



**LEO** ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Mathematics in Reception

## Monday 4th November





LEO ACADEMY  
TRUST  
LEARNING. EXCELLENCE. OPPORTUNITY.



## Aims of this workshop

- What does your child need to learn by the end of the year?
- How do we teach number across the Early Years?
- Why is solving problems important?
- What resources and strategies are used in the classroom?
- How can you help your child with their maths at home?



LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Maths in Early Years

- Mathematics in the Early Years, builds an important foundation for number work and problem solving in Key Stage 1.
- It comes under two strands, each of which has an Early Learning Goal attached:

Numbers

Shape, Space and Measures





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Number

- Children count reliably with numbers from one to 20
- place them in order and say which number is one more or one less than a given number.
- Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer.
- They solve problems, including doubling, halving and sharing.





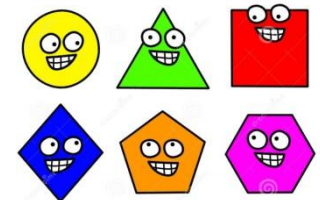
LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Shape, Space and Measures

- Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems.
- They recognise, create and describe patterns.
- They explore characteristics of everyday objects and shapes and use mathematical language to describe them.





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



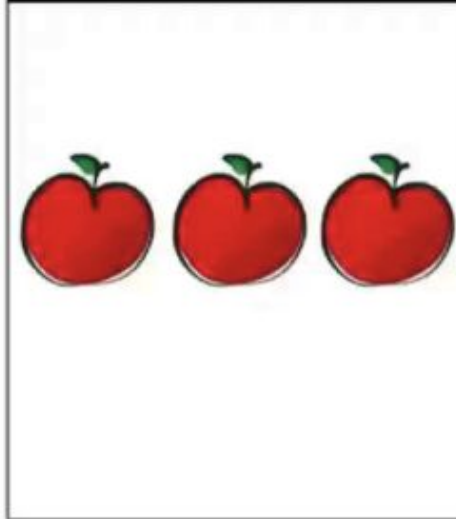
# How do children learn maths?

Concrete, Pictorial, Abstract

Concrete



Pictorial



Abstract

3

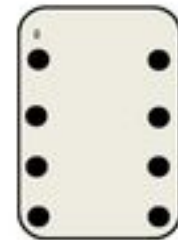


LEO ACADEMY TRUST

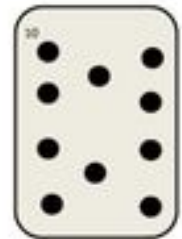
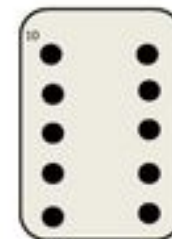
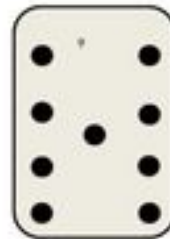
LEARNING. EXCELLENCE. OPPORTUNITY.



# It's all about patterns



Visual Cluster Cards







# Progression in counting

<p><b>Pre-counting</b></p> <p>The key focus in pre-counting is an understanding of the concepts more, less and the same and an appreciation of how these are related. Children at this stage develop these concepts by comparison and no counting is involved.</p>	<p><b>Ordering</b></p> <p>Count by reciting the number names in order forwards and backwards from any starting point.</p>	<p><b>One to one correspondence</b></p> <p>One number word has to be matched to each and every object. Lack of coordination is a source of potential error – it helps if children move the objects as they count, use large rhythmic movements, or clap as they count.</p>	<p><b>Cardinality (Knowing the final number counted is the total number of objects)</b></p> <p>Count out a number of objects from a larger collection. Know the number they stop counting at will give the total number of objects.</p>
<p><b>Pre-counting ideas</b></p> <p>Provide children with opportunities to sort groups of objects explicitly using the language of <b>more</b> and <b>less</b>.</p> <div data-bbox="131 1006 490 1149" data-label="Image"> </div> <p>Which group of apples has the most? Which group of apples has the least?</p>	<p><b>Ordering ideas</b></p> <p>Provide children with opportunities to count orally on a daily basis. Rote count so that children are able to understand number order and can hear the rhythm and pattern. Use a drum or clap to keep the beat.</p> <div data-bbox="614 1078 859 1306" data-label="Image"> </div>	<p><b>One to one correspondence ideas</b></p> <p>Play counting games together moving along a track, play games involving amounts such as knocking down skittles.</p> <p>Use traditional counting songs throughout the day ensuring children have the visual/kinaesthetic resources eg. 5 little ducks, 10 green bottles</p> <div data-bbox="1246 1035 1400 1192" data-label="Image"> </div>	<p><b>Cardinal counting ideas</b></p> <div data-bbox="1487 849 1787 1042" data-label="Image"> </div> <p>How many bananas are in my fruit bowl? Allow children to physically handle the fruit.</p> <p>Provide children with objects to point to and move as they count and say the numbers.</p>





# Progression in counting

## Subitising (recognise small numbers without counting them)

Children need to recognise small amounts without counting them eg. dot patterns on dice, dots on tens frames, dominoes and playing cards as well as small groups of randomly arranged shapes stuck on cards.

## Abstraction

You can count anything – visible objects, hidden objects, imaginary objects, sounds etc. Children find it harder to count things they cannot move (because the objects are fixed), touch (they are at a distance), see, that move around. Children also find it difficult to count a mix of different objects, or similar objects of very different sizes.

