# **Bowling Park** Primary School

Learning Together, Achieving Together

# **Maths**

# **Maths:** Purpose of Study

**At Bowling Park, we know how essential it is for our children to develop their maths skills. We want them to love the subject but also feel confident and fluent mathematically. We achieve this by:**

**Fostering a life-long love of maths**
At Bowling Park, we are dedicated to fostering a genuine love of maths by making each lesson engaging, practical and exciting. We believe that learning should be hands-on and brought to life through interactive activities, problem-solving challenges and creative lessons that spark curiosity. We want children to feel enthusiastic and confident in their abilities, as they explore the world of numbers and patterns. By making maths fun and accessible, we aim to inspire a lifelong love for learning.

**Helping our children understand the world**
Maths is the foundation for understanding the world around us and it has so many connections to everyday life. It is not just about numbers — maths links to shape, measure, money and so much more. At Bowling Park, our curriculum provides our children with a strong foundation that helps them see how maths connects to all areas of learning. We actively make links to subjects like science, design technology and computing, demonstrating how maths is essential in problem-solving and other key skills.

**Equipping our children with the skills to solve problems**
Problem solving is at the heart of our maths curriculum at Bowling Park, as we believe it is essential for building confidence and resilience in our children. We encourage our children to approach a variety of problems in meaningful, real-world contexts, allowing them to develop critical thinking and perseverance. By providing opportunities for our children to work through challenges, we aim to equip them with the skills needed to tackle different situations, not only in school but also throughout their lives.

**Ensuring our children are fluent mathematically**
At Bowling Park, we are committed to increasing children's confidence and fluency in maths, ensuring they develop the basic skills needed for the next stage of their education. We focus on building fluency through tools like Times Tables Rock Stars, which helps children practice and master essential number facts in a fun, engaging way.

**Helping our children communicate effectively**
For our children, we know the importance of communication. Through shared problem-solving, open-ended questions and practical tasks, we create opportunities for children to express their mathematical thinking and reasoning.  By promoting discussions around strategies, solutions and methods, we help children build confidence in communicating mathematically. This not only strengthens their understanding but also gives them the ability to reason and articulate ideas clearly.

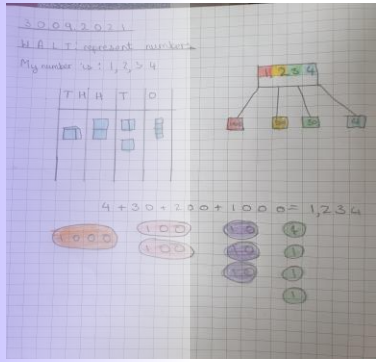
# **Maths:** Vision and Design

| | Responsible | Confident | Successful |
|---|---|---|---|
| **Vision** | We want our children to be responsible citizens by:<br>- Having the **mathematical skills** needed to access the next stage of their education.<br>- **Contributing to society** by having the mathematical skills needed to secure a job.<br>- Being able to work individually and as a **team**. | We want our children to be confident individuals by:<br>- Being **fluent** mathematically.<br>- Having the confidence to **think critically** and **investigate.**<br>- Having the confidence and perseverance to **solve a range of problems.**<br>- Have the **vocabulary** and understanding to articulate themselves mathematically. | We want our children to experience success at Bowling Park and beyond by:<br>- Using their mathematical skills in **real-life** situations.<br>- **Solving problems** no matter the context.<br>- Being able to **reason** and talk confidently. |

| | | | | |
|---|---|---|---|---|
| **Design** | Our maths teaching is driven by the National Curriculum and intertwined with White Rose Maths teaching resources and our calculation policy. Although we use the White Rose resources, our curriculum and LTPs are bespoke to our children and school. | Our curriculum is carefully sequenced to build mathematical knowledge, concepts and procedures over time. We break our learning down into small steps, in a logical order. Within our curriculum, opportunities are provided to re-visit prior learning to ensure the concept is embedded. | Every day, our children have the opportunity to practise their mathematical fluency. We want our children to be confident with number and have mental strategies which they can apply to their problem solving and reasoning. | Our children have the confidence to tackle a variety of different problems in a range of contexts. To reduce cognitive load and to provide opportunities to apply new knowledge and skills in different contexts, maths is linked (where possible) to foundation subjects. |

