

A photograph of two children, a girl and a boy, sitting at a desk in a classroom. They are both wearing blue school sweaters with a white collar. The girl is on the left, and the boy is on the right. They are looking down at a table covered with colorful geometric blocks (cubes and rectangular prisms) in shades of blue, green, and red. The background is a blurred classroom setting with blue walls and educational posters. The text 'Shinewater Primary School' is overlaid on the left side of the image.

Shinewater Primary School

# Maths

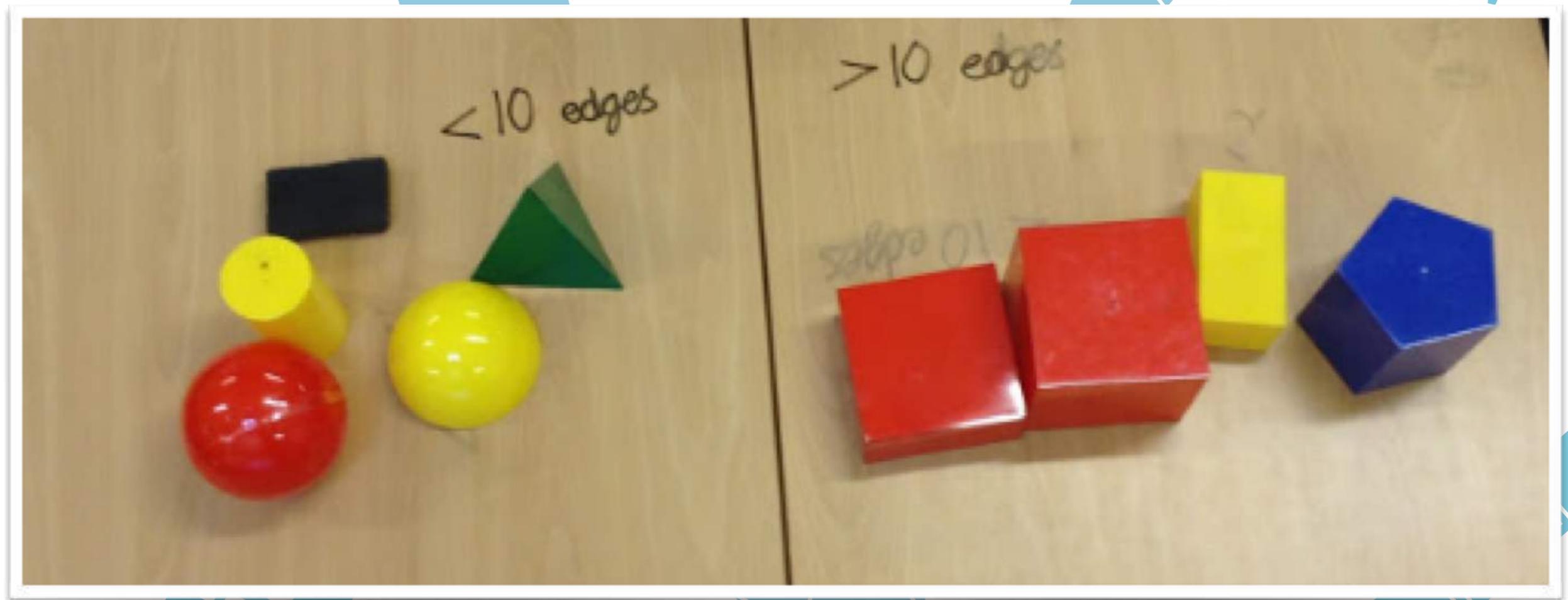
Swale Academies Trust

# How is the subject taught and why?

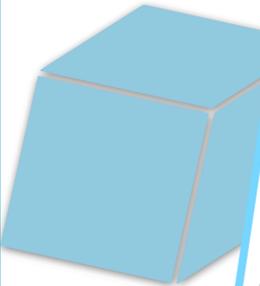
The way Maths is planned and taught is innovative and reflects the school's drive to be at the forefront of education.

When planning, we follow a 'Teaching for Mastery' approach which places conceptual understanding at the heart of every lesson.

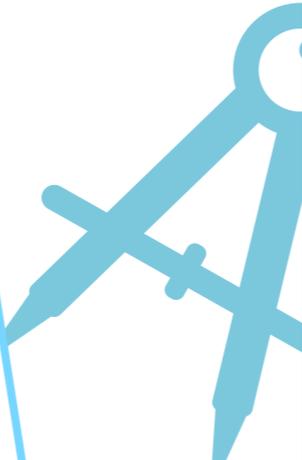
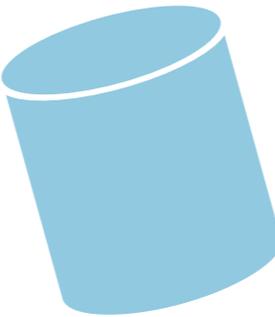
We design lessons which provide ongoing opportunities for our children to demonstrate a depth of learning and we



# Mathematics in EYFS



In Reception, Maths is taught through exploration and discovery, where child-centred learning is at the heart of every planned lesson and activity. There are three focused lessons each week, which are teacher-led and focus on a particular area of Maths (e.g. counting, measuring, ordering). During these lessons, the children are introduced to visuals, vocabulary and resources which underpin the new concept they are learning.



Over the course of the week, practical and stimulating activities are set up around the classroom to reflect and promote this specific area of learning; the children manipulate resources and experiment with numbers visually and practically. Throughout the week the teachers and teaching assistants ensure they observe and assess every child in the class engaging independently with these activities.



Children in Reception develop a strong foundation in number because they focus on their understanding of the 'numberness' of different values; our Reception children understand what the number 3, for example, means because they experiment with it through different representations (counters, pictures, toys) before they learn how to record it on paper.