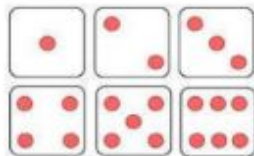
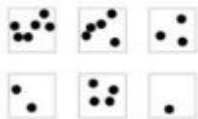
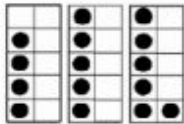
## Conservation of number – MASTERY!

Ultimately children need to realise that when objects are rearranged the number of them stays the same.



### Subitising ideas

Provide children with opportunities to count by recognising amounts.



### Abstraction ideas



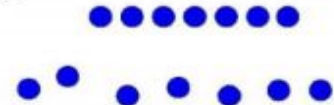
How many pigs are in this picture?

Provide children with a variety of objects to count.



### Conservation of Number

- The amount is "seven" and doesn't change.





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# How do we teach maths?

- Through structured play, adult led activities and child initiated learning.
- Using counting rhymes, stories and games.
- We encourage the use of cubes, compare bears, fingers, number fans, counters, numicon, number lines up to 10 and 20 and ten frames.
- We encourage children to find patterns
- We talk about 1 more/1 less, doubles and halves.





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Learning through play

Before we can embark on any kind of formal calculating there are vital practical processes the children need to experience.

- Role play - shops, market, hospital
- Areas of provision - child initiated
- Outdoor play - sand, water, games, coins, shape hunt, ordering positions in a race
- Rhymes and songs
- Stories
- Games





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Calculations

## Adding = counting on

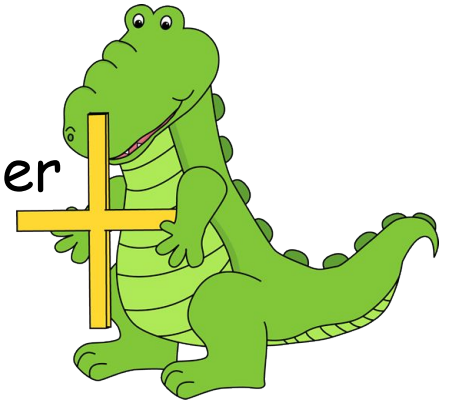
*There are six apricots on one plate and two on another. How many are there altogether?*

Children need to understand that adding involves an increase.

Start by having the physical representation and combining two sets by counting all of the objects.

Progress to adding two sets by starting with the larger and counting on by the smaller.

Introduce number lines to help record the number sentence.





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Calculations

## Subtracting = counting back

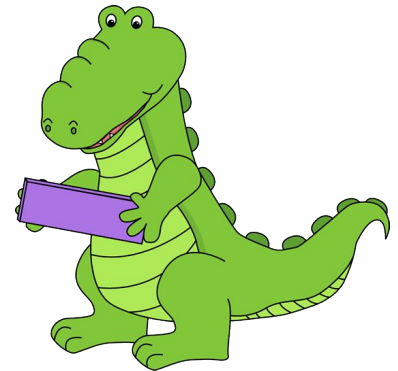
*There are six apricots on a plate, we eat two, how many are left?*

Children need to understand that subtracting involves a decrease.

We start by having the physical representation and removing the appropriate number.

Progress to subtracting two sets by starting with the larger and counting back by the smaller.

Introduce number lines to help record the number sentence.







# The importance of problem solving

Children should be given the opportunity to set their own problems so they can then develop strategies to solve problems

- Finding opportunities to challenge children through child-initiated play e.g. 'What's the biggest arch you can make with the blocks?'
- Planned opportunities to challenge children i.e. presenting children with a 'genuine' problematic situation e.g. organising a scoring game, unfair distribution of pirate gold.

*A good problem may have more than one solution and can be investigated at different levels.*







# Mastery

- Mastery is not just being able to memorise key facts and procedures and answer test questions accurately and quickly.
- It involves knowing 'why' as well as knowing 'that' and knowing 'how'. It means being able to use one's knowledge appropriately, flexibly and creatively and to apply it in new and unfamiliar situations.

Mastery is:

- Knowing how to do something
- Doing it automatically (driving a car)
- Being really good at something
- Showing someone else how to do it





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Supporting your child at home

## How should we practise at home?

Little and often is the best approach.

Use a variety of activities.

Remember it needs to be FUN!

## Maths Apps/Websites

There are thousands of educational apps which will support your child's maths learning.

We have selected just a few that we would recommend as being particularly good.

Topmarks

Ictgames

Busy Things



# Supporting your child at home

## Games

Board Games or any type of game which includes counting e.g. snakes and ladders, pairs, or dominoes

## How old?

Start with your child's age. Ask your child:  
How old will you be when you are one year older?  
How old were you last year?  
How old will you be in ... 2 years time?

## Helping at home

Weighing items  
Sharing out plates and cutlery  
Looking at a calendar - day, months



# Supporting your child at home

## Maths when Out and About

### Shape Hunt

On the way to school carry out a shape hunt. How many 2D and 3D shapes can you see? Who found the most?

### Housey, Housey

When walking down the street look at the numbers on the house, They should follow a pattern. Can your child predict the next number. Is the number odd or even?





LEO ACADEMY  
TRUST

LEARNING. EXCELLENCE. OPPORTUNITY.



# Any Questions?