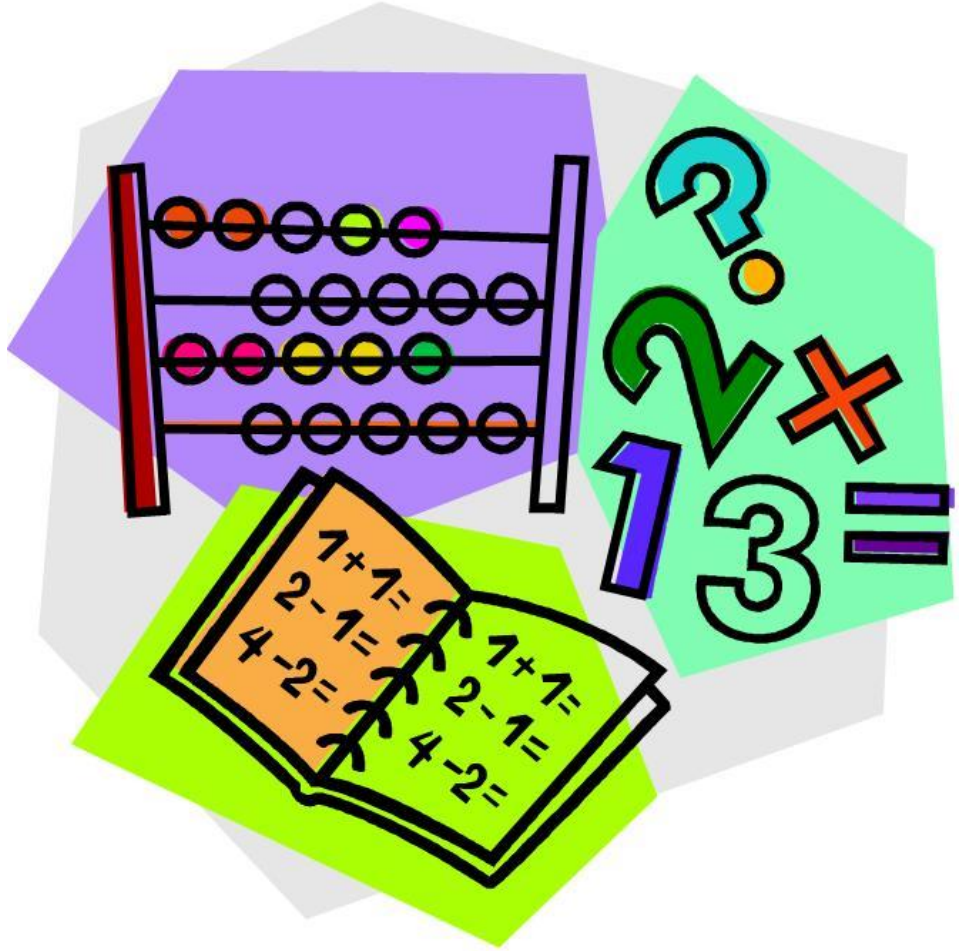
Maths Parent Workshop



EYFS/KS1

Mrs Hickman

Aims for the workshop

- ✓To gain an understanding of Mathematics in Reception and Key stage 1 (Years 1 and 2)
- ✓To become aware of the importance of understanding number.
- ✓To show parents how we teach mathematics at St Joseph's
- ✓To understand the mastery approach
- ✓To explain concrete, pictorial and abstract approaches in maths
- ✓To provide ideas for parents throughout the workshop of things that you can do at home

How has Mathematics changed?

We know much more about how children learn e.g. hands on, practical, visual, through play.

Learning is not a race; everyone's brain works at its own pace.

It is important that children are secure with the number system.

‘Gifted’ Mathematicians

- Seeing maths as a ‘gift’ rather than something that involves hard work makes young people feel insecure.
- The idea that maths comes effortlessly to an elite group of people is a false and damaging one.
- People who could be very good mathematicians feel outside this elitist group and drop out of maths and maths related subjects.

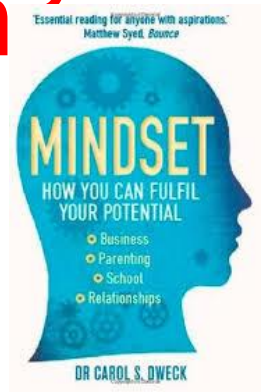
- *Jo Boaler, 2016*

Growth Mindsets

youcubed at Stanford University

‘There is no such thing as a maths person ’

‘Everyone is able to learn mathematics.’



‘educators… create self-fulfilling prophecies’ (Dweck, 2008).

Jo Boaler
Youcubed

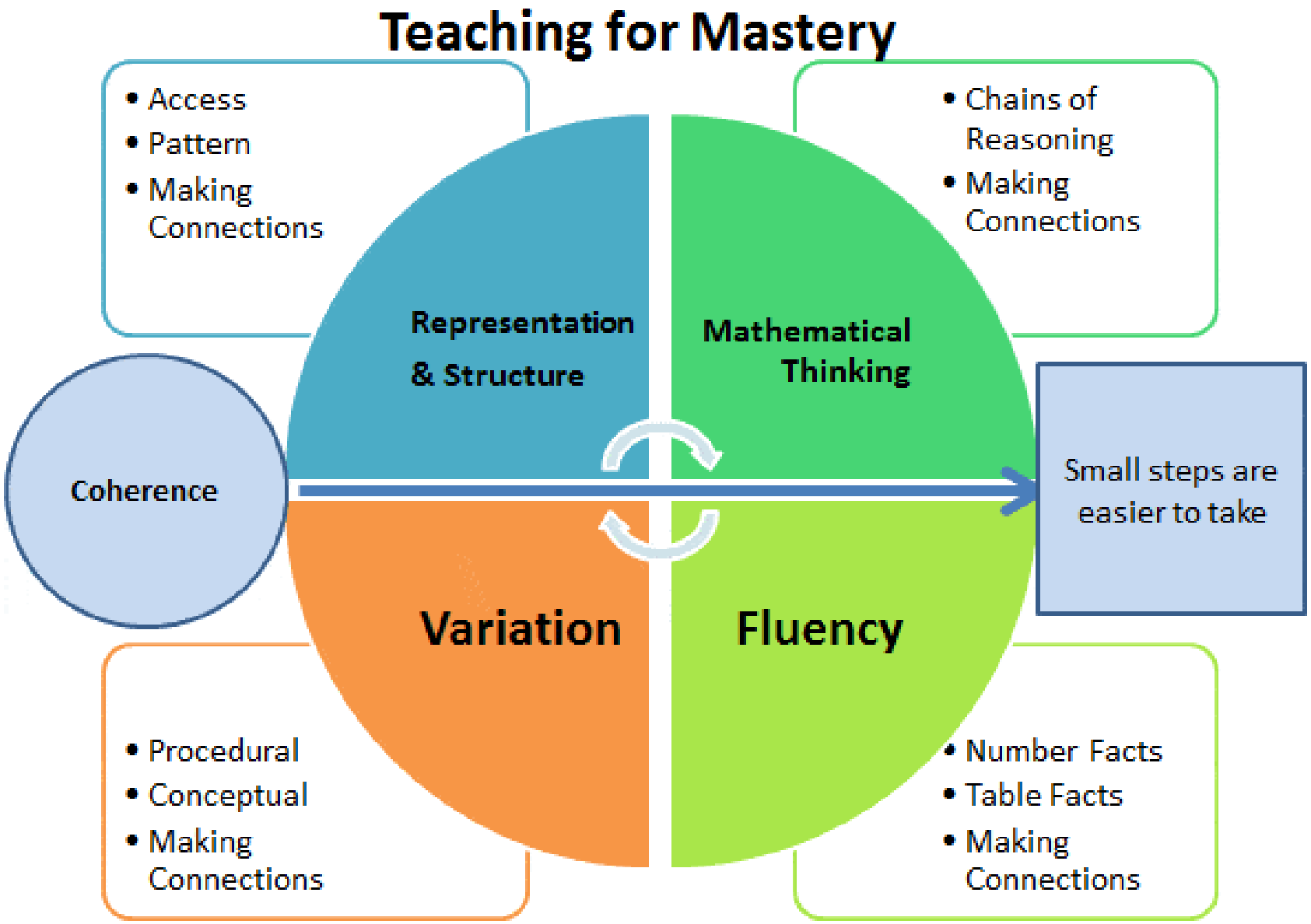
FLUENCY

REASONING

PROBLEM SOLVING


Attitude
Is
Everything

Teaching for Mastery



NCETM

- Achievable for ALL **(keeping the class working together)**
- **Deep** and **sustainable** learning (understanding the maths)
- The ability to **build on something that has already been sufficiently mastered by spending longer on topics**
- The ability to **reason** about a concept and **make connections**
- **Factual, conceptual** and **procedural** fluency
- Longer time on key topics – **going deeper** to embed learning
- Challenge for **ALL**!

NCETM
NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

What is Mathematics Mastery?

Growth mindset – success for all!

Based on research and evidence

One small step at a time

Making connections across concepts and topics

Problem solving at the heart

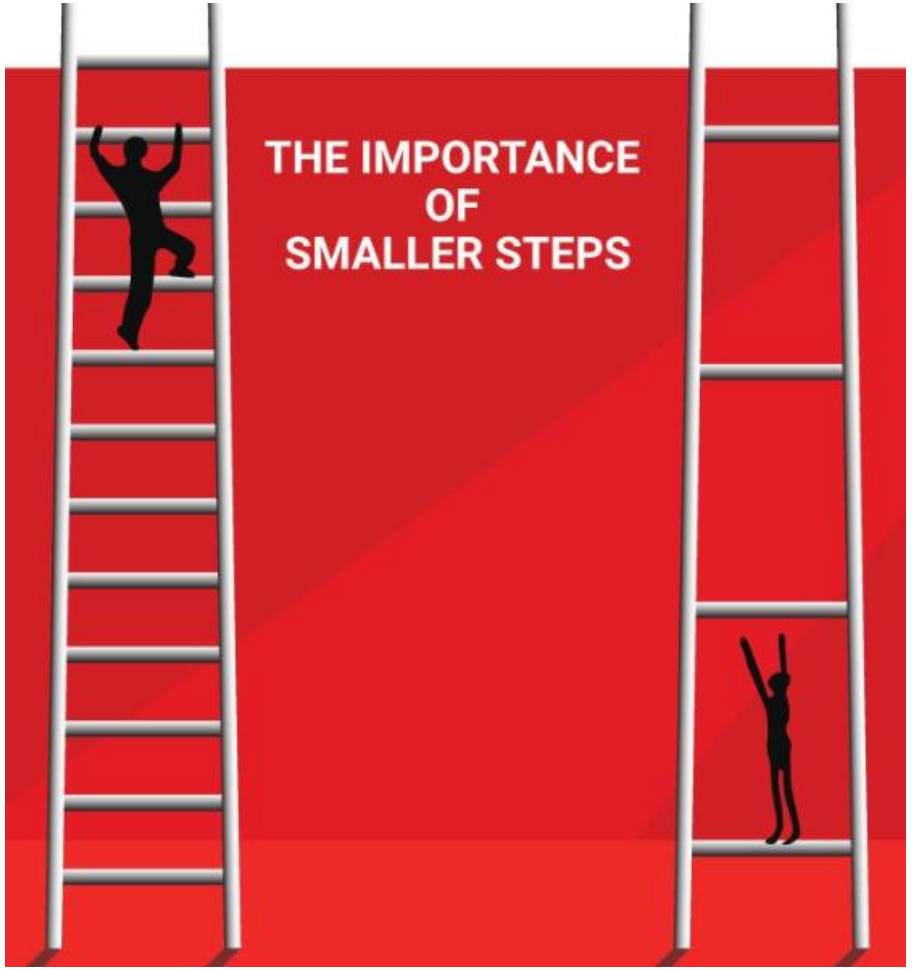
Focus on talk and reasoning about maths

Focus on depth, not acceleration

How is this different from how parents often learned maths?

- Less emphasis on memorising tricks
- More time spent understanding number relationships and making connections with what you already know/have learned
- Children may use methods you don't know - these are designed to build long-term understanding

Focus on depth, not acceleration
Not racing up a ladder/levels/year groups



When the children learn a concept in maths, they **embed** that skill.