# **Maths:** The Vision

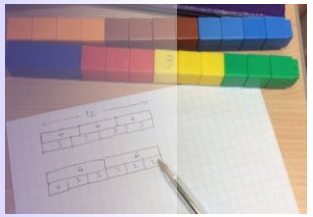
At Bowling Park Primary School, we aim to provide a maths curriculum that contributes to the acquisition of life-long skills and promotes enjoyment and enthusiasm for learning through practical activity, exploration and discussion. We believe that maths at Bowling Park Primary should be ***creative*** and ***engaging***. It should be presented through a *context* which is ***meaningful*** and ***stimulating*** for all children. Children should be confidently able to ***apply their skills*** and ***knowledge*** to solve problems.  We also use a wide range of resources to reinforce the children's mathematical learning and ensure conceptual understanding.



# **Maths:** Our approach

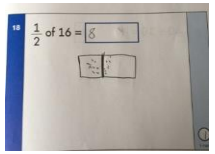
## Concrete

The concrete stage is where students use physical objects or manipulatives such as counters, cubes or base ten blocks to explore mathematical ideas. This hands-on experience allows them to see and physically interact with maths, making abstract concepts more accessible. By engaging with real-world materials, children develop a strong foundation and can link new ideas to something they can see and touch.



## Pictorial

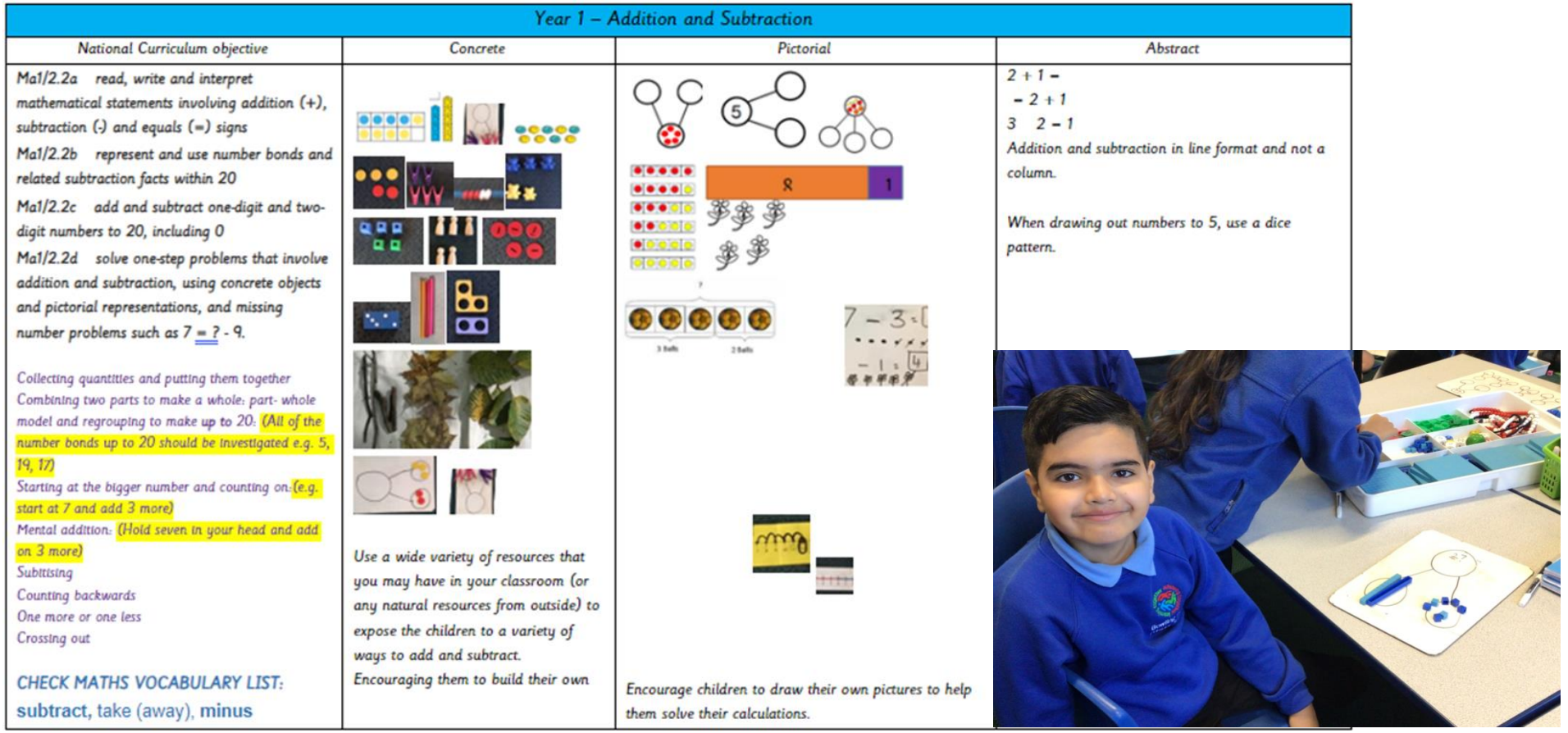
The *pictorial* approach is where children move from concrete objects to visual representations such as drawings, diagrams or models. This helps bridge the gap between the physical and abstract, enabling students to represent mathematical problems in different ways. For example, they might draw bar models to represent addition or sketch arrays for multiplication. Pictorial representations encourage students to think visually, deepening their understanding and providing a way to solve problems even when concrete resources are not available.




