
# Maths in Reception


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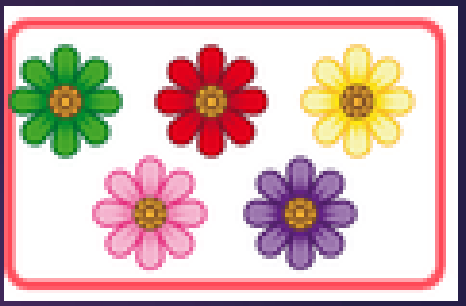
# Why is Maths important in EYFS?



- In Reception, children learn to recognise basic numbers and quantities which builds the foundation for learning bigger numbers in more depth and reasoning/problem solving skills in KS2
- Children need to be fluent in a range of number facts to fully understand taught concepts
- Research shows that early years settings/schools that helped children to understand early number concepts led to better outcomes in mathematics at 11 years old
- Misconceptions are often hidden! Many children can recite numbers in sequence without being able to count i.e. 1, 2, 3, 4, 5. 5 flowers!
- Sometimes children can know an amount of objects, but find it very difficult to prove through counting.
- **Mathematical understanding helps children make sense of the world around them**, interpret situations, and solve problems in everyday life.

# Foundations for EYFS maths:

- Learning maths through play (Make it fun and as practical as can be!)
- Mastery is key to developing fluency, reasoning and problem

Fluency

Reasoning

Problem Solving

# End of Year Expectations for Reception

**The teaching of Mathematics in the Early Years Foundation Stage (EYFS) is split into 2 areas:**

- Number
- Numerical Patterns

Children at the expected level of development will:

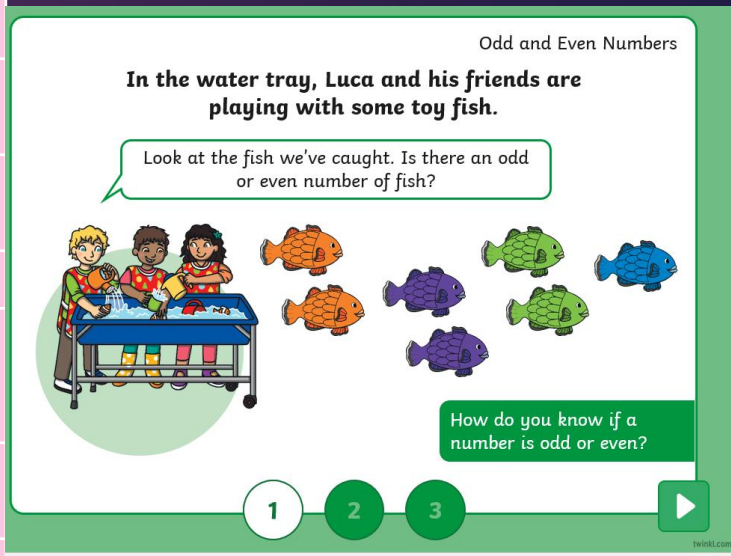
✓ have a deep understanding of number to 10, including the composition of each number
✓ subitise (recognise quantities without counting) up to 5.
✓ automatically recall (without reference to rhymes, counting or other aids)number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

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.

# Maths – Glossary

| | |
|---|---|
| **Fluency** | the ability to quickly recall addition and subtraction facts through memory of key concepts |
| **Subitise** | to recognise how many spots there are on dice, dominoes and Numicon etc. instantly without counting them. This skill is needed to develop fluency. |
| **Deep understanding** | the ability to solve a problem in number of ways and apply – *this is the main aim by the end of Reception!* |
| **Reasoning** | the children's ability to explain their thinking |
| **Problem solving** | to use their maths skills in lots of contexts and in situations that are new to them. It allows them to seek solutions, spot patterns and think about the best way to do things rather than blindly following taught maths strategies |
| **Rote counting** | the ability to verbally recite numbers in the correct sequence from memory (e.g., "1, 2, 3, 4, 5...") without necessarily linking them to physical objects. |
| **Composition** | What a number is made of i.e. the parts of the number like 4 is made of 2 and 2 |
| **number bond** | pairs of numbers that add together to make a specific total e.g. number bonds to 5 are 1+4, 2+3, 3+2, 4+1, 5+0 |
| **Ten frame** | Used to count accurately to 10 one object at a time but also for addition and subtraction |
| **Double facts** | The same number added twice e.g. 2+2, 3+3, 4+4 |
| **Numerical pattern** | a child's developing ability to recognize, understand, and predict rules within numbers and sequences. It involves recognizing relationships between numbers. |
| **Odd and even numbers** | Even numbers can be shared equally into pairs with none left over. Odd numbers always have an "odd one out" leftover |
| **Halving** | How to share objects equally |



# X What is not covered?

- 2D or 3D shape
- Money
- Geometry e.g. mass, capacity, length etc
- Formal written methods or sums

# The counting Principals

**1. The one-to-one principle (or one to one correspondence)**
This is where only one number is assigned to each object that  is counted i.e.  lining up objects in a row.

**2. The stable order principle**
This is knowing that numbers need to be said in the same numerical order or sequence.  This also requires a stable list …..that is at least as long as the number of items being counted. It is always 1,2,3,4,5,6,7 etc., not 1,2,3,5,8

**3. The cardinal principle**
This is understanding that the last number counted indicates how many things in the set i.e. stopping number.


Keep modelling:
There are 1,2,3 marbles in the jar.
There are 3 marbles in the jar.

**4. The abstraction principle.**
This is the understanding that non-physical as well as physical things can be counted e.g. counting actions or sounds.

**5. The order-irrelevance principle.**
This is the understanding that the order that you count and in which order those items are counted, or which you start with, is irrelevant, as long as every item in the collection is counted once, and only once.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We provide a deep understanding of Maths through a **Concrete** (use of apparatus/manipulatives/objects), **Pictorial** (diagrams and images) and **Abstract** (numbers and words only) approach.

