

# Maths Intent, Implementation and Impact

## Statement of Intent

Maths is important in everyday life, giving pupils the opportunity to make sense of the world around them. At Milford Infants' School, the intent of our maths curriculum is to ensure all children enjoy learning maths and become **enthusiastic and confident mathematicians** where they can **make links with maths to practical and real-life situations**. Through **Teaching for Mastery in maths**, using the **Five Big Ideas** to **plan, teach and assess**, children can **develop their skills, knowledge and understanding**.

We aim to secure firm foundations in the development of good number sense for all children from preschool through to Reception, Year 1 and Year 2, leaving KS1 with fluency in calculation and a confidence and flexibility with number.

- Pupils will develop a good number sense.
- Pupils will build firm mathematical foundations.
- Pupils will develop fluency in calculation and number sense
- Pupils will be confident in selecting and understanding how to use a wide range of manipulatives to support their learning.
- Pupils will become confident in explaining their mathematical thinking using stem senses teaching them the key language needed for effective mathematical talk.

Through the structure of how lessons are taught in each year group, children have **opportunities to both consolidate and extend their learning as appropriate**. This ensures any misconceptions are addressed as well as providing opportunities for Greater Depth children to explore their learning in a more in-depth way, mastering the knowledge and skills necessary for all children to make progress.

## Implementation

In Preschool, Reception, Year 1 and Year 2 **Power Maths** and **White Rose yearly overviews** are followed to ensure coverage, consistency and progression across year groups.

From this the Autumn, Spring and Summer medium term plans are followed to ensure coverage, coherence and progression of teaching through the blocks/units of work.

| WIM - Year 1 - Scheme of Learning 2.0 |                                                                               |        |        |                                                                           |        |                    |                                 |        |                                 |         |               |
|---------------------------------------|-------------------------------------------------------------------------------|--------|--------|---------------------------------------------------------------------------|--------|--------------------|---------------------------------|--------|---------------------------------|---------|---------------|
| 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       |
| Autumn                                | Number: Place Value (within 10)                                               |        |        | Number: Addition and Subtraction (within 10)                              |        |                    | Geometry: Shape                 |        | Number: Place Value (within 10) |         | Consolidation |
| Spring                                | Number: Addition and Subtraction (within 10)                                  |        |        | Number: Place Value (within 10) (Multiples of 2, 5 and 10 to be included) |        |                    | Measurement: Length and Height  |        | Measurement: Weight and Volume  |         | Consolidation |
| Summer                                | Number: Multiplication and Division (Multiples of 2, 5 and 10 to be included) |        |        | Number: Fractions                                                         |        | Geometry: Position | Number: Place Value (within 10) |        | Measurement: Money              |         | Time          |
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resources. This ensures consistency of teaching and learning both within each year group and across the year groups.

### **Developing fluency:**

We identify in our intent that we aim to ensure children have a 'good number sense' and are fluent in the fundamentals of maths building 'firm mathematical foundations...' alongside '...fluency in calculation and a confidence and flexibility with number'. We recognise the importance of this in relation to cognitive overload when working with new concepts. To ensure new concepts are understood, it is vital that children have these fundamentals readily available in their working memory.

### **Number Sense:**

To support our aim of developing fluent mathematicians, children receive Number Sense sessions in addition to their weekly maths lessons at least 2 – 3 times a week. Depending on what is being taught and how it works best in each class, these sessions are delivered either prior to the main maths lesson or at a separate time. We follow the NCETM Mastering Number using a range of strategies and stem sentences to become fluent in addition and subtraction facts, using subitising as a basis for this. A key principle of the programme is 'no more counting' to solve these facts.