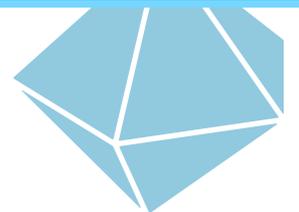
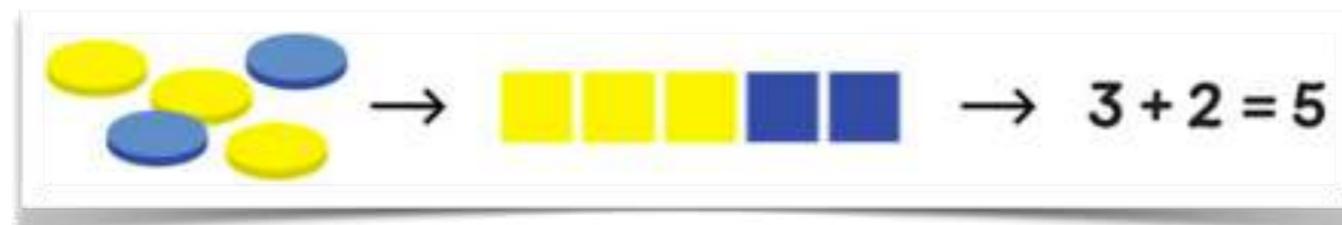
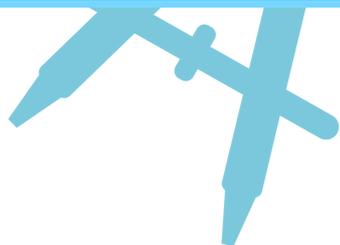
# Planning in Years 1-6

The 'Teaching for Mastery' approach is underpinned by the belief that all children can achieve in Maths and lessons at Shinewater are planned with this notion in mind. Throughout the planning process, teachers are supported by quality resources from:

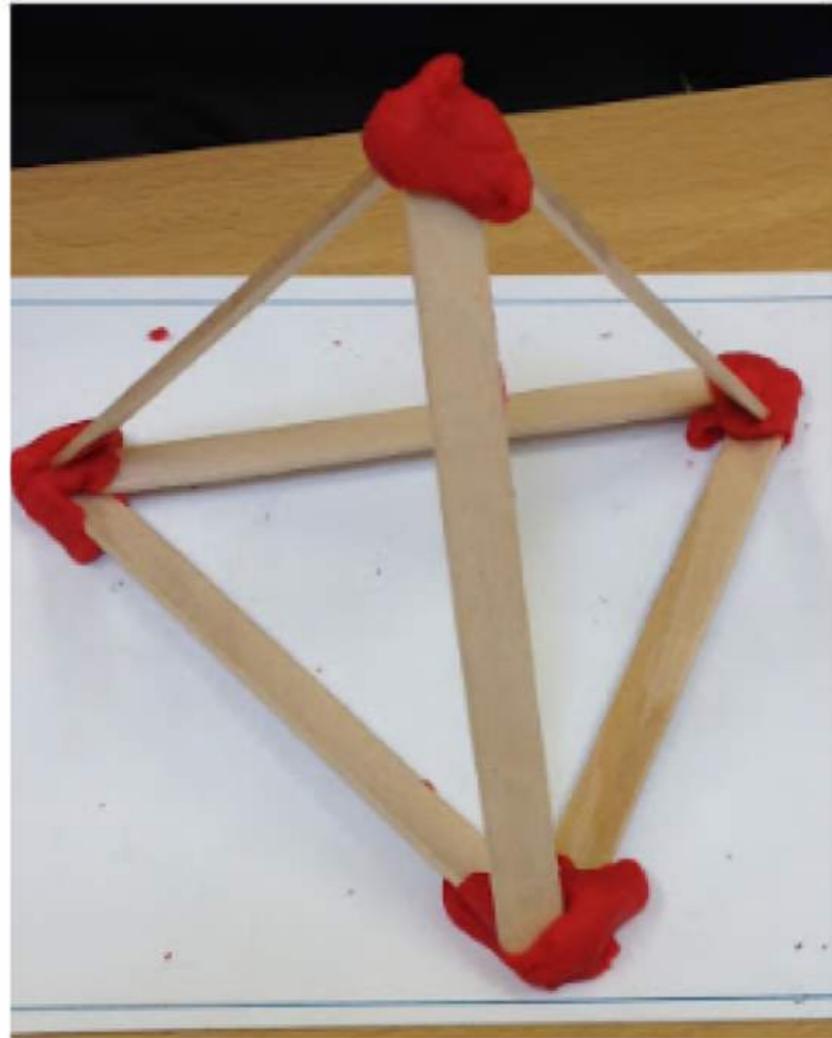
- Power Maths (a teaching for Mastery scheme of work, approved by the Department for Education);
- White Rose (materials created by a teaching for Mastery hub, working alongside the NCETM)
- The NCETM itself (the National Centre for Excellence in the Teaching of Maths)

In Key Stage One and Two, Maths lessons are planned in clear blocks, as suggested by both Power Maths and White Rose. Within each block, lessons are planned using a sequence of small steps, which address the end of year expectations set out in the National Curriculum. This 'small-step' approach, gives our children the opportunity to explore Maths concepts in depth; we give our children the time to develop a conceptual understanding of their learning through exposure to different representations.