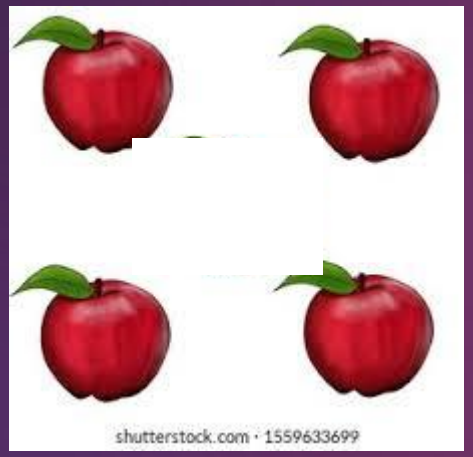
***Depth before breath*** ! More concrete and pictorial before more abstract!

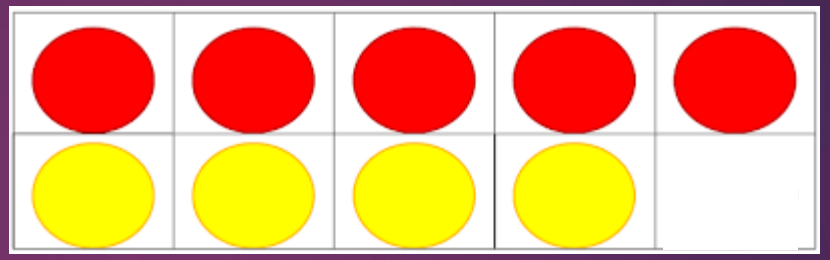
# Too abstract?

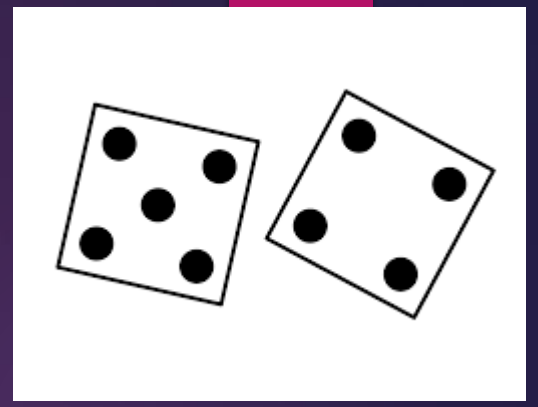
- 5 + 4=

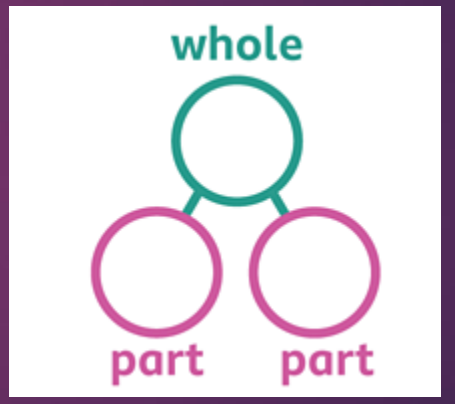
# Concrete or pictorial representations support children to understand abstract concepts

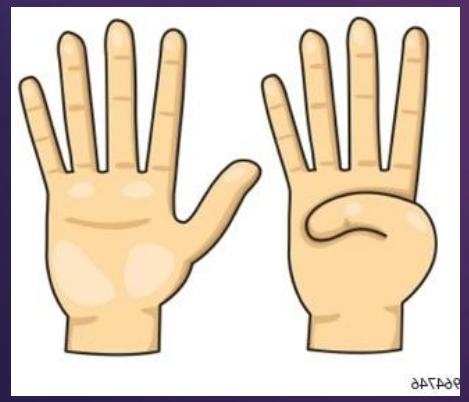
## 5 + 4=

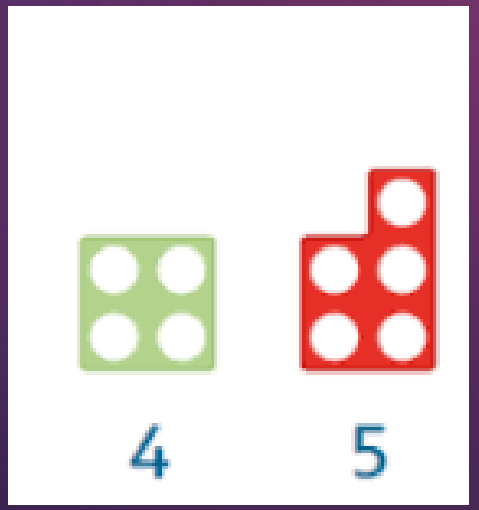



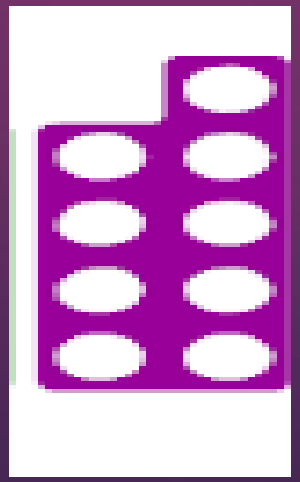



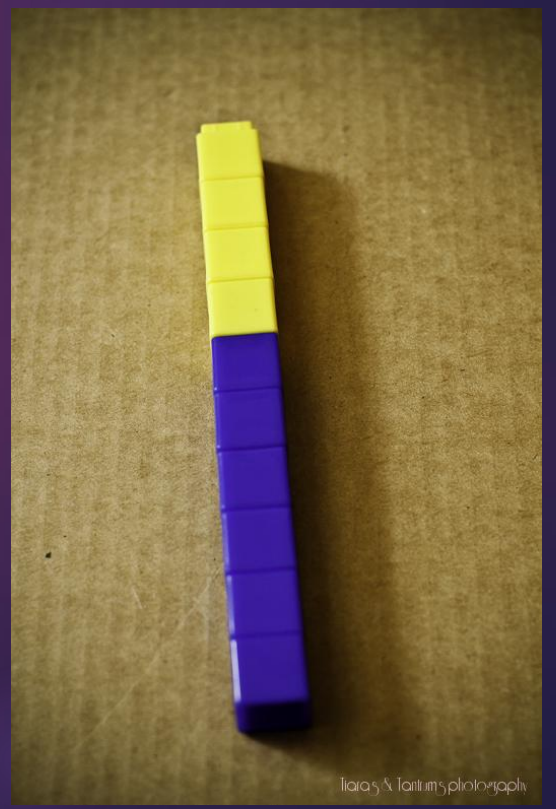




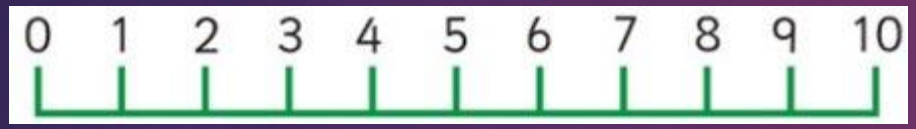






Allow your child to use objects, drawings and practical objects to work this out.