## Abstract

Students will then progress to the *abstract* stage, where they work with numbers, symbols and worded problems. At this point, they apply their understanding from the concrete and pictorial stages to solve problems using numbers and equations. For instance, after using counters and drawings to explore division, they would solve calculations like 45 ÷ 3 using written methods. The CPA approach ensures that learning is sequential and secure, giving students the confidence and skills to tackle increasingly complex mathematical ideas. By following this progression, our teachers help students develop a solid and lasting understanding of maths.

# **Maths**: Our Calculation Policy



**Year 1 – Addition and Subtraction**

| National Curriculum objective | Concrete | Pictorial | Abstract |
|---|---|---|---|
| Ma1/2.2a read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs<br>Ma1/2.2b represent and use number bonds and related subtraction facts within 20<br>Ma1/2.2c add and subtract one-digit and two-digit numbers to 20, including 0<br>Ma1/2.2d solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? - 9.<br><br>Collecting quantities and putting them together<br>Combining two parts to make a whole: part- whole model and regrouping to make up to 20: (All of the number bonds up to 20 should be investigated e.g. 5, 19, 17)<br>Starting at the bigger number and counting on: (e.g. start at 7 and add 3 more)<br>Mental addition: (Hold seven in your head and add on 3 more)<br>Subitising<br>Counting backwards<br>One more or one less<br>Crossing out<br><br>CHECK MATHS VOCABULARY LIST:<br>subtract, take (away), minus | Use a wide variety of resources that you may have in your classroom (or any natural resources from outside) to expose the children to a variety of ways to add and subtract.<br>Encouraging them to build their own | Encourage children to draw their own pictures to help them solve their calculations. | 2 + 1 =<br>= 2 + 1<br>3 2 = 1<br>Addition and subtraction in line format and not a column.<br><br>When drawing out numbers to 5, use a dice pattern. |



Our calculation policy serves as a comprehensive guide that outlines how mathematical concepts, particularly calculations are taught and developed across different year groups. Its primary purpose is to ensure consistency, progression and clarity in the teaching of calculations throughout school. Our teachers use this to help inform their planning and teaching.

# Maths in the Early Years

# **Early Maths:** The Early Years

## Nursery

In Nursery, maths is taught through direct inputs. The teaching is brought to life through hands-on, practical activities that make use of high-quality, open-ended resources. Storytelling and songs are an important part of the maths curriculum in Nursery, providing children with a concrete visual image before they move to the abstract. This helps children develop a deeper understanding of numbers, patterns and relationships.

Each day begins with "The Daily Dash," where children explore the days of the week, practise counting to a pattern and discuss concepts such as ordering, seasons and weather. A strong emphasis is placed on subitising and on developing 1:1 correspondence which supports children's understanding of number.

