Alexandra Park Junior School

Mathematics

2023 - 2024

Alexandra Park Junior School

Intent

- <u>Our shared Vision</u>
- At Alexandra Park Junior School, we hope to instill a self-confidence, enthusiasm and fascination of mathematics. We will achieve this through a **mastery** approach of developing a deep understanding. This means:
- The large majority of pupils progress through the curriculum content **at the same pace.** This is achieved through adaptation of activities, scaffolding resources and or individual support and intervention so that all children can access year group objectives. This will allow all children to achieve and master concepts so they are ready to progress to the next part of the curriculum sequence.
- Teaching is underpinned by accurate assessment and lessons matched to pupils' needs to foster deep conceptual and procedural knowledge.
- Practice, variation and consolidation in different subject areas -application of skills via cross-curricular links, real life contexts and the wider world. It is especially important that children understand how maths relates to their economic-well being
- Time is spent on topics embedding learning and developing a deep conceptual understanding - allowing children to move on to applying their mathematical skills through varied fluency, problem solving and reasoning tasks

Implementation

- From the start of the lesson, children are sat in mixed ability groups to encourage children to become fluent, mathematical thinkers through the use of reasoning and questioning their peers. Mixed ability pairs allows peer support so that everybody progresses at the same pace.
- White Rose Flashback four is used every day as a starter. This should take up no longer than 10 minutes to allow time to address misconceptions and gaps. This needs to be evidenced in books and children need to mark these on the day using purple pen to allow children to address misconceptions.
- An additional 2-minute starter activity to improve children's fluency of number facts and times tables should also be used daily.
- All main teaching sessions should start with an introduction to the TLC, steps to success and key vocabulary for the day (the vocabulary must then be added to working wall).
- Following this, 'ping-pong' approach paired tasks are completed with valuable paired discussion throughout (taken from the White Rose PowerPoints). These tasks use a ping-pong approach to encourage short bursts of pupils practicing together interspersed with short bursts of teacher input and discussion.
- Following the ping-pong activities, children progress to independently work on questions. Each week should consist of 3 lessons which are evidenced within books, and 2 lessons which are practical. Practical sessions are recorded in Class Active Learning Books.
- At the end of each session, children work through their answers with the rest of the class to allow opportunities to address misconceptions. Children mark their question with pink and green highlighters. The teacher can use this to plan same day interventions (which is shown through the children's use of purple pen) to ensure all children are ready to progress.

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Implementation

When planning, teachers will follow the Five Big Ideas for teaching for Mastery: Cohesion, Representation and structure, variation, mathematical thinking and fluency. Here are some questions to consider when planning:

Cohesion

- What do I want the students to achieve? What steps must I take to get there?
- What could go wrong and how can I pre-empt this?

Representation & Structure

- Which concrete resource will expose the structure for this concept?
- How can I use CPA effectively to support understanding?

Variation

- How can I represent this concept differently so I can prepare students for recognising it in unfamiliar contexts?
- Are my tasks mechanical or do they encourage students to spot corrections?
- Do the steps in my lesson connect, building on what is already known to new contexts?

Mathematical Thinking

- What questions might I pose to deepen understanding?
- How have I explored the answer as a starting point?
- Do **all** students have access to reasoning and problem solving opportunities?

Fluency

- Have I provided adequate opportunities for fluency in relation to reasoning and problem solving?
- Do my fluency tasks promote mathematical thinking without abandoning procedural fluency?
- How will I continue to develop fluency outside of the lesson?

Implementation

- **Quality First teaching – key points**
- **Concrete-pictorial-abstract**
- We believe that all students, when introduced to a key new concept, should have the opportunity to build competency in this topic by developing a progressive concrete-pictorial-abstract understanding.
- Concrete- students should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing. **These should be used when introducing a new concept to enable children to deepen their understanding (longer if required).**
- Pictorial – students should then build on this concrete approach by using pictorial representations. These representations, including bar modelling, can then be used to reason and problem solve.
- Abstract – with the foundations firmly laid, students should be able to move to an abstract approach using numbers and key concepts with confidence.
- Clear links should be made between each of these steps.

- **Feedback**
- All children need feedback in class (by teacher and TA) to celebrate the successes and for them to know their next steps. This information is used for future planning and for effective and prompt interventions to be delivered where required. Self and peer assessment should be an integral part of feedback.

