

## CALT – ADVICE SHEETS

### Maths

#### What is the Concrete Pictorial Abstract in Maths?



The **Concrete Pictorial Abstract (CPA)** approach is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics.

Pupils are introduced to a new mathematical concept through the use of **concrete** resources (e.g. fruit, Dienes blocks etc). When they are comfortable solving problems with physical aids, they are given problems with pictures – usually **pictorial representations** of the concrete objects they were using.

Then they are asked to solve problems where they only have the **abstract** i.e. numbers or other symbols. Building these steps across a lesson can help pupils better understand the relationship between numbers and the real world, and therefore helps secure their understanding of the mathematical concept they are learning.

#### Why use the Concrete Pictorial Abstract approach in Maths?

Pupils achieve a much deeper understanding if they don't have to resort to rote learning and are able to solve problems without having to memorise.

When teaching reading to young children, we accept that children need to have seen what the word is to understand it. Putting together the letters c- a- t would be meaningless and abstract if children had no idea what a cat was or had never seen a picture.

People often don't think of this when it comes to maths, but to children many mathematical concepts can be equally meaningless without a concrete

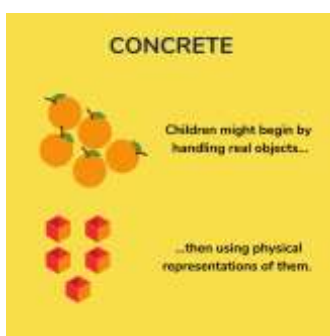
resource or picture to go with it. This applies equally to mathematics teaching at KS1 or at KS2.



### **Concrete**

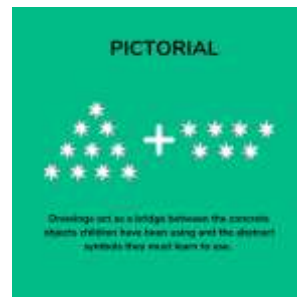
This is the “doing” stage. During this stage, pupils use concrete objects to model problems. Unlike traditional maths teaching methods where teachers demonstrate how to solve a problem, the CPA approach brings concepts to life by allowing pupils to experience and handle physical (concrete) objects. With the CPA framework, every abstract concept is first introduced using physical, interactive concrete materials.

For example, if a problem involves adding pieces of fruit, pupils can first handle actual fruit. From there, they can progress to handling abstract counters or cubes which represent the fruit.



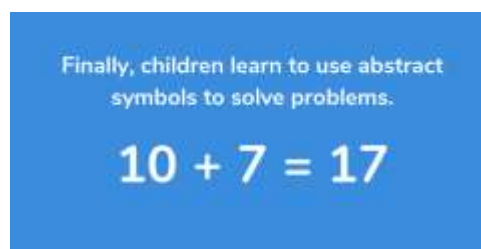
### **Pictorial**

This is the “seeing” stage. Here, visual representations of concrete objects are used to model problems. This stage encourages pupils to make a mental connection between the physical object they just handled and the abstract pictures, diagrams or models that represent the objects from the problem.



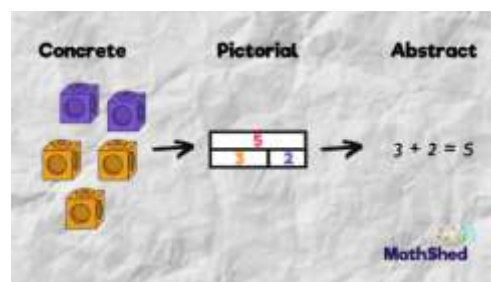
## **Abstract**

This is the “symbolic” stage, where pupils use abstract symbols to model problems. Pupils will not progress to this stage until they have demonstrated that they have a solid understanding of the concrete and pictorial stages of the problem. The abstract stage involves introducing abstract concepts (for example, written numbers or mathematical symbols).



## **Want to know more?**

Here is a useful website to explore:



<https://blog.edshed.com/what-is-the-cpa-approach-explained/>