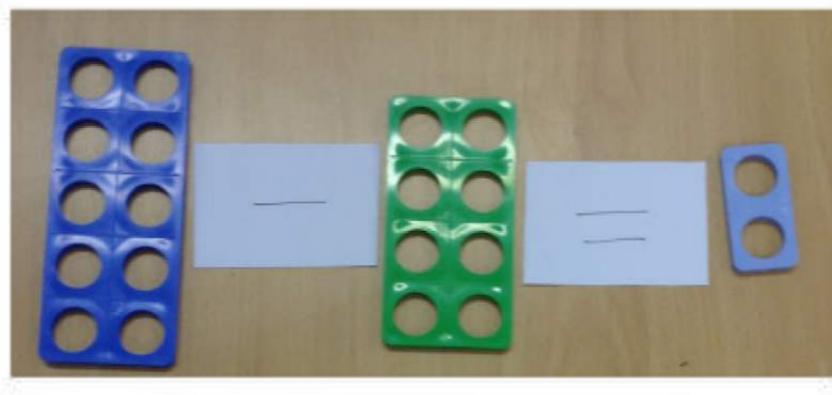
When planning a sequence of lessons, teachers at Shinewater use a range of concrete resources to support their children's active understanding. Our children manipulate practical resources such as place value counters, numicon, base 10, as they explore the concept they are being taught. Alongside these concrete representations, children are then exposed to models and images shown pictorially and visually. Using iconic representations such as the bar model or the part-whole model alongside practical resources, helps our children to transition their understanding from the concrete to the pictorial. The final representation our children are presented with when learning new concepts, is the abstract, symbolic calculation. Again, this is done alongside concrete resources and pictorial models, so that our children can see how the three representations are linked, resulting in a stronger understanding of the concept. With this enhanced understanding, our children are then able to apply their knowledge of particular concepts to different contexts. Through problem solving, investigations and regular opportunities to reason and justify their Maths, our children can demonstrate a greater depth of understanding.



# Planning in Years 1-6



Differentiation in lessons is achieved through careful and deliberate scaffolding. This could take the form of a particular concrete or pictorial resource, additional adult guidance, the use of peer support or mentoring; differentiation could be achieved through the planning of additional questions which would encourage a child to take a small step back in their practise of a concept. In addition to this, through thoughtful, targeted questioning, teachers can regularly assess the understanding of their children during lessons and can encourage children to develop their learning by asking them to explain, reason and justify their answers. Furthermore, differentiation is also achieved through the use of 'Stretch challenges' - our children are given the opportunity to apply their understanding of the lesson concept to a different context. This application could take the form of a misconception which the children have to explain and then correct; the children could be given two mathematical statements which they need to justify. Within these 'stretch challenges', teachers provide their children with the opportunity to explain and reason about the Maths concept they have been taught.



As illustrated above, through thoughtful and targeted scaffolding, the 'Teaching for Mastery' approach ensures the needs of the majority of the children in the class are met; through immediate, same-day intervention, our children are encouraged to 'keep up, rather than catch up.' For these identified children, teachers at Shinewater make use of a range of supporting methods. Some children will be included in a 'pre-teaching' group, where the children are exposed to the vocabulary and methods ahead of the lesson, enabling them to participate in the lesson feeling more confident about their learning. Other children may work with the teacher in a one to one or small group capacity in order to address their misconceptions, whilst other children may work with a teaching assistant on a task differentiated to their level of understanding.

# The Maths Lesson (Monday - Thursday)

Arithmetic	
1. 2 4 6 _	2. 0 _ 4 6 _
3. 5 10 _ 20	4. 10 20 30 _

At Shinewater, across Key Stage One and Two, we have adopted a clear, consistent structure to our Maths lessons. The structure - as detailed below - provides our children with ample opportunity to explore and practise concepts independently, whilst also giving teachers the time to explicitly model and share their approaches.

Year 1

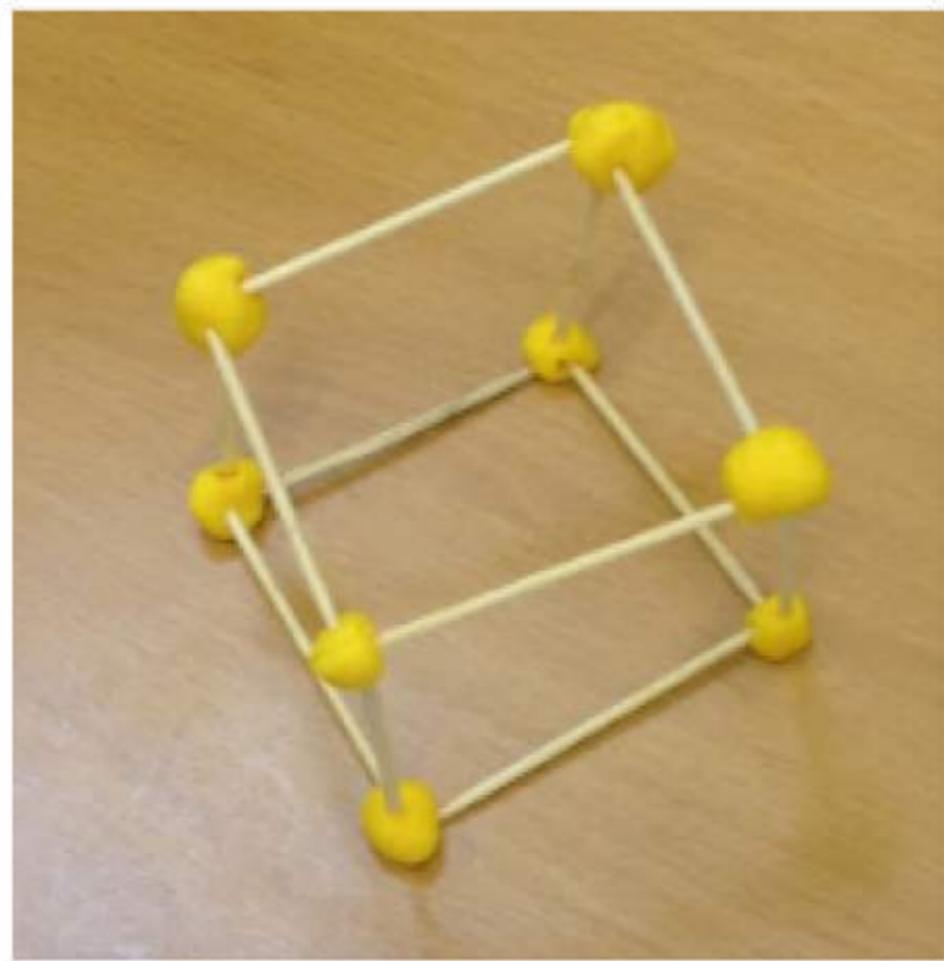
A typical Maths lesson in Year 1, would follow this structure:

Fluency Practice

Each lesson starts with a five minute activity to develop the childrens' mathematical fluency. Pupils work through four arithmetic-style questions and spend time discussing the efficient methods they used to answer them.

