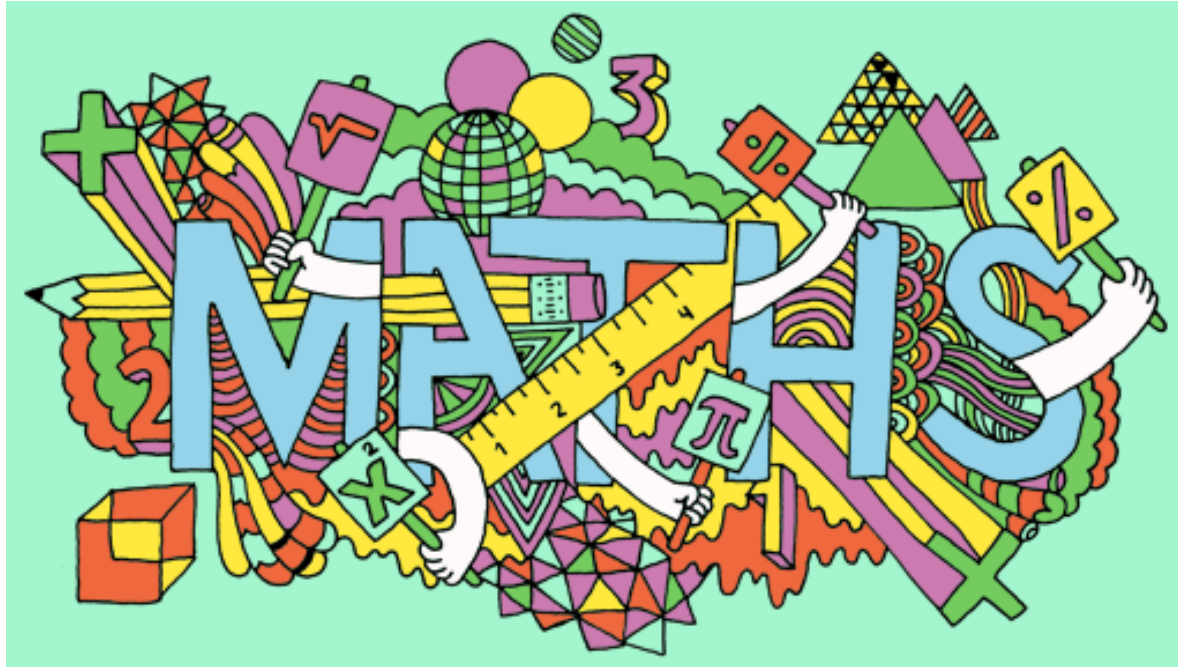




# Marvellous Maths



## Developing Number Sense in Reception

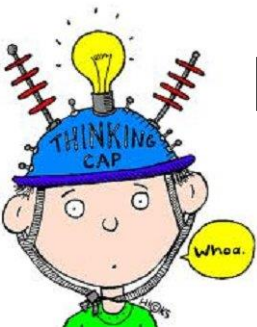
January 2020



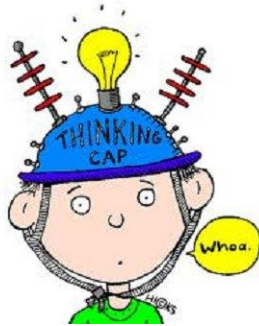
# Aims of this morning:



- To give you an overview why we teach what we do in Reception
- To explore the main elements that can help children develop number sense and fluency in early years.
- To discuss ways you can support your children at home, including games you can play.



# What is Number Sense?

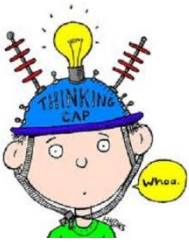


$$6 + 5 =$$

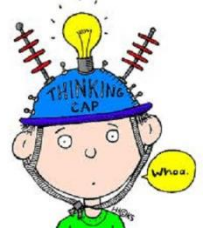
$$11 - 9 =$$

- Children with number sense can work **fluently and flexibly** with numbers
- They have a sense of what numbers mean and understand their relationship to one another
- They can use numbers in real world situations.

Number sense develops gradually as a result of exploring numbers, visualizing them in a variety of contexts, and relating them in ways that are not limited by traditional algorithms



# Number Sense is ...



“...good intuition about numbers and their relationships. It **develops gradually** as a result of **exploring numbers, visualizing them** in a variety of contexts, and **relating them** in ways that are not limited by traditional algorithms.”

Howden, 1989

**Number sense** refers to the ability of people to have a good knowledge and understanding of **numbers** and operations as well as their relations, and to deal with daily life situations involving **numbers**; and this ability is used in developing flexible and convenient strategies in dealing with numerical problems .



