Parent Mathematics Workshop

Aims:

- To provide parents with information about the concrete, pictorial and abstract approach
- For parents to gain a greater understanding of the concepts behind the CPA approach
- To give parents an opportunity to familiarise themselves with some of the resources WVPS use in Maths lessons

What is the CPA approach?

https://www.youtube.com/watch?v=weCPBIJVSrI&safe=active

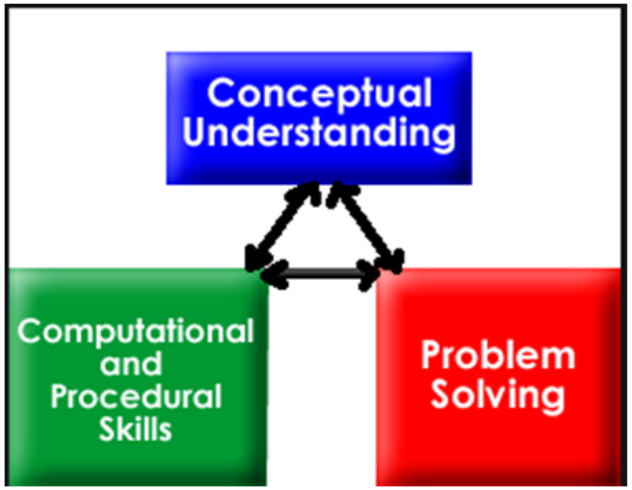
Barriers

- Lack of conceptual understanding means that pupils struggle to reason and problem solve
- Teaching processes and methods rather than developing an understanding of number- Remember rather than understand!
- Concrete and pictorial representations seen as a tool to support lower ability pupils rather than secure all pupils conceptual understanding.
- Quantity rather than quality

Why the CPA Approach?

To provide a greater security and a deeper understanding of mathematical concepts is key to success, due to this, at WVPS we have adopted the concrete, pictorial and abstract approach to teaching.

https://www.youtube.com/watch?time_continue=11&v=2Ss8xAXs_ns&feature=emb_title



What is a deep understanding?

"Progress in mathematics learning each year should be assessed according to the extent to which pupils are gaining a deep understanding of the content taught for that year, resulting in sustainable knowledge and skills."

A pupil really understands a mathematical concept, idea or technique if he or she can:

- describe it in his or her own words;
- represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the CPA approach)[1];
- explain it to someone else;
- make up his or her own examples (and non-examples) of it;
- see connections between it and other facts or ideas;
- recognise it in new situations and contexts;
- make use of it in various ways, including in new situations.

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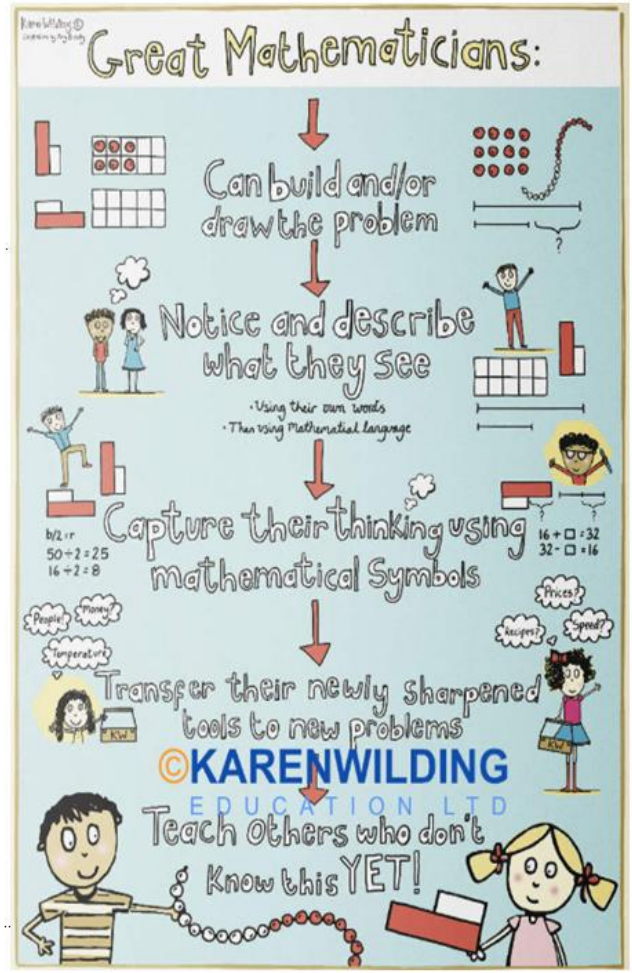


What is Cardinality?