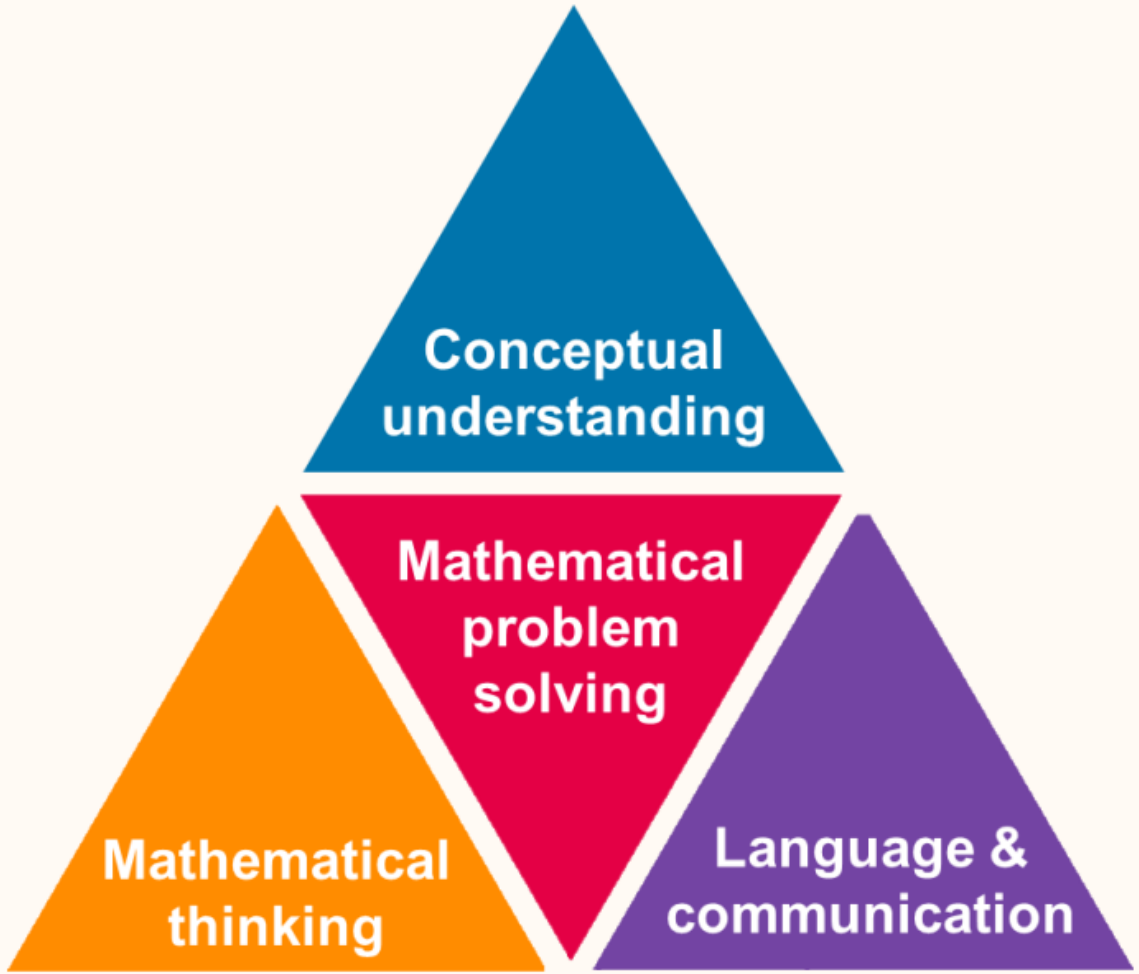
Just because we know our numbers to 10, we do not rush to learn our numbers to 100.

There are more small steps in between! (you need to know your bonds and links to ALL numbers up to 10 first, then 20, then 50)

Depth not acceleration

What do we mean by depth?

How do we deepen understanding?



Mathematics teaching for mastery assumes **everyone can learn** and enjoy mathematics.

Mathematical learning behaviours are developed such that pupils focus and engage fully as learners who reason and seek to **make connections.**

Lesson design links to **prior learning** to ensure all can access the new learning and identifies carefully sequenced steps in progression to build secure understanding.

Examples**, representations and models** are carefully selected to expose the structure of mathematical concepts and emphasise connections, enabling pupils to develop a deep knowledge of mathematics.

Procedural fluency and conceptual understanding are developed in tandem because each supports the development of the other.

It is recognised that practice is a vital part of learning, but the practice must be designed to both reinforce pupils' procedural fluency and develop their conceptual understanding

Pupils are taught through **whole-class interactive** teaching, enabling all to master the concepts necessary for the next part of the curriculum sequence.

In a typical lesson, the **teacher leads back and forth interaction,** including questioning, short tasks, explanation, demonstration, and discussion, enabling pupils to think, reason and apply their knowledge to solve problems.

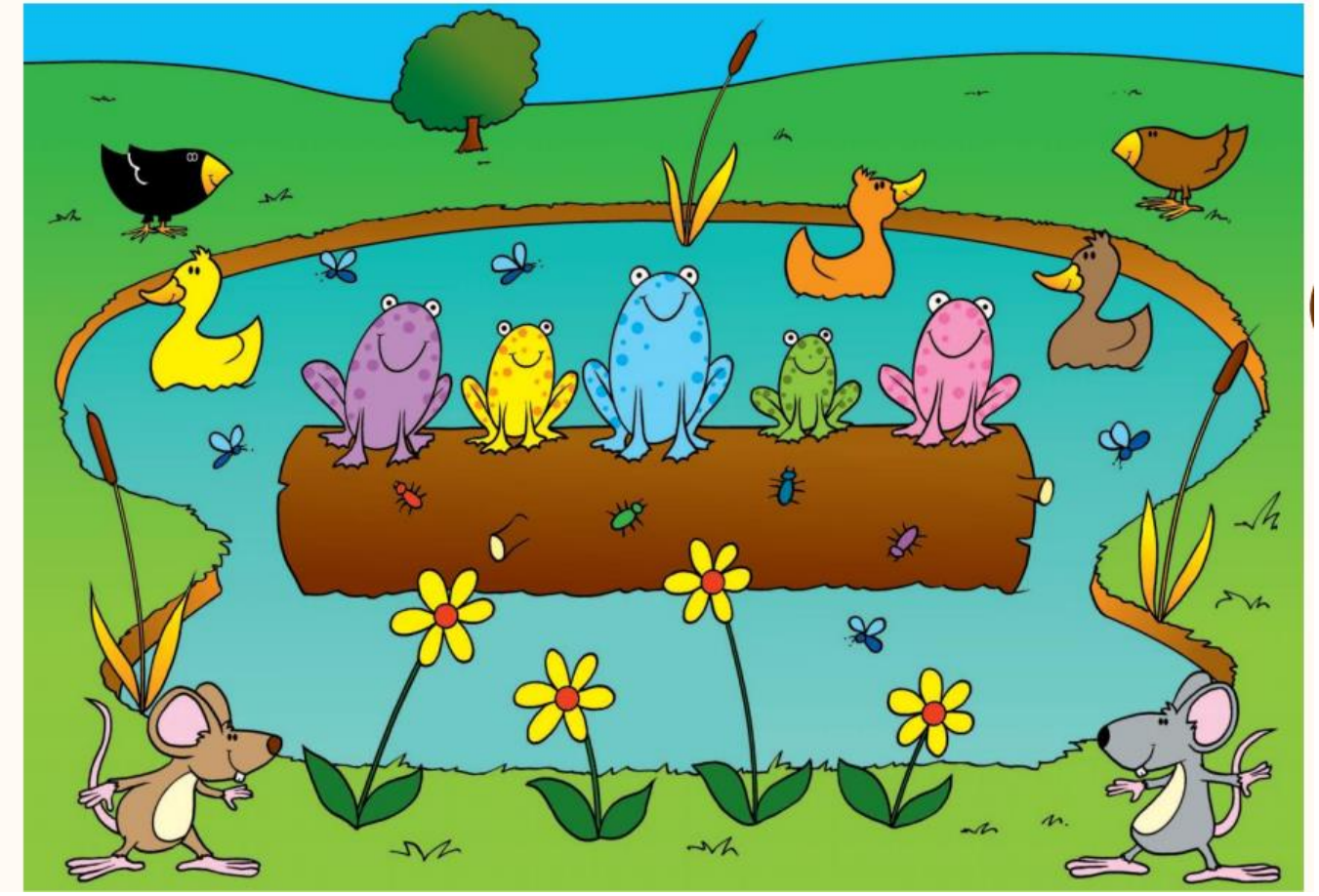
Use of precise **mathematical language** enables all pupils to communicate their reasoning and thinking effectively.

If a pupil fails to grasp a concept or procedure, this is identified quickly, and gaps in understanding are addressed systematically to prevent them falling behind.

Significant time is spent developing deep understanding of the key ideas that are needed to underpin future learning.

Key **number facts are learnt to automaticity**, and other key mathematical facts are learned deeply and practised regularly, to avoid cognitive overload in working memory and enable pupils to focus on new learning

What maths can you see in this picture?



Language and Communication

Key vocabulary:

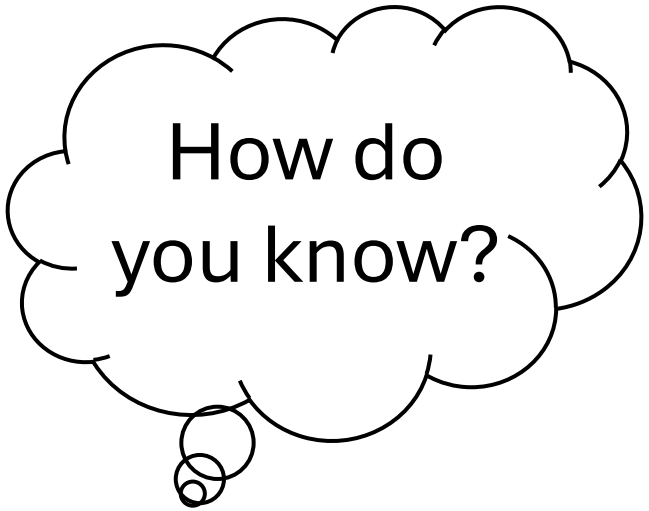
First then now less more

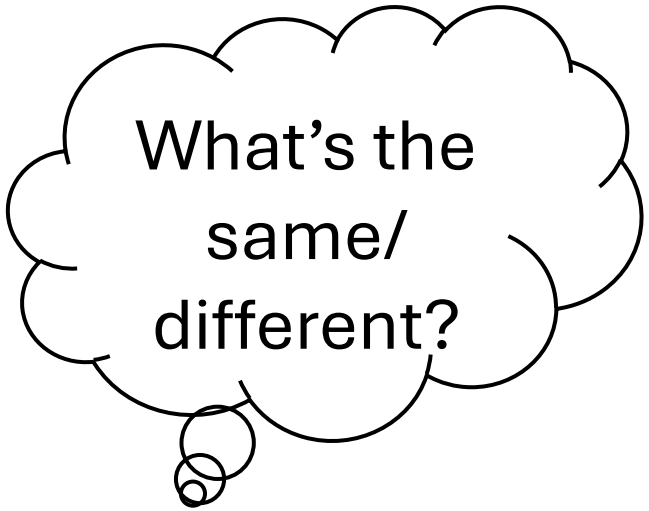
Represent subtract take away number line

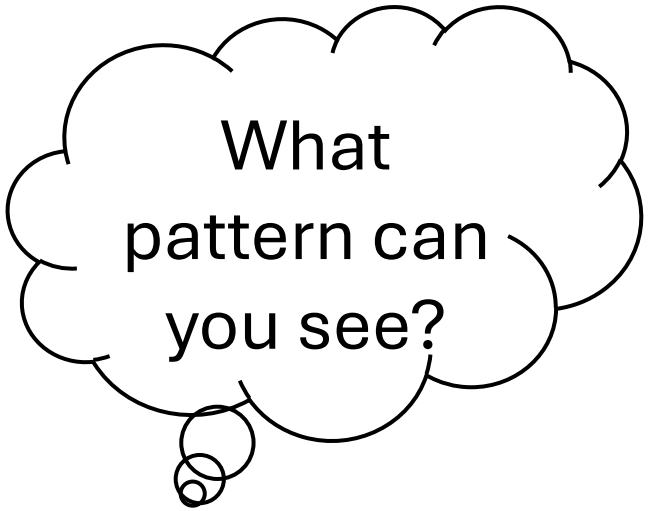
number track equation calculation

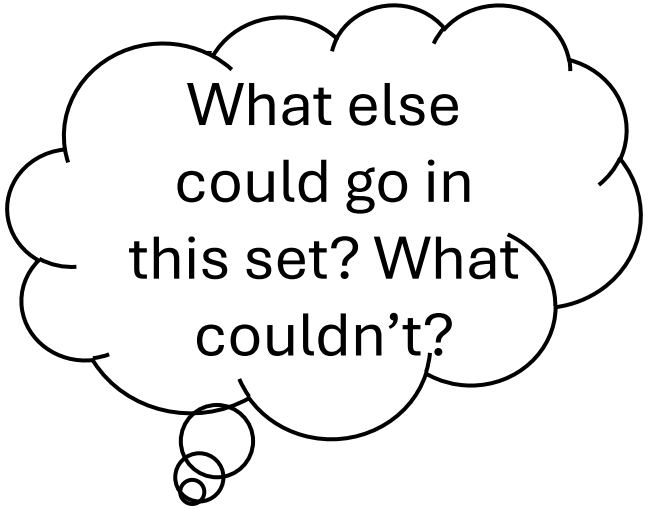
Can you say that in a full sentence, please?

