

# KS2 PARENT WORKSHOP

26/4/23

Today's aims:

- Identify how **fluency** impacts upon achieving **mastery**.

*How can this be supported at home?*

- Explore some **arithmetic approaches we use in class**

# FLUENCY

**Fluency = how fast a person can retrieve correct maths facts to working memory from storage memory.**

We want children to build speed and confidence, without reliance on resources and fingers, using strategies to support them

- Timetables (and matching divisions)
- Quick recall addition and subtraction

Ability to apply that knowledge to new and varied contexts

*Consider: In your head now, complete  $120 \div 4$   
What is the best way to complete it?  
Maybe your approach is different from others?*

**Double, double again**  
**Half, half again**

$$6 \times 2 = 12 \quad 12 \times 2 = 24$$
$$6 \times 4 = 24$$

**Place value knowledge**

$$7 \times 2 = 14$$
$$70 \times 2 = 140$$

**Partitioning**

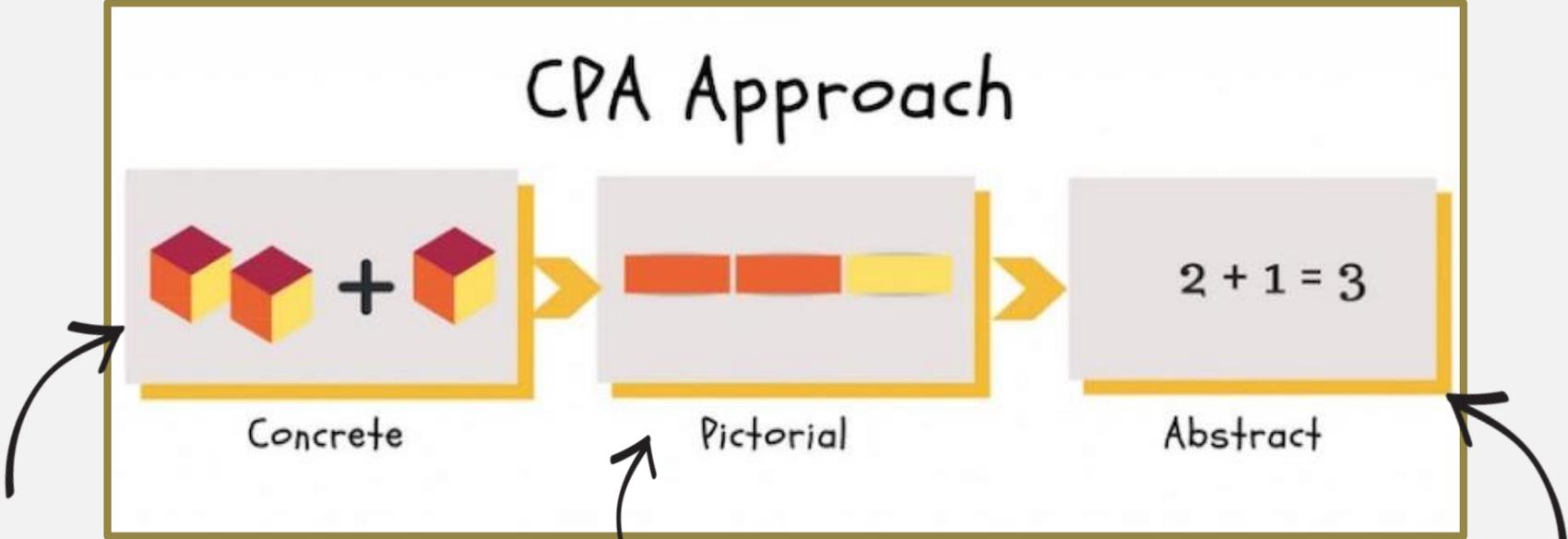
$$34 + 25$$
$$30 + 20 = 50$$
$$4 + 5 = 9$$
$$= 59$$

**Near doubles**

$$6 + 6 = 12$$
$$6 + 7 = 13$$

# CPA

Concrete, pictorial, abstract



Physical resources the children can touch, move and explore

Connections built with pictures and images, in some cases created by the children

