

Inspiring children
to succeed

INSPIRE
MATHS



Inspire Maths Parents' Workshop

Led by Mrs Grover and Mrs Wallace



OXFORD

This parents' workshop will explain:

- National Curriculum key ideas
- What Inspire Maths is all about
- How we teach Inspire Maths at Chilwell Croft
- What 'Concrete, Pictorial, Abstract' means and what it looks like in the classroom

National Curriculum (2014)

The national curriculum for mathematics aims to ensure that all pupils:

- *become **fluent** in the fundamentals of mathematics, including through **varied and frequent practice** with increasingly complex problems over time, so that pupils develop **conceptual understanding** and the ability to recall and apply knowledge rapidly and accurately*
- ***reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language*
- *can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with **increasing sophistication**, including breaking down problems into a series of simpler steps and **persevering in seeking solutions***

FLUENCY

To be fluent in mathematics children should be able to...

- grasp the fundamentals of mathematics
- practice arithmetic skills
- make connections
- become more confident with written and mental methods
- be confident with what they are doing and why
- recall and apply their knowledge rapidly and accurately

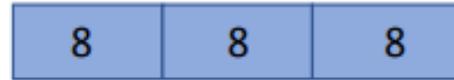
Through **fluency** work, children will learn to:

- Confidently balance equations

$$40 \div 8 = 5$$

$$4 \times 2 = 8$$

$$\square \times 2 = 8$$

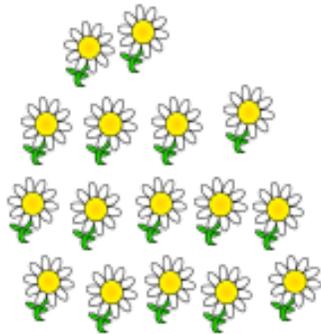


$$\begin{array}{r} \times 5 \\ 8 \\ \hline 40 \end{array}$$

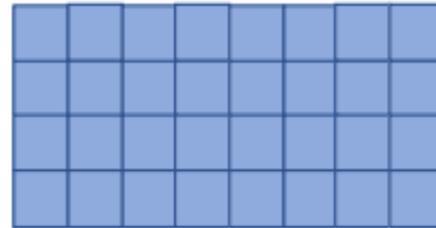
$$8 \times \square = 0$$

Worted questions

$$64 = 8 \times \square$$



There are 16 daisies. How many pairs can you make?



Find the area

Fluency in Year 2:

- Order the numbers from smallest to largest:
23, 32, 27, 30, 19, 41 (**Number and Place Value**)
- $22 - ? = 15$ (**Addition and Subtraction**)
- Find an object bigger than 10cm (**Measurement**)
- $20 \div 2$ (**Multiplication and Division**)
- Find $\frac{1}{3}$ of 30 (**Fractions**)
- Find 3 different 3D shapes in the classroom (**Shape**)

REASONING

Through reasoning problems children should...

- be able to explain why an answer is right or wrong
- follow a line of enquiry to a logical conclusion
- prove theories using mathematical language

Reasoning can be thought of as the 'glue' that helps maths makes sense.

Reasoning :

- It requires systematic thinking.
- It involves being able to explain a method to another child.

Convince me!

Explain why.

Odd one out.

Do you agree?

True or false?

Prove it!

What do you notice?

Reasoning in Year 2:

- Katie is trying to build a tower with 3D shapes. When she uses one shape they keep rolling off each other. What shape do you think she is using and why?
(Shape)
- Which has more? 4 bags of sweets with 5 in each or 3 bags of sweets with 10 in each?
Explain your reasoning
(Multiplication and Division)

PROBLEM SOLVING

Children should be able to...

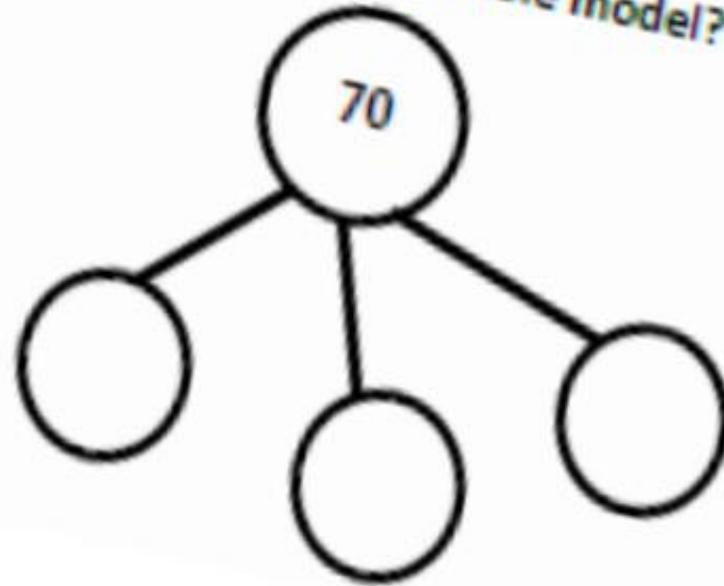
- apply their mathematics to a variety of routine and non-routine situations
- put maths into context
- break down problems into a series of manageable steps

This is fundamental to the mathematical development of all children.