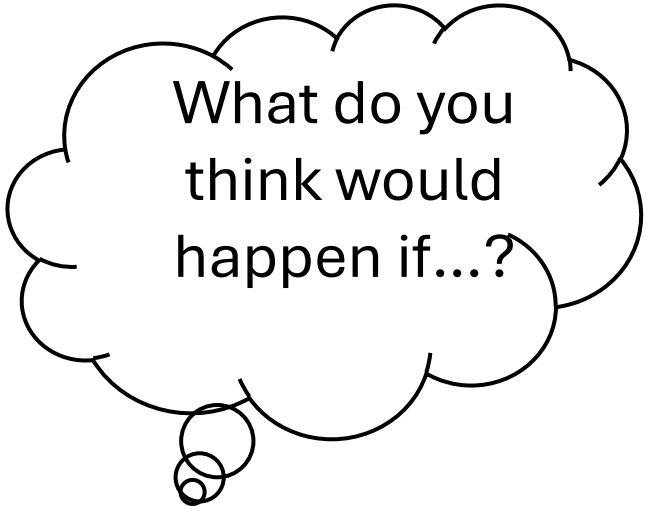
Mathematical thinking



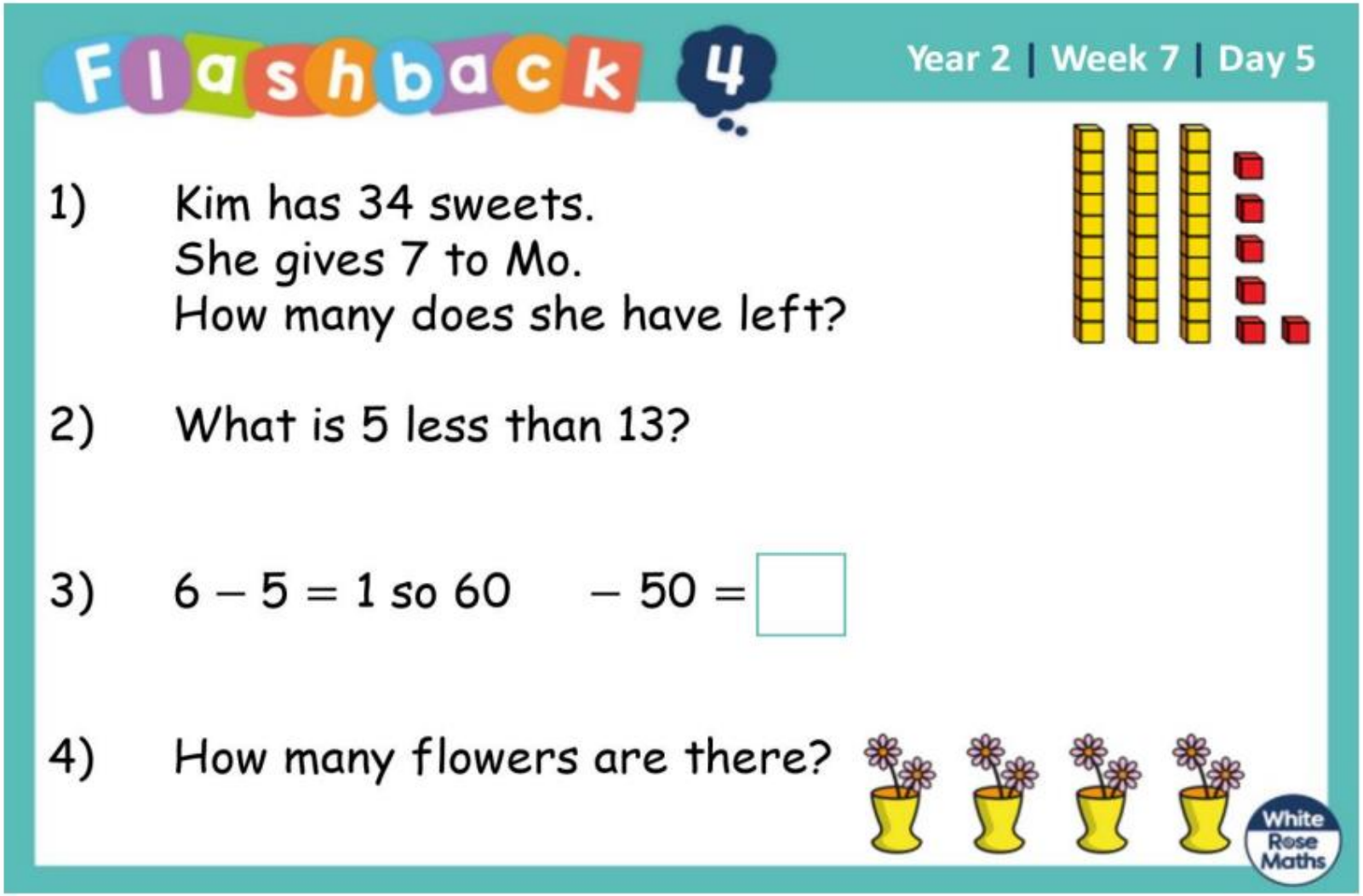








Why we use White Rose



Follows the mastery approach

Small, carefully sequenced steps – secure underst

Follows the Concrete- Pictorial – abstract (CPA) approach

- Concrete: practical resources (counters, cubes, number lines)
- Pictorial: drawings, bar models, part-whole diagrams
- Abstract: numbers and symbols

The whole class works on the same core concept together

- Support is given through resources and guidance
- Challenge comes through deeper thinking, not harder content

Lots of reasoning and mathematical talk

Problem solving throughout

Depth before acceleration

How do we teach Mathematics in the Foundation Stage?

Practically with manipulatives.

Through play with real objects.

Through songs and rhymes.

Through books, I-pads and Smartboard.

Modelling good, accurate vocabulary.

Through questioning.

Through adult led personalised activities where children can be supported and extended.

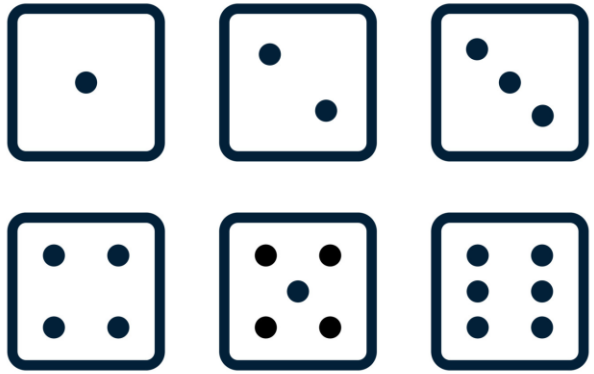
Through short carpet inputs.

Through questioning ‘I wonder what / if….?’

1:1 interventions or small group interventions

Subitising

Subitising means being able to **recognise how many objects there are without counting**.
For example, when you see the dots on a dice and *just know* it is **5** – that's subitising.



Why is subitising important?
Subitising helps children:

- Develop a **strong number sense**
- Understand numbers quickly and confidently
- Begin to see number patterns (like groups of 2 and 3 making 5)
- Become quicker and more confident with maths

It helps children move away from counting **one by one** every time.

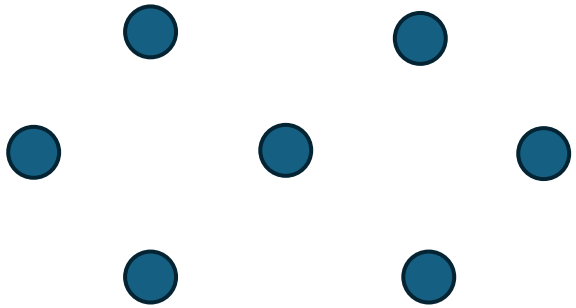
On the next slide I will put a number represented by dots on the screen for a second.

I want you to tell me how many dots you see!

Ready?

It will be quick!

Fluency EYFS/KS1



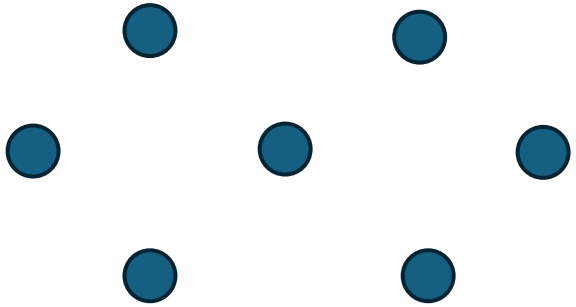
How many dots were there?

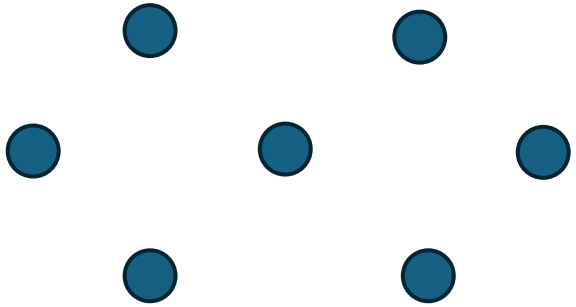
How did you know without counting?

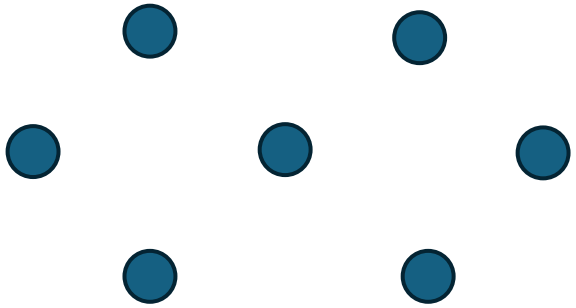
Did you see a pattern?

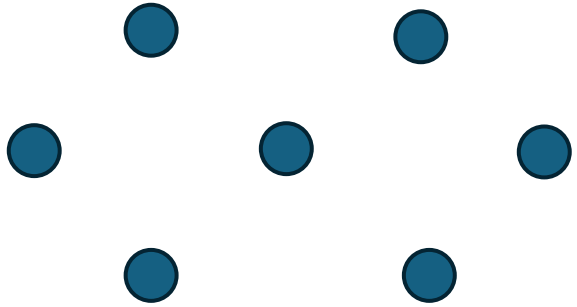
I saw a 3, 3, and 1 so I know it was 7.