Impact

- Impact may be measured in a variety of ways, including:-
  - Book scrutiny
  - Planning scrutiny
  - Learning walks
  - Lesson observations and pop-ins
  - Staff and pupil voice
  - Data analysis

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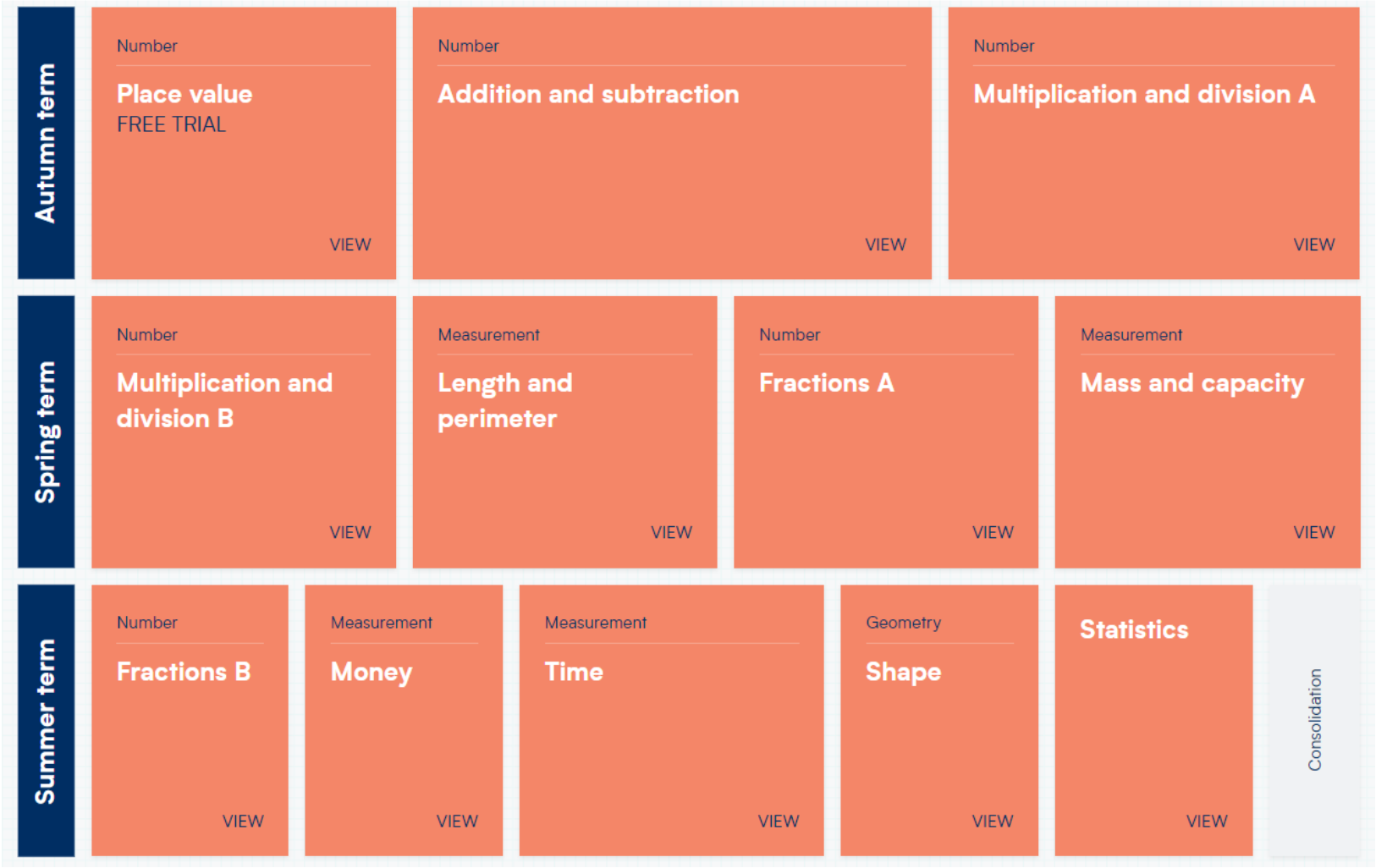
Long Term Plans

Year 3 Curriculum

This is using the White Rose Curriculum which we will supplement using the NCETM resources.



