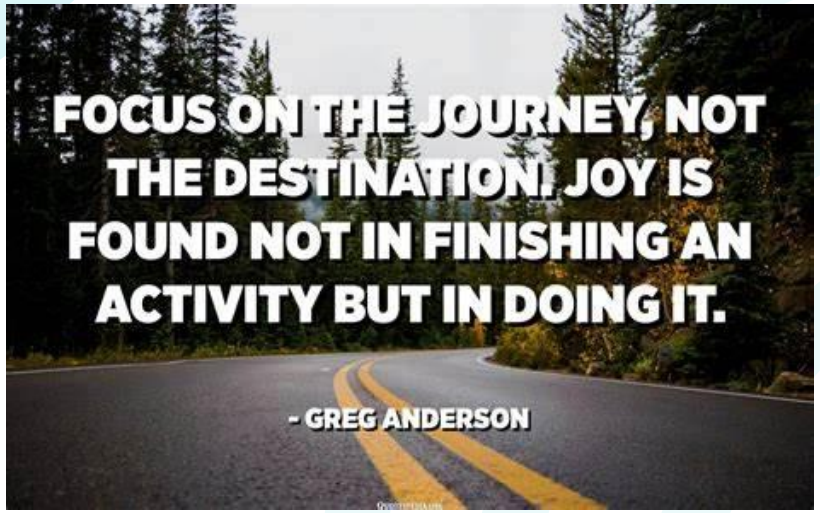
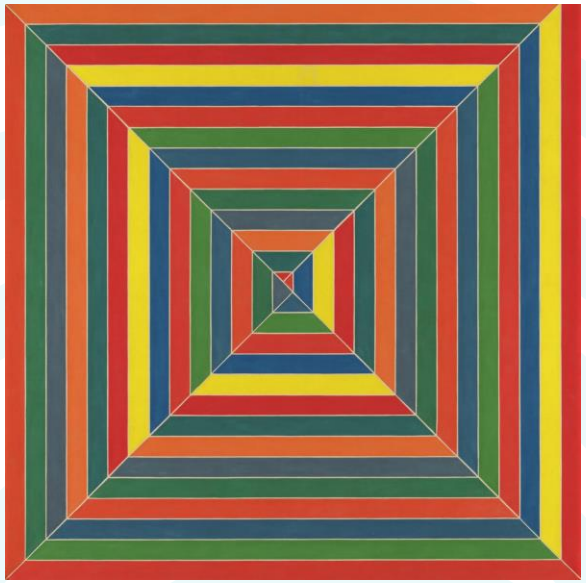
NORD ANGLIA EDUCATION

Maths

Welcome to the Primary Maths Parent Workshop





Maths

Ms Deborah Spencer
Assistant Head of
Primary and Primary
Maths Leader

Mr Kieran Sear
Head of Year 2

Maths

Aims of the workshop

- Introduce the curriculum at BSB Shunyi
- A brief overview of why we approach Maths in a particular way
- Look at the developmental Stages of Maths
- What are the 3 stages we use at BSB Shunyi?
- What is the concrete stage?
- What is the pictorial stage?
- What is the abstract stage?
- How students are challenged further – reasoning and application
- How you can help your child at home
- questions

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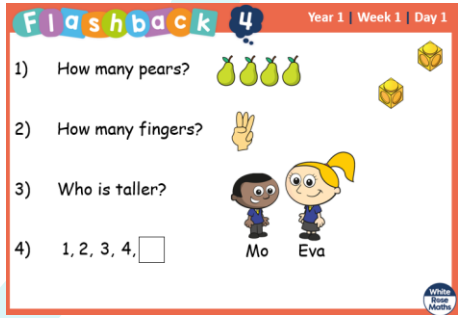
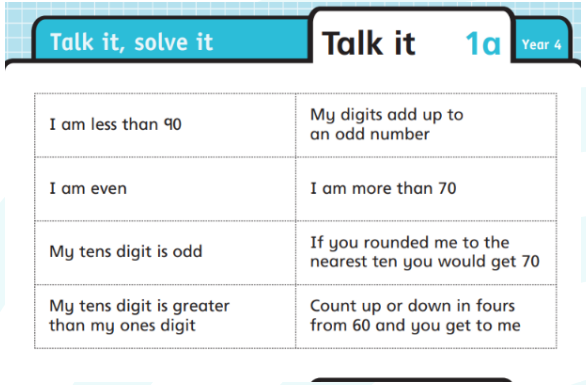
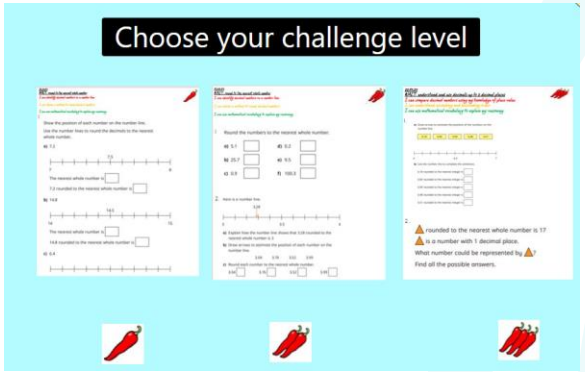
Maths at BSB Shunyi

Whiterose Scheme of work
Reviewing topics – flashback 4
Chili Differentiation
Adding challenge through:

- Discussion
- Problem Solving
- Paired/group work
- NRich/Youcube activities







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Not good at Maths

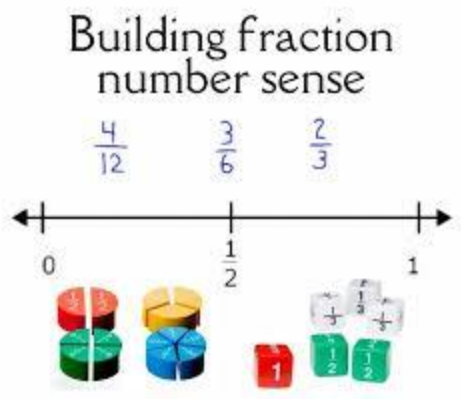
Students rarely cry about other subjects – they have a belief that Maths is about memorisation and speed.