- The latest research shows that children who have poor number sense by the time they leave Reception, are likely to do less well in maths as they move through the school and beyond.

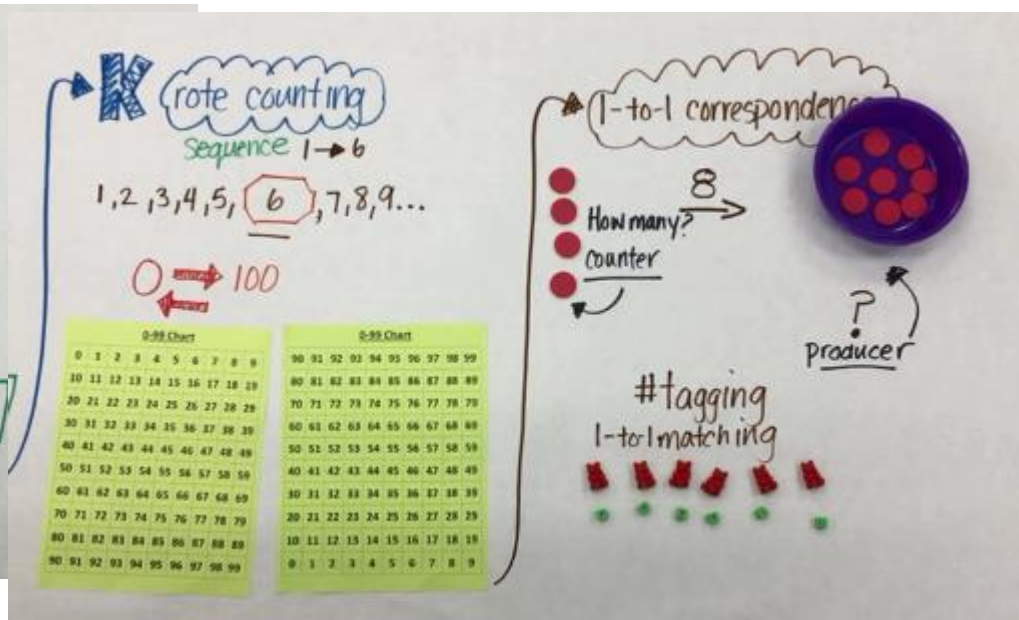
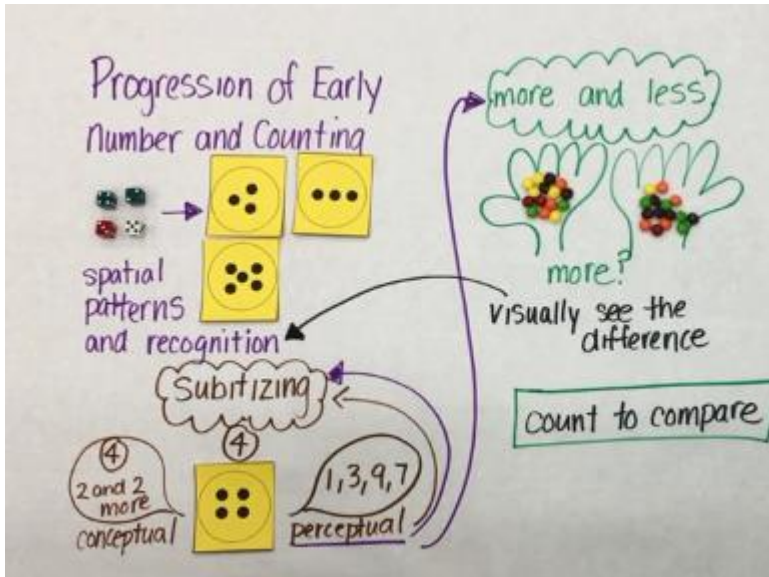
# The 4 (or 5!) Cs



