How We Teach Maths at

Wildmoor Heath School

September 2021

MATHEMATICS INTENTION

At Wildmoor Heath, we aim to deliver a curriculum that meets the needs of our children through our unique curriculum drivers, which are opportunities, Communication, Community, Creativity, Environment and Well-Being.

We aim for all our children to be confident, happy and resilient mathematicians who relish the challenge of maths. We want to create independent and reflective learners whose skills not only support them in maths but also helps across the whole curriculum and in later life.

In addition to this, our aims align with that of the national curriculum, which are to develop learners who: are fluent in the fundamentals of maths; are able to reason mathematically and are able to apply their maths to a range of problem solving scenarios.

WILDMOOR HEATH'S APPROACH TO TEACHING MATHEMATICS (Implementation)

WHITE ROSE SCHEME

At Wildmoor Heath we follow the White Rose maths schemes of work which map out all the units of work for the whole year (Appendix 1). Within each unit the small steps across a unit of work are mapped out so that the children can master each conceptual step before moving on to the next. All resources and materials can be found at the following link https://whiterosemaths.com/.

LESSON PLANNING AND RESOURCING

As mentioned above, each small step is mapped out in the White Rose schemes of work. This includes a context for the lesson and examples of fluency, reasoning and problem-solving tasks. Teachers at WMH are expected to plan their maths learning journeys using these small steps. Generally, a maths lesson will consider the following parts. This is based on the EEF Improving Mathematics in Key stage 2 report.

1) Maths recall – this is a low stakes test/ activity designed to rehearse key skills from the past. (see below for more information).
2) Recall the pre-requisites of for new learning and ensure they are secure
3) Predict the misconceptions and address these in the teaching input. This allows errors to be addressee before they happen.
4) Teacher modelled examples
5) Independent/ collaborative activity – carefully chosen examples to develop understanding
6) Use manipulatives to support understanding. These should scaffold learning and be temporary rather than a safety net.

At the end of each lesson teachers must assess how each child has progressed during the lesson and plan the following lesson accordingly. We have no set way to plan lessons however it is recommended that teachers plan the main learning that they want to take place over a week and then find and create strong resources such as IWB presentation. We have subscribed to some high-quality resources that support the aims of the curriculum including number bots and Deepening Understanding.

In addition to this, we also use the most recent Government guidance to support the teaching of the key objectives that allow our children to be ready to move on to their next learning stage.

This guidance can be found at https://www.gov.uk/government/publications/teaching-mathematics-in-primary-schools.

As part of the lessons at WMH we apply a Concrete, pictorial, abstract (CPA) approach. This means that children should use concrete resources such as diennes and place value counters first, then represent this pictorially before moving to abstract recording of maths. This process helps the children develop a strong understanding of the concept being taught. For more information on this please follow the link https://thirdspacelearning.com/blog/concrete-pictorial-abstract-maths-cpa/

MATHS RECALL STARTERS

Learning can be defined as moving information from the short-term memory to the long term memory. For this to happen, science has shown that repetition is key. As a result, at the beginning of every maths lesson, we complete a maths recall starter. This starter gives children the opportunity to recall and rehearse concepts and skills that have already been taught in the past. The four questions that the children complete should be purposeful and linked to the needs of the children. Therefore, the following are used to inform which four questions are used.

1) From QLAs on assessments – what have the children got wrong on a test?
2) Access prior learning – What do you need the children to recall to access the learning the following week?
3) From past teaching, what area of maths did the children find most challenging?
4) Examples linked to the key objectives outlined in the government guidance

An example of a maths recall task can be found in appendix 2

For children who require specific maths intervention, this part of the maths lesson is used to do it e.g number bonds instead of completing whole class recall.

NUMBER FACT MASTERY SESSIONS
EYFS and KS1
Research has shown that pupils who are not able to recall number facts easily struggle with other concepts, such as calculation, later on in their school journey. Many children benefit from a systematic approach to learning number facts so this is something we build in to our Maths curriculum.

We are part of the NCETM's Teaching For Mastery program which provides all lessons and resources to teach daily, 15 minute, maths mastery sessions. These sessions are provided for Year R, Year 1 and Year 2 and builds a strong foundation of number. https://www.ncetm.org.uk/news/mastering-number-a-new-programme-for-early-primary-pupils/

KEY STAGE 2
The expectation for primary school children is that all times tables up to 12 x 12 will be learnt by the end of year 4. Research suggests that speed and memory activities are not the best way for children to become fluent in their understanding of multiplication facts and that it is more important to develop "number sense" rather than memory. Therefore, it is best for children to learn times tables using a balanced approach teaching and rehearsing them both conceptually and through repetition and low stakes testing.

To ensure that the times tables are completely mastered we follow the Third Space Learning document for progression which sets out the key objectives to be focused on each half term.

Each day, the teacher leads a times table session. These sessions include a range of the following activities.

