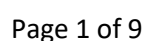


# EYFS CALCULATION POLICY



## MAIN PRINCIPLES

### What is maths mastery?

Teaching maths for mastery is a transformational approach to maths teaching which stems from high performing Asian nations such as Singapore. When taught to master maths, children develop their mathematical

fluency without resorting to rote learning and are able to solve non-routine maths problems without having to memorise procedures.

### Concrete, pictorial, abstract (CPA)

Concrete, pictorial, abstract (CPA) is a highly effective approach to teaching that develops a deep and sustainable understanding of maths. Developed by American psychologist, Jerome Bruner, the CPA approach is essential to maths teaching in Singapore.

### Number bonds

Number bonds are a way of showing how numbers can be combined or split up. They are used to reflect the 'part-part-whole' relationship of numbers.

### Bar modelling

The bar model method is a strategy used by children to visualise mathematical concepts and solve problems. The method is a way to represent a situation in a word problem, usually using rectangles.

### Fractions

In Singapore, the understanding of fractions is rooted in the Concrete, Pictorial, Abstract (CPA) model, where children use paper squares and strips to learn the link between the concrete and the abstract. At the heart of understanding fractions is the ability to understand that we're giving an equal part a name.

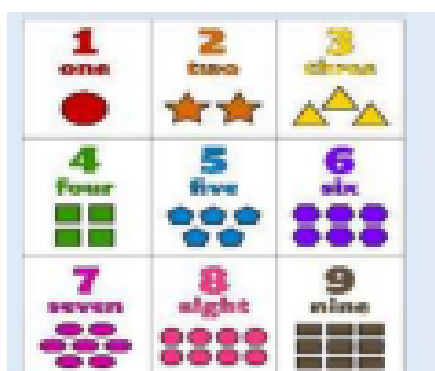
# EYFS

## ADDITION

Early learning goals:

- Count reliably with numbers from 1 to 20, place them in order.
- Say which number is one more than a given number.
- Using quantities and objects, add two single-digit numbers and count on to find the answer.

Recognise numbers up to 20 and understand the meaning of each number by recognising and knowing their clusters

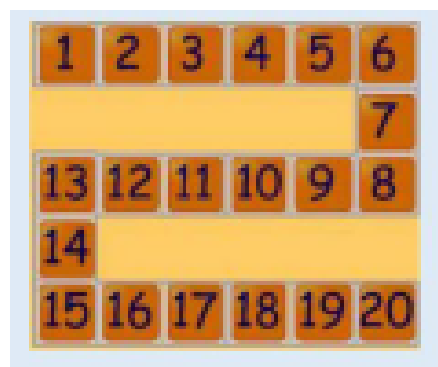


Numicon shapes are introduced straight away and be used to:

- identify 1 more/less
- combine pieces to add
- find number bonds
- add without counting



Count on in ones and say which number is one more than a given number using a number line or number track to 20.



Number tracks can be introduced to count up on and to find one more:

What is 1 more than 4?



1 more than 13?

# EYFS

## ADDITION

Early learning goals:

- Count reliably with numbers from 1 to 20, place them in order.
- Say which number is one more than a given number.
- Using quantities and objects, add two single-digit numbers and count on to find the answer.

Begin to relate addition to combining two groups of objects using practical resources, role play, stories and songs.

Know that counting on is a strategy for addition. Use numbered number lines to 20.



Children can begin to combine groups of objects using concrete apparatus:



Construct number sentences verbally or using cards to go with practical activities.

Children are encouraged to read number sentences aloud in different ways:

- "Three add two equals 5"
- "5 is equal to three and two"
- "5 is the same as three and two"

Children make a record in pictures, words or symbols of addition activities.

Number lines:



Children will be able to use a number line to count, as well as using it to take away or add one. This will be for numbers up to 20.

# EYFS

## ADDITION

Early learning goals:

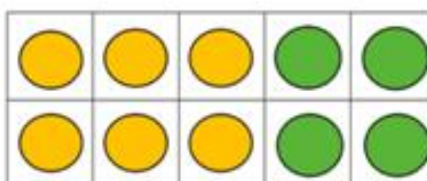
- Count reliably with numbers from 1 to 20, place them in order.
- Say which number is one more than a given number.
- Using quantities and objects, add two single-digit numbers and count on to find the answer.

Other methods of adding and subtracting include:

Number bonds using Tens frame:

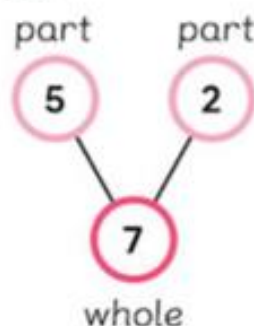
Children will be able to use a tens frame to find number bonds to 10.

Tens frame:



The tens frame shows  $6 + 4 = 10$

Part-part-whole model:



Children will use the part-part-whole diagram to add and subtract numbers.



# EYFS

## SUBTRACTION

Early learning goals:

- Say which number is one less than a given number.
- Using quantities and objects, subtract two single-digit numbers and count back to find the answer.

Say which number is one less than a given number using a number line or number track to 20.