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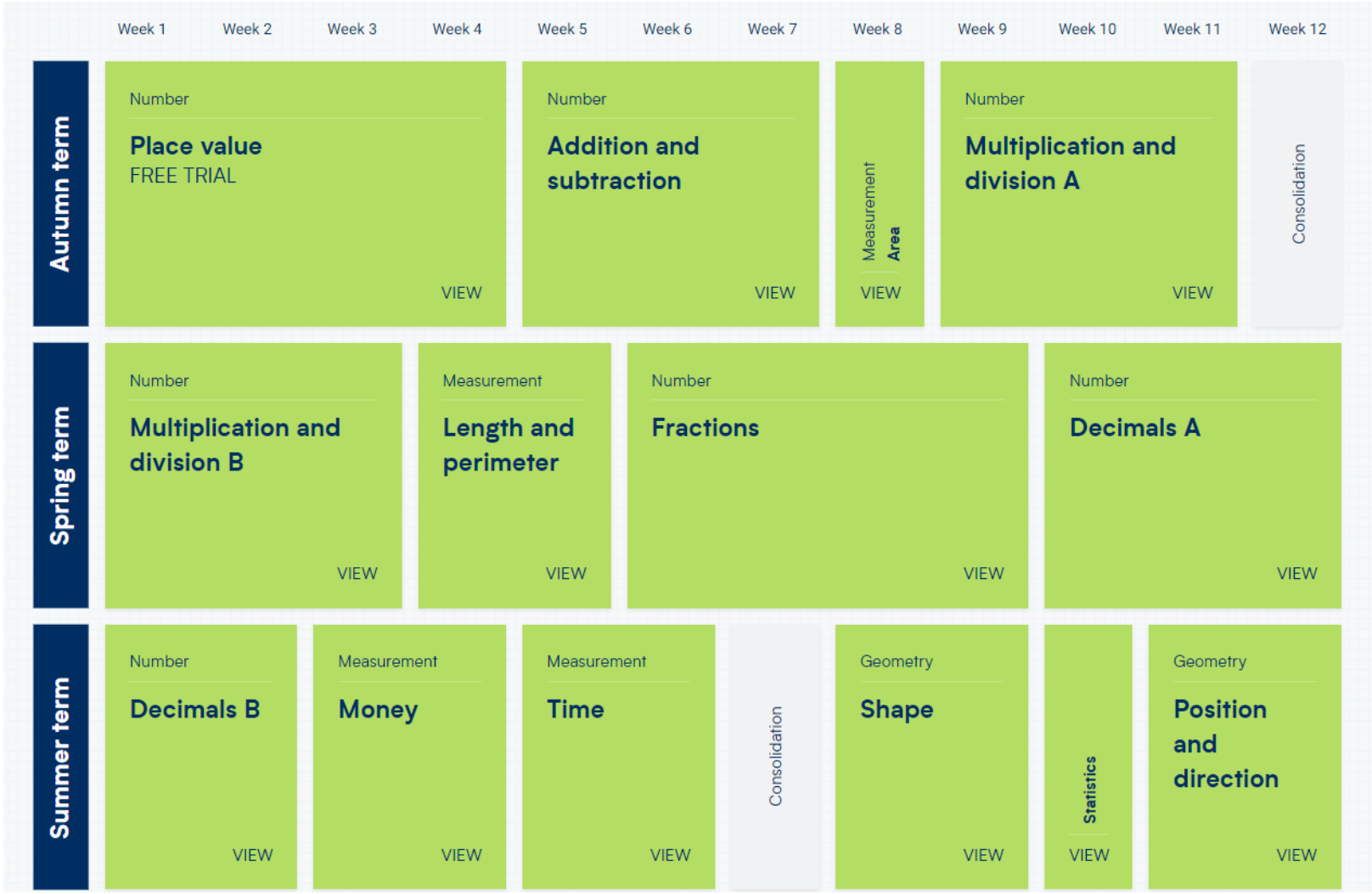
Long Term Plans

Year 4 Curriculum

This is using the White Rose Curriculum which we will supplement using the NCETM resources.