# Engaging resources:
## Treasure/loose parts and small objects


Eventually take the objects/pictures away and display the number sentence.

# Number Vocabulary

zero

more
few
fewer

compare

less
more
most
the same

number

sort

pair

ones

count on
count backwards

order

before
after

# Addition and Subtraction Vocabulary

add

altogether

one more
one less

more

takeaway

equals
equal to

whole
parts

How many?

make
total

numberline

half

double

# Measure

Before
After
Next
Last
Now
Soon

coin
buy
sell
pay,
price
how many?

tall
small
large
thick thin
low deep

Days of the week
Months
Year

yesterday
tomorrow

old
new

Long
Longer
longest

short
shorter
shortest

weekend
holiday

capacity
empty
full
nearly empty

weight, weigh, weighs

heavy, heavier, heaviest
light, lighter, lightest

late
quick
fast
slow

morning, afternoon,evening, night

# Nursery rhymes are amazing!

opportunities to develop mathematical thinking:


## Counting songs

School Radio > Reception / EYFS > Nursery Rhymes and Songs

Nursery rhymes and songs for learning the numbers 1 to 10.


**The animals went in two by two**

Watch and sing along with the video.


**Five currant buns**

Watch and sing along with the video.


**Five little apples**

Watch and sing along with the video.

**Five little ducks went swimming one day**

Watch and sing along with the video.

**Five little men in a flying saucer**

Watch and sing along with the video.


**Five little monkeys jumping on the bed**

Watch and sing along with the video.


**Five little monkeys swinging from a tree**

Watch and sing along with the video.

**Five little speckled frogs**

Watch and sing along with the video.


**The goats came marching**

Watch and sing along with the video.


**1, 2, 3, 4, 5, Once I caught a fish alive**

Watch and sing along with the video.


**One big hippo**

Watch and sing along with the video.

**One finger, one thumb, keep moving**

Watch and sing along with the video.

**One man went to mow**

Watch and sing along with the video.


**One tomato, two tomatoes**

Watch and sing along with the video.

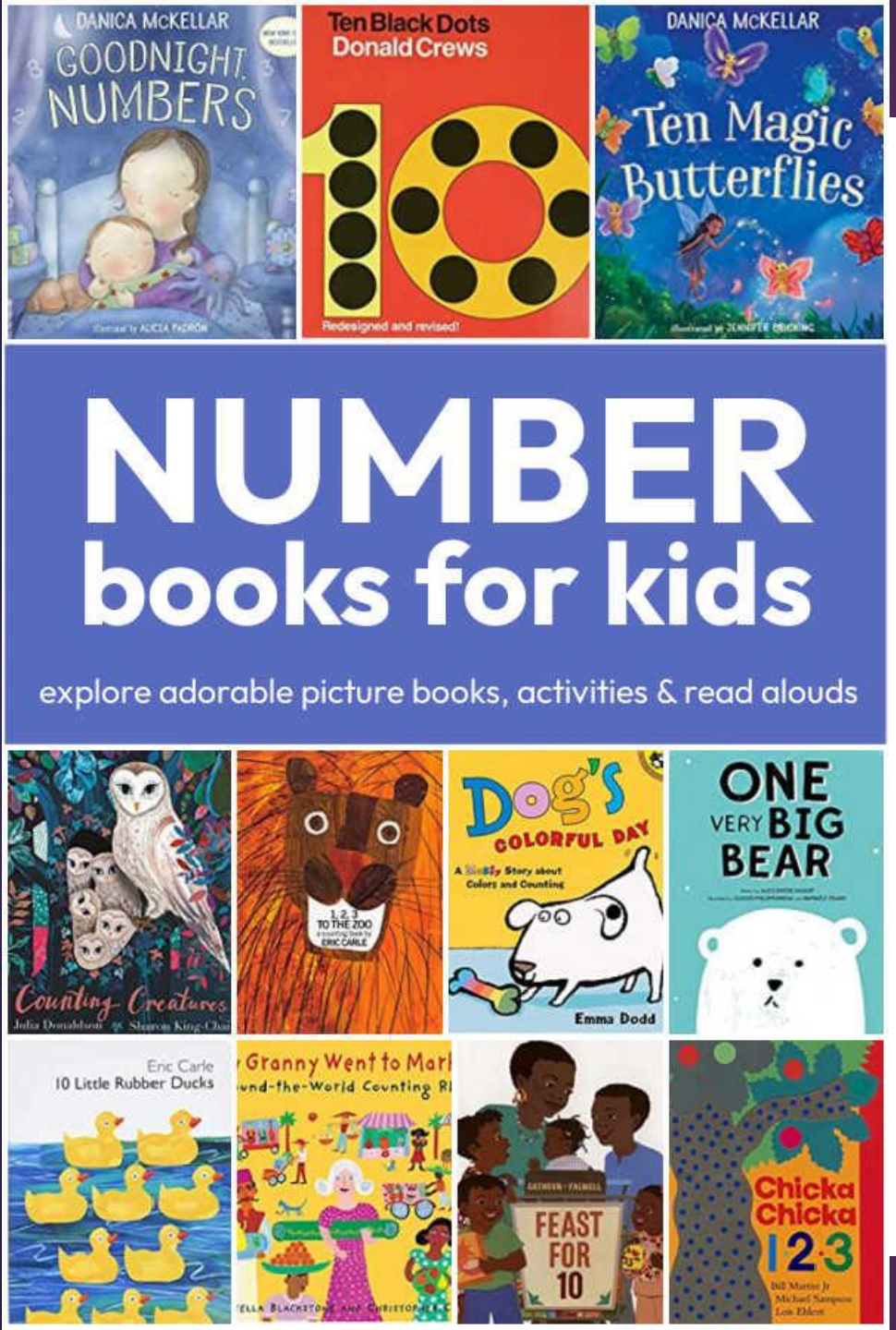

**One, two, buckle my shoe**

Watch and sing along with the video.


