

At Lincoln Carlton Academy, we believe every child can achieve in maths and it is our responsibility to provide the environment and experiences to make this possible. We believe every child is a capable mathematician with the ability to reason and problem solve. A positive growth mindset from teachers and pupils combined with strong teacher subject knowledge are essential to our children's success in mathematics.

'At our school, every child in our classroom has an 'I can solve anything attitude'

Beginning in September 2019, we have adopted a 'mastery' approach to the teaching of maths across the whole school. This approach recognises the value of developing the power to think, understand and reason rather than just 'do' using a set of given rules. The fundamental belief is that every child can achieve number fluency, confidence and understanding step by step.

Children are all taught the same concept in their year and the expectation is that all children can succeed. Some children may need extra strengthening teaching whilst others are encouraged to deepen their understanding. Maths mastery recognises the value of making a whole class journey of a concept which is broken down into small steps of learning, one by one. In this way children are building secure foundations which they can build upon and make connections to other areas of maths ensuring deep mathematical understanding and confident mathematicians.

Power Maths

As part of our Mastery journey, we have adopted a maths scheme called *Power Maths* to support our teaching of maths.

What is Power Maths?

Power Maths is a resource that has been designed for UK schools based on research and extensive experience of teaching and learning around the world and here in the UK. It has been designed to support and challenge all pupils, and is built on the belief that EVERYONE can learn maths successfully.

How does this support our approach to teaching?

The philosophy behind *Power Maths* is that being successful in maths is not just about rote-learning procedures and methods, but is instead about problem solving, thinking and discussing. Many people feel they were taught maths in a way that was about memorising formulas and calculation methods, then having to apply them without any real understanding of what or how these methods actually work. *Power Maths* includes practice questions to help children develop fluent recall and develop their conceptual understanding. *Power Maths* uses growth mindset characters to prompt, encourage and question children. They spark curiosity, engage reasoning, secure understanding and deepen learning for all.

How will the lessons work?

Each lesson has a progression, with a central flow that draws the main learning into focus. There are different elements, informed by research into best practice in maths teaching, that bring the lessons to life:

- **Discover** – each lesson begins with a problem to solve, often a real-life example, sometimes a puzzle or a game. These are engaging and fun, and designed to get all children thinking.
- **Share** – the class shares their ideas and compares different ways to solve the problem, explaining their reasoning with hands-on resources and drawings to make their ideas clear. Children are able to develop their understanding of the concept with input from the teacher.
- **Think together** – the next part of the lesson is a journey through the concept, digging deeper and deeper so that each child builds on secure foundations while being challenged to apply their understanding in different ways and with increasing independence.
- **Practice** – now children practice individually or in small groups, rehearsing and developing their skills to build fluency, understanding of the concept and confidence.
- **Reflect** – finally, children are prompted to reflect on and record their learning from each session and show how they have grasped the concept explored in the lesson.

Representations

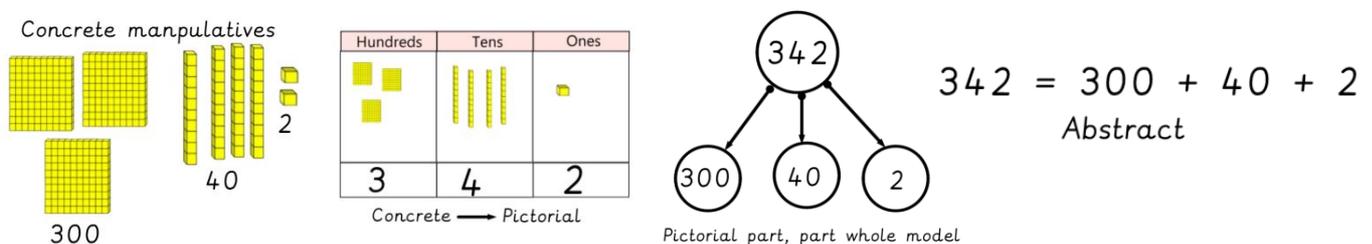
The teaching of maths uses the principles of **CPA – Concrete, Pictorial, Abstract**.

Concrete – children use manipulatives to represent the concept they are being taught.

Pictorial – children can use pictures and models to represent the concrete manipulatives

Abstract – This is the concept in the abstract form which is more readily understood once children have explored the concrete and pictorial.

An example of this can be found here when exploring the concept of Place Value within 1000.



What if my child needs a confidence boost, or wants to be challenged further?

Power Maths is based on a 'small-steps' approach, sometimes called a mastery approach.

This means that the concepts are broken down so that your child can master one idea without feeling over-whelmed. There are a range of fluency, reasoning and problem solving questions in each lesson that are designed to support the different needs and confidence levels within a class, while at the same time fostering a spirit of working and learning together. Each lesson includes a challenge question for those children who can delve deeper into a concept.

So far, children have been incredibly excited about their own *Power Maths* adventures.