The children's learning is then consolidated and deepened through the provision areas, where children have access to a wide range of resources which they can explore. Opportunities to work mathematically have been carefully planned into the different areas of provision, both inside and outside.

# **Early Maths:** The Early Years

## Reception

In Reception at Bowling Park, maths is taught through a daily lesson. As a school, we follow the White Rose Maths curriculum to ensure a well-structured and sequenced approach to learning. Our maths working wall is a key feature in supporting children's understanding and the number of the week helps reinforce the composition and recognition of numbers.

In our provision areas, we provide a variety of equipment such as tills, purses, timers, building blocks and a water area, all designed to enhance children's understanding of mathematical concepts through hands-on experiences.

# **Early Maths:** The Early Years

## Outdoor provision

In Early Years, maths is brought to life in the outdoors through a range of engaging activities. Children have access to natural resources which they use to develop their pattern making, sorting and classifying. Children also use sports equipment to practise counting, measuring and comparing, while the water area offers opportunities to explore scales, volumes and measurements.

Our outdoor resources are open-ended to encourage shared, sustained thinking. The mud kitchen provides a creative space where children apply their skills, such as sorting and classifying ingredients or calculating quantities. On the climbing equipment, children develop their understanding of positional language, describing where they are in relation to other structures. These hands-on experiences make maths both fun and practical.

# **Early Maths:** Year 1

In Year 1, maths is taught daily through a teacher input. This is followed by group activities, where children engage in teacher-led and independent tasks. This ensures they have opportunities to practise and apply their learning.

Learning is further consolidated through provision areas, where children can explore maths skills in a hands-on way, using a variety of resources to deepen their understanding. The maths area provides additional challenges, allowing children to extend their thinking and apply their knowledge in different contexts.

# **Maths Lessons:** Curriculum Delivery

# **Maths Lessons:** Curriculum Delivery

At Bowling Park Primary School, we use the White Rose Maths Hub resources and "small steps" as a foundation for our curriculum but adapt it to suit our children. We have identified the key mathematical concepts and skills that our pupils need to develop each year, ensuring a progressive and coherent learning journey.

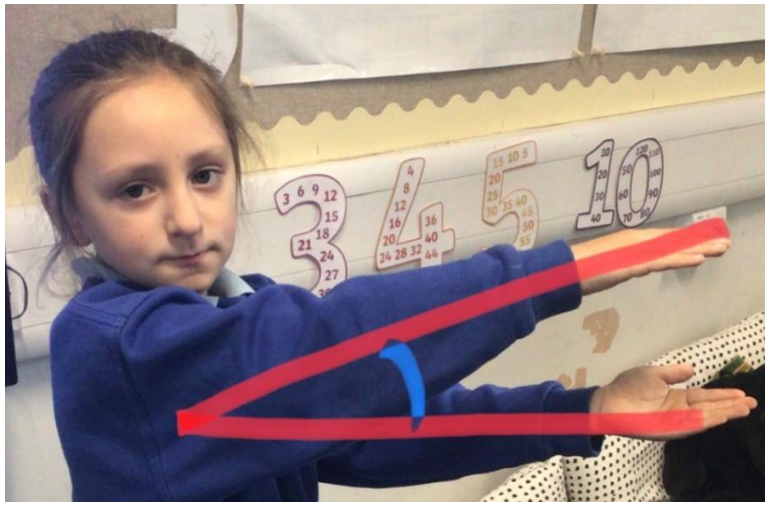

In our curriculum, we aim to:

- Develop their love of maths through exciting, practical lessons.
- Improve children's fluency and mental maths skills.
- Give all children the opportunity to deepen their understanding of mathematical concepts through a range of activities.
- Develop our children's problem-solving skills.
- Promote other skills such as resilience and team work.
- Develop our children's vocabulary and discussion skills.