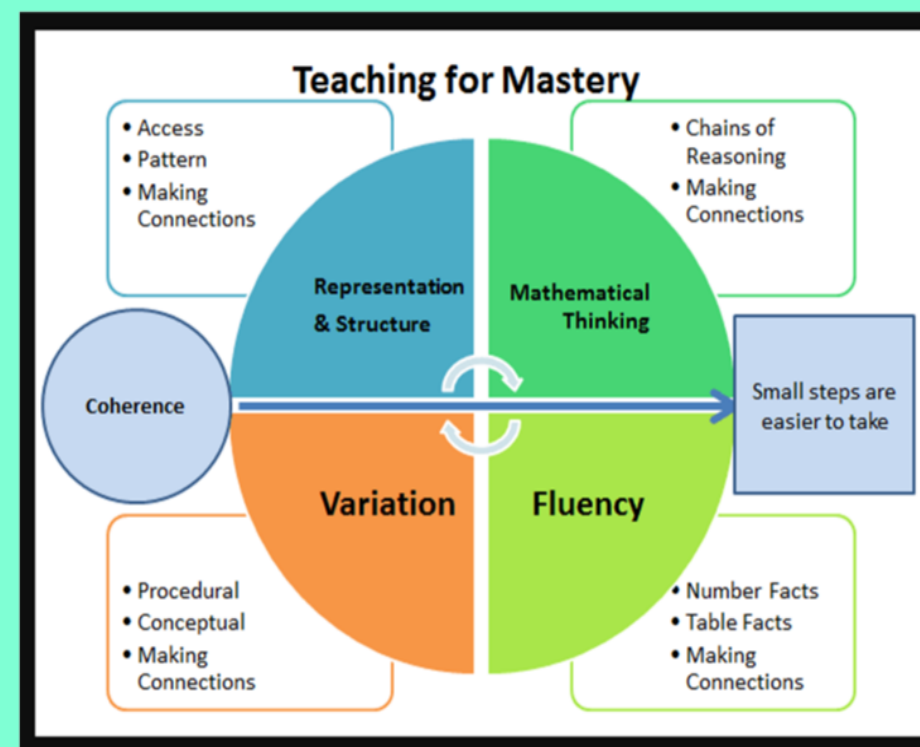
### **Lesson Structure:**

The **Five Key areas of Teaching for Mastery** are used to plan **Adult led** and **Adult directed independent** activities according to the needs of the children. Activities are differentiated where necessary to consolidate or challenge children's learning. For children who are working below age-related expectations, specific steps are planned for using their individual targets for them to make progress.

- 1) Lessons often ***begin with mental oral starters***. These can be linked to the upcoming lesson or can be a separate focus; however, these can also be separate stand-alone sessions at a different point in the day (as the number sense sessions).
- 2) Alternatively, lessons may begin with consolidating on previous learning, addressing misconceptions or recapping on arithmetic skills.
- 3) ***'Ping-pong' style teacher input follows*** with lots of teacher explanation and questioning. Pupils demonstrate their understanding using whiteboards/show me boards, recorded work and practical work. Children become confident using a range of manipulatives to support their learning. Teacher input and explanation is a hugely important part of the lesson and appropriate time is given to this to ensure understanding. The input will also include links to previous learning and a recap on prerequisites which will be needed in the short term-memory to access the lesson. Pre-empting misconceptions and planning for these are a vital part of this stage of the lesson.
- 4) **Lessons** continue with a ***ping pong style approach*** at tables in Year 2. In Reception and Year 1 children move on to a ***carousel of learning***. This enables teachers to spend time with groups of children to consolidate, practise and apply concepts and skills, extending and challenging those who are able and consolidating and supporting where necessary to ensure everyone is understanding and moving together through the small steps. In the ***Pre School the core teaching/learning is delivered through smaller groups based on ability*** again using appropriate manipulatives and stem sentences. These key skills/concepts are then continued through both adult-led/adult directed independent activities as part of the learning environment allowing for consolidation or deepening as appropriate.

- 5) The '**White Rose approach**' means that **various representations and manipulatives are consistent across the school** and progress through from the Pre School to Year 2 e.g. fives frames, tens frames, Numicon, part-part whole models and bar models. This consistency helps to support and deepen understanding. The use of **stem sentences** also ensure consistency in language used to effectively support the children in their mathematical talk and explanations.
- 6) **Concrete, Pictorial, Abstract approach is embedded across the school** and appropriate resources are routinely used in all year groups where necessary. Pupils who may find maths more challenging are routinely able to access concrete or visual resources to support them, but all pupils can use these resources to deepen their understanding
- 7) We are developing a '**mastery**' **approach** to teaching maths which in its most simplistic term means that 'children progress through the lesson at the same pace and access the same activities'.
- 8) When adapting this curriculum to meet the needs of all children especially those with SEND we make reasonable adjustments, using practical, concrete, realistic and stimulating resources to simplify the concepts that are being taught. With support the pupils will overlearn and recap the 'sticky knowledge' and key vocabulary.