= The quantity value of a number

- Rather than viewing EYFS as young peoples learning, see this as the essential foundations which all learners needs securely in place in order to continually develop deep conceptual understanding.
- This needs to be a consistent whole school approach! Every year we will be building, refining and extending existing skills using pictorial and concrete representations so that all children have a solid conceptual understanding of number.
- A child needs to have a sense of what numbers mean and understand their relationships with one another.
- Concrete and Pictorial- Not just to support LA. MA also need as it strengthens their conceptual understanding and therefore their reasoning and problem solving skills!

Concrete Resources - Number representation

7 **23** **148**

2901 **10,442**

The Foundations:

- Counters (Double sided)
- Dienes
- Place value counters

Other resources:

- Numercon
- Dice (Subitizing)

Number Bonds - Addition and Subtraction

From the Singapore approach there are a few videos that might help you to understand the steps that children should follow for a deeper understanding.

Parent video

Addition: What concrete resources could you use?

8 + 2 =

5 + 5 =

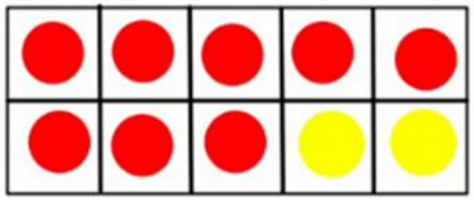
23 + 19 =

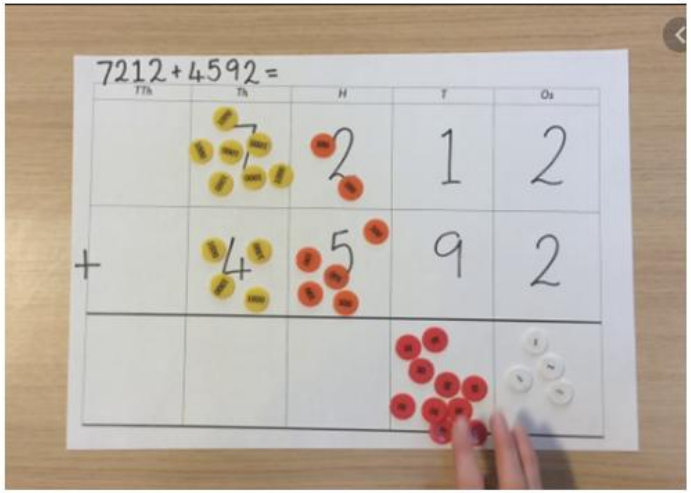
113 + 119=

7212 + 4592=

How will this help pupils (including the MA) conceptual understanding?

What Vocab/Questioning could you use?




7212+4592=
Th
H
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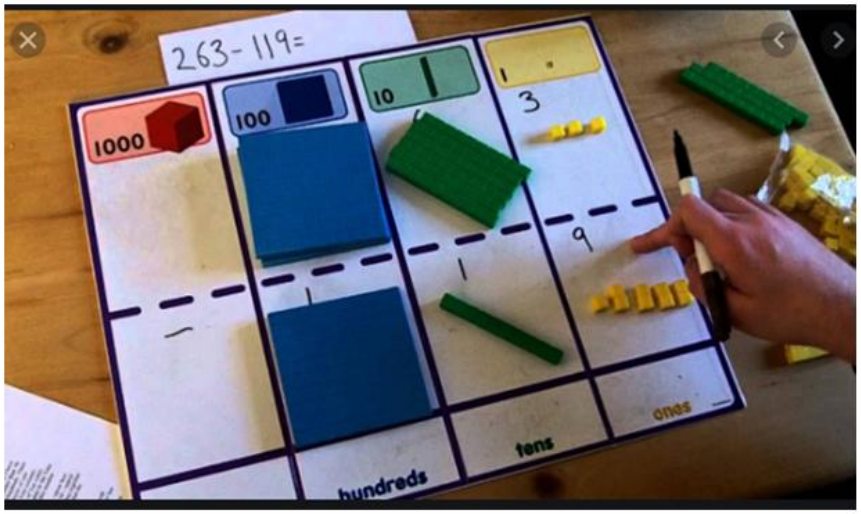
2
1
2
+
5
9
2


263-119=
1000
100
10
1
3
9
hundreds
tens
ones


1000
100
10
1
2
thousands
hundreds

Pictorials

Pictorial is the "seeing" stage. Here, visual representations of concrete objects are used to model problems. This stage encourages children 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.