1) Recognising multiplication facts conceptually in a range of forms e.g arrays, groups of objects
2) Repeated addition
3) Multiple counting – this involves number lines, counting sticks, chanting (Rolling numbers http://mrreddy.com/blog/2016/09/teaching-your-class-to-roll-numbers/). This progresses to missing multiples out and counting backwards.
4) Low stakes testing using Times Table Rockstars.

At home, so that the rehearsal of facts is continued, children use Times Table Rockstars (TTR), an online platform, which allows the children to practise their tables and their recall speeds are recorded. Children are then given instant feedback and facts that are less fluent are identified.

CALCULATION POLICY

When teaching calculation methods, we follow the school calculation policy which has been designed to match the methods used in White Rose.

UNIT ASSESSMENTS

Following the completion of each maths unit, White Rose have created a short assessment which aims to test the children's understanding of what has been taught. Because we want to test whether children have retained this knowledge, these assessments are completed by the children two weeks after the teaching.

These assessments are used to identify areas which have not been retained or not fully understood. These concepts can then be revisited again in recall sessions and later on in the year.

The outcomes of these assessments can also be used to inform teachers as to whether the children are working at ARE or not.

FEEDBACK

In line with our feedback policy, teacher do in the moment feedback and marking as this gives the teacher the opportunity to highlight and address misconceptions straight away. If this form of feedback cannot be done then teachers look at books after the lesson, complete a feedback sheet and assess progress so that it informs the subsequent lesson (See feedback policy).

MONITORING IMPACT

Once a term, Teachers meet with senior leaders to discuss how the children are progressing in maths. Teachers are expected to say whether children are working at WTS/EXS/GDS level based on what they have taught already. This information is generated from teacher assessment, end of unit assessments and termly assessments.

The data that is given to the senior leaders is then compared to their previous statutory assessment point and their progress to date evaluated.

From PPM sessions, children who are making less progress from their start points are 'targeted' by the teacher and discussed again at the following PPM. If necessary the SENCO can become involved at this stage.

As well as this, the maths subject leader and members of the SLT complete termly lesson visits and book looks.

Appendix 1 – year group overviews

Year 1 – Yearly Overview

	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	Number: Place Value (within 10)				Number: Addition and Subtraction (within 10)				Geometry: Shape	Number: Place Value (within 20)		Consolidation
Spring	Number: Addition and Subtraction (within 20)				Number: Place Value (within 50) (Multiples of 2, 5 and 10 to be included)			Measurement: Length and Height		Measurement: Weight and Volume		Consolidation
Summer	Number: Multiplication and Division (Reinforce multiples of 2, 5 and 10 to be included)			Number: Fractions		Geometry: position and direction	Number: Place Value (within 100)		Measurement: money	Time		Consolidation

Year 2 – Yearly Overview

	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	Number: Place value			Number: Addition and Subtraction					Measurement: Money		Number: Multiplication and Division	
Spring	Number: Multiplication and Division		Statistics		Geometry: Properties of Shape			Number: Fractions			Measurement: length and height	Consolidation
Summer	Position and direction			Problem solving and efficient methods		Measurement: Time		Measurement: Mass, Capacity and Temperature			Investigations	

Year 3 – Yearly Overview

	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	Number – Place Value			Number – Addition and Subtraction					Number – Multiplication and Division			Consolidation
Spring	Number - Multiplication and Division			Measurement: Money	Statistics		Measurement: length and perimeter			Number - Fractions		Consolidation
Summer	Number – fractions			Measurement: Time			Geometry – Properties of Shapes		Measurement: Mass and Capacity			Consolidation

Year 4 – Yearly Overview

	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	Number – Place Value				Number- Addition and Subtraction			Measurement - Length and Perimeter	Number- Multiplication and Division			Consolidation
Spring	Number- Multiplication and Division			Measurement - Area	Fractions				Decimals			Consolidation
Summer	Decimals		Measurement- Money		Time	Statistics		Geometry- Properties of Shape			Geometry- Position and Direction	Consolidation

Year 5 – Yearly Overview

	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	Number – Place Value			Number – Addition and Subtraction		Statistics		Number – Multiplication and Division		Perimeter and Area		Consolidation
Spring	Number – Multiplication and Division			Number – Fractions						Number – Decimals & Percentages		Consolidation
Summer	Number – Decimals			Geometry- Properties of Shapes		Geometry- Position and Direction	Measurement- Converting Units		Measures Volume			Consolidation

Year 6 – Yearly Overview

	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	Number- Place Value		Number- Addition, Subtraction, Multiplication and Division				Fractions				Geometry- Position and Direction	Consolidation
Spring	Number- Decimals		Number- Percentages		Number- Algebra		Measurement Converting units	Measurement Perimeter, Area and Volume		Number- Ratio		Consolidation
Summer	Geometry- Properties of Shapes		Problem solving		Statistics		Investigations					Consolidation

Appendix 2 – Recall task example

$6^2 + (9-5) \times 3$	$\dfrac{2}{7}$ of 56
$7 \overline{)6729}$	$\dfrac{3}{4} \times \dfrac{6}{7}$