

- Fluency practice

Independently or in pairs, children will be required to answer fluency questions that are using the skills discussed in the previous part of the lesson. There are a range of ways in which teachers might support children with the fluency practice so the activities that children carry out during this time are the choice of the teacher.



- Discussion of answers and misconceptions

This is a ballpark structure and lessons will vary throughout the week but this is the basis for all mathematics lessons across the school.

A plenary may occur at the end of a lesson to summarise the main points, assess understanding or to extend their thinking. Equally, mini-plenaries may occur throughout the lesson, sometimes as a whole class and sometimes in specific groups.

### **Equal Opportunities**

At Ravenscote, we endeavour to maintain an awareness of and to provide equal opportunities for all of our children in mathematics. Therefore, we consider cultural background, gender and special needs both in our teaching and in the materials we use with children.

'Fast graspers' are challenged with rich and sophisticated problems within the topic, so that they are exploring concepts in greater depth rather than moving onto more advanced concepts. These often may be planned in by the teacher or self-discovered by the students. This is modelled to the children by the class teacher.

If there are children, who have not fully embedded their learning during the lesson, they may receive a mathematics call-back from their class teacher or an LSA. These sessions are quick 15-minute sessions to support children with their learning from the previous lesson or to pre-teach them about a concept they are learning in the next lesson.

### **Pupils with special educational needs**

Teachers will aim to include all pupils fully in their daily mathematics lessons. All children benefit from the emphasis on oral and mental work and participating in, watching and listening to other children demonstrating and explaining their methods. However, a pupil whose difficulties are complex may need to be supported with an individualised programme in the main part of the lesson.

There are a minority of children who have their own personalised curriculum and they may be working through a different year group's learning. This is taught in the same way as the rest of the class so as to keep them included as much as possible. Learning Support Assistants (LSAs) are used to support targeted groups to ensure work is matched to the needs of individuals.

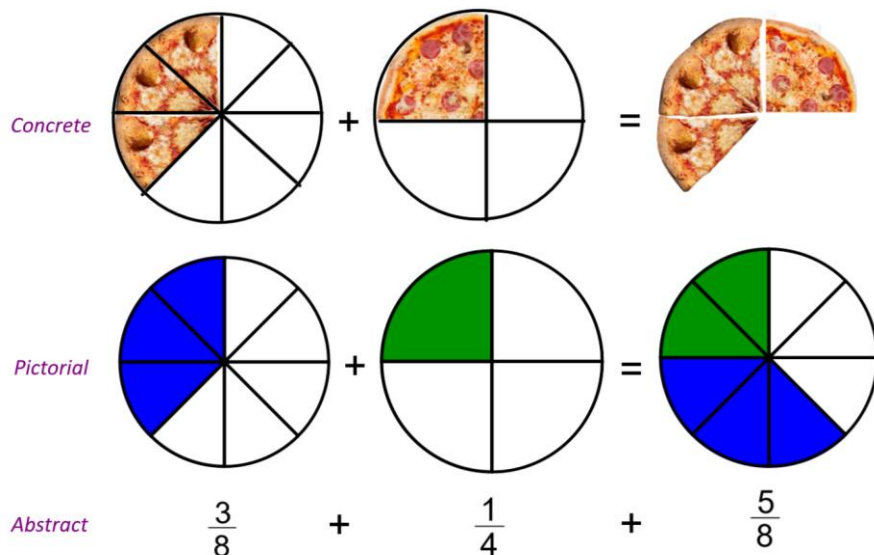
### **Resources**

At Ravenscote, we use the Concrete, Pictorial, Abstract (CPA) approach to allow children to use resources to demonstrate abstract problems. CPA is a highly effective approach for teaching mathematics, that develops a deep and sustainable understanding of the concepts. Often referred to as the concrete, representational, abstract framework, CPA was developed by American psychologist Jerome Bruner. It is an essential technique within the teaching of mathematics for mastery.

### **Background to the CPA framework**

Children (and adults!) can find mathematics difficult because it is abstract. The CPA approach builds on children's existing knowledge by introducing abstract concepts in a concrete and tangible way. It involves moving from concrete materials, to pictorial representations, to abstract symbols and problems. In some countries, The CPA framework is so established in mathematics teaching, that the country's Ministry of Education will not approve any teaching materials that do not use the approach.





### Concrete step of CPA

Concrete is the “physical” stage. During this stage, students use the object within the problem to model it. Unlike traditional mathematics teaching methods where teachers demonstrate how to solve a problem, the CPA approach brings concepts to life by allowing children to experience and handle physical (concrete) objects. With the CPA framework, every abstract concept is first introduced using physical, interactive concrete materials. For example, if a problem involves pieces of fruit being shared between people, children can first handle actual fruit and share it out. From there, they can progress to handling abstract counters or cubes which represent the fruit.

### Pictorial step of CPA

Pictorial is the “seeing” stage. Here, visual representations of concrete objects are used to model problems. This stage encourages children to make a mental connection between the physical object they just handled and the abstract pictures, diagrams or models that represent the objects from the problem.

Building or drawing a model makes it easier for children to grasp difficult abstract concepts (for example, fractions). Simply put, it helps students visualise abstract problems and make them more accessible.

### Abstract step of CPA

Abstract is the “symbolic” stage, where children use abstract symbols to model problems. Students will not be able to use this stage until they have a solid understanding of the concrete and pictorial stages of the problem. The abstract stage involves the teacher introducing abstract concepts (for example, mathematical symbols). Children are introduced to the concept at a symbolic level, using only numbers, notation, and mathematical symbols (for example, +, −, ×, ÷ to indicate addition, subtraction, multiplication or division).