# **Maths Lessons:** Curriculum Delivery

How do we achieve this:

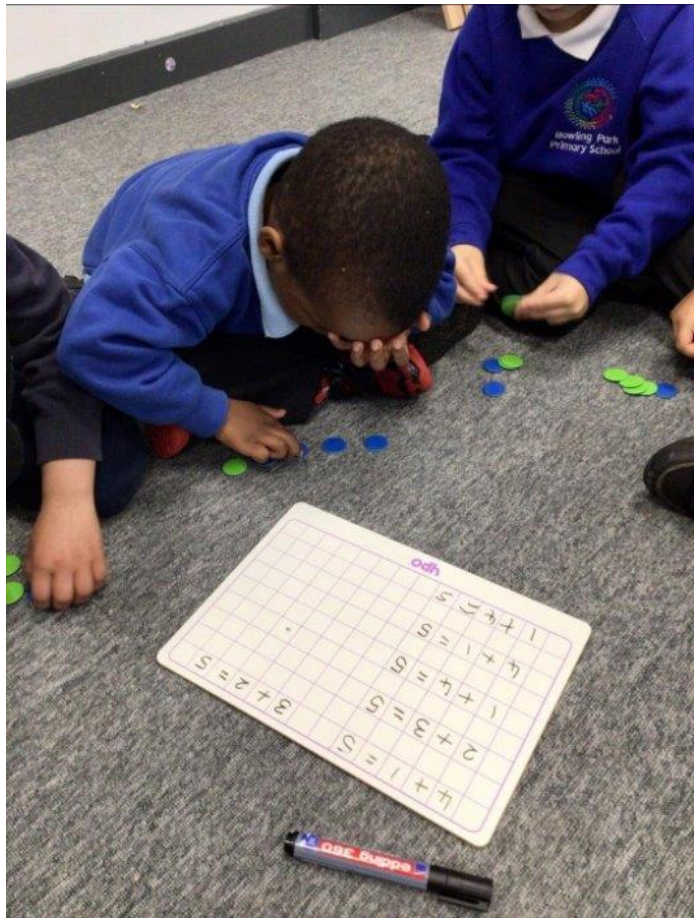
- We start every day with Early Bird Maths – the perfect time to develop our fluency in the subject.
- Our lessons start with a mathematical "Word of the Day" which links to our current learning.
- Calculations and problem solving strategies are modelled by the teacher through the "I do, We do, You do" approach.
- Concrete resources are readily available in class and children are encouraged to use them where appropriate. Staff model how to use these resources effectively.
- Where appropriate, lessons and activities link to a real-life, meaningful context.
- Children are exposed to a range of routine and non-routine problems as they develop their problem solving skills
- Across the curriculum, we make appropriate links to maths.
- As part of our "Aspirations Week", we look at jobs and careers linked to maths.



# **Early Bird Maths:** Curriculum Delivery

At Bowling Park, every school day begins with "Early Bird Maths," where students from Year 1 to Year 6 start working as soon as they enter the classroom. This dedicated time helps children build their mathematical confidence by focusing on fluency work, ensuring that they become more comfortable with key mathematical skills. Children practise their times tables, develop their arithmetic skills and deepen their understanding of number.

We have carefully mapped out key mental maths skills, providing a structured approach that ensures each skill is covered. Through regular practice, students improve their mental maths confidence, setting a solid foundation for their ongoing learning and success in mathematics.



# **Maths Lessons** Curriculum Delivery

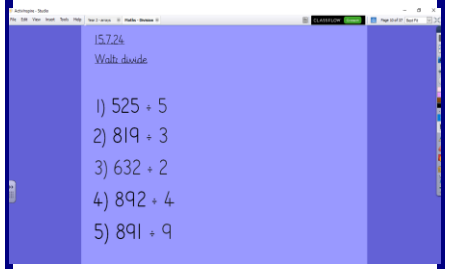
## Planning a Maths lesson:

Identify the skills we want to teach the children. These should initially be taken from the maths long term plan and the WRM small steps. However, skills taught should also be informed by ongoing formative and summative assessment.


Use the CPA approach to ensure that children are given every opportunity to succeed in every part of their maths journey. Where appropriate, bring the maths to life using practical resources.