Discover

The pupils are shown an 'anchor task' or image to introduce them to the concept being taught in the lesson. The children are given a short time to discuss what they can see with their partner and what they feel they may be learning about. During this initial part of the lesson, where the children are engaging in self-discovery and investigation, practical resources are available and easily accessible, should the children wish to use them.



# The Maths Lesson (Monday - Thursday)

We are learning to (WALT)

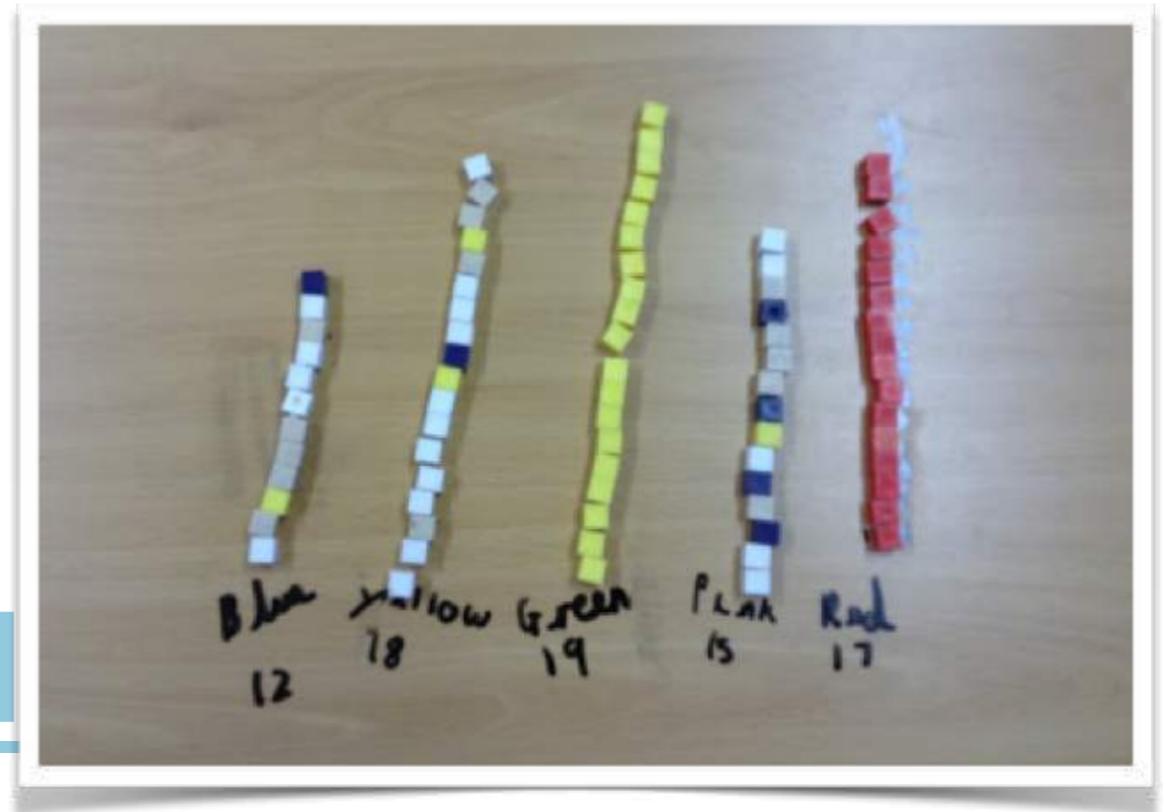
The WALT is shared with the class. This may be given by the teacher or could be offered by one of the children. At this point, the key vocabulary and the stem sentence or generalisation could, also, be shared. A generalisation is a mathematical truth, whilst a stem sentence is a concise statement with gaps for the children to fill.

Active Learning

During this part of the lesson, the children explore the key concept through active learning. Every opportunity is taken to ensure learning is interactive and kinaesthetic, through the use of an effective concrete-pictorial-abstract approach. Evidence of learning is captured daily and is done so in a variety of different ways: photos and comments; post-it notes reflecting student voice; appropriate worksheets from Power Maths or teacher-generated; written work from the children.

Stretch

Pupils are given the opportunity to deepen their understanding through a challenge.



# The Maths Lesson (Monday - Thursday)

Years 2-6

In years 2-6, the structure of a Maths lesson is similar to year 1, but a 'stretch and fix' model is used, as the lesson is built around an assembly. A typical Maths lesson in Years 2-6, would follow this structure:

Fluency Practice

Each lesson starts with a five-minute activity to develop the childrens' mathematical fluency.

Discover

The pupils are shown an 'anchor task' or image to introduce them to the concept being taught in the lesson. The children are given a short time to discuss what they can see with their partner and what they feel they may be learning about. During this initial part of the lesson, where the children are engaging in self-discovery and investigation, practical resources are available and easily accessible, should the children wish to use them.

We are learning to (WALT)

The WALT is shared with the class. This may be given by the teacher or could be offered by one of the children. At this point, the key vocabulary and the stem sentence or generalisation could, also, be shared. A generalisation is a mathematical truth, whilst a stem sentence is a concise statement with gaps for the children to fill.

