Maths Policy
October 2022

Review: Every Two Years

Date of Next Review: February 2024

Coordinator	Nominated Governor		
Lee McCormack	Craig Smith		
Headteacher		**Date**	
Chair of Governing Body		**Date**	

Mathematical skills are fundamental for children to engage competently with the modern world in which they live. Our teachers will nurture and model positive attitudes towards the subject so as to give the children resilience and the best possible chance of becoming capable, enthusiastic mathematicians.

Our aims for our Parkwood pupils are as follows:

- **To become fluent:** develop a strong understanding of place value and the relationship between the four operations so that children can be efficient and flexible with the strategies they use to obtain accurate answers.

- **To be able to reason:** apply logic and critical thinking to decide on the best strategy to reach a solution.

- **To be able to solve problems:** finding a way to apply knowledge and skills you have to answer unfamiliar types of problems.

At Parkwood Primary we will take the following steps to develop fluent mathematicians who can reason and solve problems:
- Develop mathematical understanding through systematic, direct teaching of appropriate learning objectives.
- Teach using correct mathematical vocabulary (number/integer)
- Develop quick recall of the basic facts (TTRS/NumBots)
- Intervene appropriately where children are lacking in basic recall (precision teaching)
- Develop positive attitudes to Maths as an interesting and attractive subject in which all children gain personal success and pleasure.
- Encourage the effective use of Maths as a tool in a wide range of subjects in school and, subsequently, in adult life.

Approach to Teaching:

At Parkwood Primary School, our principal aim is to develop children's knowledge, skills and understanding of mathematics. Hierbert (1999) states that children who engage in a lot of practice without understanding what they are doing often forget, or remember incorrectly, those procedures. Further, there is growing evidence that once students have memorised and practised procedures without understanding, they have difficulty learning later to bring meaning to their work. Therefore, at Parkwood, using a concrete, pictorial and abstract approach to teaching mathematics is essential and non-negotiable.

The Concrete Pictorial Abstract (CPA) approach is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics. This will give children he best chance of understanding what they are doing so that they can make links with this learning in the future.

Pupils are introduced to a new mathematical concept through the use of **concrete** resources (e.g. tens frames, dienes, fraction pieces etc). When they are comfortable solving problems with physical aids, they

are given problems with pictures, usually **pictorial representations** of the concrete objects they were using.

Then they are asked to calculate where they only have the **abstract** i.e. numbers or other symbols. Building these steps across a lesson can help pupils better understand the relationship between numbers and the real world, and therefore helps secure their understanding of the mathematical concept they are learning.

Planning:
As a school, we use White Rose Maths as a foundation for Maths planning. It sets out our long-term plan for Year 1 to Year 6. It **should not** be used as a lesson-by-lesson plan. It should be used as a general guide. It may be necessary to use a sequence of lessons to meet one learning objective fully. There is an expectation that all teachers will use the long-term and medium-term plans provided by White Rose Maths, alongside with National Curriculum, to plot out the weekly learning journey.

White Rose Long Term Plan

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Number — **Place value**			Number — **Addition and subtraction**		Number — **Multiplication and division A**			Number — **Fractions A**			
Spring term	Number — **Multiplication and division B**			Number — **Fractions B**		Number — **Decimals and percentages**			Measurement — **Perimeter and area**		**Statistics**	
Summer term	Geometry — **Shape**			Geometry — **Position and direction**		Number — **Decimals**			Number — **Negative numbers**	Measurement — **Converting units**		Measurement — **Volume**

White Rose Medium Term Plan

Premium resources

Flashback 4	
Step 1 Multiples	
Step 2 Common multiples	
Step 3 Factors	
Step 4 Common factors	
Step 5 Prime numbers	
Step 6 Square numbers	
Step 7 Cube numbers	
Step 8 Multiply by 10, 100 and 1,000	
Step 9 Divide by 10, 100 and 1,000	
Step 10 Multiples of 10, 100 and 1,000	
End of block assessment (version B)	

Weekly Learning Journey:

Year 5 Maths Planning 2022/23

Term 1 Week 5	
Year 5 Multiplication and Division A Autumn Term	
Monday	Can I identify what a factor of a number is and find all factors of a number?
Tuesday	Can I find all the factors of a two-digit number (varied fluency)
Wednesday	Can I find all the factors of a two-digit number (reasoning)
Thursday	Can I identify common factors? (varied fluency)
Friday	Can I identify common factors? (reasoning)

This journey needs to be made available for senior leaders to monitor. There is no expectation for teachers to produce a detailed written, weekly plan as we feel, as a school, this time would be better invested in considering the following question for each skill, or learning objective, to be taught: how can I teach this, using the CPA approach, so that all learners will understand? It is expected that all teachers will refer to the calculation policy when teaching calculations to the children.