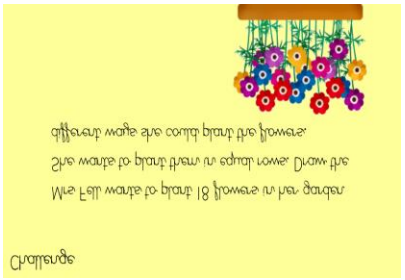
Look at the calculation policy to ensure we are consistent.


Recap prior learning. This reinforces previous learning and allows children to reflect on how their previous work will help them.




The main part of the lesson will involve the teacher modelling calculations or problem solving strategies.

The main activity for the children will usually involve some fluency practise but they will also be exposed to a variety of problem-solving activities throughout the lesson.




Teachers will stretch and challenge their children through a range of problems and reasoning.

This could include more open-ended problems where there is more than one possible answer.

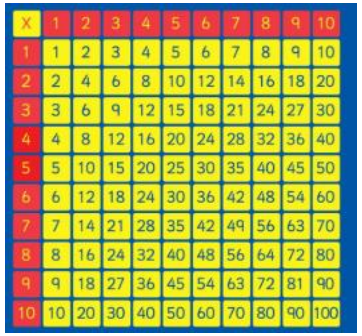
# **TT Rockstars:** Improving fluency

At Bowling Park, we love TT Rockstars. This interactive game gives our children the opportunity to practise their times tables and division facts. All children from Year 1 to Year 6 can access this website in and out of school.

We hold regular competitions and assemblies in school and compete against other schools in the Exceed Trust.

# **Maths:** Inclusion

Scaffolding is provided to ensure that children can access the same learning.



| X | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |
| 4 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |
| 10 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

Times tables grids and 100 squares are available to children if they need further support.

Concrete resources are available to all children to support their understanding.

Pre-teaching is used to further support children. This allows children to learn key facts and skills before the main lesson to improve their confidence.

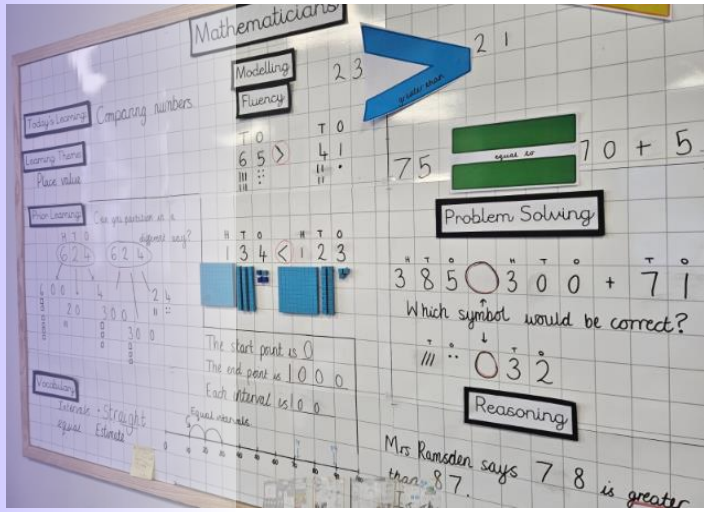
We ensure that teaching presentations have pastel backgrounds to support visual needs.

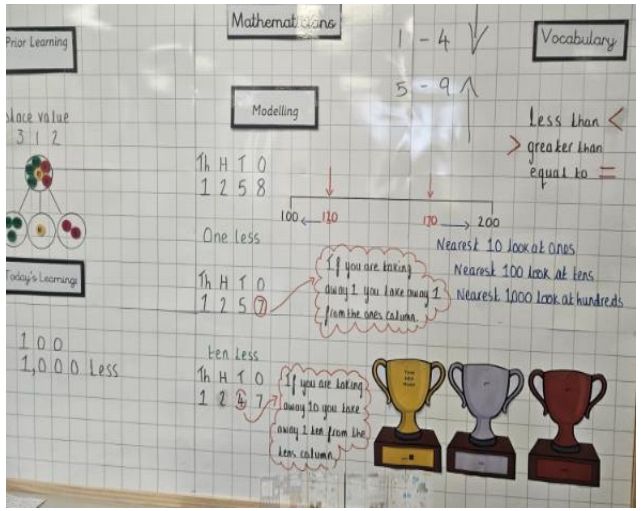
Although focus groups may sometimes comprise of children with similar needs, children sit in mixed ability groups or pairs during most lessons.