**Ten fat sausages sizzling in a pan**

**Ten green bottles**

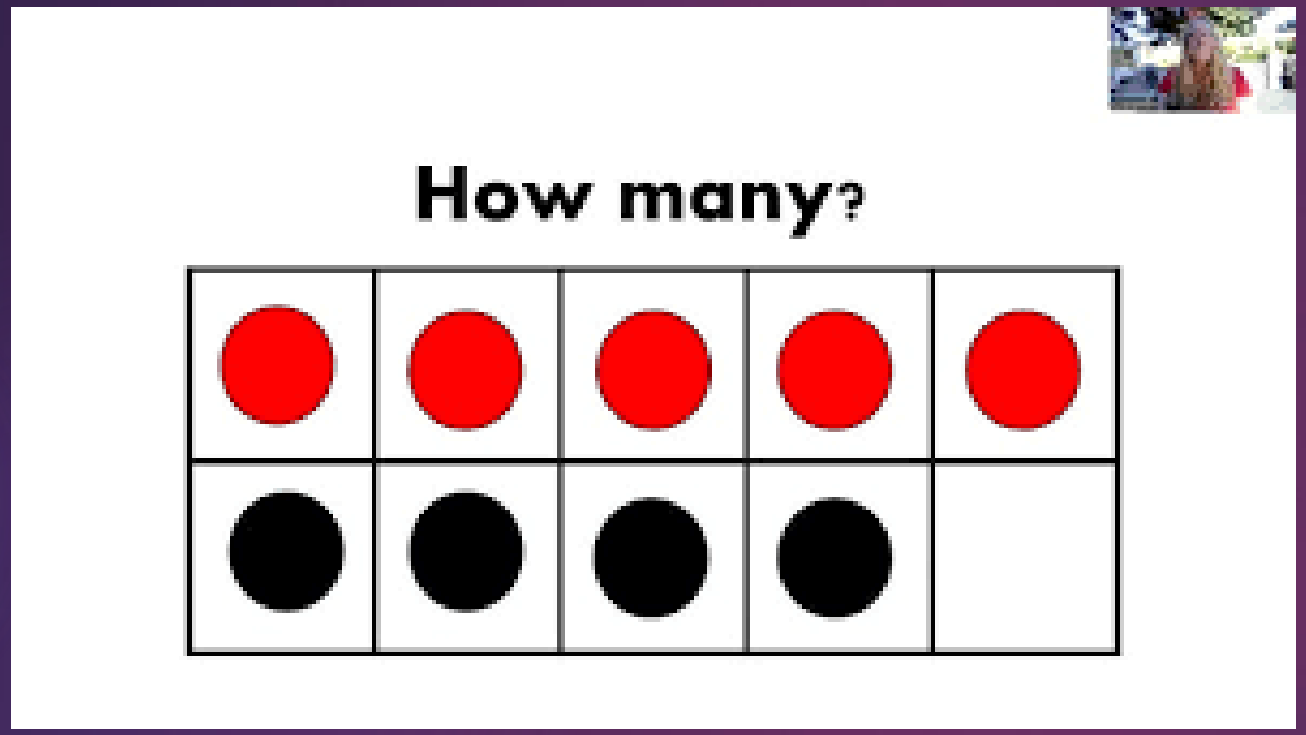
**Ten in the bed**




# Maths Through Stories

| Title and Author | Mathematical Concept |
|---|---|
| The Shopping Basket by John Burningham | Counting, subtracting, concept of 1 less |
| Six Dinner Sid by Inga Moore | Counting, sharing |
| Goldilocks and the 3 Bears (traditional tale) | Counting, size, ordering |
| Ten Little Dinosaurs by Mike Brownlow | Counting through rhyme |
| Kippers Toybox by Mick Inkpen | Counting |
| Handas Surprise by Eileen Browne | Ordinal numbers, subtraction |
| The Very Hungry Caterpillar by Eric Carle | Numbers, counting, days of the week |
| The Bad Tempered Ladybird by Eric Carle | Size, Time |
| Bear in a Square by Stella Blackstone and Debbie Harter | Shapes |