FS will use the NCETM Number Sense programme to deliver daily maths. White Rose will be used to teach aspects of the curriculum not included within the Number Sense programme.

Teaching:

Lessons will follow a basic flow of learning (I do it, we do it, you do it):
- Teacher explains following the guidance given for explicit teaching
  - Teacher **does not stop and ask questions or check for understanding**. Children watch and listen *in silence*.
  - The reason for this is that **questions break up the clarity** of the **explanation,** diverting pupils' attention down side streams.

- **Questions** are very **important** at other **stages of teaching**, but not at that fragile point when new knowledge is being introduced.
- **Cluttering** up the **working memory** with distractions at this delicate stage must be **avoided at all costs**! So you should avoid asking children mid-explanation questions such as 'so what comes next?'.
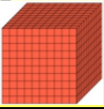- You want working memory focused on what you are teaching, and that alone.

- Teacher models (questions the teachers will pose and model to the children based on intelligent practice).
- Teacher checks for understanding
- Children engage in guided practice with scaffolding as needed
- Scaffolding and support are gradually withdrawn
- Children engage in independent practice until children become fluent
- Once children are fluent, they must be given the opportunity to reason before moving on.

Manipulatives:

There are a range of manipulatives to support the teaching of mathematics across the school. Each classroom has a selection of staple manipulatives which should part of everyday learning and be easily accessible to the children.

Larger or domain-specific equipment is kept in a central store.
All teachers across the school are expected to use the differentiated place value grids which includes the consistent visuals.

Thousands Th 1000	Hundreds H 100	Tens T 10	Ones O 1

Classrooms will also display matching place value displays in the main teaching area for use when teaching.

Thousands Th	Hundreds H	Tens T	Ones O
1,000 / 1000	100 / 100	10 / 10	1 / I
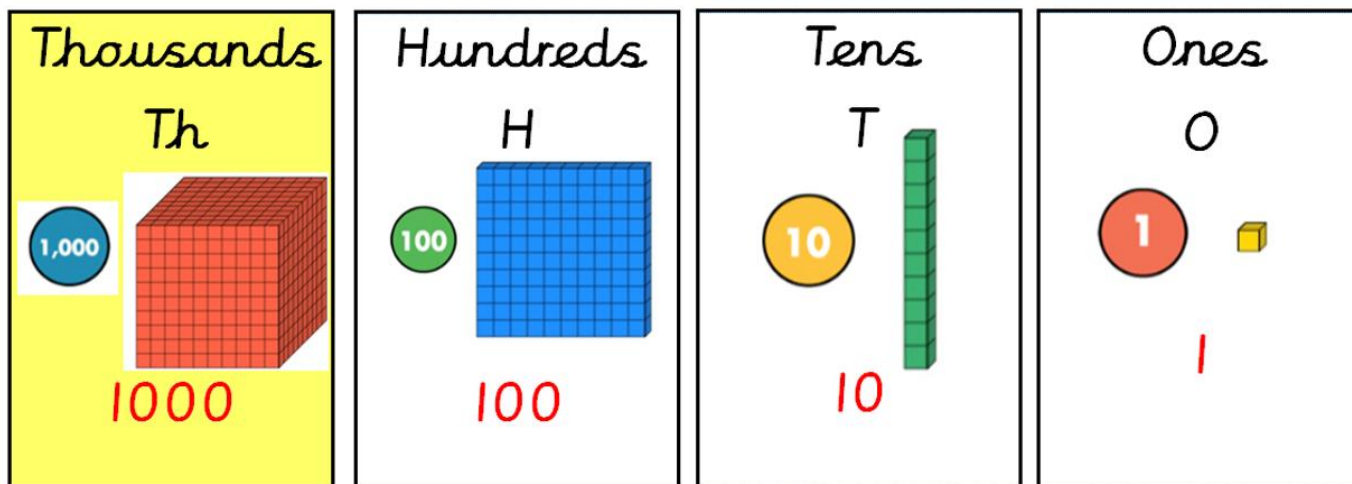
Frequency of Lessons:

Daily Maths lessons will be taught in every year group from FS to Year 6.

In addition to this, arithmetic lessons will be timetabled three times a week for twenty minutes from Year 3. The reason for arithmetic lessons is to build fluency in a range of calculations to reduce the cognitive load in Maths lessons that need application of calculations when reasoning.