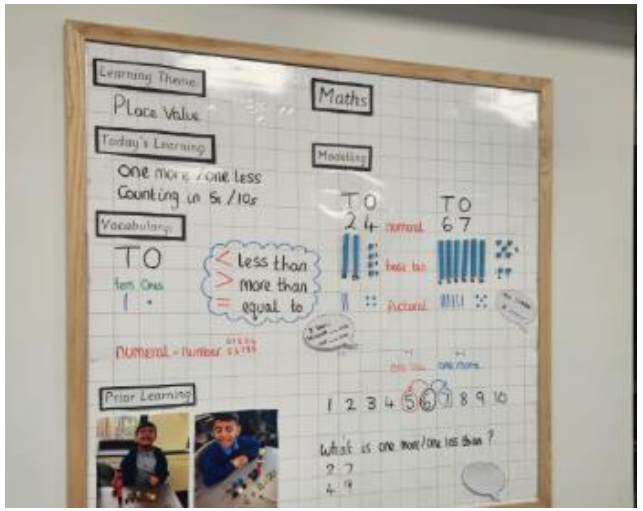
# **Maths**: Our Working Walls

Our maths working walls are an interactive resource that support our children's understanding. It helps to reinforce key concepts, model problem solving strategies and display examples of our children's work.

We display key vocabulary on our working walls so children have a prompt to support their discussions.

# Characteristics of a Mathematician

- **Curiosity**: Young mathematicians who are naturally curious, always asking questions and exploring the world around them to understand mathematical concepts.
- **Playful Learning:** They engage in playful activities that involve counting, sorting, and basic problem-solving, often incorporating toys, games, and everyday objects into their learning.
- **Concrete Thinking:** Primary school mathematicians primarily work with concrete objects and visual aids to grasp mathematical concepts, such as using blocks to understand addition and subtraction.
- **Persistence**: Despite challenges, they demonstrate persistence in solving problems, trying different strategies until they find a solution.
- **Collaboration**: They enjoy working with their peers, sharing ideas, and learning from each other in collaborative settings such as group activities and discussions.
- **Fluent**: Our children are fluent with their mental maths skills: they know their year group times tables, they can add and subtract mentally where appropriate and they also have a range of other mental strategies.
- **Creativity**: Young mathematicians exhibit creativity in finding multiple ways to solve problems and in creating their own mathematical games and activities.
- **Developmental Progression**: Their mathematical abilities develop over time, starting with basic numeracy skills like counting and recognizing shapes, and gradually progressing to more complex concepts like multiplication, division and fractions.
- **Positive Attitude**: They approach mathematics with a positive attitude, viewing it as an enjoyable and rewarding subject that can be applied to real-life situations.
- **Teacher Guidance:** They benefit from supportive guidance from teachers who provide encouragement, scaffolding, and differentiated instruction to meet the diverse learning needs of students.
- **Celebration of Success**: Primary school mathematicians thrive in environments where their achievements are celebrated, fostering confidence and a love for learning mathematics.

# Our journey could lead your child to...

**Here are some of the jobs you could aspire to do in the future as a Mathematician:**

| | | |
|---|---|---|
| ***Teacher:*** Teaches maths to students, helping them understand concepts like addition, subtraction, multiplication and division.<br>  | ***Accountant:*** Helps people and businesses manage their money by keeping track of finances and budgets.<br>  | **Banker:** Works in a bank, using maths to handle money, loans and investments.<br>  |
| ***Statistician:*** Collects and analyses data to help make predictions and decisions in fields like sports, medicine and economics.<br>  | • ***Architect:*** Designs buildings and structures using maths to ensure they are safe and functional.<br>  | • ***Carpenter***: Measures and cuts wood using maths to build things like furniture and houses.<br>  |
| ***Scientist***: Conducts experiments and research using mathematical principles to understand the world around us.<br>  | • ***Engineer:*** Uses maths to design and build things like bridges, roads and machines.<br>  | ***Astronomer:*** Studies space and celestial objects using maths to calculate distances, sizes, and movements<br>  |