



Friday 22<sup>nd</sup> March 2024 - Welcome to our Maths Workshop

Before we begin...

Help yourself to a cup of tea or coffee and a biscuit. While you are chatting:-

Can you remember any of your Maths lessons in school?

What were they like?

*Creativity - Excellence - Resilience*

# Aims of the session

- To give you a better understanding of the Early Years Foundation Stage Maths curriculum and what we teach in Reception.
- To show you some of the resources we use and how they support your child's maths learning in school.
- To give you an opportunity to 'do' some Maths.
- To give you some ideas of how you can support your children at home.

# The confidence trap

Are you guilty of saying the following:-

- I can't do that.
- I don't know how Maths is taught today.
- My partner does the Maths; I do the Literacy.
- I didn't like Maths at school.
- Oh that's really hard!
- I am rubbish at Maths.
- No...you do it this way.
- That's not how you do it!
- I didn't do it that way when I was at school.

Try saying:-

- That's what I need to learn next.
- This is a challenge – can we work it out together?
- You thought really carefully about how to solve those problems.
- I wish I learned Maths the way you are learning it now.
- That looks like a problem we can try and solve.
- Can you show me how you worked that out?

# End of year expectations

- The early learning goals summarise the knowledge, skills and understanding that all young children should have gained by the end of their Reception year.
- There are two early learning goals which relate to Maths and these are detailed below.
- ELG - Number - children at the expected level of development will: -
  - Have a deep understanding of number to 10, including the composition of each number;
  - Subitise (recognise quantities without counting) up to 5;
  - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
- ELG - Numerical Patterns - Children at the expected level of development will: -
  - Verbally count beyond 20, recognising the pattern of the counting system; -  
Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
  - Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

# End of year expectations

- Although shape, space and measure is no longer in the end of year expectations, it still forms such an important part of the children's mathematical development.
- Children are the expected level of development will:-
- Use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities;
- Create and describe patterns;
- Explore characteristics of everyday objects and shapes and use mathematical language to describe them;
- Use money with increasing confidence.

# Our curriculum

- In Reception at Bridge and Patricbourne CEP School, the main bulk of our Maths teaching is based on planning from the NCETM, National Centre for Excellence in Teaching Maths. We also supplement our planning with other schemes and resources, such as White Rose Maths, to deliver a broad and balanced curriculum, with plenty of challenge.
- We teach discrete maths lessons so that the children are taught some direct knowledge. Following each lesson and within our “exploring” time, activities are planned to excite learners to explore maths concepts in their play.
- We believe maths should be fun and ‘hands-on’. We believe children are naturally enquiring and it is our role to provide opportunities for children to explore, investigate, problem-solve, reason and just have plenty of opportunities to talk about maths.

# The Counting Principles

Following research from Gelman and Gallistel in 1978, it is vital that teachers understand the five counting principles. (Gelman, R. & Gallistel, C. (1978) *The Child's Understanding of Number*. Cambridge, MA. Harvard University Press.)



**The one-one principle.** This involves children assigning one number name to each object that is being counted. Children need to ensure that they count each object only once ensuring they have counted every object.

Children will sometimes count objects more than once or miss an object out that needs to be counted. Encourage children to line up objects and touch each one as they count saying one number name per object. This will also help to avoid children counting more quickly than they touch the objects which again shows they have not grasped one-one correspondence.



1



2



3



4



5





## The Counting Principles

2

**The stable-order principle.** Children understand when counting, the numbers have to be said in a certain order.

Children need to know all the number names for the amount in the group they are counting. Teachers can therefore encourage children to count aloud to larger numbers without expecting them to count that number of objects immediately.

3

**The cardinal principle.** Children understand that the number name assigned to the final object in a group is the total number of objects in that group.

In order to grasp this principle, children need to understand the one-one and stable-order principle. From a larger group, children select a given number and count them out. When asked 'how many?', children should be able to recall the final number they said. Children who have not grasped this principle will recount the whole group again.