The abstract concept then becomes clearer

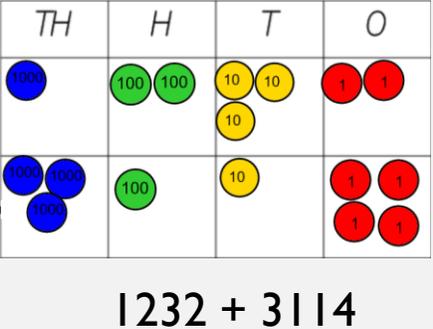
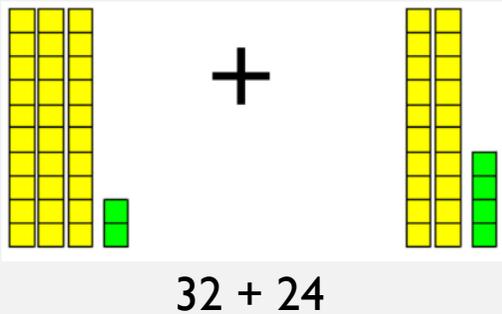
**This doesn't mean that physical resources are only used at the start of children's learning journey. We continue to use them up to year 6 and can be applied to challenges and new ideas.**

# ADDITION AND SUBTRACTION

**First:**

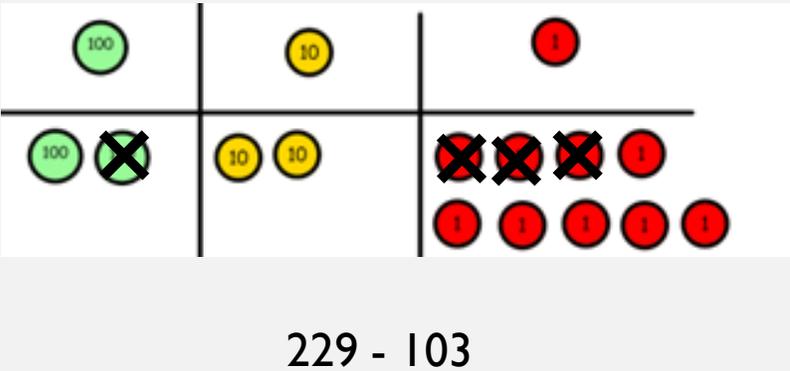
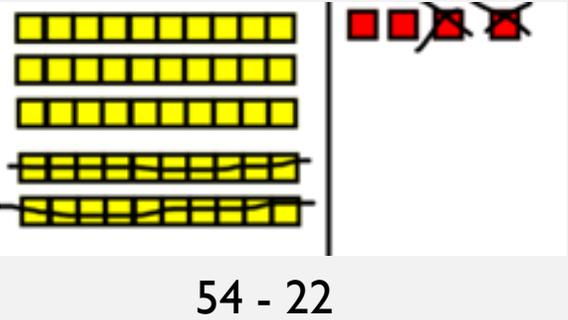
Children will explore using dienes and place value counters to partition and add parts individually

Addition →



*Notice the presentation being 'grid like'*

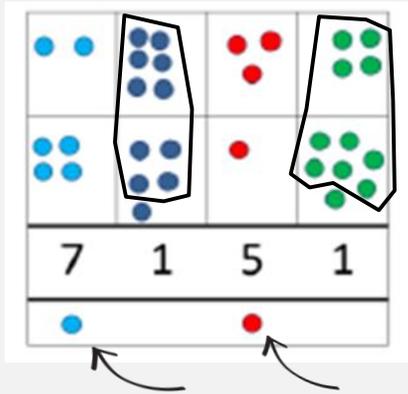
Subtraction →



# EXCHANGING AND CARRYING

When a calculation 'bridges 10' we may 'carry over' what we need or exchange from another place value position

## Addition

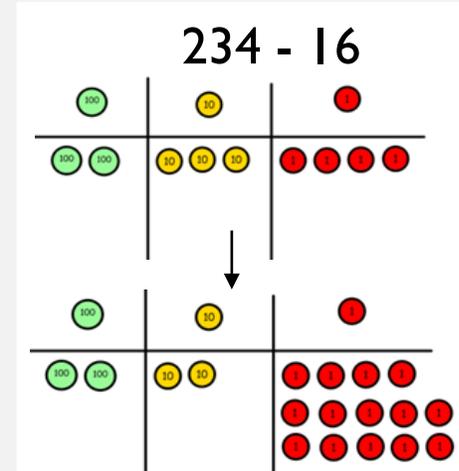


Where 10 can be collected, we exchange it for the next place value position

The carry is shown here

$$\begin{array}{r} 2634 \\ + 4517 \\ \hline \end{array}$$

## Subtraction



There are not enough ones available to subtract 6, so we take a ten and exchange it for ten ones

