Maths No Problem; A Mastery Approach.

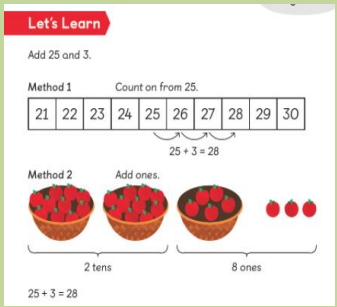
A visitors guide to Maths at Britannia CP School

Lesson Structure

In Focus

In Focus - Each lesson begins with an 'In Focus' task (with **real life application** where appropriate). Children often work in groups using **concrete** materials to solve the problem. The teacher then leads a discussion, using **questioning to challenge** and move learning forward.

Lets Learn

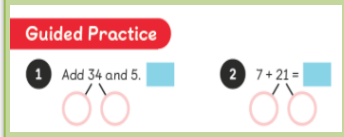


Lets Learn - The class use 'Lets Learn' to look at various methods in more detail to solve the problem. The questions and examples are carefully varied by expert authors to encourage pupils to think about the maths. Rather than provide mechanical repetition, the examples are designed to **deepen pupils' understanding** and **reveal misconceptions.**

Guided Practice – An opportunity for children to work through strategies learnt in the previous parts of the lesson with support where needed. Children are to move to using a pictorial and abstract approach when ready. Recording in Math's Journals when appropriate. **Concrete Pictorial Abstract (CPA) Approach** means pupils learn new concepts initially using concrete examples, such as counters, then progress to drawing pictorial representations before finally using more abstract symbols, such as the equals sign.

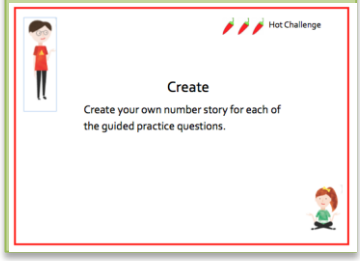
Challenge - This can be used after the guided practice and/or the workbook. To be completed in Journals. Problem Solving activities are designed to be taught using problem-solving approaches to encourage pupils' higher-level thinking. The focus is on working with pupils' core competencies, building on what they know to develop their relational understanding.

Guided Practice



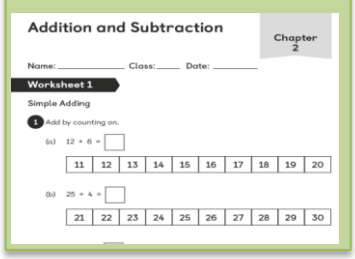
Journal work

Challenge



Journals - Opportunities for children to record their work at an age appropriate level is built upon as they move up. Journals are used as a free space where children can **explore and develop** their understanding at various levels.

Workbook



Workbook - When ready, children work independently in workbooks. **Differentiated tasks** and activities are designed to be easy for pupils to enter while still containing **challenging** components. For advanced learners, the textbooks also contain non-routine questions for pupils to develop their higher-order thinking skills.

OFSTED Framework

When evaluating the effectiveness of a school's work in mathematics through the analysis of performance data, observations in lessons and scrutiny of pupils' work, inspectors will consider:

How well the school is identifying and tackling inconsistency in the quality of mathematics teaching between different groups of pupils, key stages, sets and classes, including those taught by non-specialist teachers of mathematics in secondary schools

how well teaching, in the mathematics lessons observed, through discussions with pupils and scrutiny of their work and by reviewing curriculum plans:

– fosters mathematical understanding of new concepts and methods, including teachers' explanations and the way they require pupils to think and reason mathematically for themselves

– ensures that pupils acquire mathematical knowledge appropriate to their age and starting points, and enables them to recall it rapidly and apply it fluently and accurately, including when calculating efficiently and in applying arithmetic algorithms

– uses resources and approaches to enable pupils in the class to understand and master the mathematics they are learning. The national curriculum for the aims and then states, 'The expectation is that the majority of pupils will move through the programmes of study at the same pace.'

– develops depth of understanding and readiness for the next stage. The national curriculum states, 'Decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.'

– enables pupils to solve a variety of mathematical problems, applying the mathematical knowledge and skills they have been taught.

how well pupils apply their mathematical knowledge and skills in other subjects in the curriculum, where appropriate

How 'No Problem' Maths meets new OFSTED framework.

-We have high quality teacher support materials that help to **tackle potential inconsistencies**. Teachers work with senior leaders, collaboration schools and the mastery maths hub to ensure that the quality of teaching is consistent across classes. Our whole school professional development, including use of online video exemplification means that non-specialists can feel supported in all mathematical topics.

-Lesson guides help teachers to develop **Mathematical reasoning** by providing plenty of opportunities for pupils to investigate planned open questions that require them to sort and compare, seek patterns and look for rules.

-No problem math's teaching emphasizes the importance of using **Multiple representations;** concrete, pictorial and abstract approaches to the teaching of mathematics throughout a pupil's school career and that pupils will need to go back and forth between them, rather than seeing these as separate stages of learning.

-Depth of understanding is developed through pupils' being able to **communicate** using the correct mathematical language. We ask pupils to explain, justify and prove their ideas so that they are deepening their understanding of a concept.

-Problem solving is at the heart of the mastery approach, so we make sure we dedicate sufficient time to each new concept or skill, so every pupil can gain the reasoning they need to solve new problems in unfamiliar contexts. Our pupils are expected to all solve investigations by the end of the lesson, meaning the key concepts and objectives are met by all pupils. Instead of accelerating higher attainers onto new content, teachers differentiate through depth, to develop pupils' conceptual understanding.

-We have **high expectations** for every child, spend more time on fewer topics and focus teaching on using mathematical principles to problem-solve. We promote a **growth mindset** and believe that all children can get better at maths when they put in the effort and work at it. To this end, we have developed lesson structures and resources to promote high expectations. Combined with the training we offer teachers, the school development visits and the collaborative cluster meetings, we feel that this both sets out our high expectations and develops teacher subject knowledge.

-Through our training, we strongly promote the principle that no child is left behind and that interventions, based on the teacher's expert knowledge about what pupils know and can do, help youngsters to "keep up, not catch up". We use end of unit reviews and continuous opportunities for children to apply their skills so that teachers can **assess for mastery.** Teachers track pupils' gains in progress over the course of a topic, and tailor learning to suit individual pupils' needs. Equal opportunities are promoted through our belief that all children can succeed in mathematics. Links are made wherever possible to real-life opportunities so that mathematics is seen as "real".