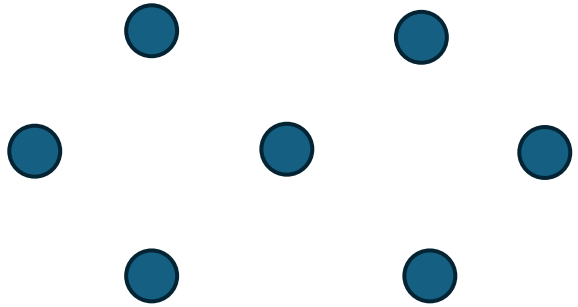
Fluency EYFS/KS1







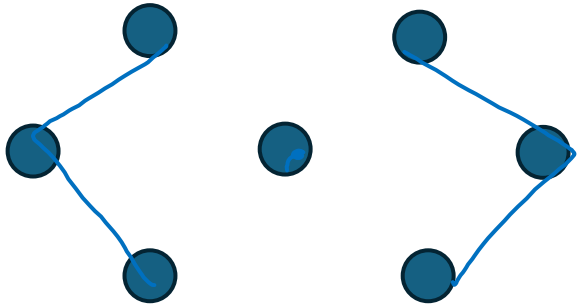


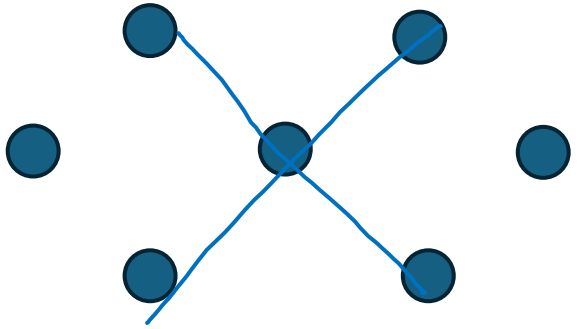


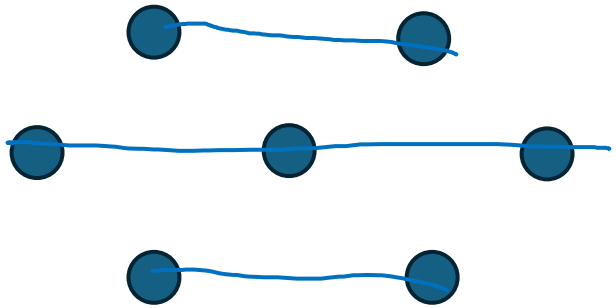
Don't count the dots – subitising

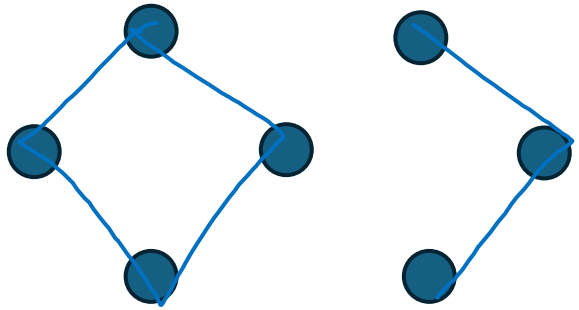
Perceptual 1-5
Conceptual 6-10
(knowing more than basic facts, adapt knowledge, bigger picture, go beyond solving a single maths problem)

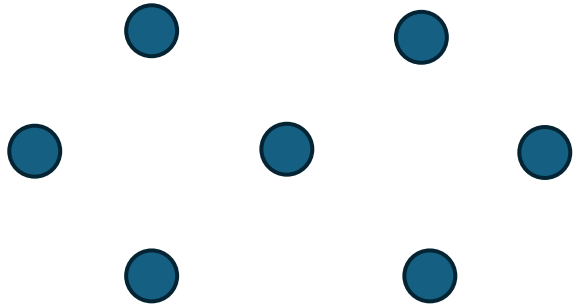
Fluency EYFS/KS1











Don't count the dots – subitising

Perceptual 1-5
Conceptual 6-10
(knowing more than basic facts, adapt knowledge, bigger picture, go beyond solving a single maths problem)

When subitising children are:

- Making connections
- Using spatial reasoning
- Looking at and talking about patterns
- Looking at parts and wholes
- Composition of number
- Talking/reasoning/oracy

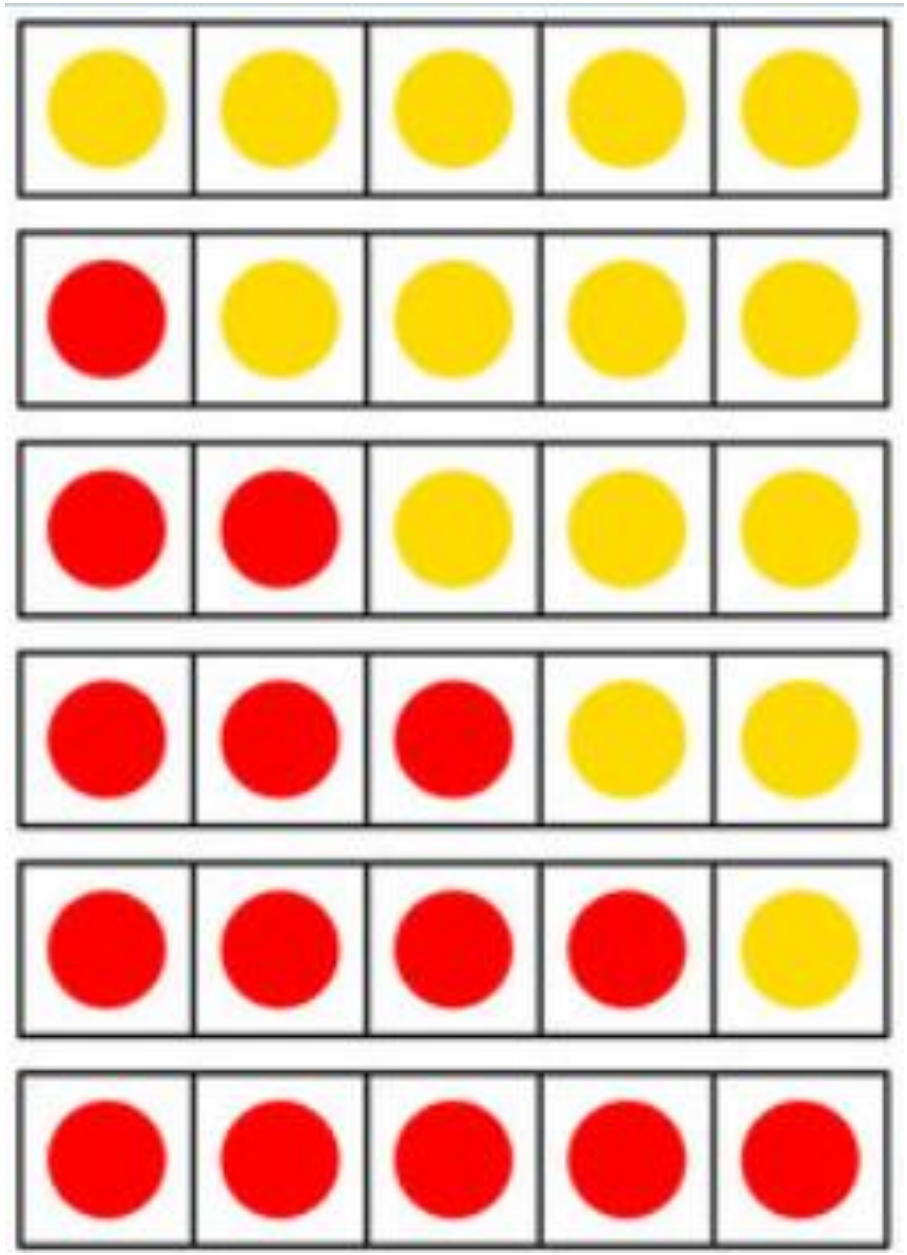
Your child may be able to count by rote to 100/200 but do they understand the smaller components of number?

Can they talk about how every number up to 10 is made?

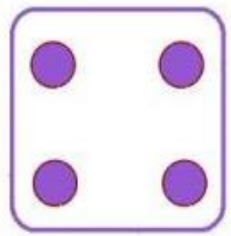
This will help with numbers to 20/50/100/1000

5 frames – one way we teach number bonds

Starting to recall facts but can “see” the maths behind it too!
Understand more and visualise it later when counters are taken away. These resources create images in their head.



Understanding the value of number.



Fluency and learning number facts off by heart AND understanding what they look like is so important.

Number bonds to **all numbers** up to 10.

Then 20.

50

100

Moving on to times tables.

I HEAR AND I FORGET.
I SEE AND I REMEMBER.
I DO AND I UNDERSTAND.

— CONFUCIUS

CPA approach

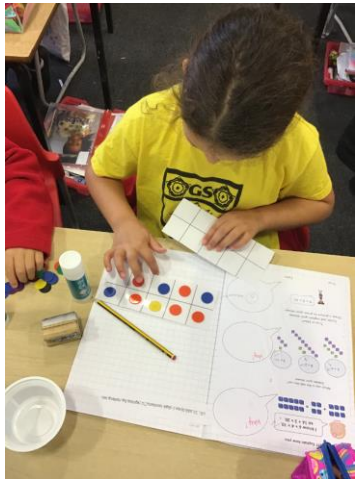
- Concrete
- Pictorial
- Abstract

Concrete

The Concrete stage encourages the use of manipulatives and physical resources to physically show the process behind what is being taught.

At its most basic level, this can be as simple as using counters, sweets, marbles, etc to show numbers/amounts, allowing children to visualise the idea of more or less or comprehend what 3 (or any given number) actually is.

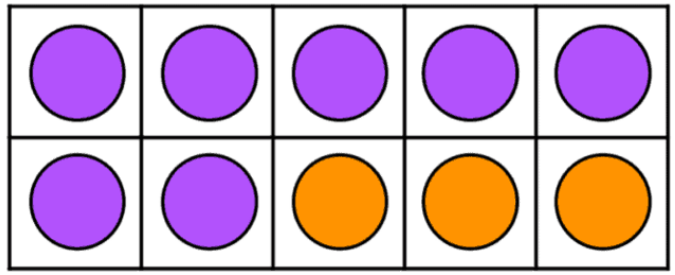
All of the main mathematical operations can be introduced and explored in this way. You'll find that learners love getting involved with this hands-on approach



On your tens frames:

How many different ways can you make 8? Write your number bonds on your white boards as you make them?

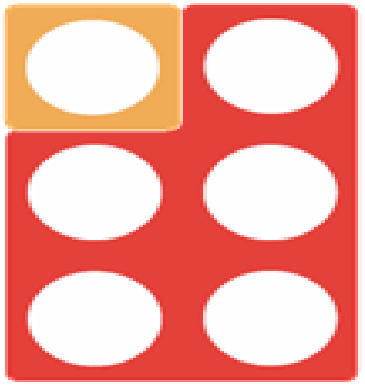
Finished? Can you make the fact family for your number bond(s)?



Can you use this to help you make bonds to 20?

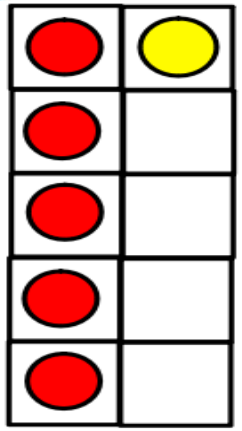
Bonds to 100?

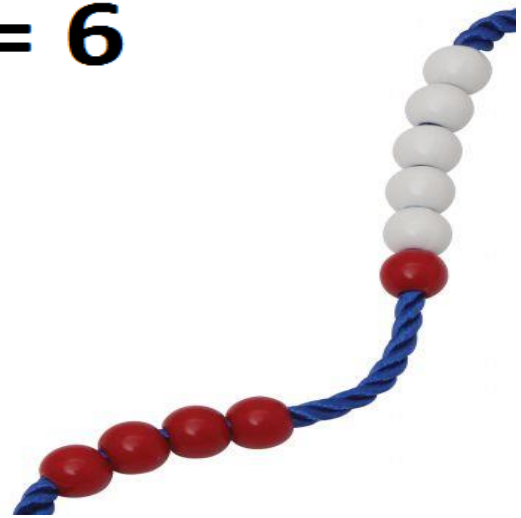
Multiple Representations – how to make six. Is there a different way?