$$\begin{array}{r} 234 \\ - 16 \\ \hline \end{array}$$

# MULTIPLICATION

## Year 3 and 4

x	T	U
	██████████	□ □ □
	██████████	□ □ □
	██████████	□ □ □
	██████████	□ □ □

$13 \times 4$

$34 \times 2$

Tens		Ones	
10	10	1	1
10	10	1	1
10	10	1	1
10	10	1	1

	T	O	
	3	4	
x		2	
		8	
	6	0	
	6	8	

( $4 \times 2 = 8$ )  
( $30 \times 2 = 60$ )



Resources are used alongside the written calculation

Pictorial representations begin to be simplified to more concise column methods

Children write each calculation as they go 'keeping track' of the total multiplication.

## Year 5

		1	2	3		
x			2	3		
		3	6	9		
	2	4	6	0		

( $123 \times 3$ )  
( $123 \times 20$ )

$123 \times 23$

Children perfect their column multiplication

They are expected to calculate 4 digit numbers x 2 digit numbers

$$\begin{array}{r} 234 \\ \times 12 \\ \hline \end{array}$$

# DIVISION

## Year 3 and 4

Tens	Ones
	
	

$$48 \div 2$$

Emphasis is put on partitioning the number allow for easier division

Children continue to use resources and place value columns to assist with this

## Year 5

		1	2	1	
	5	6	0	5	

$$605 \div 5$$

Children apply what they have learnt to short division methods.

They look at each digit individual, carrying remainders where needed.

**Children explore long division in year 6 where they divide by a 2 digit number**

$$242 \div 4$$

$$2 \overline{) 242}$$

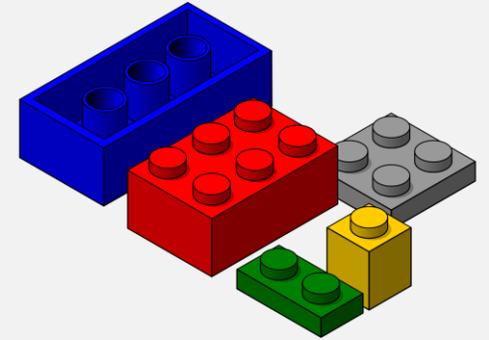
# TOP TIPS FOR AT HOME

Anything can be used as a concrete resource: Lego bricks, pasta shells, pencils!

Little and often is more effective, including with homework!

Find ways to progress their fluency in day to day tasks:

- Add/multiply/subtract/divide door numbers, numbers on car registration plates, road signs
- Flicking through the TV guide? Ask your child to calculate the length of their favourite programmes. How long is it until the next programme?
- Use food packaging to discuss 2D and 3D shapes. What are the properties of these shapes e.g. how many faces, sides, vertices? Flatten the packaging out to find the net of the 3D shape too.
- Measuring up for new furniture? Want to make sure the Christmas tree will fit in your living room? These are really good opportunities to encourage your child to see the value of careful measuring skills in everyday life.
- Board games supply endless opportunities for Maths – Snakes and Ladders, Monopoly, Bingo, Connect Four, Battle Ships



AND MOST IMPORTANTLY,

BE AN AMBASSADOR FOR MATHS!

**We want children to enjoy maths** and feel, with some hard work, they can all progress and achieve!

*This may go against what you experienced at school but the adults around have an important influence*

If children hear 'I can't do maths' from parents, teachers, friends they begin to believe it isn't important. People become less embarrassed about maths skills as it is acceptable to be 'rubbish at maths'.

Top tips:

- Remove all negative ideas of maths from discussions or 'Someone else can help with your maths homework because I'm rubbish'
- Everything in the National curriculum is available online. Struggling with an idea or some homework? – google it, or better yet, ask a teacher!
- Recognise that there is more than one way of doing calculations – *You may have learned one method, but children are actively encouraged to seek out alternative methods in school and choose one which works for them, no matter how long winded.*
- Be an actor! – Get excited about maths and your child will get excited too.