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Long Term Plans

Year 5 Curriculum

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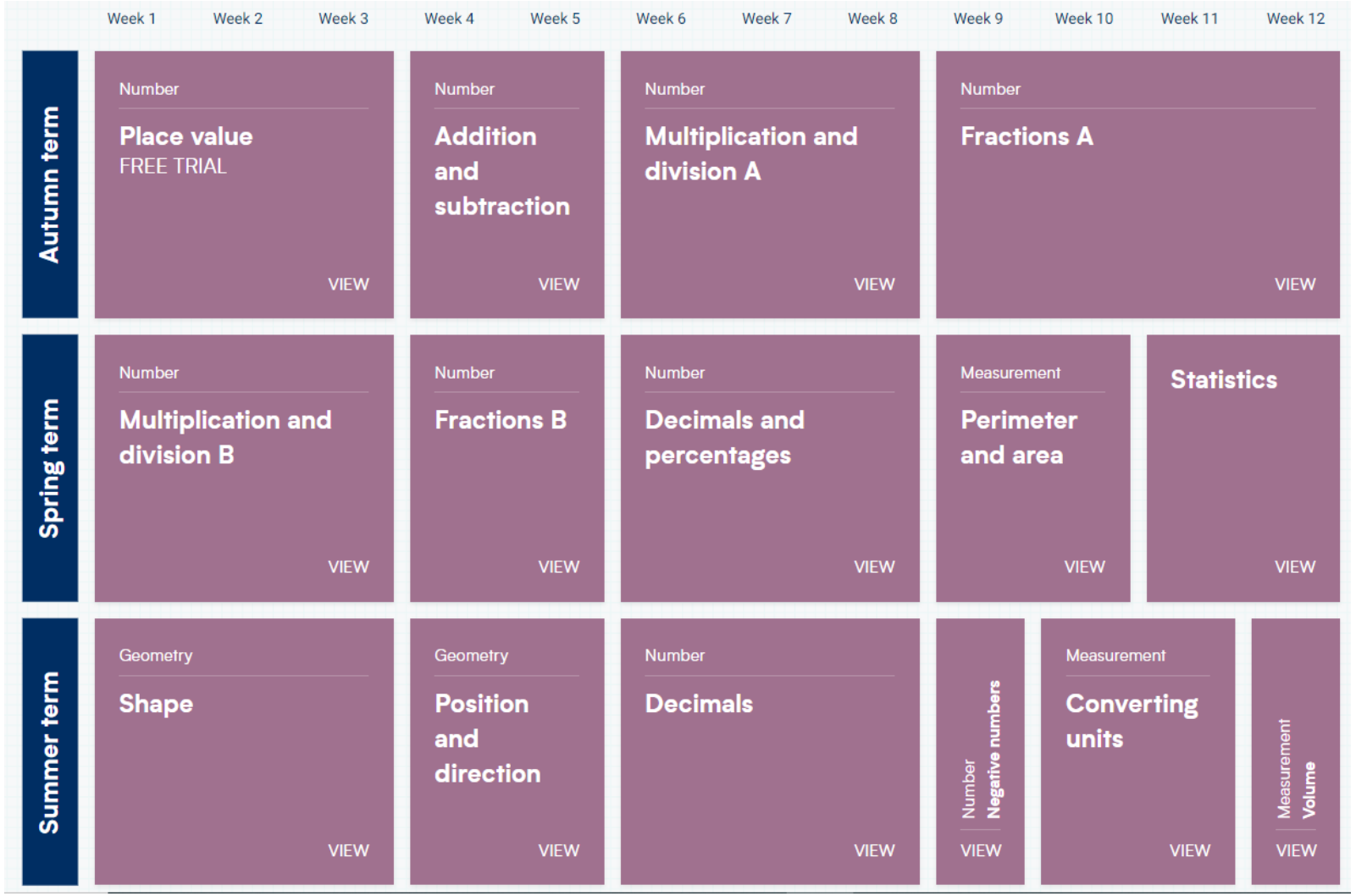