5 + 1 = 6

1 + 5 = 6



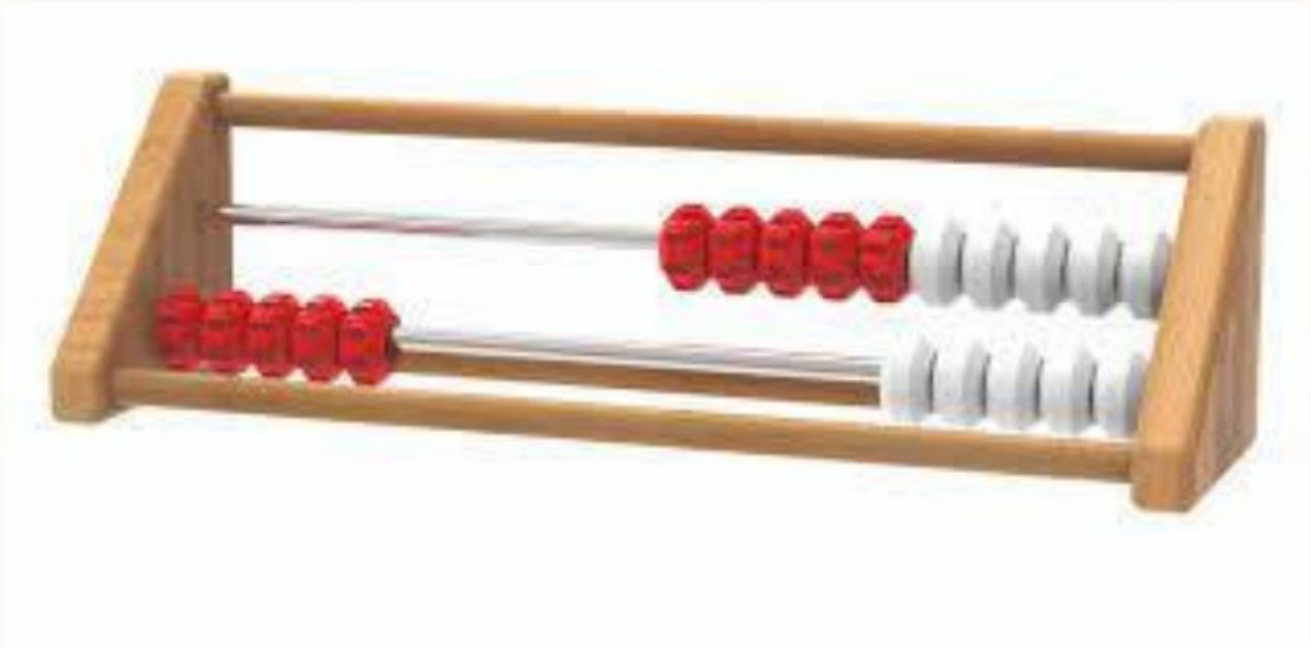


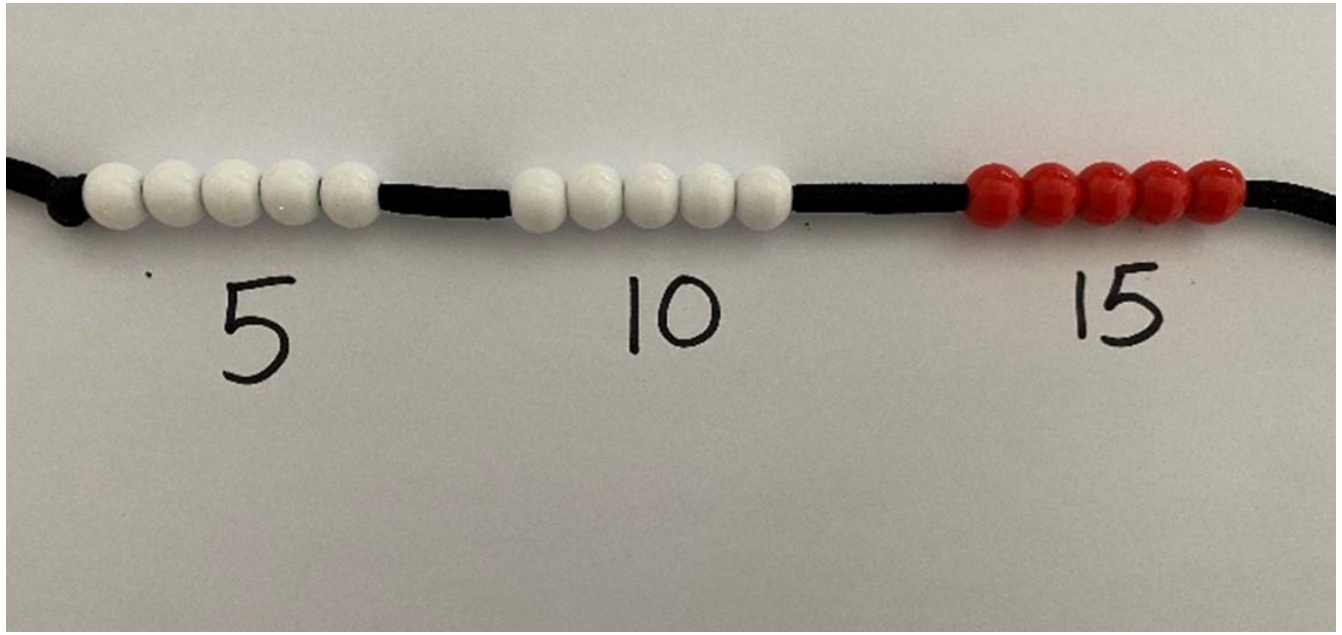
Numicon

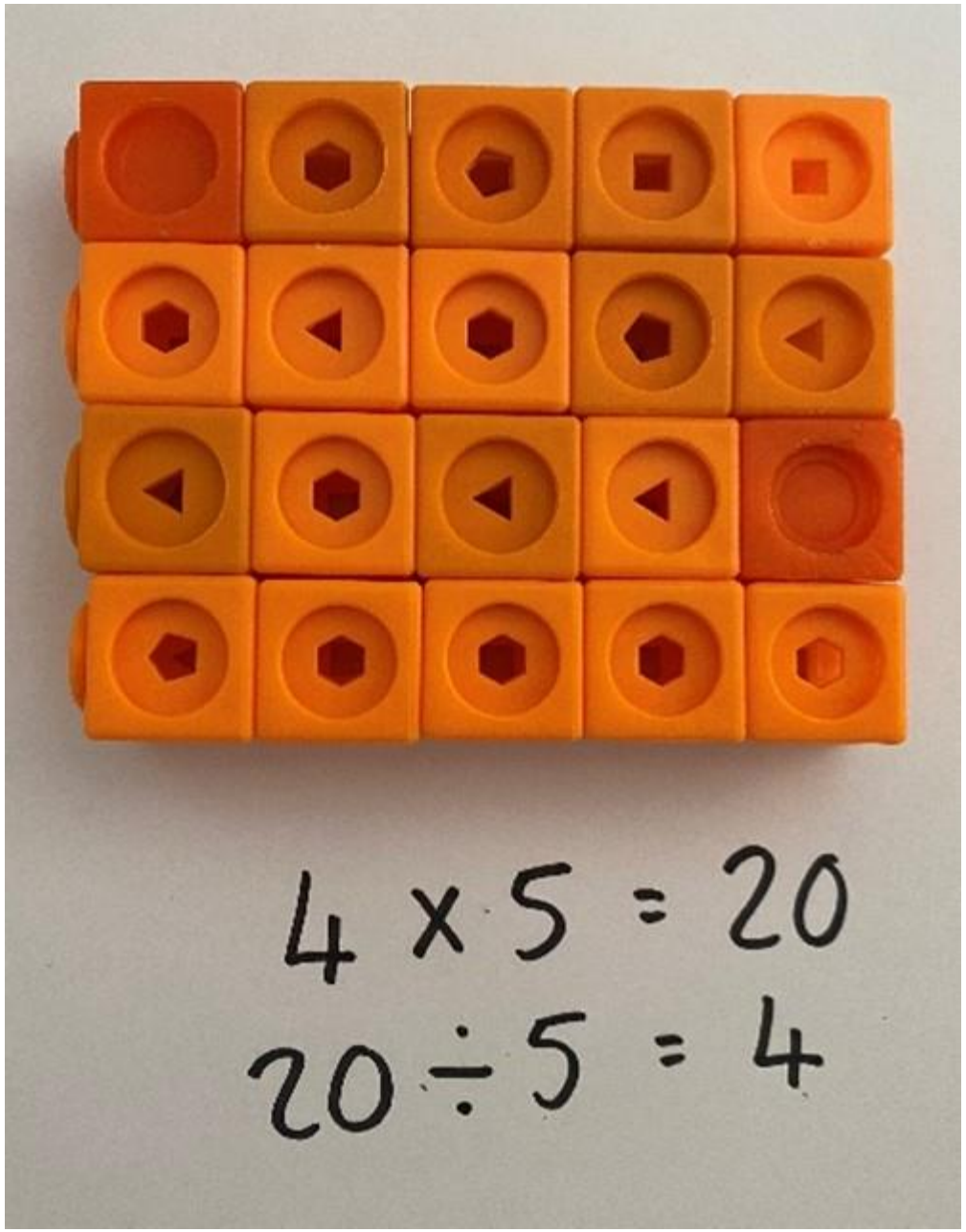
- Counting
- Ordering
- Odd and even numbers
- One more than

Rekenreks

A rekenrek is a counting frame, similar to an abacus. It has ten beads on each row, five white and five red which supports the development of number sense.




5
10
15


4 x 5 = 20
20 ÷ 5 = 4

Pictorial

Once secure with understanding at the concrete stage, pupils move on to pictorial based problem-solving and expression.

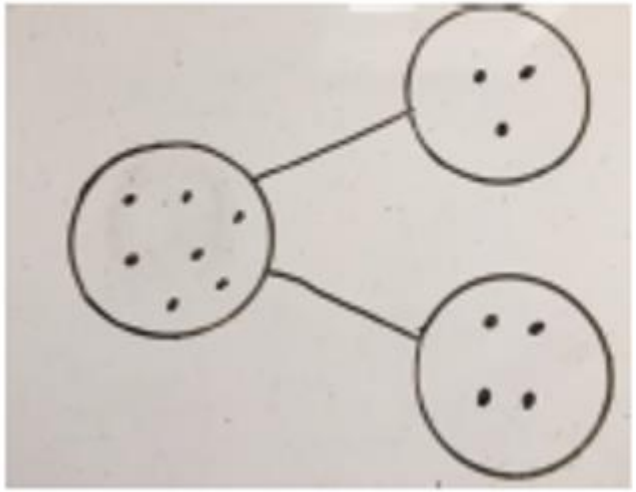
The physical resources are generally replaced with a pictorial representation.

Additionally, visual support strategies such as ten frames, bar models and part whole representations are used for pupils to show their understanding through answering questions using these visuals.

The pictorial stage is essential for learners to consolidate and secure their understanding of topics. It bridges the gap between getting to grips with a concept (quite literally) and knowing how to combat more abstract ideas

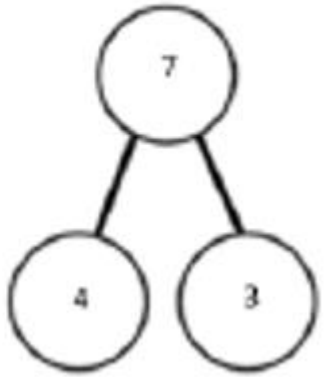
Part whole models

Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.

