



## The Teaching of Mathematics at Ravensdale - Intent

At Ravensdale, we want our children to adopt a positive, fearless approach to learning Mathematics. We believe in promoting a sustained and deepening understanding by employing a variety of mastery strategies, with teaching for conceptual understanding at the heart of everything we do. Our children will develop their mathematical learning through a Mastery approach that involves the use of concrete manipulatives, which support pictorial representations that develop secure, abstract thinking. Underpinning this pedagogy is a belief that all children can achieve in Mathematics. This helps deliver the three aims of the National Curriculum: fluency, problem solving and reasoning. Our children will be motivated by the subject and excited to learn more through a range of engaging and inspiring learning opportunities. This will mean that upon leaving, our children will have a deep understanding which empowers them with the understanding of a confident mathematician.

## The Teaching of Mathematics at Ravensdale - Implementation

### Curriculum and Planning

Teachers follow and plan from the White Rose Maths 3.0 scheme of learning and topics are to be taught in consolidated blocks. Lessons address the 'Small Steps' of learning which build on each other so the learning journey within that year group is complete. Within each block, teachers are expected to use their knowledge of the children to adapt the White Rose Maths during the planning stage, adding extra time, where necessary, for topics that need most attention and adjusting other learning accordingly.

### Lessons

Weekly slides provide the detail of each lesson, including a separate cover slide for each 'Small Step' which outlines the key information needed (more details on the next page):

- how the teacher is expected to model the concept
- the pertinent questions to ask the children to encourage deeper level thinking
- methods to be used (following the CPA approach) and resources needed
- relevant mathematical vocabulary expected to be used by all adults and children for that small step

Slides follow the following format:



### Teaching for Mastery:

- All pupils are encouraged by the belief that by working hard at mathematics, they can succeed.
- Children are taught in mixed-attainment groupings (where possible and appropriate to the children's needs and level of understanding)
- There is an expectation that teachers use a variety of representations (Concrete-Pictorial-Abstract) and resources to ensure mathematical concepts are accessible.
- Adaptations are made at the level of task and not child – i.e. all pupils will work on the same concept and access the same tasks, but some children will be expected to develop a deeper understanding while other children will need more targeted support and use additional resources to scaffold their learning.
- Targeted CPD, primarily through staff meetings, ensure staff are well-supported and can support all children effectively to make good progress.

## The Impact of Learning Mathematics at Ravensdale

### Year Group Coverage

Year 3	Year 4	Year 5	Year 6
Place Value	Place Value	Place Value	Place Value
Addition and Subtraction	Addition and Subtraction	Addition and Subtraction	Addition and Subtraction
Multiplication and Division	Multiplication and Division	Multiplication and Division	Multiplication and Division
Money	Area	Area	Statistics
Statistics	Statistics	Statistics	Perimeter, Area and Volume
Length and Perimeter	Length and Perimeter	Length and Perimeter	Fractions
Fractions	Fractions	Fractions	Decimals and Percentages
Time	Decimals	Decimals and Percentages	Converting units of Measure
Properties of Shape	Money	Converting units of Measure	Converting units of Measure
Mass and Capacity	Time	Time	Time
	Properties of Shape	Properties of Shape	Properties of Shape
	Position and Direction	Position and Direction	Position and Direction
		Volume	Ratio
			Algebra

As a result of the mathematics curriculum our children receive, it should:

- Instill a confident approach to solving mathematical problems.
- Improve rapid recall of key facts and methods of calculation.
- Develop mathematical enquiry and knowledge application through problem solving skills.
- Deepen mathematical knowledge and understanding.
- Support articulation of ideas using appropriate mathematical vocabulary.
- Advance mathematical understanding in the wider world.

Teachers assess the children's progress against the intended learning outcomes for each objective. Children are assessed at working towards (WT), reaching the expected standard (EX) or achieving greater depth (GD) for their year group. In Year 4, children complete a Multiplication Tables Check testing their knowledge of times tables up to 12 x 12. In Year 6, their maths is formally assessed through SATS. Parents are informed of this outcome in the annual summer report.

## Guide to maths lessons at Ravensdale Junior School

The White Rose Scheme of Learning Version 3.0 (2023/2024) is the basis of our maths curriculum but these resources should not be used exclusively for every lesson. Lesson content and tasks should be drawn from a wider range of resources including: NCETM Primary PD materials, NRich, Classroom Secrets, Testbase, MyMaths, Target Your Maths and CGP textbooks. This list is not exhaustive.

Teachers have the autonomy to combine Small Steps or further break down these Small Steps into smaller chunks to cater for the needs of the year group. Therefore, one Small Step may need several lessons of teaching to master.

Where appropriate, any new slides made from September 2023 could involve downloading the Small Step slides from White Rose and edited to match our current proforma (add labels for each section – Review, Assess, Model, Guided etc... - as well as challenge question and helping hands prompts). The Skills Check and Review can be added to the start and the Independent Work and Deeper Thinking to the end.

On the Review, Assess and Guided slides, there should be a challenge ★ question linking back to the main task, extending their mathematical thinking and making connections. There should also be a ‘helping hand’  as a prompt for a piece of concrete apparatus that could be used, a pictorial representation or a known fact.