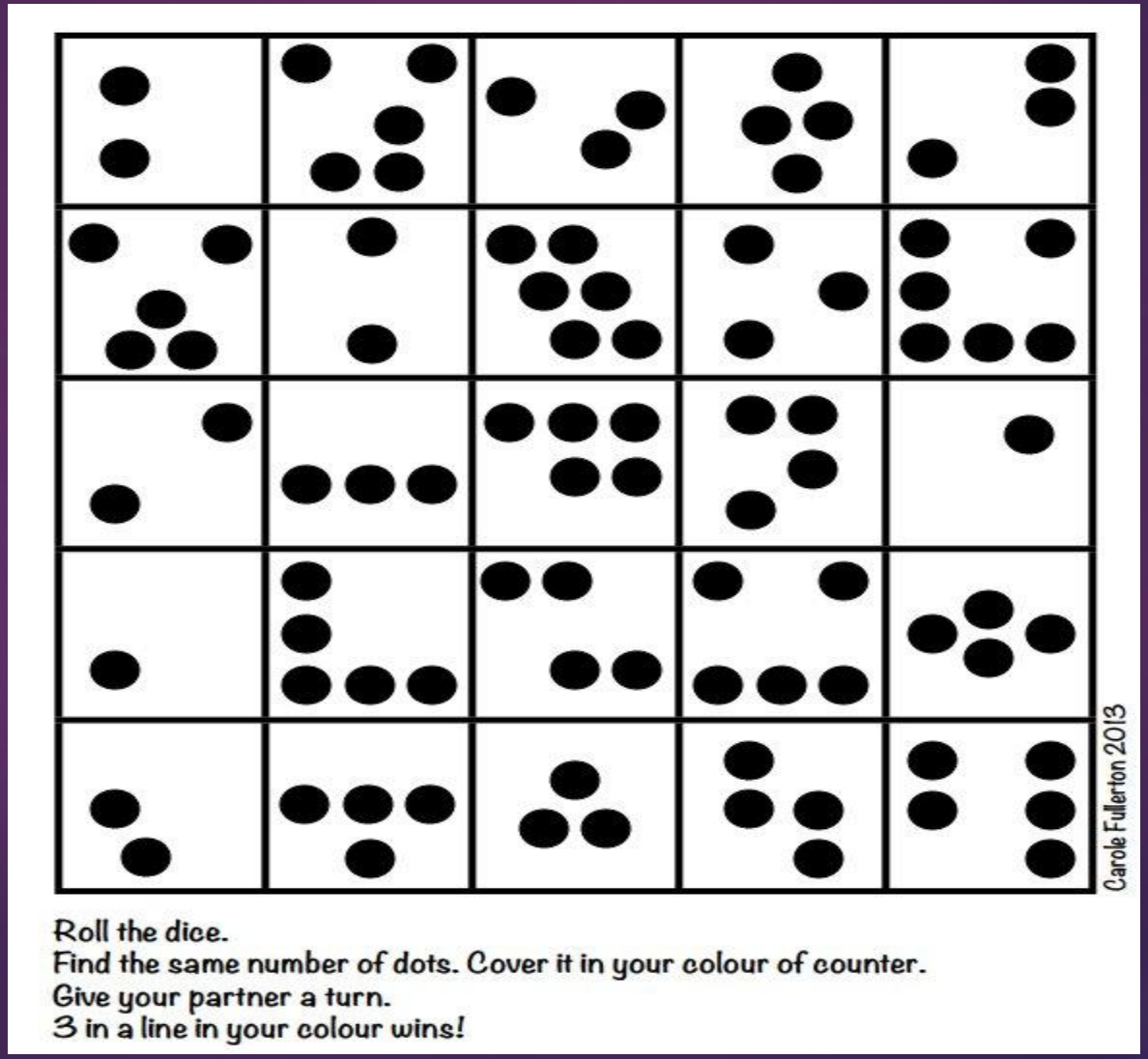
# Game idea 1: Ten frame flash




Great for subitising and identifying parts in numbers which is key for addition and subtraction

https://www.youtube.com/watch?v=J45gF0xKnlY

# Game idea 2: Roll and cover!



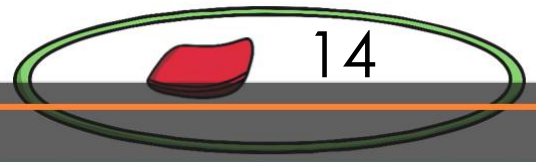
# Game idea 3: Bean Bag toss!