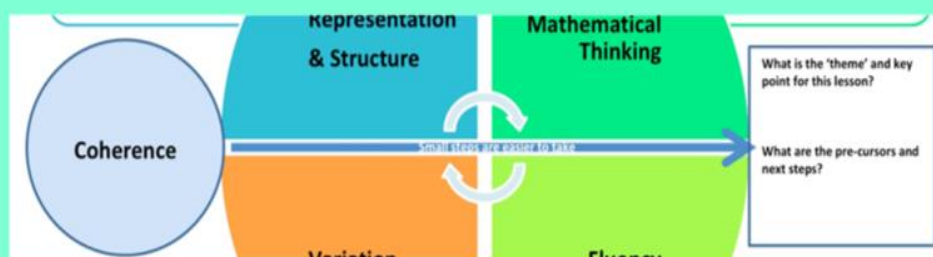
## What is Teaching for Mastery in maths?



## The 5 big ideas in Teaching for Mastery

A true understanding of these ideas will probably only really be achieved by exploring how they are reflected in the ongoing day to day teaching of maths

## Coherence



| Milford Infants' School Numeracy Plan |                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Teaching Sequence – Counting and writing numbers to 20                                                                                                                             |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lesson                                | Objectives                                                                                                                   | Warm up:<br>Fluency:                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                    |
|                                       |                                                                                                                              | Counting in multiples of 10 using the Espresso hundred square. Recap all addition facts for 10 and corresponding subtraction facts – using coat hanger/pegs to show inverse                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                    |
|                                       |                                                                                                                              | Espresso dart board – no. bonds to 10 – begin to relate to no. bonds to 20.                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                    |
| 1 & 2                                 | Small steps: Count using tens and ones<br>Count one and one more<br>Compare numbers of objects<br>Compare and order numbers. | <b>Teacher</b><br>SMART : Discover – Show the children pictures of bottles. Ask the children how many ten we just put the ten in our heads and count on the little ones. Then show the children many pencils there are.<br>Share – Partitioning into tens and ones. Look at pictures in groups of ten. Count how many tens and ones.<br>Think together – There is ___ tens and ___ ones. Look at tens frame pictures and write the number of tens and ones. | <b>GDWA</b><br>WAI For<br><b>Adult led</b> / <b>Adult directed ind</b> I can count in tens and ones.<br><b>Adult led</b> / <b>Adult directed ind</b> I can count in tens and ones. |

### Coherence

Connecting new ideas to concepts that have already been understood, and ensuring that, once understood and mastered, new ideas are used again in next steps of learning, all steps being small steps

Here you are continually over lapping - taking ideas, concepts and strategies that you've already learnt into new learning/ into the next step. All the steps are very small steps that continually build on each other . This week in Y1 - counting in 2s 5s 10s - pictorial representations of what that looks like as equal groups - repeated addition - simple arrays

How is the mathematics represented and the structure exposed?

## Representation & Structure

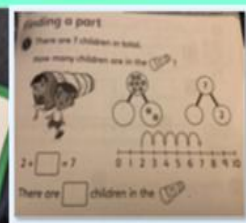
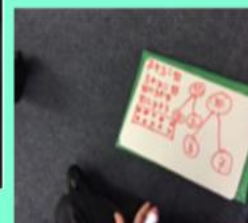
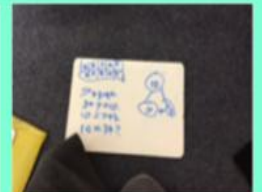
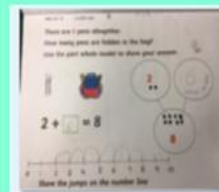
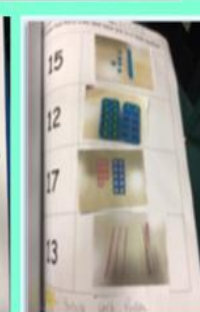
This relates to our **calculation policy** - idea of moving from

**concrete - pictorial - abstract**

Using apparatus/equipment to represent mathematical ideas/concepts - moving into children being able to draw pictorial representations of these then into more formal/abstract strategies and/or mental strategies

### Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation



## Coherence

How are the questions carefully crafted to expose key learning and practice the thinking process? What changes? What stays the same?