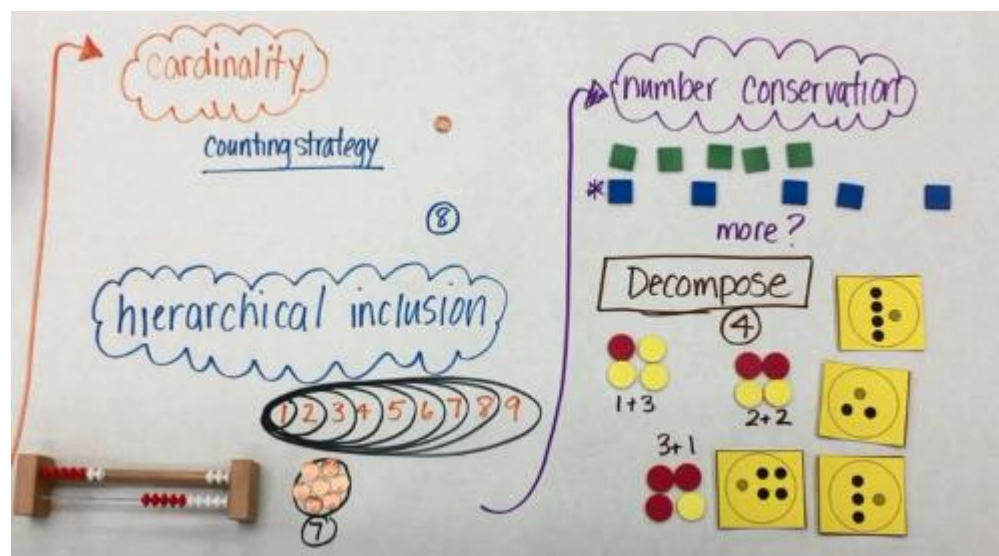
Sue Gifford

These key elements are the basis for the development of children's early number sense and future success in maths:

- **Counting**
- **Cardinality** – understanding the value of numbers and knowing when to stop counting (The 3-ness of 3!)
- **Composition** – numbers are made of other numbers
- **Comparison** – the ability to compare numbers and talk about their relative size
- **Change** – What happens when we add or subtract



# Progression of Early Number and Counting



<https://gfletchy.com/progression-videos/>

# Counting Principles

Along with this:

- Ability to subitise
- Number recognition
- Knowing all about numbers to 10

- **One to one principle** (One number for each item)
- **Stable order principle** (Knowing number names in order)
- **Cardinal principle** (Stopping number – the last number you say tells you how many you have)
- **Order irrelevance principle** (It doesn't matter which order we count the objects in)
- **Abstraction principle** (You can count anything, including non-physical (eg sounds) and imaginary things, and the same rules apply)

**Gelman and Gallistel, 1978**

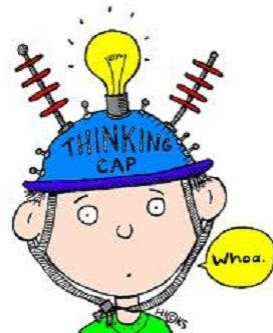
+ Hierarchical Inclusion + Conservation principle





# How can you help at home?

- Involve your child in everyday maths; talk about numbers/ maths around you.
- Play lots of games, including ordinary board games.





# Fab questions to ask your child!



**What do you notice?**

**What do you wonder?**

**How do you know?**

**What do you think?**

Number  
BLOCKS

The logo consists of the word "Number" in a multi-colored, rounded font (N: red, U: orange, M: yellow, B: green, E: blue, R: purple) and the word "BLOCKS" in blue block letters with white outlines. A red, square character with a single large white eye, two brown arms, and two brown legs is positioned between the two words, appearing to be part of the "O" in "BLOCKS".