## **Spiritual, moral, social and cultural development within the children**

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We often group children so that they can work together, and we give them a chance to discuss their ideas and results. The study of famous mathematicians around the world contributes to the cultural development of our children. Mathematics contributes to children's spiritual development. Children can find shapes and pattern in nature. They can see the order, logic and pattern that numbers offer.

## **Parental Involvement**

We recognise that parental involvement is an important factor in helping children achieve their best and we actively encourage parents to be involved with their children's learning through:

- Parents Evenings' twice a year, with the opportunity for parents to look at their children's work
- Use of TTRockstars at home
- Yearly overview detailing what children will be learning at each point of the year
- Calculation policy on the website

## **Homework**

The daily mathematics lessons will provide opportunities for children to practice and consolidate their skills and knowledge; to develop and extend their techniques and strategies and to prepare for their future learning. These will be extended through homework. Mathematics homework consists of three tasks: Engage, Enrich and Excel and these are differentiated with the first task being one all children will be expected to complete (more information can be found in the Homework Policy).

We are committed to helping our parents support their child with their mathematics homework, particularly with new strategies. The use of the Calculation Policy will help parents to understand how we progress the children through the four operations.

## **Links between mathematics and other subjects**

Mathematics contributes to many subjects within the primary curriculum and opportunities will be sought to draw mathematical experiences out of a wide range of activities. This will allow children to begin to use and apply mathematics in real contexts. Mathematics is seen in computing, science and many other subjects. For example, in art, children need to consider ratio and proportions when sketching a portrait.

## **Tracking and Assessment**

### Tracking of Pupil's Progress

Careful tracking of pupils' progress is vital. It allows teachers to plan appropriate levelled work, ensuring pupils are challenged or supported in areas they need to be. At Ravenscote this is achieved by:

- Termly pupil progress meetings to discuss concerns and identify steps to develop learning
- Continual teacher assessments throughout a lesson
- Termly assessments produced by Rising Stars



## Assessment

At Ravenscote we apply Assessment for Learning strategies and carry out assessment of learning through teacher, self and peer assessment.

## Assessment for Learning

At Ravenscote we recognise that Assessment for Learning (AfL) lies at the heart of promoting learning and in raising standards of attainment. We further recognise that effective AfL depends crucially on actually using the information gained.

The AfL procedures within our school encompass:

- making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal and the children will act on the feedback straight away
- using knowledge of pupils drawn from ongoing pupil tracking records, in order to adapt lessons
- adjusting planning and teaching, within units, in response to pupils' performance
- use of the 'assessment for learning' tasks within the unit to check learning against objectives at the end of each unit of work. If necessary future planning is adapted in response to assessment outcomes
- use of questioning within lessons to ensure any children that need further support or challenge are identified
- the children reflect on their own learning through the use of a range of strategies:
  - 'traffic lighting' their understanding for the lesson
  - reflecting on their learning by writing a self-reflection statement at the end of each lesson
  - considering how well they have used the skills learnt in the lesson

## Assessment of Learning

We undertake termly assessments to measure progress against the key objectives, and to help us plan the next unit of work.

We pass all information on to the next teacher at the end of the year, so that they can plan for the new school year. We make long-term assessments with the help of end-of-year tests and teacher assessments. We use a range of assessment tools in all year groups including: end of unit tests, observational activities, book work activities, pupil interviews and use of Rising Stars formal tests. Year 3 complete baseline assessments on arrival into Ravenscote.



## Monitoring and Evaluation

Monitoring and evaluation is carried out by the Mathematics Subject Leader and/or Mathematics Team. At Ravenscote Junior School, the subject leader supports colleagues in their teaching in a number of ways:

- review of planning and then provision of feedback to teams
- classroom observation and feedback
- reviewing children's work
- discussions with the children about their learning
- analysis of test data and papers (SATs, Rising Stars) – by Headteacher, Subject Leader and Mathematics Team
- monitoring of assessment and teacher assessments (by Head Teacher and Mathematics Subject Leader)
- a staff meeting each term will be devoted to discussion of the teaching and learning of mathematics, within the subject team

## Expectation of Mathematics Team and Members of Staff

Each member of staff is responsible for:

- Planning the lesson content to fit the ability level of the class and ensuring it covers the learning objective. As well keeping in mind the children's prior learning and if they are secure in the knowledge they have.
- Evaluating the effectiveness of their planning and recording whether pupils are emerging, developing, secure or exceeding in relation to the learning objective.
- Providing feedback to the individual about their understanding of the work. Using this to support 'call-back' or 'pre-teach' sessions. These may take the form of focus groups at the beginning of the lesson, focus groups during the independent task, groups during assembly time or LSAs leading a group.

Management of Mathematics - Role and responsibilities of the mathematics subject leader:

- teach outstanding demonstration lessons and therefore lead by example
- ensure scheme of work is well sequenced and contains the key knowledge, skills and vocabulary the children need to know in order to be fluent in mathematics
- ensure teachers are familiar with the scheme of work and support them with planning lessons, if needed
- lead staff meetings and LSA training





- work co-operatively with the Inclusion AHT to support monitoring of standards in mathematics throughout the school
- identify strengths and areas for improvement and to lead and drive improvements within the school
- keep up to date with new initiatives and train staff on these
- observe colleagues regularly with a view to identifying the support they need
- keep the governing body informed about the progress of mathematics