Problem Solving:

- Engaging with real problems; guessing, discovering, and making sense of mathematics.
- Exploring lots of different options.
- Using a system or a strategy.

How many different ways can you complete this part whole model?



Problem Solving in Year 2:

- Tubes of bubbles come in packs of 2 and 5.
Holly has 22 tubes of bubbles. How many of each pack could she have? How many ways can you do it?
(Multiplication and Division)
- Four students measured their heights.
Lucy was taller than Katie, but not as tall as Tim.
Gary was taller than Tim. Write down their names in order of their heights, from shortest to tallest.
(Measurement)

At Chilwell Croft we now use Inspire Maths.

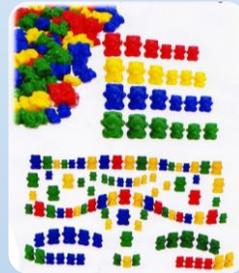
Inspire Maths is the UK version of the Singapore maths programme My Pals Are Here!, which is incredibly successful.

It is a mastery curriculum with an emphasis on deep understanding and problem solving.

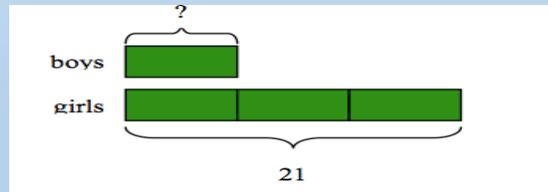
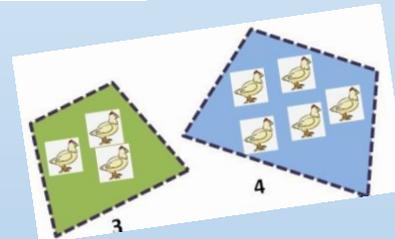
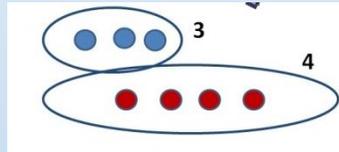
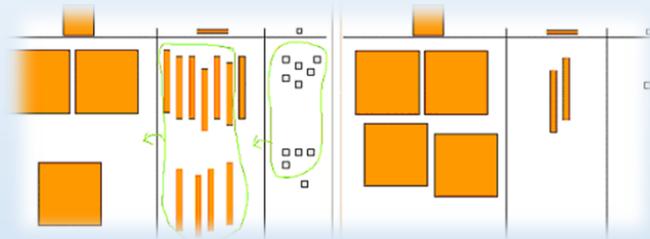
The programme is built around the CPA approach.

The Concrete, Pictorial and Abstract approach to teaching (CPA).