## The Counting Principles



4

**The abstraction principle.** This involves children understanding that anything can be counted including things that cannot be touched including sounds and movements e.g. jumps.

When starting to count, many children rely on touching the objects in order to count accurately. Teachers can encourage abstraction on a daily basis by counting claps or clicks. They can also count imaginary objects in their head to encourage counting on, this involves the children visualising objects.

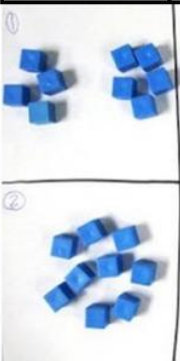
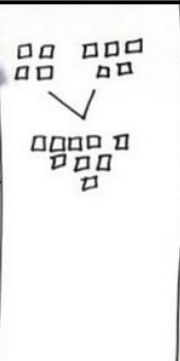
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**The order-irrelevance principle.** This involves children understanding that the order we count a group of objects is irrelevant. There will still be the same number.

Encourage children to count objects, left to right, right to left, top to bottom and bottom to top. Once children have counted a group, move the objects and ask children how many there are, if they count them all again they have not fully grasped this principle.

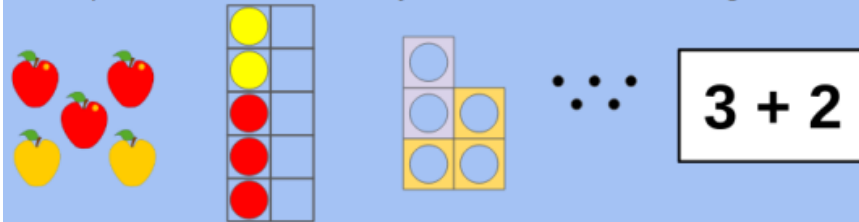
# CONCRETE – PICTORIAL – ABSTRACT

- **Concrete** – students should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.
- **Pictorial** – students should then 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, students should be able to move to an abstract approach using numbers and key concepts with confidence.
- **Language** – using, understanding and explaining the meaning of mathematical vocabulary is essential for depth in mastery.

Concrete	Pictorial	Abstract
		$4+5=9$

## Representation & Structure

- CPA used meaningfully across school
- Representations expose the structure of the problem or calculation
- Linguistic representations (emphasis on vocabulary and using stem sentences)
- Representations must be carefully selected and used in a meaningful order



# Mathematical Resources

- We believe children need plenty of opportunities to make connections between numbers and operations and to see, and then talk about, their discoveries and the patterns that emerge. A range of resources allow children to 'see the maths'. Some of these are on the table for you to explore at the end of our session today.

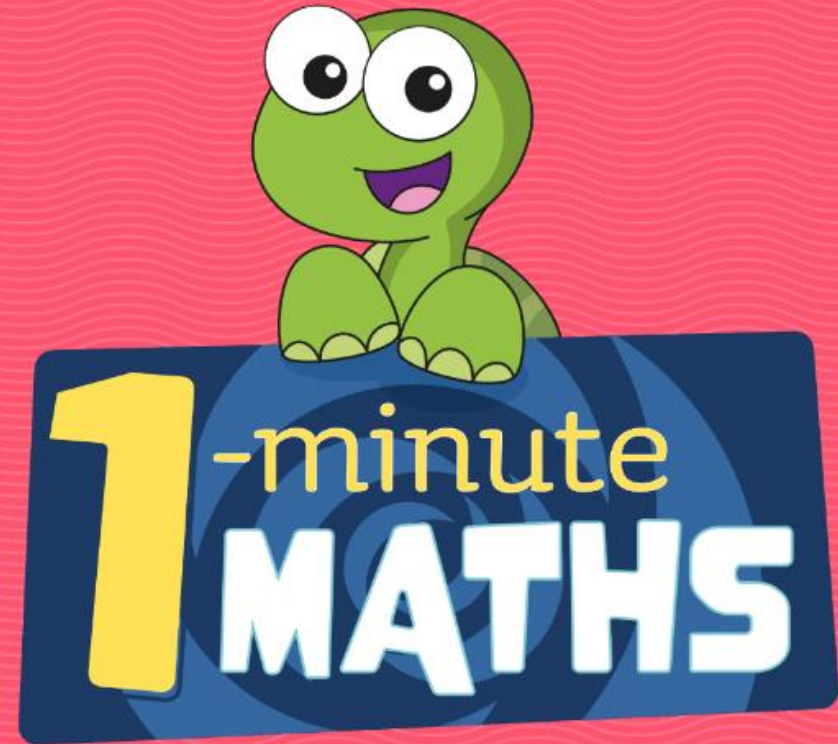
# What you can do at home...