## Number Concept Activity Ideas

**Bean Bag Toss**

**Equipment:** bean bags, hula hoop

**Activity:** Say a number to your child and have them toss that same amount of bean bags into the hula hoop.

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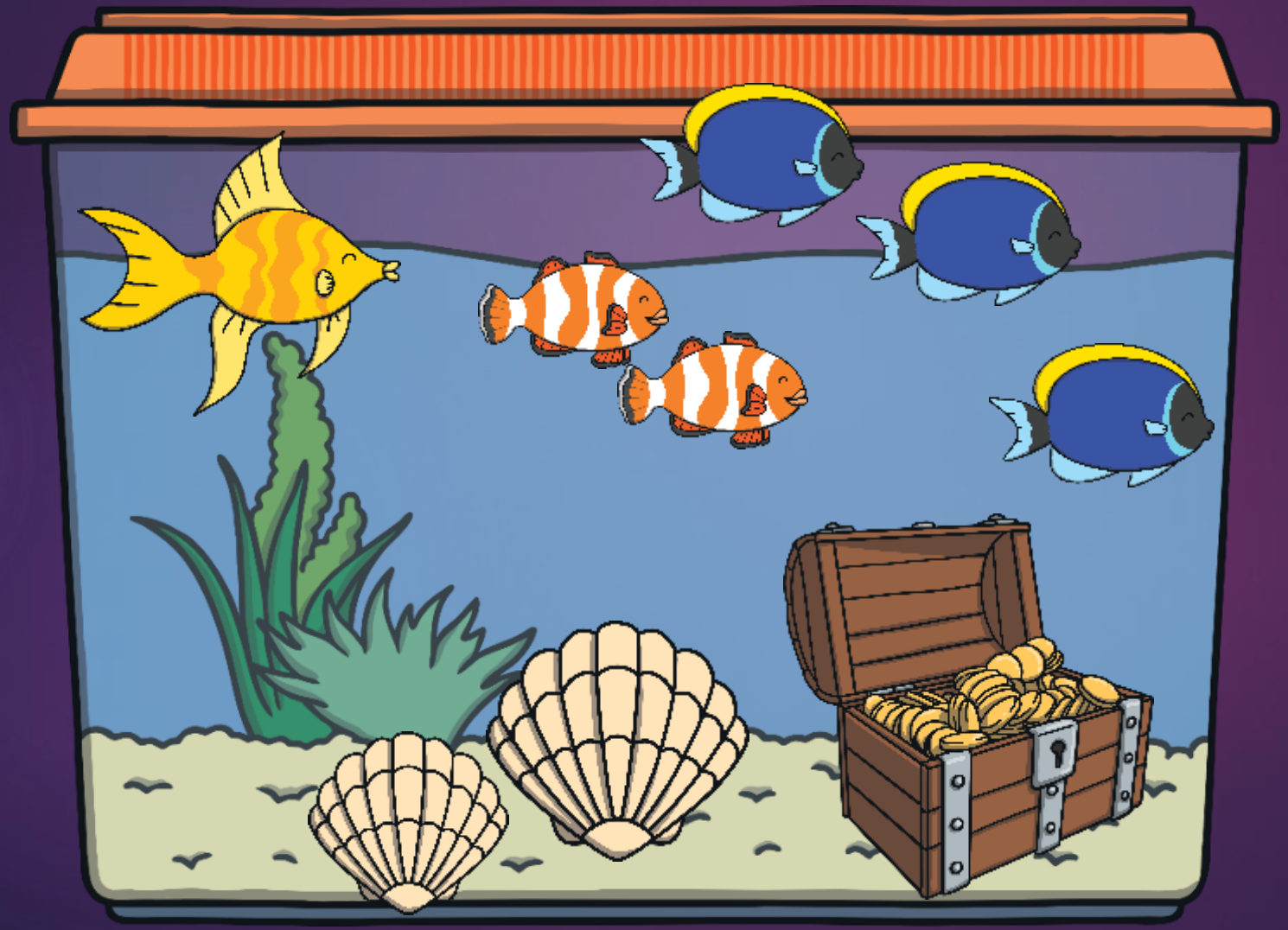
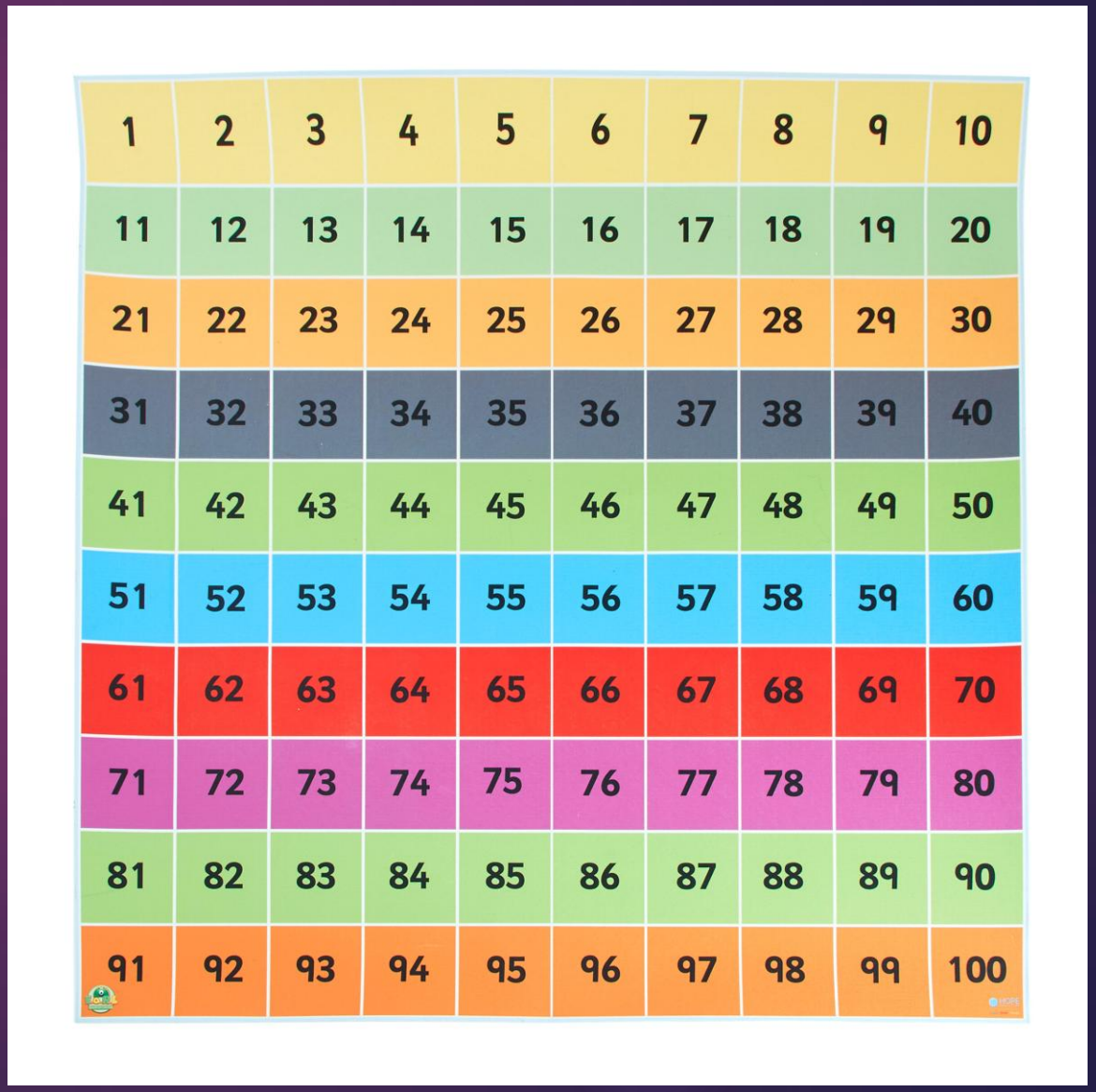
Number Concept PowerPoint Video

# Comparing numbers - More or Less? Fewer or equal?



# Verbally counting beyond 20

- Hundred square
- https://www.topmarks.co.uk/learning-to-count/paint-the-squares



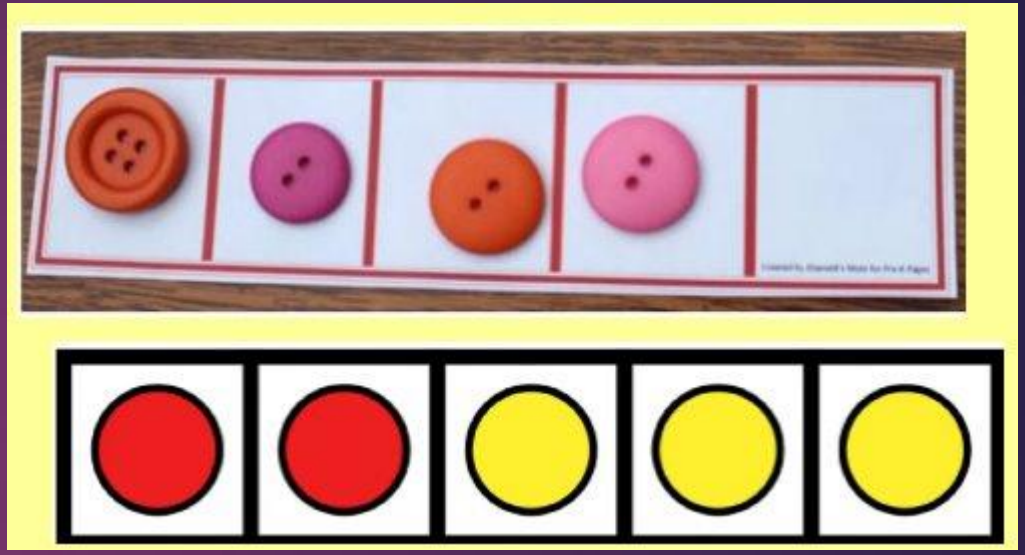
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

# Addition

- • Find the total number of items in 2 groups by counting all of them.
- • Varied language – ‘adding’ ‘total’ ‘how many altogether’ ‘makes’ ‘equals’
- Orally say the sum

# Subtraction

- How many buttons are there?
- 
- Take away 2 buttons.
- 
- How many do you have left?