# Counting rhymes & books

<http://earlymath.erikson.edu/movement-counts/> - video

See Erikson's lists

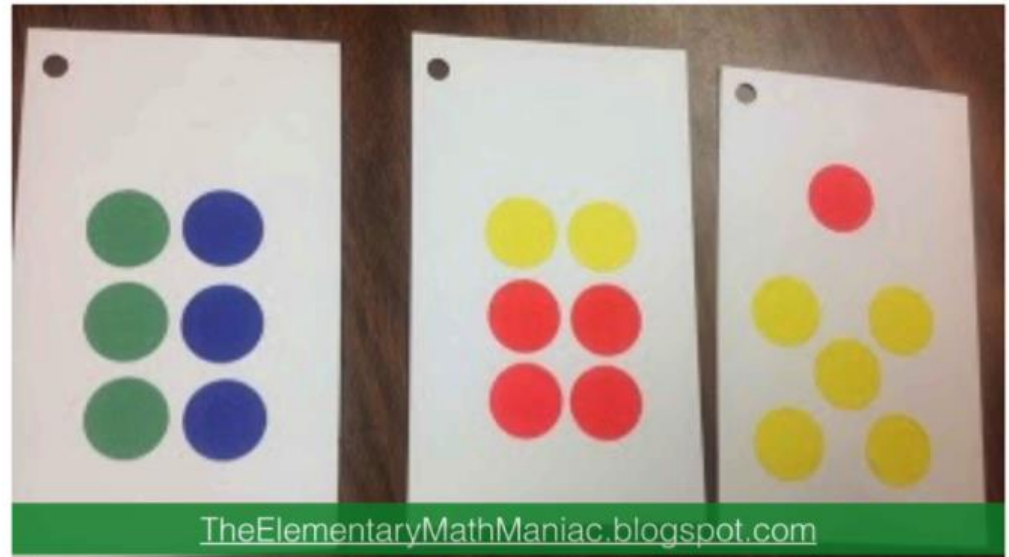
## COUNTING SONGS

- Here is the Beehive
- 5 Currant Buns
- 5 Green, Speckled Frogs
- 5 Little Ducks
- 5 Jellyfish
- The Ants Go Marching
- One Grey Elephant Balancing
- One, Two, Buckle My Shoe
- 5 Cheeky Monkeys Jumping On The Bed
- There Were Ten In The Bed
- 10 Cheeky Monkeys Swinging in the Tree
- One Potato, Two Potato
- 1, 2, 3, 4, 5 Once I Caught a Fish Alive
- Johnny Works With One Hammer
- 10 Fat Sausages



# Subitising

## Dot pattern fun!

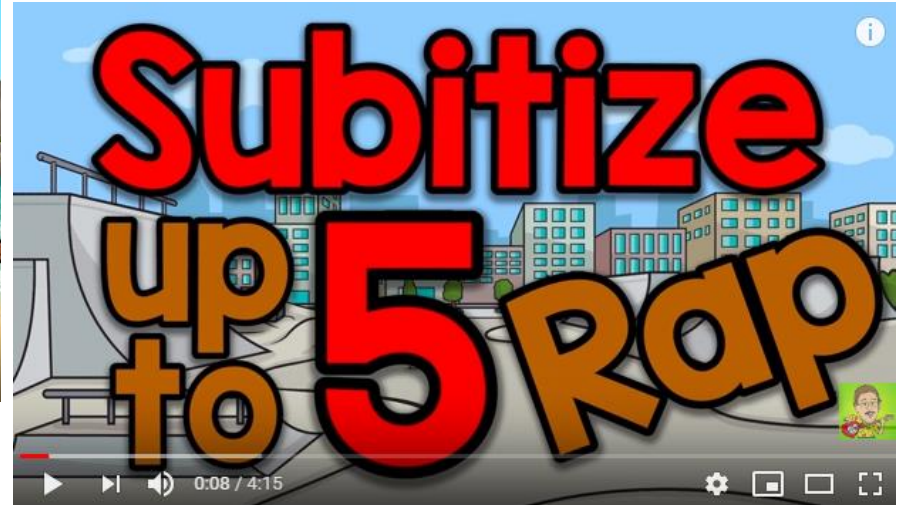


# Subitising songs and online PPTs

Jack Hartman



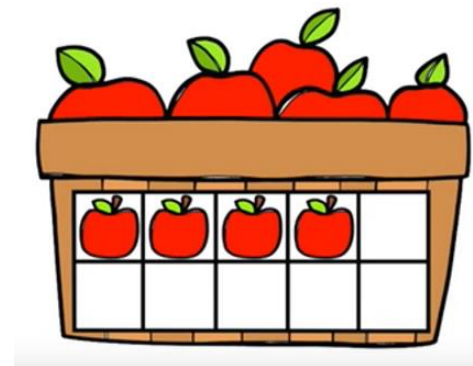
<https://www.youtube.com/watch?v=1L8bIDeW5co>



[https://www.youtube.com/watch?v=6yyz\\_OyCV4A&t=2s](https://www.youtube.com/watch?v=6yyz_OyCV4A&t=2s)



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[https://www.youtube.com/watch?v=jOj\\_AgfMMLc&app=desktop](https://www.youtube.com/watch?v=jOj_AgfMMLc&app=desktop)

# Cardinality/ Composition

Let's play...

## Bunny Ears



## Activities and Games

**Who has the most? Who has the fewest?**

**How do you know?**

- Sharing sweets/chocolates
- Building with blocks. Can you make a taller tower?

**How many bricks do you have?**

- Building snakes with play dough and using blocks to measure how long they are.

**Which is the longest snake and how do we know?**

**Use numeral dice, as well as dot dice.**





# Comparison

## Activities and Games

### Estimating activities

- How many sweets are in the jar?
- How many apples are in the fruit bowl, or how many do you think will fit in the bowl?
- How many slices of cake are there? etc.



- Build a den using blocks or boxes. How many teddies do you think will fit in the den?



# To finish...

‘ PLEASE, PLEASE... NEVER say that you are bad at maths ... not anywhere within a 100-mile radius of any child you ever want to influence.’

Naomi Sani

‘How to do maths so your child can too’