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Long Term Plans

Year 6 Curriculum

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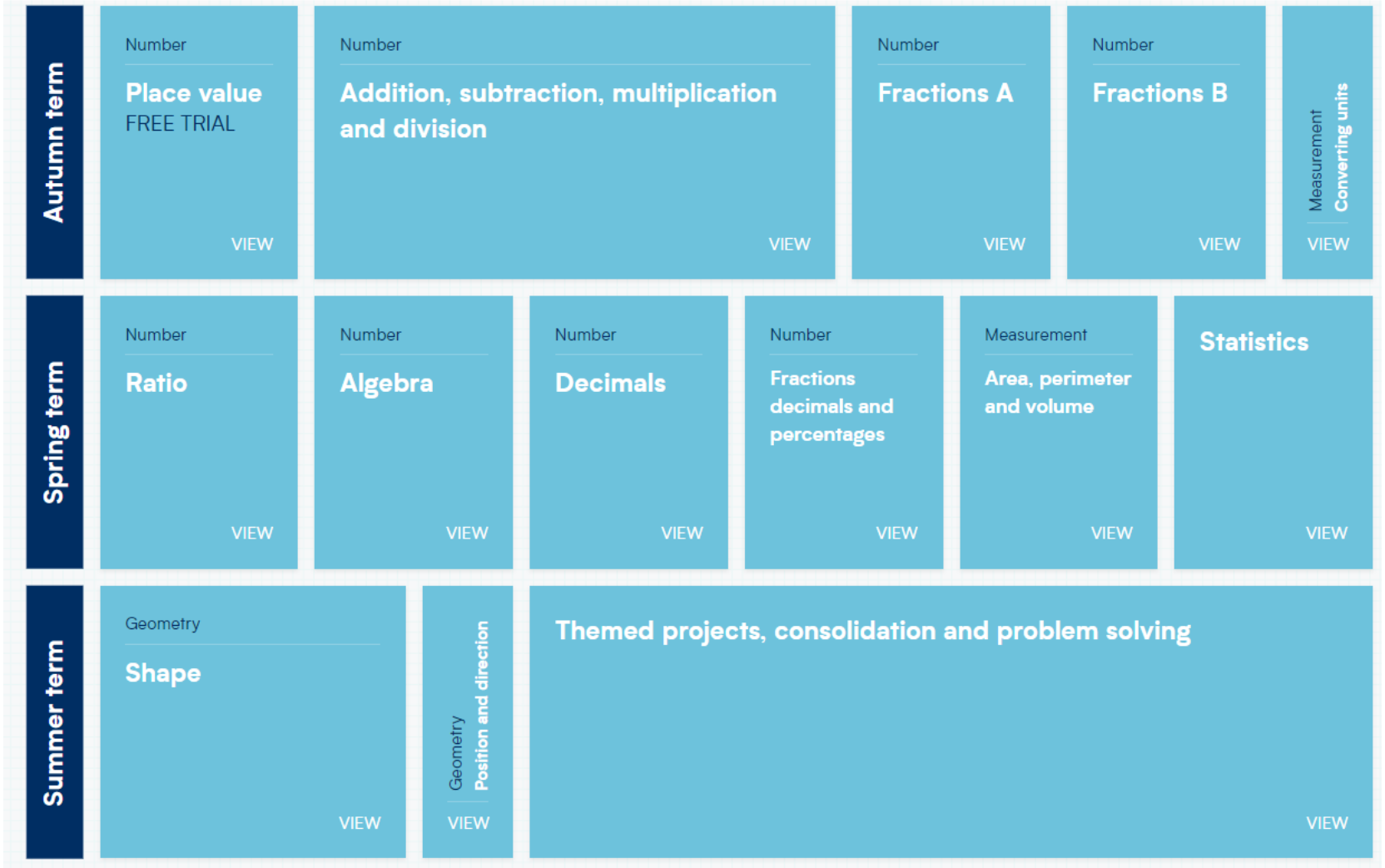

Next Steps

- Continue to work with the NCETM and maths hub to develop our mastery approach.
- Develop CPD and PD for ALL staff.
- Keep developing the use of pre assessments to enable us to accurately target pupils for pre teach intervention.

Resources

- Manipulatives are stored in labelled boxes in the classroom for the children to use. Children should be encouraged to use the manipulatives themselves when needed. This of course should be modelled by the class teachers and teaching assistants.