# Number composition

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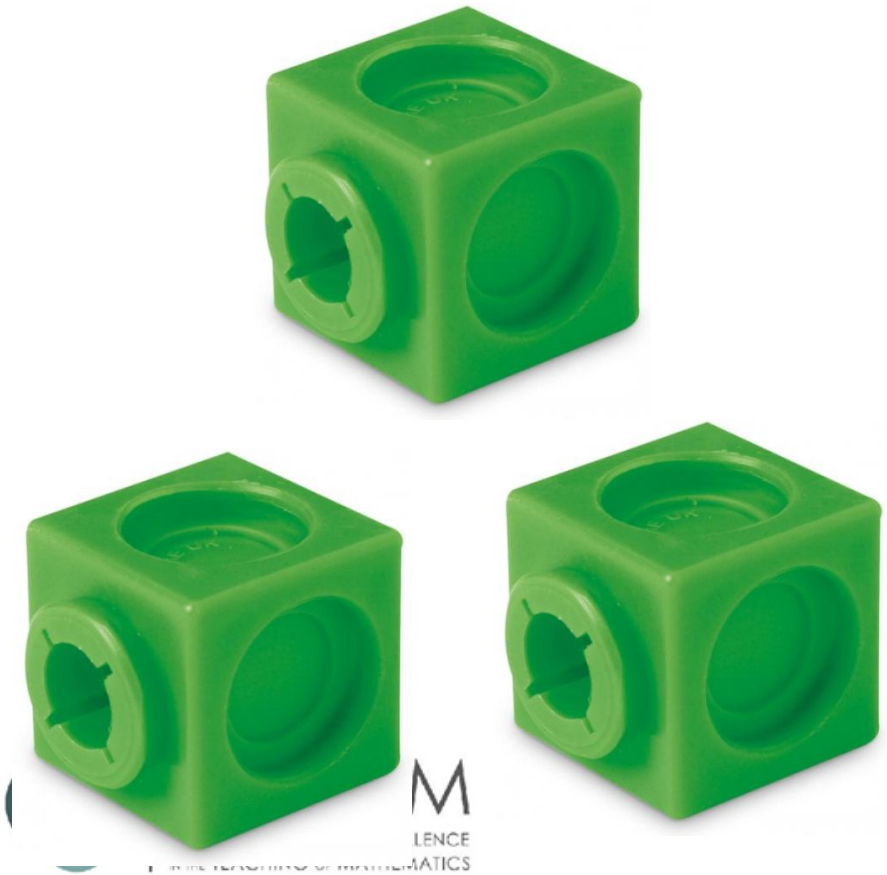
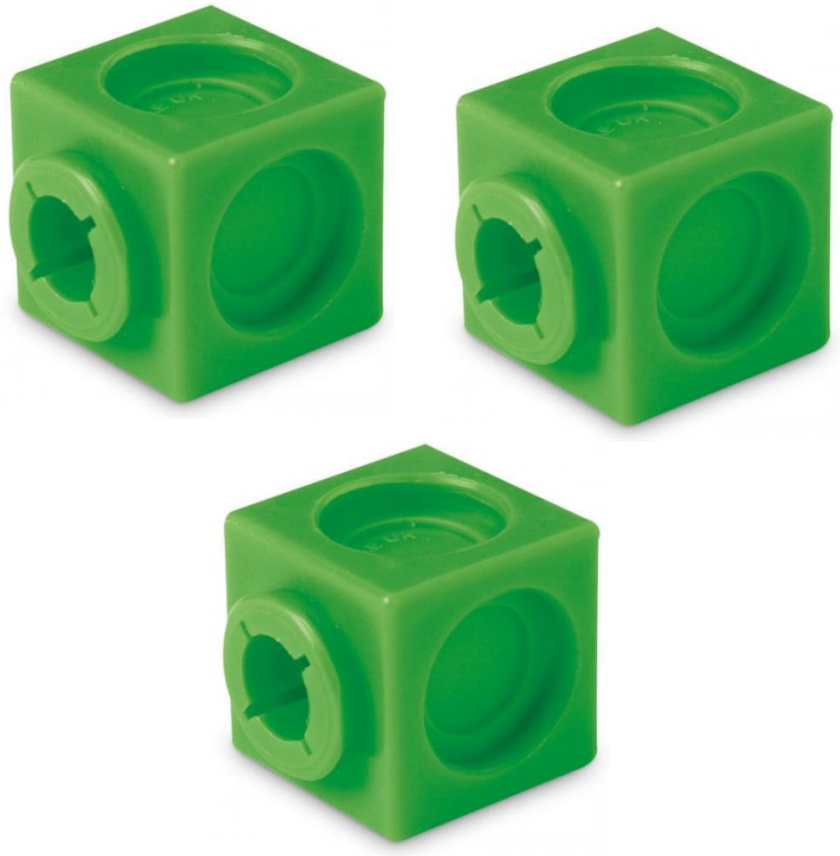
MATHSHUBS
MATRIX

**number composition** is the understanding that numbers are made up of smaller numbers (parts) that combine to form a whole.

MATHSHUBS
MATRIX



MATHSHUBS
MATRIX

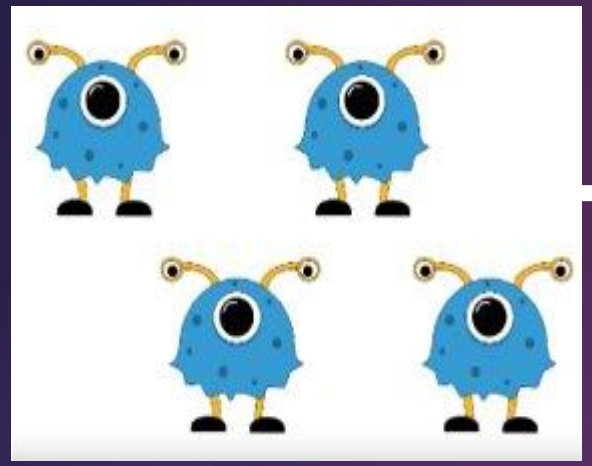


# Number Composition/ Subitising

Subitising helps children to understand the composition of number.