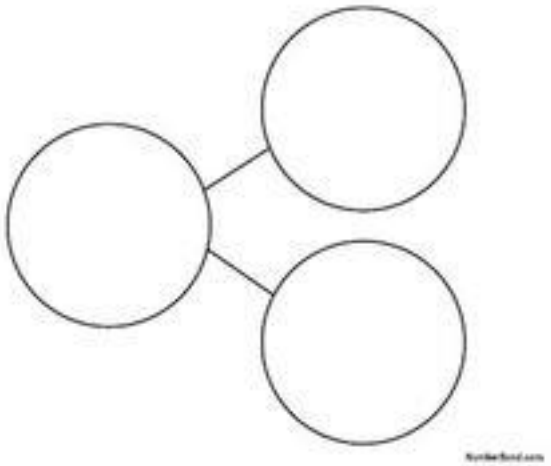


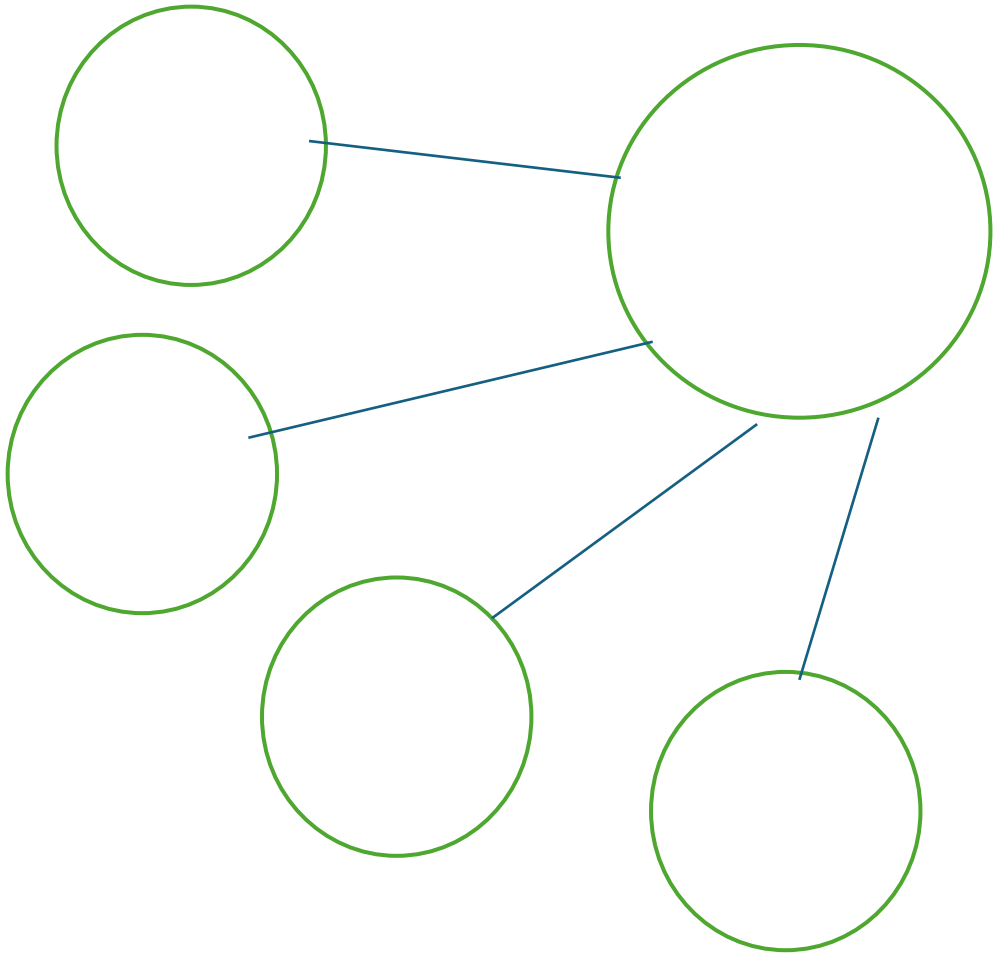
$4 + 3 = 7$

Four is a part, 3 is a part and the whole is seven.

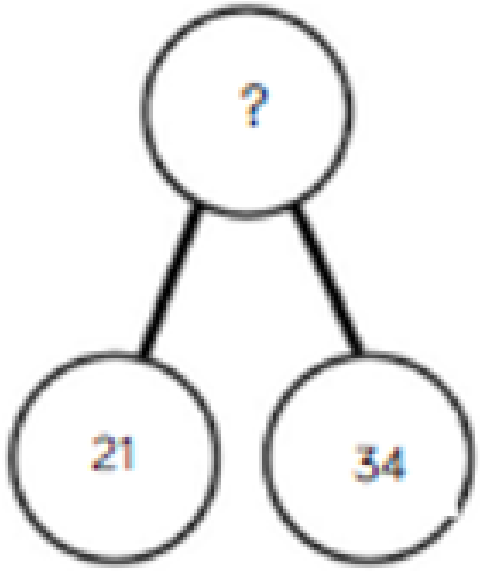


Part-whole models





Use for larger numbers too – KS2



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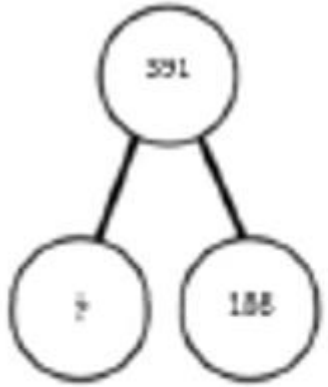
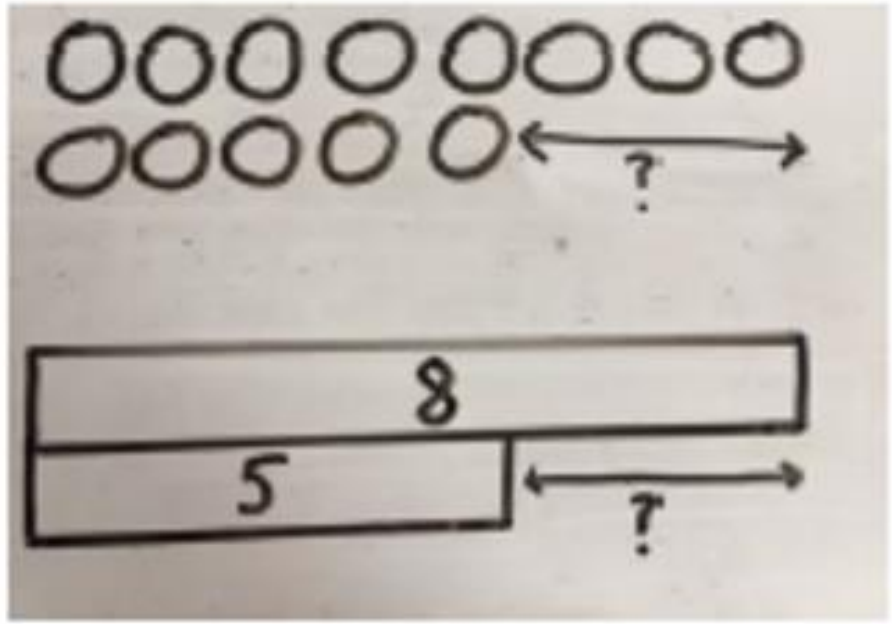
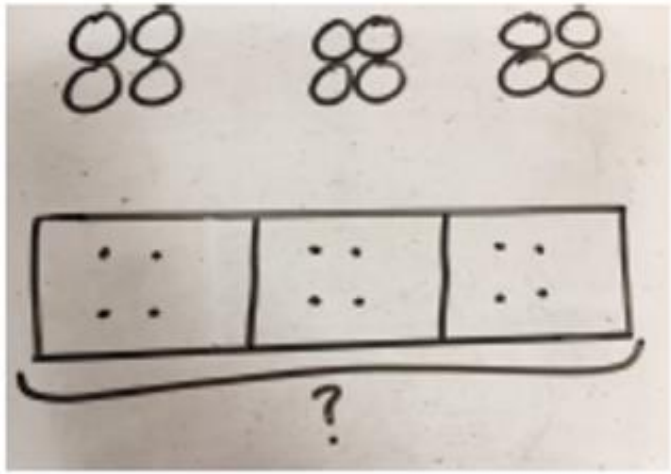
21	34



391	
186	?

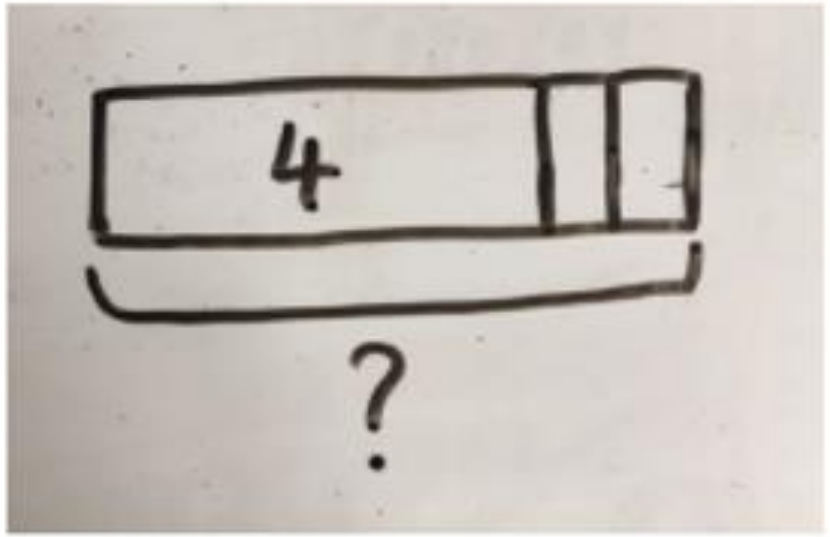




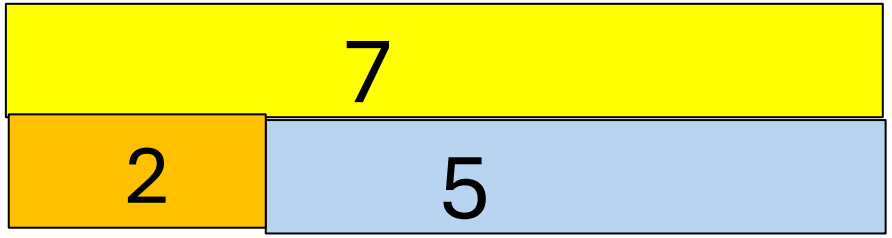
A bar model which encourages the children to count on, rather than count all.

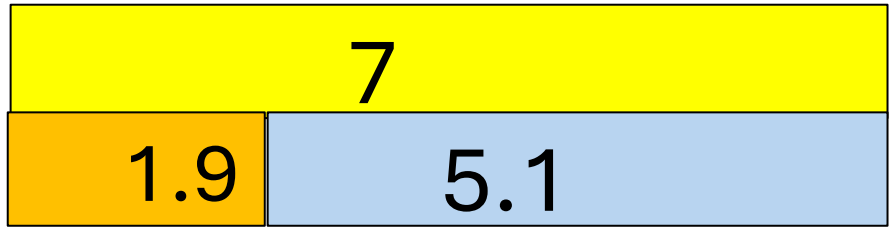
23	23	23	23	23	23

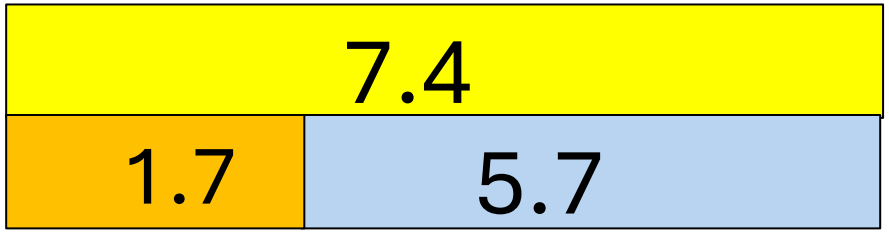
?

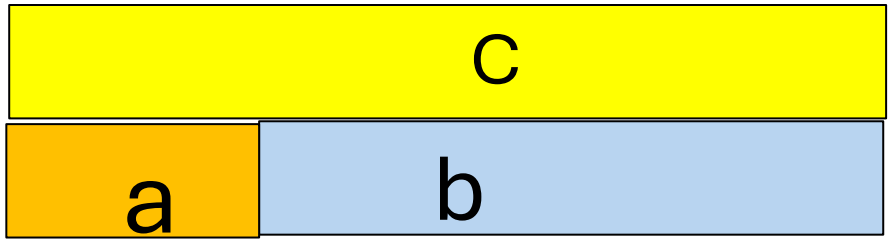


Using Pictorial Representations









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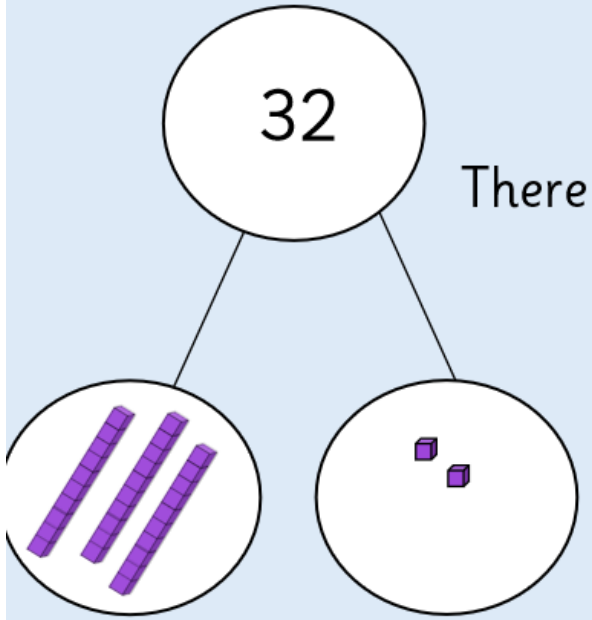

There are _____ tens and _____ ones.