Building or drawing a model makes it easier for children to grasp difficult abstract concepts (for example, fractions). Simply put, it helps students visualise abstract problems and make them more accessible.

How can we show the same number sentences pictorially?

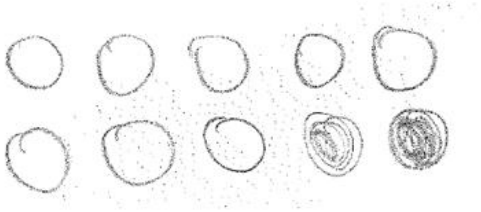
8 + 2 =

5 + 5 =

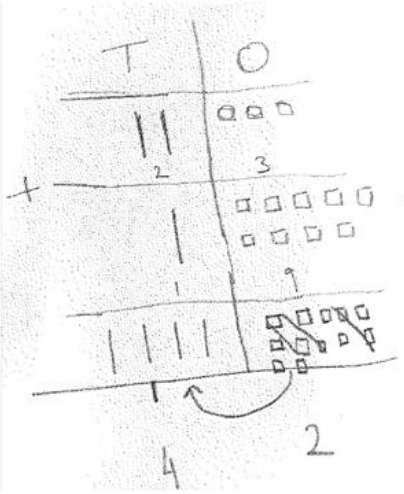
23 + 19 =

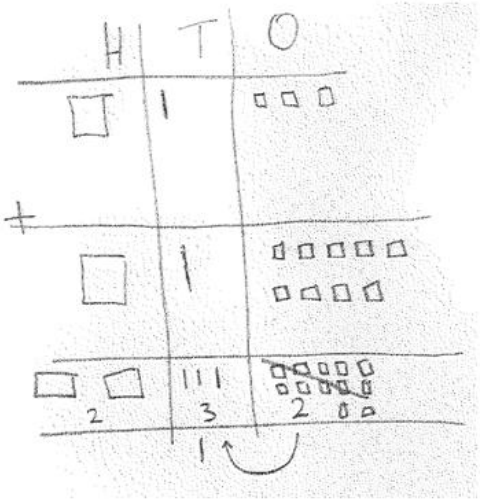
113 + 119=

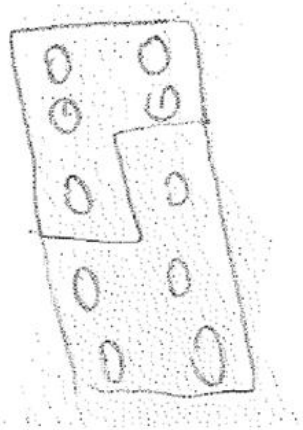
7212 + 4592=



= 10







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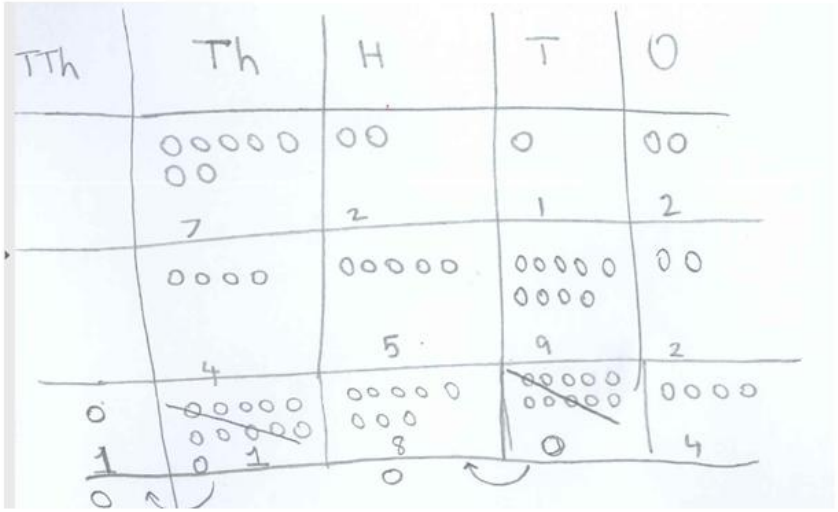
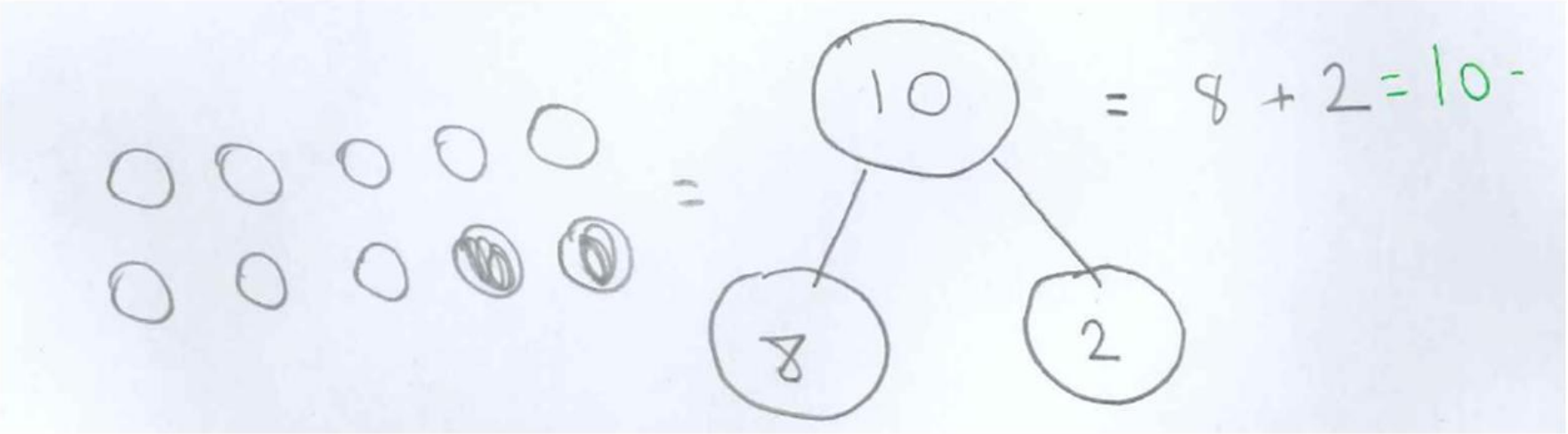
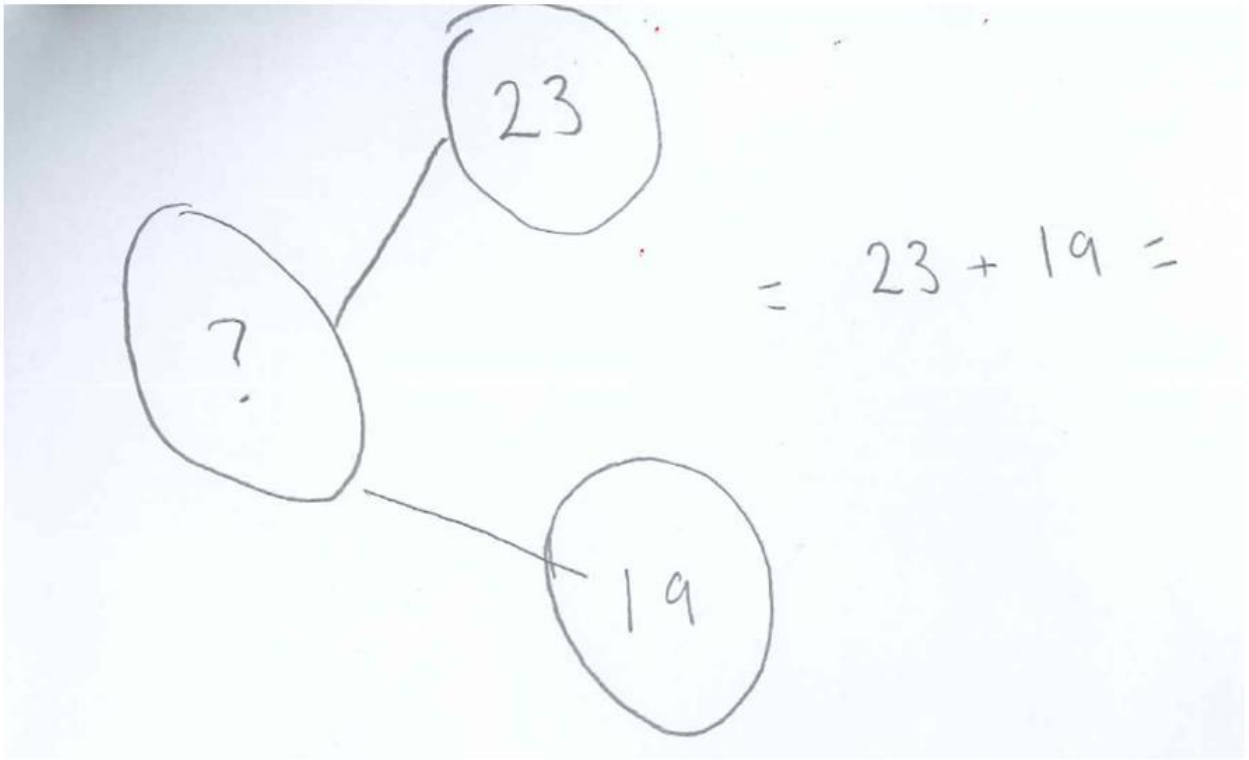