- Numbers are composed of smaller numbers
- Numbers can be made of 2 parts
- Numbers can be made of more than 2 parts
- Numbers can be made of equal parts
- Numbers can be made of unequal parts

# Moving on in skills



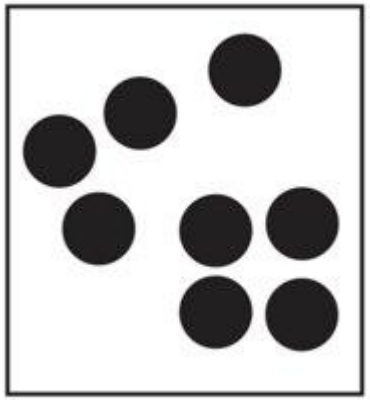


Figure 6

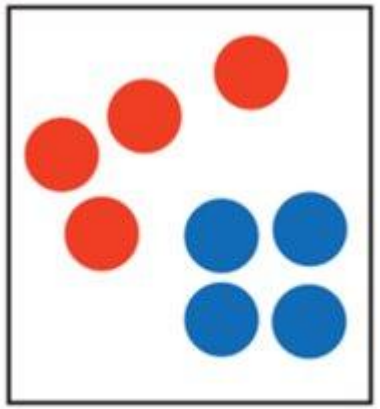
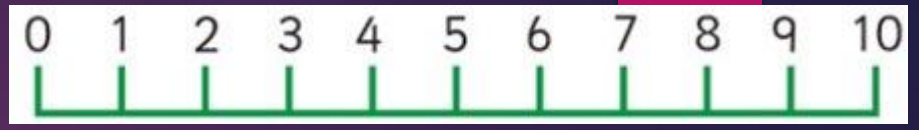


Figure 7

# Extended Counting



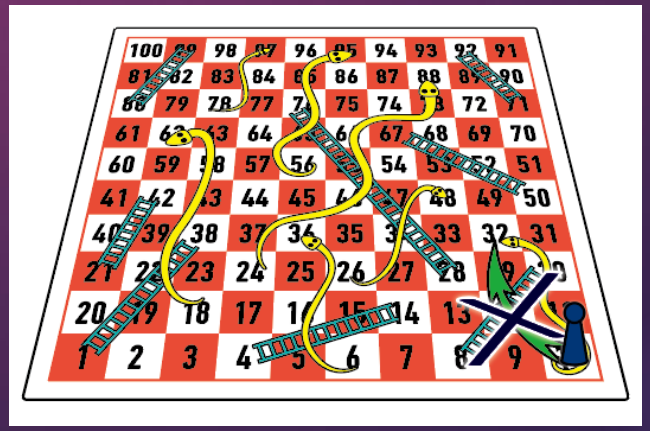

- **Forwards**
- • 3, 4, 5, 6, 7…
- • 6, 7, 8, 9, 10…
- • 8, 9, 10, 11, 12…

- **Backwards**
- • 11, 10, 9, 8, 7…
- • 6, 5, 4, 3, 2…

- • This skill prepares children for addition and subtraction.

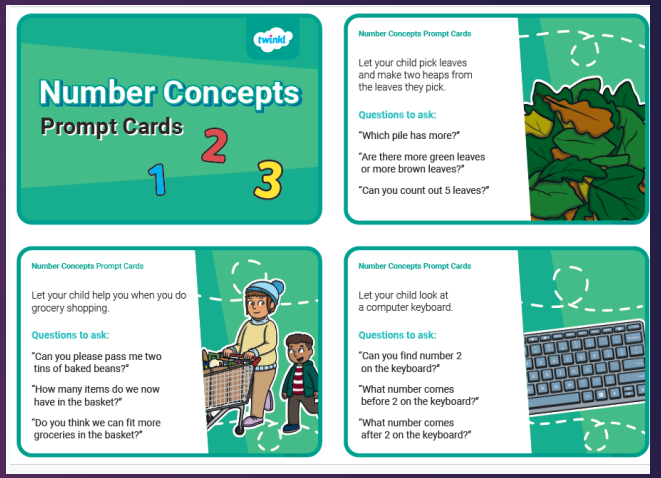
# How else can I help?

- Plan playful activities, communicating and modelling language, showing, explaining, demonstrating, exploring ideas, encouraging, questioning, recalling, providing a narrative for what they are doing, facilitating and setting challenges.
- "What do you notice?"… is a key questions when exploring quantities!
- Make it fun! Consider using board games! E.g. snakes and ladders, track games etc



# The home environment

- Time – “ 5 more minutes!”
- Comparing quantities during breakfast/dinner – “she has more cereal/sweets/juice than me!”
- Sharing during celebrations – how many sweets, fruit, toys, will every one get in their party bag?
- Counting – “ How many sleeps till ?”, counting stairs, steps..
- Number recognition – car registration/ house numbers/bus numbers/ remote controls/mobiles
- Measures – helping with cooking i.e. 2 spoonfuls of sugar, 10 tsp of nutmeg
- Size – sorting washing/drying – socks
- One to one correspondence – doing up buttons, laying a table setting
- Bath-time (filling and emptying containers, counting, timing how long it takes to fill the bath)
- Singing maths nursery rhymes
- Talk about numbers in the environment (front door numbers, number plates,road signs etc)
- Shopping – helping to count out varying amounts of fruit and vegetables, paying in shops (how much change?)
- Estimating amounts (how many apples/sweets?)



# Numbers everywhere!




# Number blocks!


Numberblocks up to 20 and beyond!

Great for developing Early Number sense – The fiveness of five! Supports the Early Years and Year 1 and 2 curriculum.

Watch and see how it links all we have discussed thus far.
https://www.bbc.co.uk/iplayer/episode/b08q4jkq/numberblocks-series-2-double-trouble

# Useful websites

- https://www.youtube.com/watch?v=dAgeKohw3XI
- https://www.bbc.co.uk/iplayer/episodes/b08bzfnh/numberblocks
- https://www.bbc.co.uk/teach/school-radio/articles/zn67kmn
- https://www.topmarks.co.uk/maths-games/5-7-years/counting
- https://www.youtube.com/channel/UCVcQH8A634mauPrGbWs7QlQ
- https://ictgames.com/mobilePage/eyfs.html

# Thank you for taking part!

Any questions?