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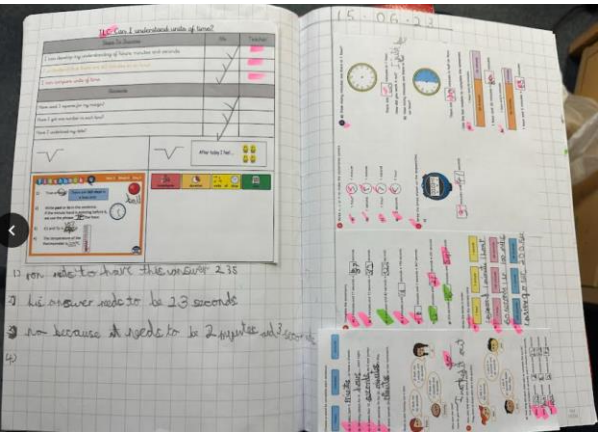
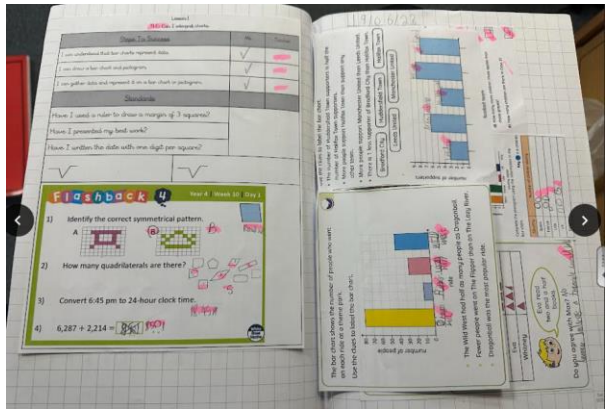
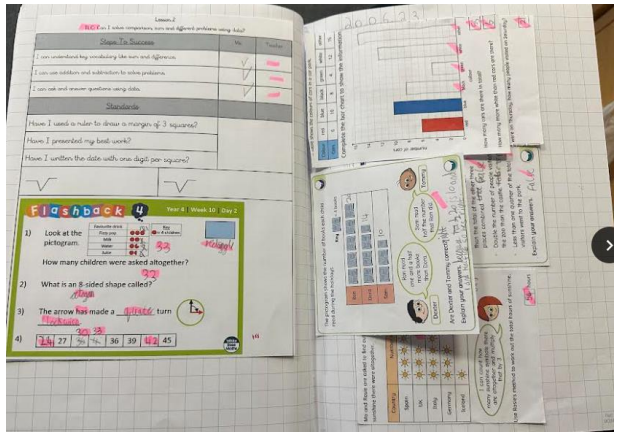
Examples of Work

Year 3

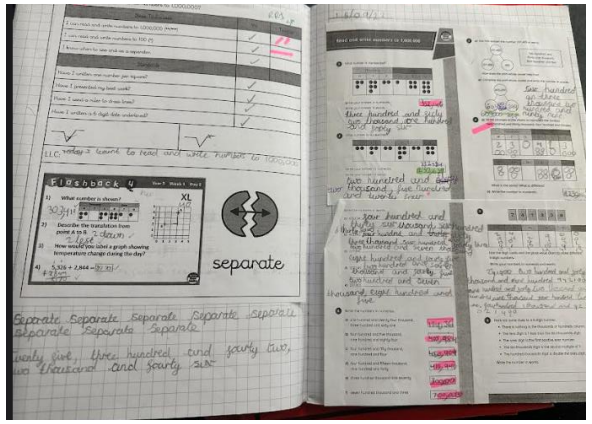


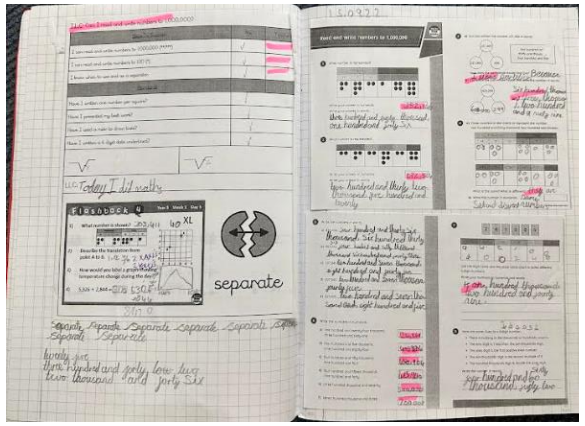
Year 4



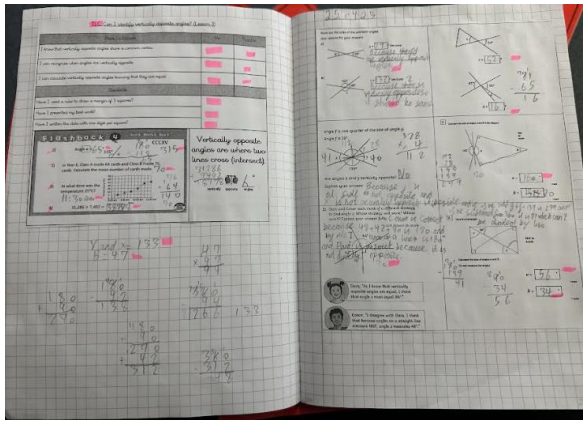


Year 5





Year 6



Progression from Year 3 - Year 6.

Examples of Working Walls