## Variation

### Variation

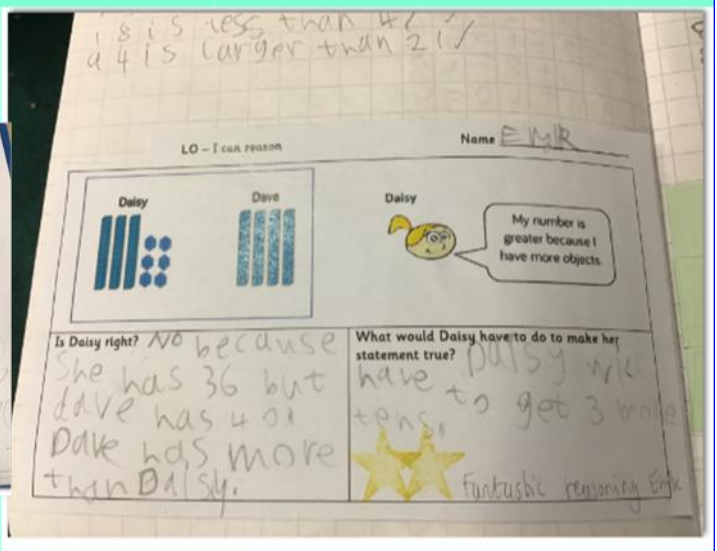
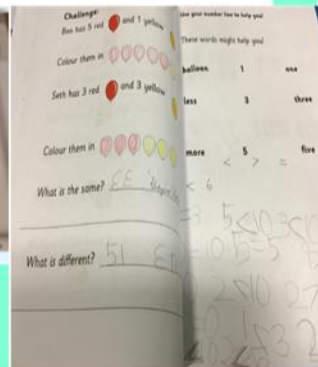
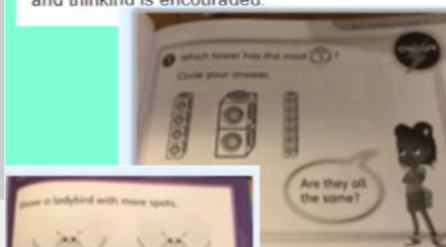
Varying the way a concept is initially presented to students, by giving examples that display a concept as well as those that don't display it. Also, carefully varying practice questions so that mechanical repetition is avoided, and thinking is encouraged.

This is the idea of getting away from the fixed mind set - turning questions around so it is not necessarily/immediately obvious what the question is actually asking or what it is you need to do in order to answer it. That is how you know when all concepts are truly embedded.

A balance between procedural maths and conceptual maths. Idea that children are learning formal methods regardless of their conceptual understanding.

Alongside this children need mathematical literacy (mathematical talk)

Children's understanding involves learning these procedures but also understanding why things work.



## Fluency

What are the pre-cursors and next steps?

How are the pupils using known facts and methods accurately, flexibly and efficiently?

## Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

This is where children are building an overall bigger picture of number - making links between numbers - patterns of numbers and relationships between numbers - rapid recall of addition and subtraction facts, times tables as multiplication and division facts - e.g. in Y1 when we're counting in 2s 5s 10s - what patterns do we notice - what do we know about numbers in the 5 and 10 times table? what do we know about numbers in the 2 times table? If we know  $1+9=10$  what else do we know?

What are the pupils working on, thinking about, discussing, reasoning?  
When do pupils have an opportunity to reason and make connections?