_____ tens + _____ ones = _____

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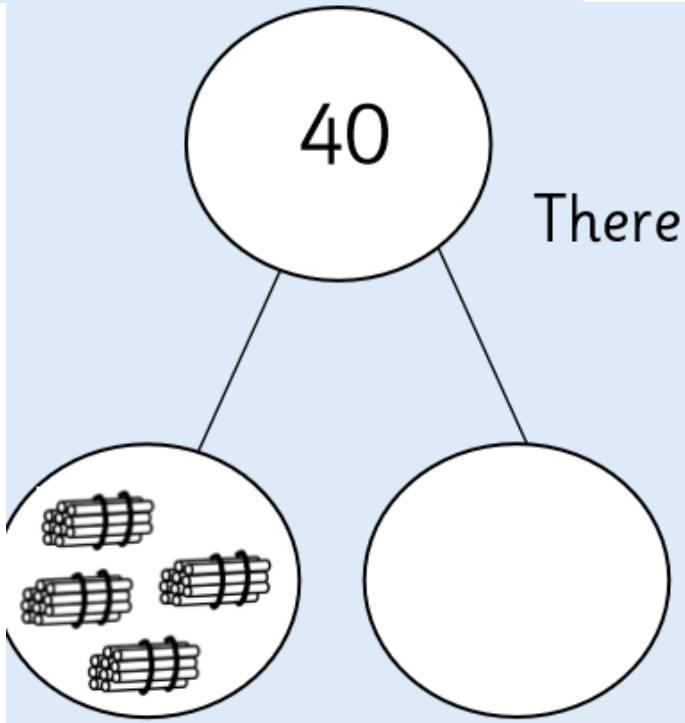


There are _____ tens and _____ ones.

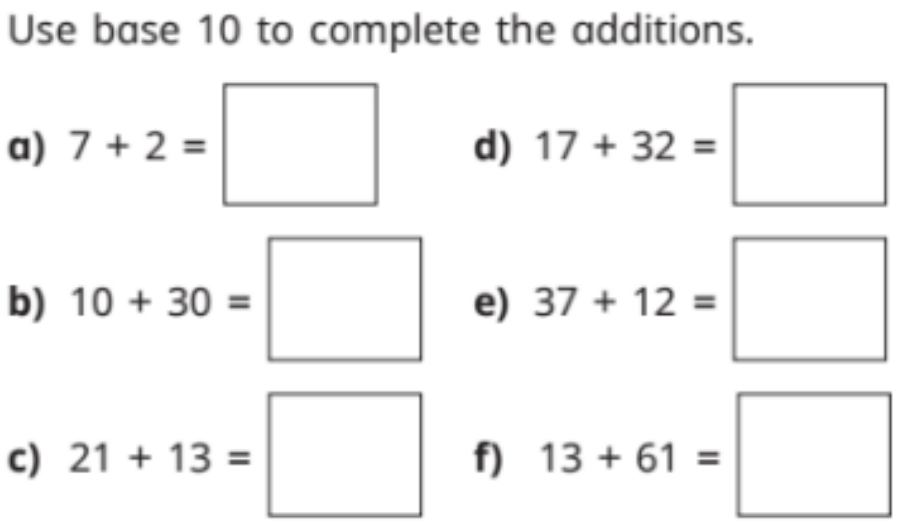
_____ tens + _____ ones = _____

Abstract

The abstract stage is when children face questions using numbers and symbols, or key vocabulary alone. For instance, 6 + 3 =?

If children have entered into the abstract stage, before establishing secure links or points of reference as to what these numbers, operations or keywords mean - they may well struggle here (“Miss, what does ‘divide’ mean?”).

At this stage, pupils are expected to have a depth of knowledge which can now be applied without the need for physical or visual support strategies.



Use base 10 to complete the additions.

a) 7 + 2 = ☐

b) 10 + 30 = ☐

c) 21 + 13 = ☐

d) 17 + 32 = ☐

e) 37 + 12 = ☐

f) 13 + 61 = ☐

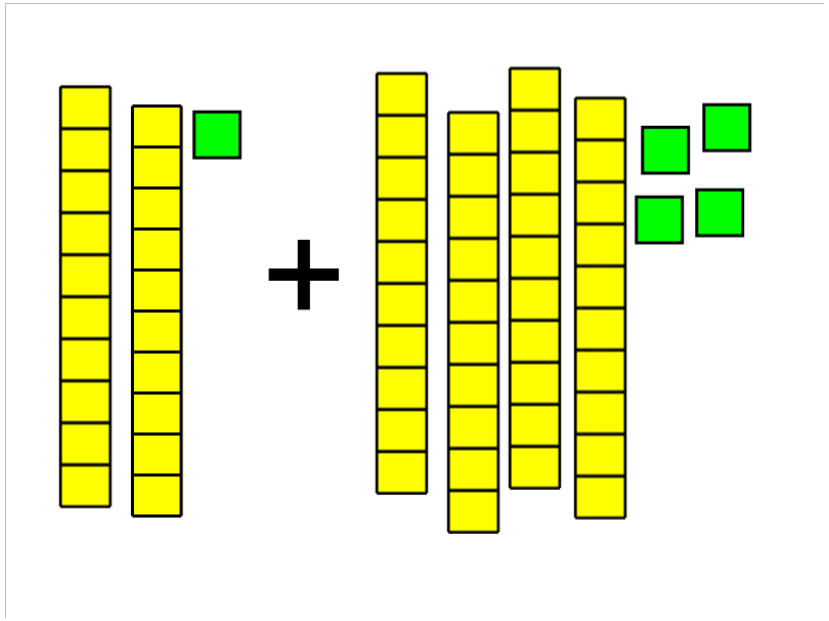
Number fan

How many times did I clap my hands?
If I added 5 more how many would there be?
Show me a 2-digit number.
Show me the largest 3-digit number you can .
Show me the lowest 3-digit number you can.

Moving through KS1

Base ten (or PV counters) to add two two-digit numbers. No exchange

Let’s do it together!



Tens	Ones

Moving through KS1

Base ten to add two two-digit numbers. With exchange (we used to call it carrying in my day!)

https://youtu.be/38dc-eS8S_k

Six Fundamental Concepts of Maths

Cardinality and Counting

Understanding that the cardinal value of a number refers to the quantity, or 'howmanyness' of things it represents

Comparison

Understanding that comparing numbers involves knowing which numbers are worth more or less than each other

Composition

Understanding that one number can be made up from (composed from) two or more smaller numbers

Pattern

Looking for and finding patterns helps children notice and understand mathematical relationships

Shape and Space

Understanding what happens when shapes move, or combine with other shapes, helps develop wider mathematical thinking

Measures

Comparing different aspects such as length, weight and volume, as a preliminary to using units to compare later

Cardinality and Counting

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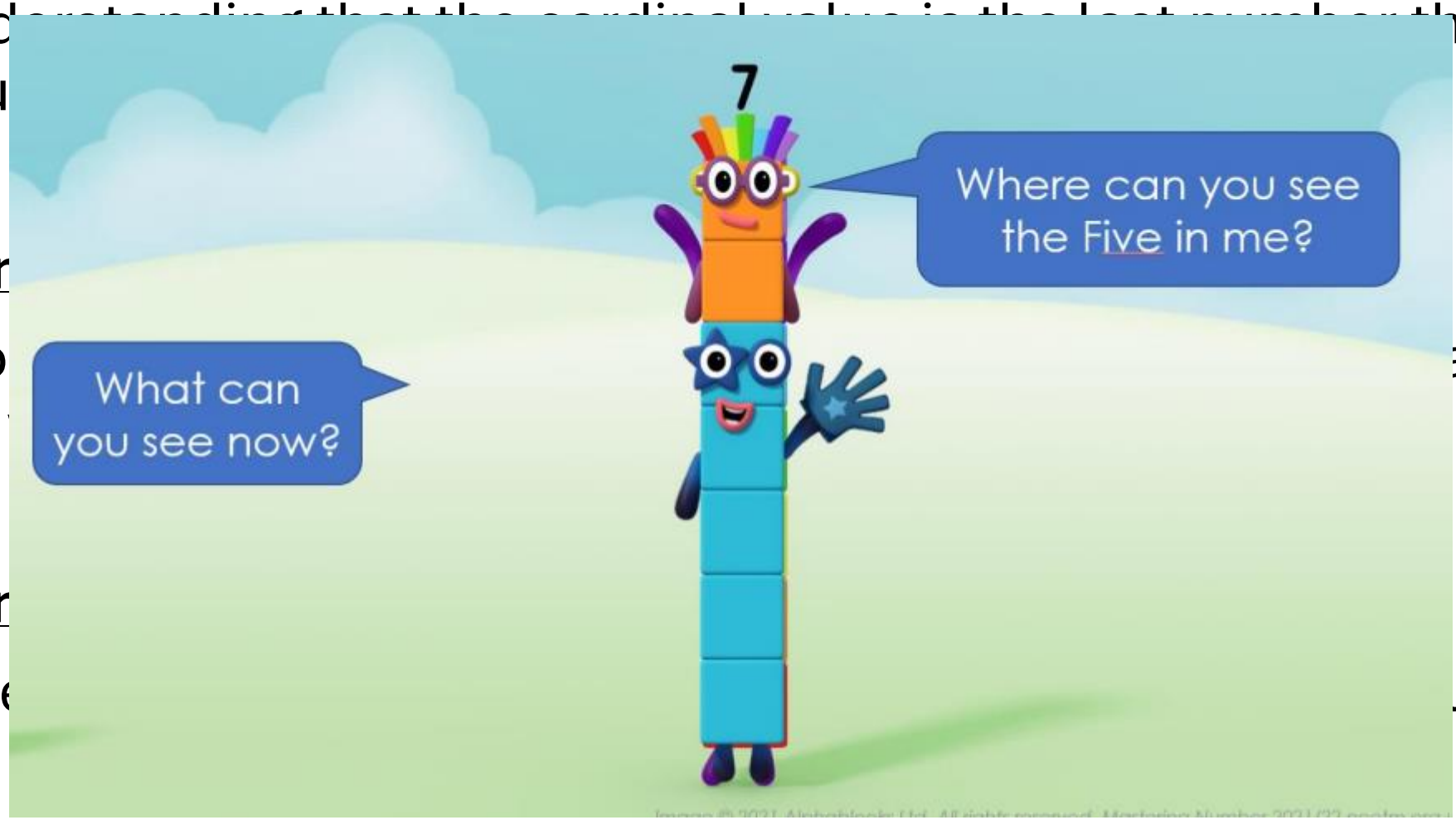
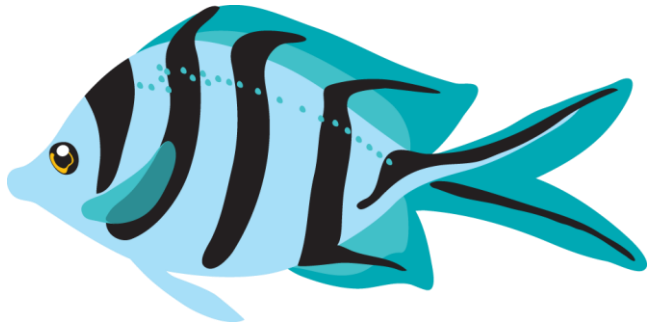
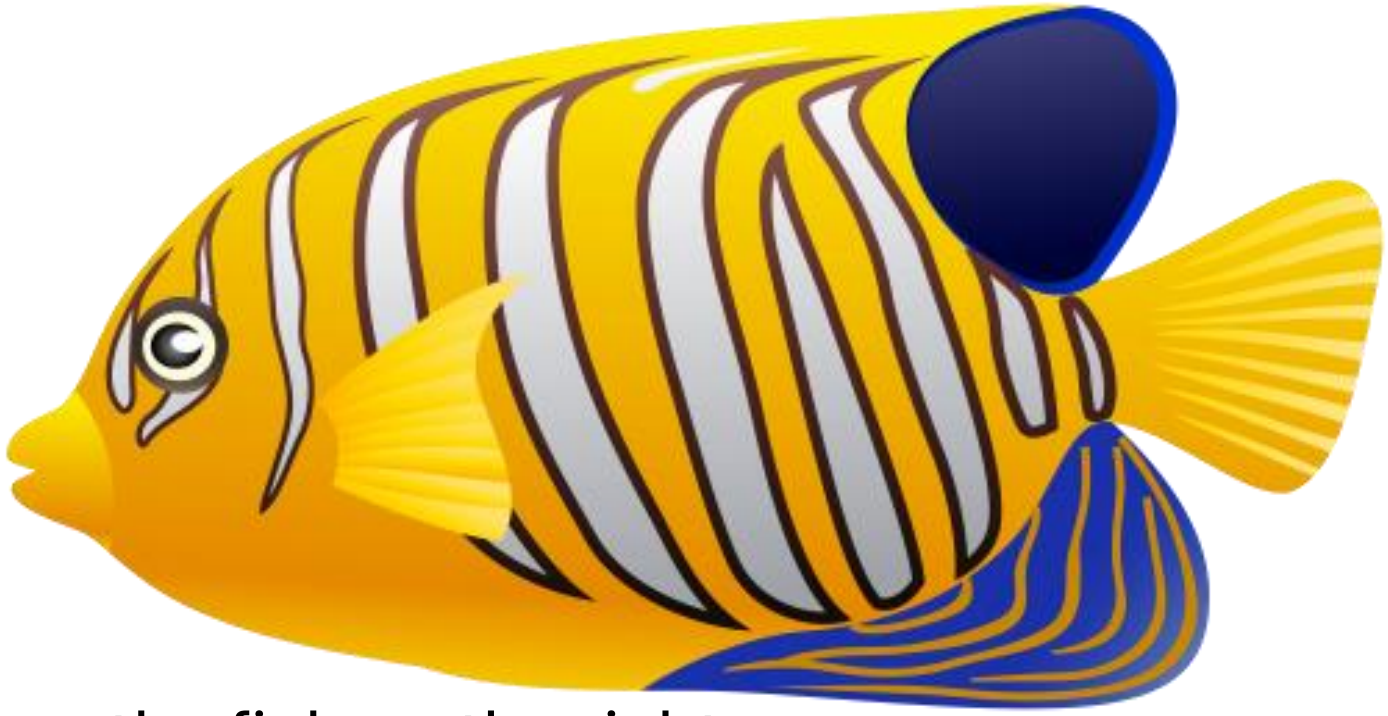