Concrete



Pictorial



Abstract

$$3 + 4 = 7$$

$$33$$

$$15N + 2P + 1A + 1E + 1SP + 1F = 33$$

$$3C + 1P + 1SN = 33$$

$$1C + 11SN + 2F = 33$$

$$33SN = 33$$

$$16P + 1SN = 33$$

$$3C + 3SN = 33$$

$$8D + 1SN = 33$$

$$15P + 3SN = 33$$

$$14P + 10 + 1SN = 33$$

$$10P + 1F + 1P + 1SN = 33$$

$$2P + 1SN + 10 + 1SP + 1E + 1C = 33$$

$$2P + 1SN + 1P + 1E + 1SP + 1C = 33$$

$$2P + 10 + 1SN + 1E + 1SP = 33$$

$$1P + 2P + 1SN + 1SP + 1E + 1C = 33$$

$$1P + 2P + 1SN + 1SP + 1C + 1E = 33$$

$$1P + 2P + 1SP + 1C + 1SN + 1E = 33$$

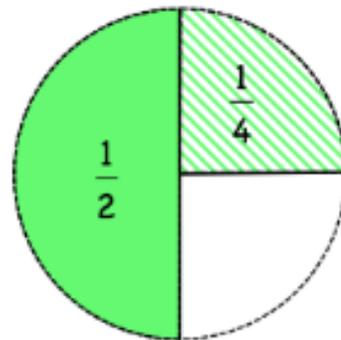
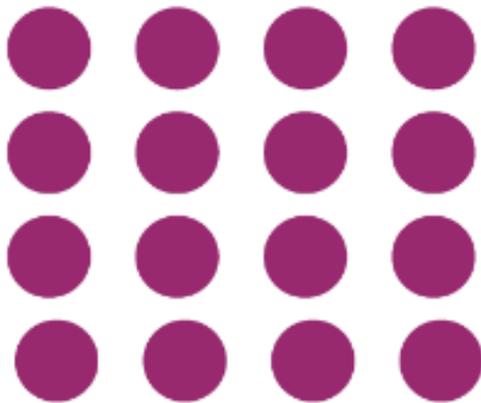
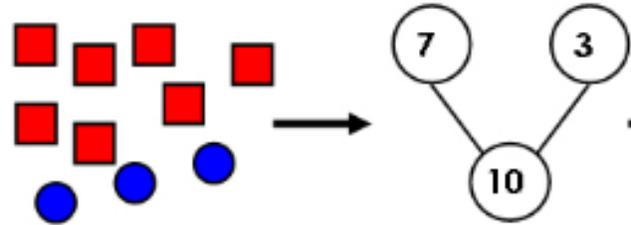
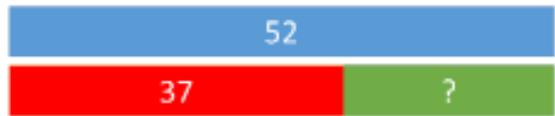
$$15P + 3SN = 33$$

CPA is a highly effective approach to learning that develops a deep and sustainable understanding of maths.

CONCRETE – *children have the opportunity to use **concrete objects** and **manipulatives** to help them understand what they are doing.*



Pictorial – children build on this concrete approach by using *pictorial representations*. These representations can then be used to reason and solve problems.



Abstract - *With the foundations firmly laid, the children should be able to move to an **abstract approach** using numbers and key concepts with confidence.*

$$90 = 100 - 10$$

$$80 = 100 - 20$$

$$24\text{cm} < 36\text{cm}$$

$$45\text{cm} < 46\text{cm}$$

$$31\text{m} > 30\text{m}$$

$$4 \times 5 =$$

$$20 \div 2 =$$

$$6 \times 10 =$$

$$25 \div 5 =$$

Concrete activity – place value

With your child, make these numbers using the place value apparatus and place value chart on your tables.

46

132

671

209

Recording the concrete as pictorial – place value

Now, with your child, record these numbers pictorially on a whiteboard.

46

132

671

209

Finally, recording the abstract – place value

Write the number to go with the concrete and pictorial.

Concrete activity – addition and subtraction

With your child, work out these calculations using the apparatus on your tables.

$$36 + 23 =$$

$$79 - 45 =$$

$$46 + 37 =$$

Pictorial activity– addition and subtraction

Now, with your child, record these numbers pictorially on a whiteboard.

$$36 + 23 =$$

$$79 - 45 =$$

$$46 + 37 =$$

Finally, recording the abstract – **addition** **and subtraction**

Write the vertical addition or subtraction to show the calculation.

$$36 + 23 =$$

$$79 - 45 =$$

$$46 + 37 =$$

Helping your child at home

The Golden Rules

Keep it simple – practise what they are already learning at school.

Keep it fun – there are lots of maths games available online.

Keep it real – practise maths for real purposes such as going shopping, sorting out laundry, measuring for cooking etc.

Children are more motivated to learn when there is a real purpose for their learning.

Here are some examples:

Shape - Play 'guess my shape'. Think of a shape. Your child asks questions to identify it but you can only answer 'yes' or 'no' (e.g. Does it have more than 4 corners? Does it have any curved sides?)

Time - Practise telling the time with your child. Use both digital and analogue (hand) clocks.

Number Facts - Use a set of playing cards (no pictures). Turn over two cards and ask your child to add or multiply the numbers. If they answer correctly, they keep the cards. How many cards can they collect in 2 minutes?

Real life maths - Go shopping with your child to buy two or three items. Ask them to work out the total amount spent and how much change you will get.

We are currently updating the maths section on the school website so look out for more information and links to where you can find more ways to support your child with maths.



Thank you for coming.

We hope we have helped you
understand how we now teach maths



at Chilwell Croft Academy.