Begin to count backwards in familiar contexts such as number rhymes or stories.

Number tracks can be introduced to count back and to find one less:

What is 1 less than 9?

1 less than 20?



Children make a record in pictures, words or symbols of subtraction activities.



# EYFS

## SUBTRACTION

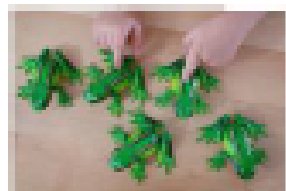
Early learning goals:

- Say which number is one less than a given number.
- Using quantities and objects, subtract two single-digit numbers and count back to find the answer.

Begin to relate subtraction to 'taking away' using concrete objects and role play.

Concrete apparatus is used to relate subtraction to taking away and counting how many objects are left.

Concrete apparatus models the subtraction of 2 objects from a set of 5.

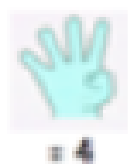


Construct number sentences verbally or using cards to go with practical activities.

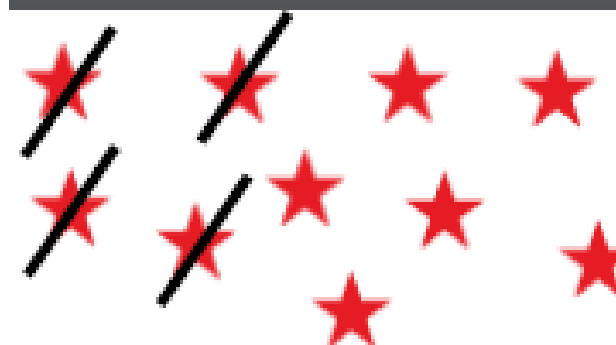


Children are encouraged to read sentences aloud in different ways "five subtract one leaves four" "four is equal to five subtract one" "four is the same as five subtract one"

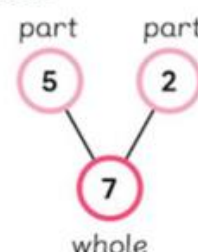
Solve simple problems using fingers



Count backwards along a number line to 'take away'



Part-part-whole model:



Children will use the part-part-whole diagram to add and subtract numbers.

# EYFS

## MULTIPLICATION & DIVISION

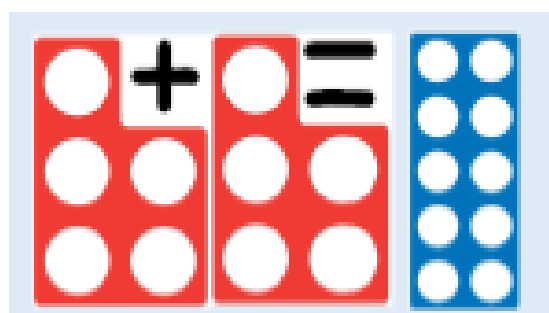
Early learning goals:

- Solve problems, including doubling, halving and sharing

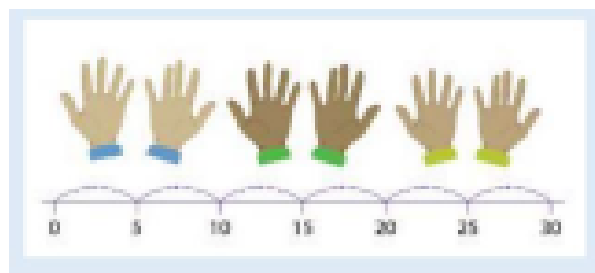
Use pictorial representations and concrete resources to double numbers to 10.



The link between addition and multiplication can be introduced through doubling.



Use concrete sources, role play, stories and songs to begin counting in twos, fives and tens.



'I have 5 pairs of socks on this line. How many socks do I have altogether?'





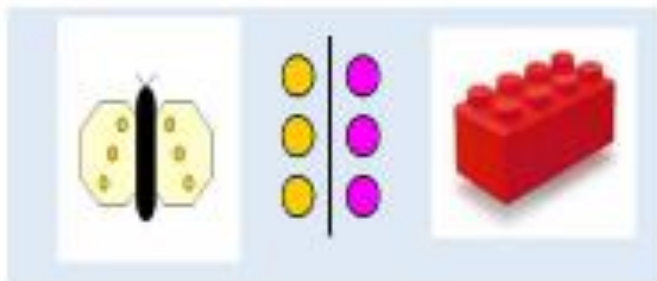
# EYFS

## MULTIPLICATION & DIVISION

Early learning goals:

- Solve problems, including doubling, halving and sharing

Use pictorial representations and concrete resources to halve numbers to 10.



"I have got a sandwich to share between two people.

Can you cut the sandwich in half?"



Children have a go at recording the calculation that has been carried out: e.g. by drawing pictures in groups or by arranging concrete apparatus into groups.

Begin to share quantities using practical resources, role play, stories and songs.



Role play example:

It is the end of the party and the final two teddies are waiting for their party bags. Provide empty party bags and a small collection of items such as gifts, balloons and slices of cake. Ask the children to share the objects between the two bags.

Sharing model:

I have 8 sweets. I want to share them with my friend. How many will we have each?