### Why this? Why now?

Although the basic structure of a lesson should remain the same, the amount of time spent in each section should be fluid based on the needs of the children, as show with through the diagram on the right.

On the next page is a guide to how Maths is taught at Ravensdale Junior School. This has been created in conjunction with the NCETM East Midlands Maths Hub and the Maths Associate Head at Transform Trust. For full details of the rationale behind each stage, please read the Transform Trust T&L Applied Mathematics Booklet.

Review	Assess	Model	Guide	Independent
Review	Assess: Children understand quickly	Less time can be spent modelling	Guide	More time can be spent on independent work hopefully moving toward greater depth.
Review	Assess: Children don't understand	More time can be spent modelling		More time guiding the children Less time spent on independent work

## A typical mathematics lesson at Ravensdale Junior School:

### Lesson Plan

For any new lessons and units, use the White Rose Scheme of Learning pdf and add 'sticky notes' to include additional commentary. This needs to be given to all staff teaching the topic. This may include what apparatus is needed, what method to focus on and what vocabulary should be used.



### Skills Check

Of the 5 sessions per week, 3 of these focus on answering 10 arithmetic questions (Tough Ten) in 10 minutes or less; 1 session has a recap quadrant with 4 questions linked to previous topics; and 1 session has a focus of the Year group's choosing. This could be multiplication focused, especially in Year 3 or 4 or this might focus on children selecting the most efficient methods for adding and subtracting e.g. +/- 99 quickly

Today's Tough Ten		Skills Check		Last Half Term																																	
1	$144 \div 12 =$	Last Topic		Last Half Term																																	
2	$2400 \div 10 =$	Compare the responses:		$6000 \times 10 =$ $3.75 \times 100 = 0.375$ $1.8 \times 1000 = 1.800$																																	
3	$2 \times 8 = 5 \times$	20, 10, 10																																			
4	$891 - 347 =$	10, 7, 4																																			
5	$2345 \times 1000 =$	Last Term		Autumn Term																																	
6	$-3 - 3 \times 4 =$	<table border="1"> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> </table>		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	<table border="1"> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> <tr><td>100</td><td>100</td><td>100</td><td>100</td></tr> </table>		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
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9	$62 \div 67.71 =$																																				
10	$= 4000 - 1872$																																				



### Review

There should be 4 or 5 questions focusing on a skill that they will need for the rest of the lesson.

Example 1: Y5 Objective - multiply decimals by 10, 100 and 1000. Therefore, children need to review the skill of multiplying integers by 10, 100 and 1000 first, with access to physical place value charts and counters for all.

Example 2: Y3 objective - recognise and sort 3D shapes. Therefore, the teacher could put two different 3D shapes out on each group table and ask, what is the same? What is different? This would help to review vocabulary and properties of the shapes.



### Assess

This is an opportunity for teachers to assess the pupils' prior knowledge. The task should require some thought, should make links to previous learning and should just be within the children's ability. However, it may be that they are using an inefficient method or have forgotten previous learning. The feedback from this will support the teacher's judgment in the direction of the lesson. Most children showing a secure understanding indicates a short 'model' from the teacher.

Avoid these common pitfalls when choosing the task:

- It is always a word problem
- There is never a practical aspect
- It is always recorded
- It is simply an arithmetic problem
- There is no differentiation



### Deeper Thinking

This is an open-ended investigation task linked to the Small Step that utilises all of their learning from the lesson.

They will often have multiple answers and a chance to collaborate with other learners in the class.

NRich and Classroom Secrets Discussion Problems are two great resources to source these from.



### Independent Work

There are 3 stages of work: green, blue and purple. There is a main task and a challenge question underneath. Children are to self-mark after each stage. They need to go back and reattempt any question that was wrong.

Nearly all children should be attempting work that is of age-related expectation. It is the job of the teacher to provide adequate adaptations to allow children to access this.

Green should be a pure fluency task which use concrete/ pictorial representations to firmly embed the knowledge and skills taught. The rest of the children's independent work should also have variation. Children should be exposed to different contexts; different representations and examples of what something isn't. Apparatus should be able to be accessed by all. **Children should be working for at least 25 minutes.**



### Guided

This is a similar question to the assessment task and can be solved using the modelling that the teacher has just done. It is a final checking stage before the children start their independent work.

If the children have understood the concept they can move through this stage quickly and on to their independent work. If they have misconceptions or misunderstandings then the teacher can model further during this guided phase of the lesson.

Tip: Use Think, Pair, Share from the Walkthrus book to have two similar style questions on the slide with Person A and Person B completing one each and then explaining their method and reasoning to their partner.



### Model

Examples to work through could be put on the slides to annotate BUT it could also be a blank slide with a title. Then an instruction can be written for the teacher to use the visualizer and do their own examples. Where possible, this must include concrete apparatus or pictorial representations.

There should be a maximum of three modelled examples but most lessons, only one or two will be needed.

Stem sentences must be used during this section by the teacher and children. The children must be given opportunity to practice using these as a discursive element - improving understanding and maintaining engagement.