- Singing number songs e.g. 5 little ducks, 10 green bottles etc – YouTube have lots of videos to watch and sing along to!
- Practical maths – Count anything and everything! Counting items into a shopping basket, adding small quantities of coins together, sharing toy food at a teddy bear's picnic etc.
- Play should include opportunities for size, shape, capacity, number and simple addition and subtraction vocabulary.
- Online games exploring number, shape and more! Don't forget to do some 1-minute maths every day and record this on the chart in your child's reading record.
- Show an interest in numbers in everyday life – e.g. numbers on the radio (101); speed limit signs; door numbers; checkout numbers, on buses / trains, on signs. Playing I spy whilst on walks out and about – which shapes or numbers can you see? Number plates, numbers on buses etc are great for this.
- Problem-solve at home – have we got enough plates, knives, forks, cups? How many shoes could fit on the mat? – estimate then count to check.
- Baking – support your child in reading numbers for ingredients, counting spoonfuls or cups into a bowl, timing the baking of cakes, reading scales etc.



# Check out these 7 top reasons for using 1-minute maths!

1. Excellent practice — and no distractions.
2. A clear, intuitive process that children pick up straight away.
3. No login or internet access needed. Just download and play.
4. Enjoyable and motivating... How many can they get correct in one minute?
5. Helpful hints match those used in class.
6. Brilliant for building number fluency and confidence.
7. It's **FREE!**

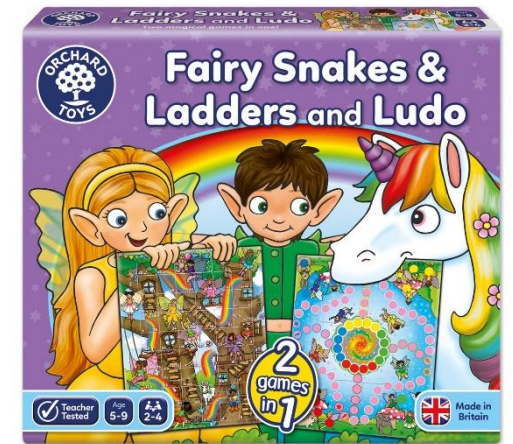


Mathematical vocabulary is so important! Use some of these words with your children during play.

full empty long short longer shorter longest  
shortest more less same equal to altogether add  
plus subtract take-away total count 2D shapes flat  
3D shapes solid sides corners heavier lighter taller  
shorter

and much, much more.....

Board games boost early maths skills, not to mention the focus on sharing, turn taking and effective communication.









# Time to do a bit of maths

- Pick three objects that match – Why did you choose them? How are they the same?
- Compare them to the person next to you – What is the same? What is different?
- Make a repeating pattern using two colours, shapes, types of objects? Share your pattern with the person next to you.
- Now try three colours, shapes and types of objects. Again, share your pattern with the person next to you.
- Working with the person next to you, use the equipment to find some different ways of making 5 and lay them out on the table.
- Now find all the “pairs” of numbers that make 5. You can only use two of your choice of object. Stick to those objects this time. Lay them out on the table in front of you.