Arithmetic lessons will follow a specific structure:
- Children should write the date and title on entering the room.
- They should then be provided with the questions.
- The number of questions given is flexible (ranging from a minimum of 4 to a maximum of 8). The questions must be varied and should not be all the same. The questions chosen should be based on the most recent PiXL gap analysis and progress in previous arithmetic lessons. Appropriate scaffolding can be added to support children – including the use of manipulatives on desks or worked examples.
- As the children work, circulate to mark the children's answers.
- Stop the children with enough time left to read the answers to the class so partners can mark answers. Model, using accurate mathematical vocabulary and concrete and/or pictorial representations, how to compete the questions the children found most challenging on flipchart paper and add to the working wall for future reference.

Year 1 and Year 2 will spend an additional ten minutes a day teaching the NCETM Number Sense programme. The programme is designed with the aim of children not being reliant on counting and being about to explain their thinking.

Homework:
FS and Year 1 will use NumBots to develop their fluency with addition and subtraction. This will form part of their weekly homework.

From Year 2 to Year 6, Times Tables Rock Stars will form part of their weekly homework to ensure they are fluent in the recall of their times tables. Three minutes a day should be the minimum expectation. Classrooms displays will be actively used.

In addition to NumBots or Times Tables Rock Stars, Year 1 to Year 6 will be set weekly homework using MyMaths which is accessible online.

Teaching Assistants:

Teaching assistants will be used to either helicopter in class or work with groups or individuals as directed by the teacher.

In the afternoons, teaching assistants will use precision teaching with children who have gaps in their learning with basic number skills e.g. number bonds, doubles, halves, times tables etc as we are aware that children who have instant recall of facts achieve more highly in Maths.

Assessment:

Teachers will use two forms of assessment:
- Formative assessment
- Summative assessment

Formative assessment is used on a daily basis by learners and by teachers. At Parkwood Primary School, we use Balance with the children as a way of identifying where they are in their learning at the start of a lesson and where they are at the end of the lesson so that the teacher can use this information to plan next steps in learning. Teachers will use a 'Balance Sheet' to give meaning and specific feedback and assist them in next steps in learning. Teachers shouldn't spend their time marking unless they are marking-in-the moment alongside the children.

Summative assessment will assess where learners are at a particular point in time. At Parkwood Primary School we use PiXL assessments across the school three times a year. Timings vary per year group. See example below:

Year 3

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Testing period: 10th October – 21st October	Make judgements from week 6	Testing period: 30th January – 10th February	Make judgements from week 5	Make judgements from week 5	Testing period: 26th June – 7th July
Writing assessment Autumn PiXL Tests (reading, SPaG and maths)	Writing assessment Book bands	Writing assessment Spring PiXL Tests (reading, SPaG and maths)	Writing assessment Book bands	Writing assessment	Writing assessment Summer PiXL Tests (reading, SPaG and maths) Book bands
Data uploaded to Insight by the end of Term 1	Data uploaded to Insight by the end of Term 2	Data uploaded to Insight by the end of Term 3	Data uploaded to Insight/PiXL by the end of Term 4	Data uploaded to Insight by the end of Term 5	Data uploaded to Insight/PiXL by 7th July

Pupil Progress Meetings:
Each year group will be given an allocated slot during the staff meeting times listed below:
Tuesday 13th September and Tuesday 20th September based on Summer data
Tuesday 15th November and Tuesday 22nd November based on Autumn data
Tuesday 7th March and Tuesday 14th March based on Spring data

Results are discussed in pupil progress meetings to identify children or specific areas of learning in Maths need targeting and how this will be approached. This information will also be used when reporting to parents.

It is crucial that teachers use the information gained from both forms of assessment.

Flexible Grouping and Whole Class Teaching:

We recognise that there are a wide range of differing mathematical abilities within classes. It will always be our preferred option to teach mixed ability classes as research suggests that mixed ability teaching benefits lower attaining pupils and does not negatively impact more able pupils. Also, the new curriculum states that children should be moving at broadly the same pace thus allowing slower learner more time to become fluent and give more able children the opportunity to be exposed to a range of contexts to which they can apply their skills as opposed to being accelerated through content. However, we will teach children in flexible groups should we feel the needs of the cohort require this approach to teaching to gain the most progress from the children.

Monitoring:

The maths lead will monitor maths through the use of frequent learning walks and will feed back directly to staff as soon as it is possible to do so.

Other senior leaders will monitor maths as part of the school monitoring schedule.