Discover

There are 1274 adults watching the show.

How much money has been made from adult tickets?

Ticket prices:  
Adult £32  
Child £19  
Capacity: 1,659 seats

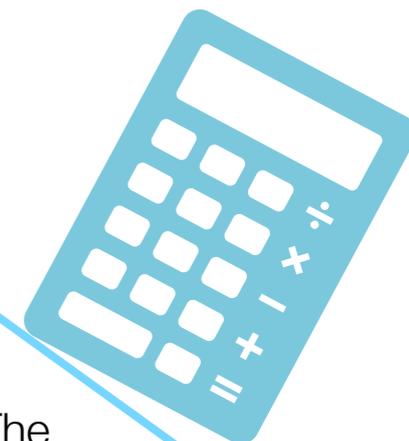
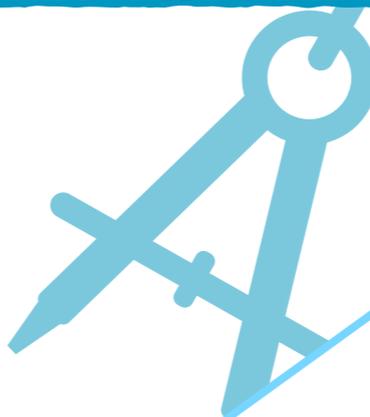
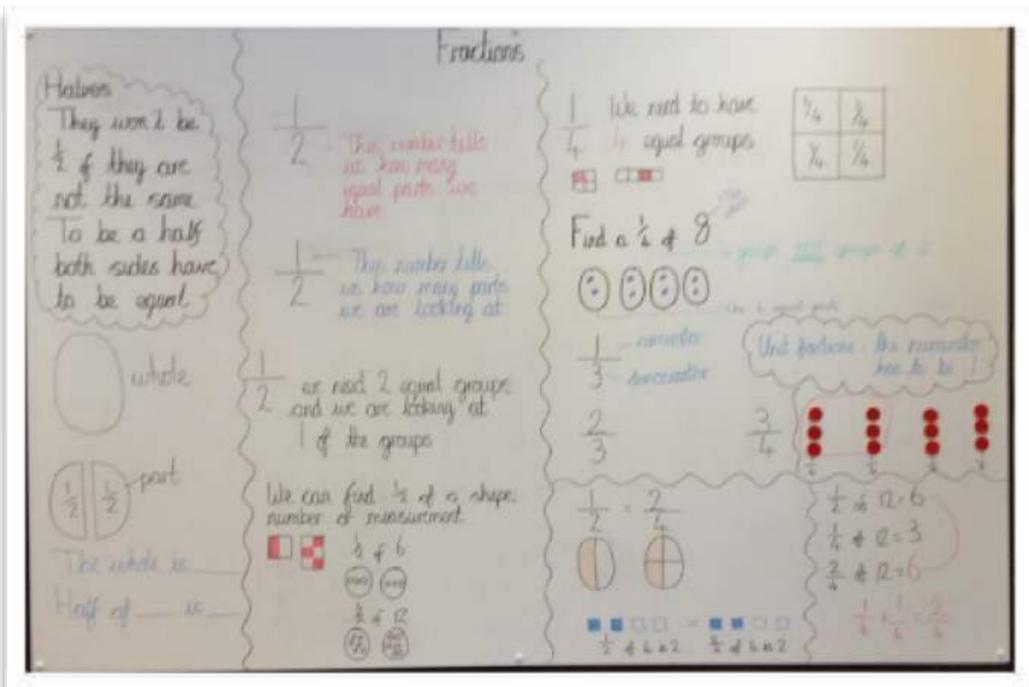
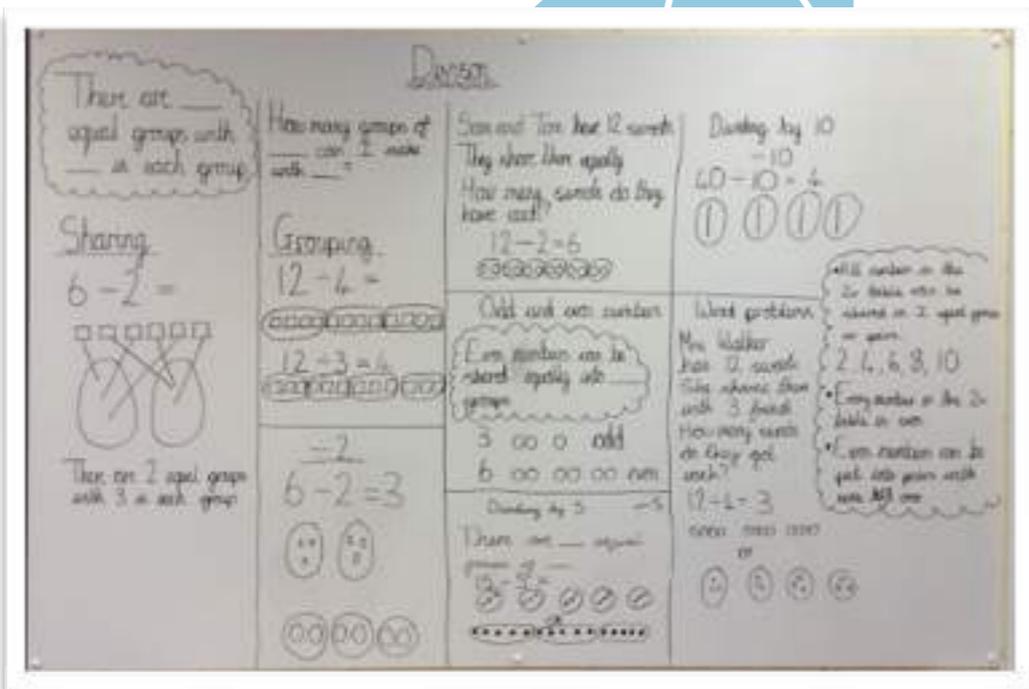
Jen Toshi

**We are learning to...**  
Multiply 4-digit numbers by 2-digits

**Stem sentence / Generalisation**  
When using long multiplication, we use 0 as a place holder to show that we are multiplying the tens.