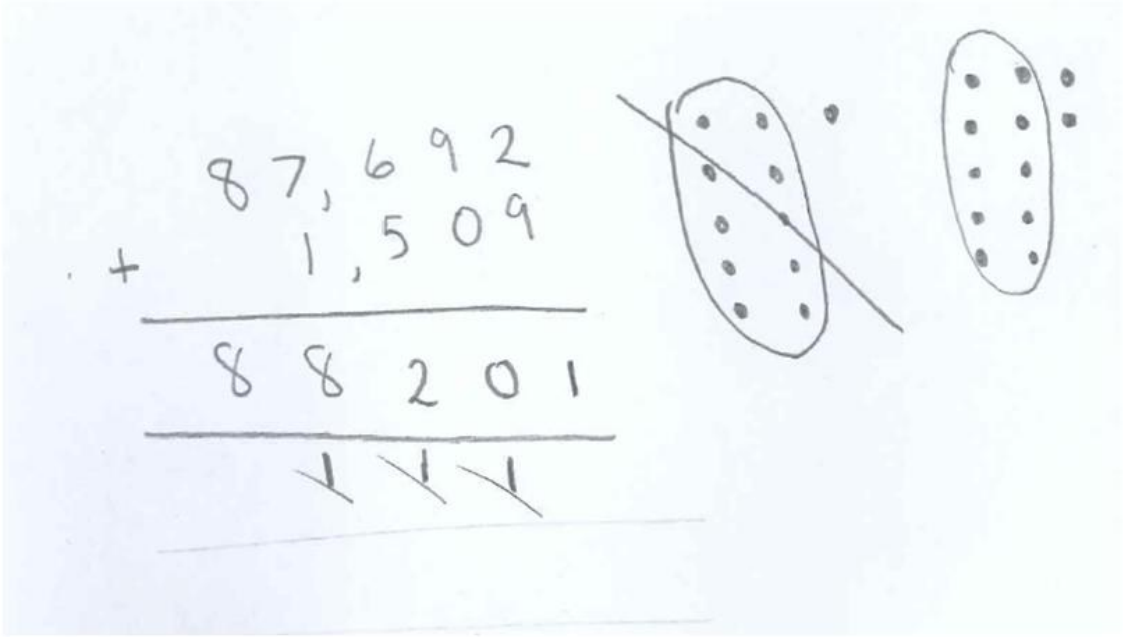
Pictorial to Abstract

Start off by having the pictorial next to the abstract and build from there!




23
?
19
= 23 + 19 =

Pupils higher up the school can still use the idea of a 10 frame and apply.



Discussion: How can you use concrete resources and pictorials and apply it to subtraction?

Ordinality: The relationships numbers have with each other or the number system

EYFS/ Year 1 model:

How could this be used further up the school?

How else could we practically teach links and patterns?

How to help at home

- Make maths as real as you can. Include your children in everyday tasks around the house that involve measures, money and calculating.
- Ask pupils how they got to an answer- Can they prove they are correct? Can they show you a different way?

A closing thought

When travelling around in the car, do you...

Talk about the mathematics you see on the roads...

Or when you stop beside a house, notice the number what facts can you share?

Please play games

- **Snakes and ladders** – as it is, vary dice numbers
- **Guess Who?** – systematic working, exploring possibilities
- **Junior Monopoly** – money
- **Cluedo** – strategy
- **Battleships** – coordinates and strategy
- **Noughts and crosses** – strategy
- **Connect 4** – strategy
- **Bingo/beetle drive**

Mathematical glossary

It is useful to find a mathematical glossary, as the vocabulary of mathematics can be confusing.
Here is a link to use:

https://www.theschoolrun.com/primary-numeracy-glossary-for-parents

Useful mathematical websites

TTRS (Year 2- 6)

Maths zone
https://mathszone.co.uk/

I love maths games
https://www.ilovemathsgames.com/

Bitesize Maths
https://www.bbc.co.uk/bitesize/subjects/z6vg9j6