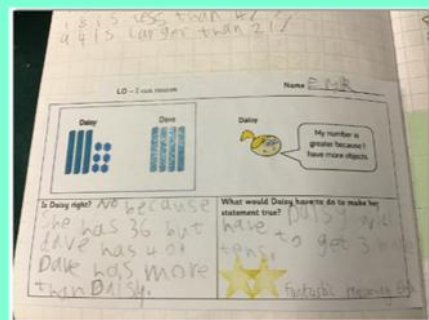
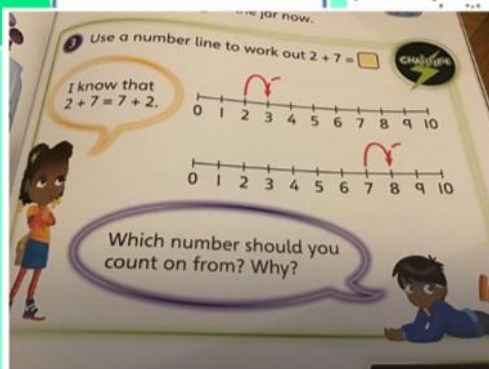
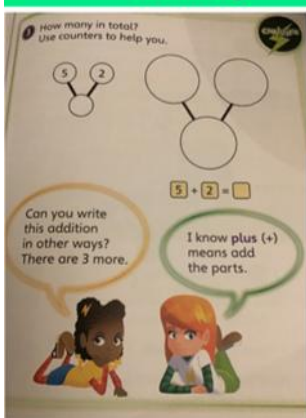
This is the idea that children have plenty of opportunity for mathematical talk and to develop their ability to explain how they know something is what it is. Children can explain their thinking - not just regurgitating/repeating set formulas/strategies

## Mathematical Thinking

What is the 'theme' and key point for this lesson?

## Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, and discussed with others



## Impact

Assessment for Learning is used throughout the lesson to plan for next steps. Misconceptions are addressed and verbal discussion/feedback is given throughout the lesson.

As part of staff meetings, lesson observations and work scrutiny, evidence is collected to show Teaching of Mastery/5 Big Ideas of Teaching. We look at and identify our strengths and areas for improvement and use this to feed into our SDP.

### **Assessment:**

**Formative Assessment** is used throughout lessons to check children's understanding through **observation and questioning**. Teachers give **verbal next steps** and/ or record them as **thought bubbles** on the children's work.

Teachers look at the work that the children have produced and use the marking symbols from the whole school marking policy to mark the work with the children.

### **Summative assessment**

**Teachers in Reception, Year 1 and Year 2** carry out '**end of unit checks**' for each block/unit of work. This is used to inform the level the children are working at for each unit/block. **Year 2** teachers carry out **end of term assessments**, which are used as evidence to feed into the **teacher assessment framework** at the end of key stage 1.

### **Ready to Progress Criteria**

In the Summer Term Year 1 and Year 2 teachers use the **Ready to Progress Criteria** to highlight those children who are still working towards achieving the key skills expected by the EOY.

### **Tracking progress**

Progress will be monitored and evidence will be collected to show maths learning through **planning, work scrutiny, learning walks, lesson observations and discussions with the children**. From this as a school we can consider our strengths and what needs to be improved. This will be used to feed into the SDP and any professional development opportunities.

In year 1 and 2 the teachers in each year group track the progress of the children in their class by recording **children's levels at the end of October, February and July**. In October the teachers in each class also put in an **EOY predicted level of achievement**.

**In preschool and Reception teachers moderate through discussion using the Progression of Skills documents** for each of the Prime and Specific areas of learning. **In maths we track the progress by moving through the small steps with end of unit checks**. Those children not on track for GLD are highlighted on **tracking sheets** alongside a 'commentary'. This data/information is used to inform next steps as well as Pupil Progress meetings.

### **Opportunities for monitoring**

Beginning of Spring term lesson observations

Work/book scrutiny

Feedback from lesson observations

Moderate in teams

Pupil Progression analysis in October, February and July (end of summer term). These are used to inform pupil progress meetings

### **Training**

Boolean Maths training - Teaching for Mastery

- Completed Developing work group (TRGs)
- Completed Implementing work group (TRGs)
- September 2024 - Sustaining work group (TRGs)
- White Rose Teaching for Mastery specialist Reception training

Subject leader – termly update meetings

Staff meetings

TA training

Presentation to Governors

Dyscalculia staff meeting

Y2 teachers moderating

Y1 teachers moderating

Reception teachers moderating

Preschool teacher moderating with preschool staff

Lesson observations and feedback

TA observations and feedback