Comparison

Same/different – what can you see?





The fish on the left is smaller than the fish on the right.
The fish on the right is larger than the one on the right.
The are similar because both of them have stripes.

This language is so important in the early days. See why on the next slide.

Everything we do links into the bigger picture!

59 152

The number on the left is smaller than/**less than** the number on the right.
The number on the right is more than/**greater than** the one on the right.
They are similar because both have 5 tens.
There are different because one is a two-digit number and one is a three-digit number.

Pattern

Looking for and identifying patterns can help children understand mathematical concepts

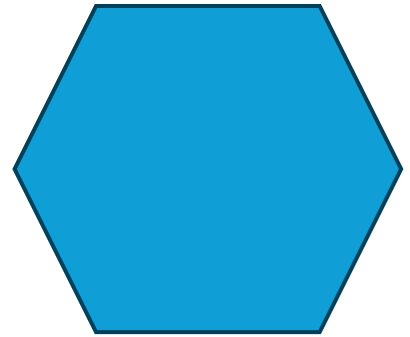
Shape and Space

Understanding what happens when shapes move, or combine with other shapes Measure

Comparing different aspects such as length, weight and volume

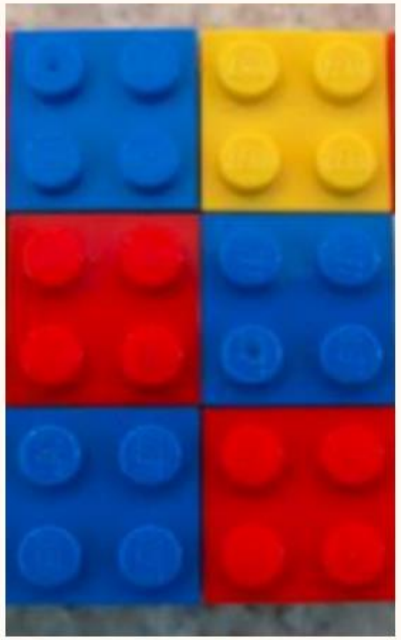
Combining these two rectangles (4-sided shapes has actually made a hexagon (6-sided shape)

We are so used to seeing a hexagon like the blue one.



Patterns

How many and how do you know?



FLUENCY

Knowing your number facts, forwards, backwards and inside out, automatically, fact families etc. KIRFs sheets sent home.

REASONING

Talking about maths. Making links. What's the same? What's different? Say **how** they got an answer Use words like *because*, *I noticed*, or *I know* Show their thinking with **objects, pictures, or numbers**

PROBLEM SOLVING

Understand the problem (what is being asked)
Choose a strategy (counting, drawing, using objects, number knowledge)
Work it out and **check their answer**
Explain their thinking simply

Resilience

Accepting a challenge

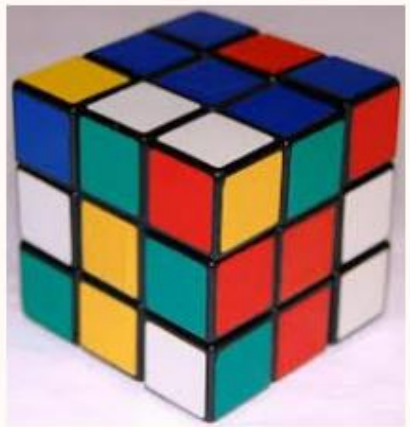
How can you help at home?

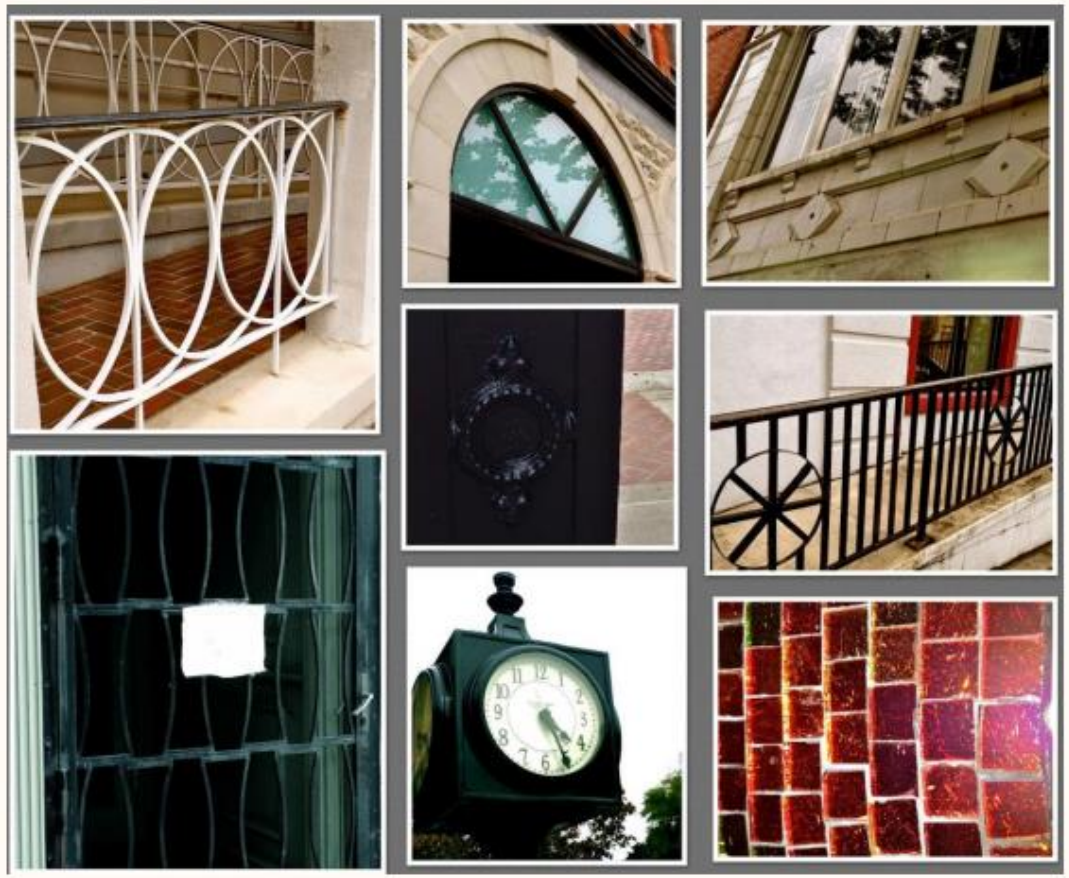
- ✓ Follow the methods taught at school as best you can!
- ✓ Make activities practical – use manipulatives, turn them into a game if you can.
- ✓ Be positive and give lots of praise.
- ✓ Don't rush your child through the stages – check they have a secure understanding of the basic maths skills ESPECIALLY number.
- ✓ Check the can apply these skills in different contexts e.g. using money, sharing sweets, setting the table, recognising things out and about
- ✓ Praise children **for effort** over outcome
- ✓ Avoid saying things like "I was never good at maths" or "I never liked maths"

Using objects in the home

Look for numbers

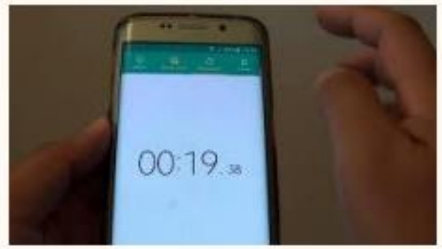
Look for shapes





Sharing, doubling & halving food

Measuring



Teach children **how to tell the time** and how to **use money** AT **HOME.** This is a life skills that needs to be revised every day/week.

Use daily routines
Link time to everyday activities so it feels meaningful.
- "We leave for school at **8 o'clock**"
- "Lunch is at **12**"
- "Bedtime is at **7 o'clock**"

Helps children understand **time in real life**.

✅ **Talk about the order of the day**
Use words like:
- **Before** / **After**
- **Earlier** / **Later**
- **Morning** / **Afternoon** / **Evening**

Example:
"What do we do **after** dinner?"

✅ **Use clocks little and often**
- Have an **analogue clock** visible at home
- Point to the hour hand:

"When the little hand points to 6, it's dinner time."
Don't worry about minutes at first — focus on **o'clock and half past**.

✅ **Use timers**
- Set a timer for tidy-up time or screen time
- Talk about how long feels **short** or **long**

Example:
"5 minutes feels quick, 10 minutes feels longer."

✅ **Count time**
- Count how many **seconds** to brush teeth
- Count steps or claps for **1 minute**

Handle real coins
Let children explore real coins.
Talk about **size, colour, and value**
Name coins: 1p, 2p, 5p, 10p
Example:
“This is a 2p coin — it’s worth more than 1p.”

✅ **Use money during shopping**
Let children hand over coins
Ask: “Do we have enough money?”
Compare prices: “Which is cheaper?”
This builds understanding of **value** and **choice**.

✅ **Play shops**
Set up a pretend shop at home
Use real or toy money
Price items up to 10p or 2 ✅ **Talk about saving**
Use a money box
Decide what they are saving for
Count money together each week
This introduces **planning and patience**.

✅ **Talk openly about money**
Use simple language:
“We earn money by working”
“We choose how to spend or save it”
“Sometimes we can’t buy everything”
This helps children understand money as part of daily life.

⭐ **Key reminder for parents**
Children learn best when:
Concepts are **linked to real life**
Learning is **little and often**
They are allowed to talk, try, and make mistakes

Play Numbots

- ✓ 30 mins max a week per child
- ✓ Class Award for the most stars won over a week!

% Active	Avg Daily Mins	Avg Coins Earned
18 %	4 MINS Graph	589

Thank you so much for coming!