**Vocabulary**  
long multiplication method  
multiply  
ones  
tens  
hundreds  
thousands  
place holder

# The Maths Lesson (Monday - Thursday)



Share

This is the main teaching input. The teacher will model the concept of learning being taught, using concrete-pictorial-abstract representations effectively to consolidate childrens' understanding. After the teacher has demonstrated the learning, the children are given the opportunity to go back and apply this new understanding to the anchor task from the 'discover' part of the lesson.

Think together

Pupils are given opportunities to actively practise what has been taught through a 'ping-pong' approach. The 'ping-pong' approach is based on repetition and allows the children to manipulate concrete and pictorial resources to solve the problem. I do, we do, you do. Any misconceptions are addressed at this point to improve understanding.



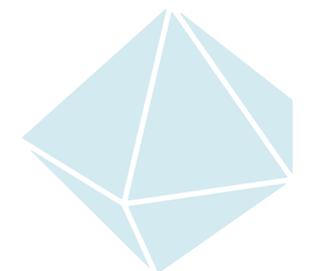
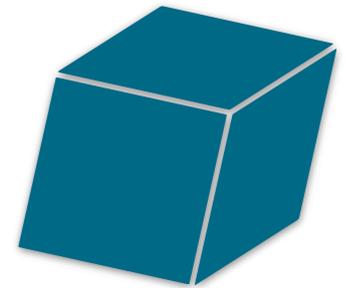
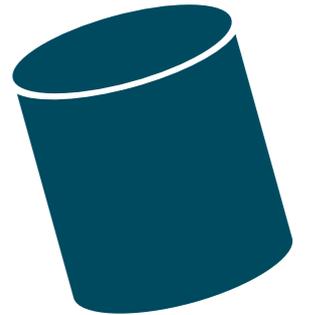
# The Maths Lesson (Monday - Thursday)

## Activity (Intelligent Practise)

The pupils work through an activity, either collaboratively with peers, or independently. Stretch and Fix (During Whole-School Assembly) Teachers look at the work the children have completed so far and along with their ongoing, live assessment from the lesson, decide on the individual child's next steps. There are three possible next steps:

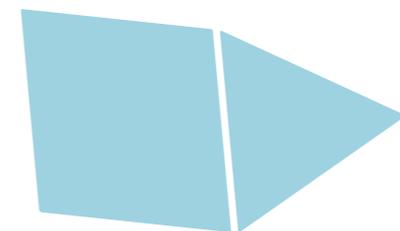
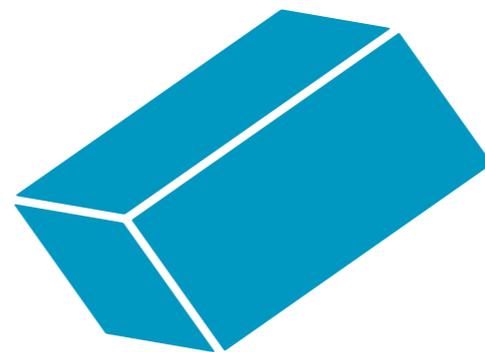
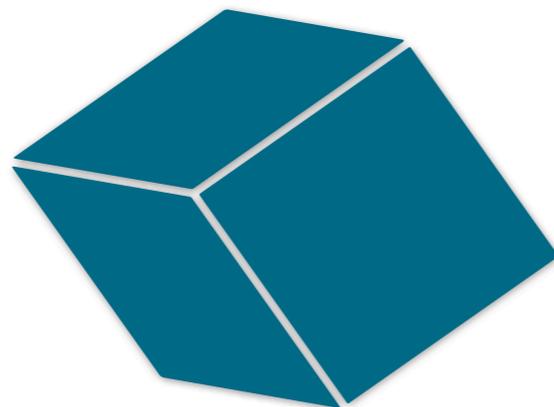
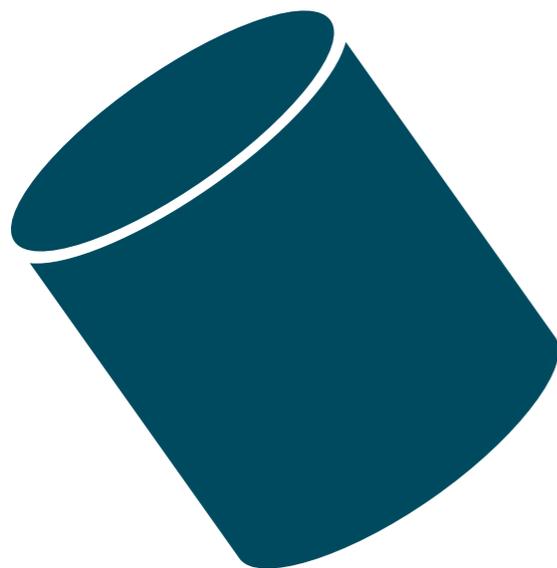
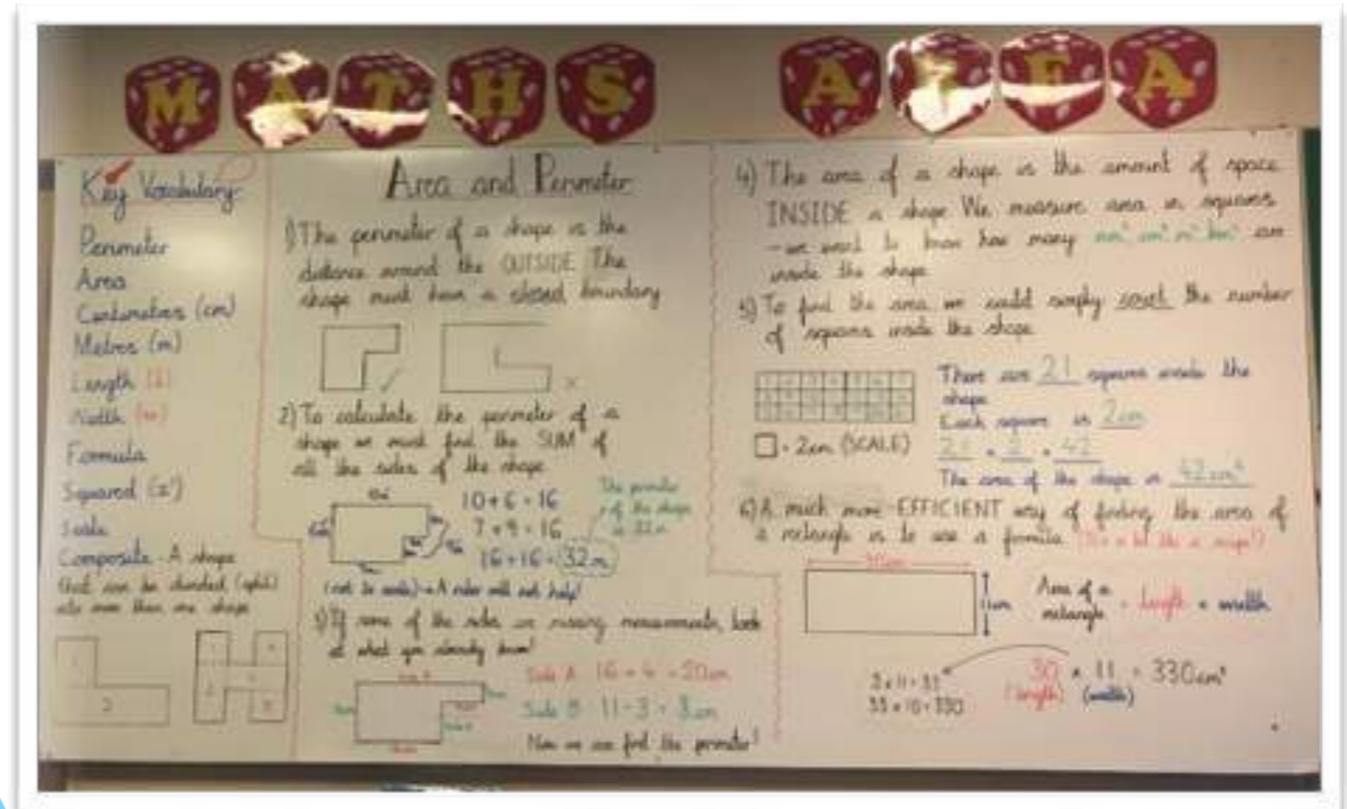
1. Fix – The child needs further input from the class teacher or TA to secure understanding of the concept taught. This step is crucial in our mastery approach to Maths, as it allows quick and immediate intervention, helping our children to 'keep up, rather than catch up.' During this 'fixing' step, an adult can immediately address a misunderstanding or misconception, rather than letting a day or two pass before having that crucial discussion with a child.
2. Consolidate – The child needs to continue with the work started as more evidence of understanding is needed.
3. Stretch – The child has demonstrated a secure understanding of the concept taught and should take their learning to a greater depth through the 'Stretch Challenge.' As mentioned earlier, these challenges provide our children with rich, thoughtful contexts to apply and demonstrate their understanding. During these challenges, our children are given the opportunity to reason about the Maths they have been learning; they are given the opportunity to prove or disprove an idea; they are given the opportunity to demonstrate a breadth and depth of learning.

After assembly, the children return to class and continue with their next steps. On a Friday the lesson is not built around an assembly but it still follows the same format. While there is no stretch and fix element to this lesson, teachers are still assessing throughout the lesson and consolidating and moving the children on when appropriate.

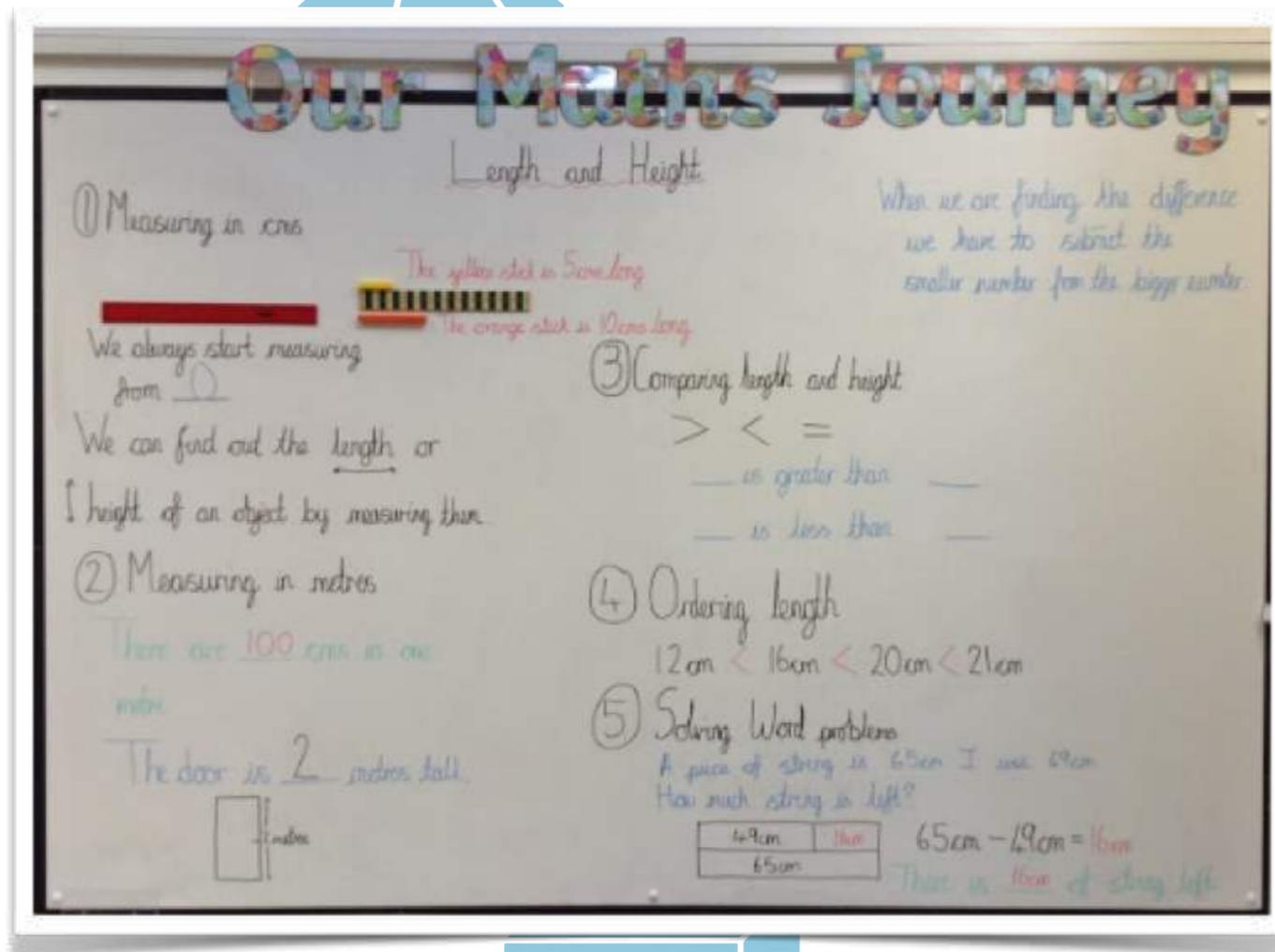


# Working Walls

Across the school, Working Walls are used to support our children's understanding and consolidation of the concepts they are taught. A new 'Wall' is started for each unit of work and is added to as each new concept – or learning point – is covered. The concepts are numbered, so that the children can clearly see the 'small steps' they have taken in the journey of that particular unit. Relevant models and images are attached to the wall or drawn by teachers, so that the children have these resources to refer to during lessons. In addition to this, worked examples are a feature of most walls, along with a bank of key vocabulary, to support our children with their explanations and reasoning.

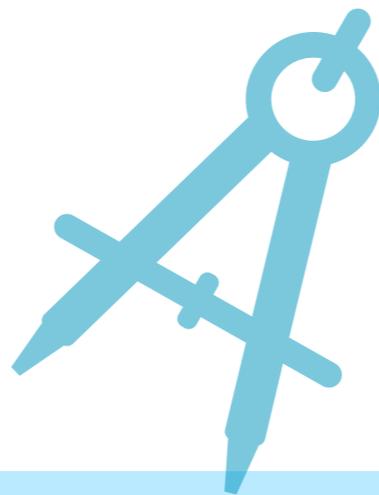
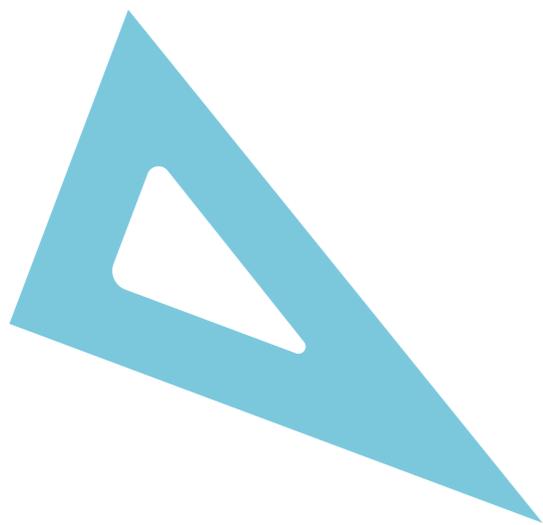


# How is the subject assessed?



Maths, across the school, is assessed against the end of year expectations for each specific year group, outlined in the National Curriculum.

Assessment in EYFS Across the Early Years Foundation Stage at Shinewater (Little Sunshines Nursery and in our two reception classes) we use the Early Excellence Achievement Tracker (EExAT) to record our observations of children's learning and to help us to assess their development over time. Throughout the year children are assessed against different age-related descriptors. These are split into the monthly brackets of 31-36, 37-42, 43-48, 49-54, 55-60, 61-66 and 67+. When evidence is gathered of a child confidently and independently meeting the skills in each age bracket their teacher or nursery key person will update their assessment tracker accordingly. The assessment tool EExAT highlights the child's chronological age in months. So a personalised assessment is produced for both 'number' and 'shape space and measure', as to whether a child is: on track for age related expectations, below age related expectations or currently above age related expectations. Evidence of Maths is recorded in the children's learning journey folders as well as online observations via EExAT. Online observations will be 'tagged' to indicate which assessment criteria they meet.



# Formative Assessment in Years 1-6

Daily assessments of each math lesson take place through the use of 'Stretch and fix'. When a sequence of lessons has been completed and an end of year expectation has been taught in its entirety, teachers use their formative assessments to make an overall judgement on the extent to which a child has met the overall objective. This overall judgement is then recorded on O-Track - our online assessment tracker - to track the progress of our children. From this information, summative judgements in maths can be made every term.