However, in English, we learn by using words in different situations – why should Maths be any different.

For example:
How can you make 8?

Let's play a game with dice

Maths



The difference between number fluency and number sense

Number Fluency

Quick recall of memorised facts.

What is 7 x 7 =

21 – 16 = counting backwards

Number sense

Being able to use numbers flexibly in a wide variety of different ways.

How can you make 49?

21-16 = 20-15 = 5

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Developmental Stages and Neurological Pathways

Scientific research has proven that the best times for brain growth and change are when people are working on challenging content, making mistakes, correcting them, moving on, making more mistakes and always working in areas of high challenge.

When working on a mathematical problem, at least 5 different pathways in the brain are involved – including 2 that are visual.

When students can make connections between these brain regions, seeing, for example, a mathematical idea in numbers and in pictures, more productive and powerful brain connections develop.

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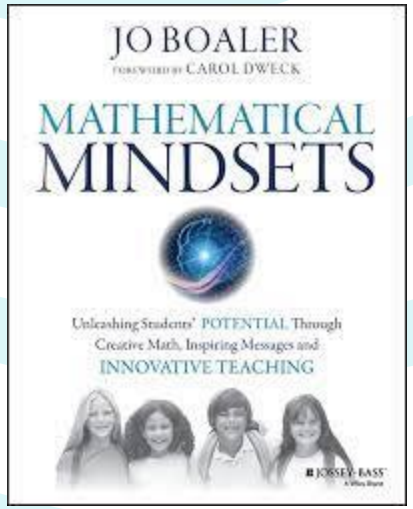

When people use gesture, drawing, visuals, models, movements, building, there are more opportunities for the brain to make important connections that are not made when they only encounter numbers in symbolic form.

It is important to remember that we are all very different and this can mean that children will reach different developmental stages at different times.

A student who achieves a certain knowledge through free investigation and spontaneous effort will later be able to return it. An acquired methodology that serves him/her for the rest of his/her life. Piaget

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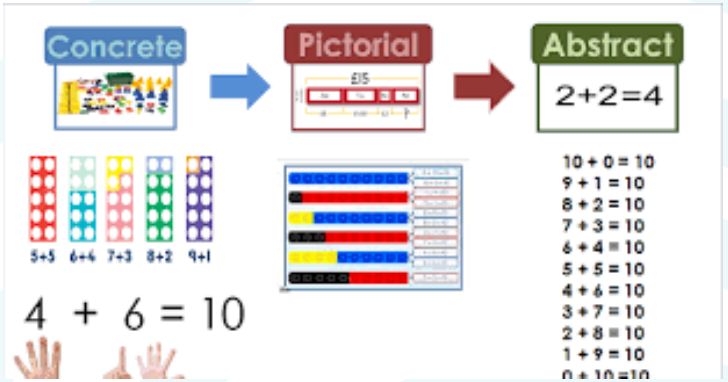
The 3 Stages of Development

Within each topic that we teach in Maths, we ensure that the 3 stages for each area are covered.

- Concrete (hands on)
- Pictorial (Drawing)
- Abstract (Formal methods)

Using this process, there is a build-up to create the most cognitive links.



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As part of the CPA approach, new concepts are introduced through the use of physical objects or practical equipment. These can be physically handled, enabling children to explore different mathematical concepts. These are sometimes referred to as maths manipulatives and can include ordinary household items such as straws or dice, or specific mathematical resources such as dienes or numicon.

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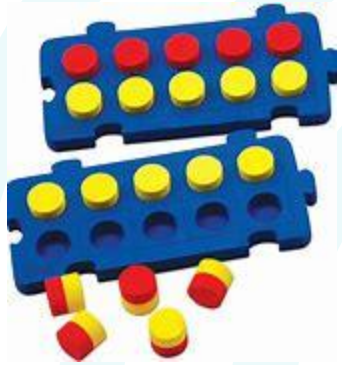
Concrete- The 'doing' stage

Concrete resources can be used in a great variety of ways at every level. All children, regardless of ability, benefit from the use of practical resources in ensuring understanding goes beyond the learning of a procedure.
Practical resources promote reasoning and discussion, enabling children to articulate and explain a concept. Teachers are also able to observe the children in order to gain a greater understanding of where misconceptions lie and to establish the depth of their understanding.



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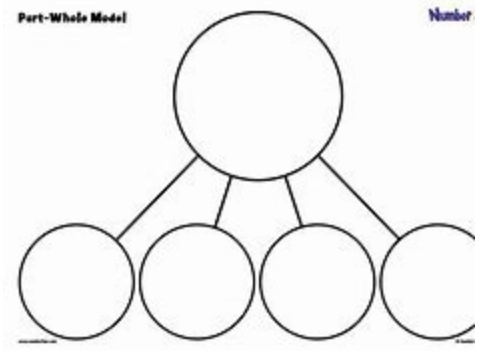
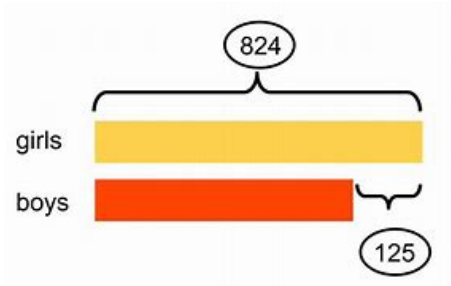
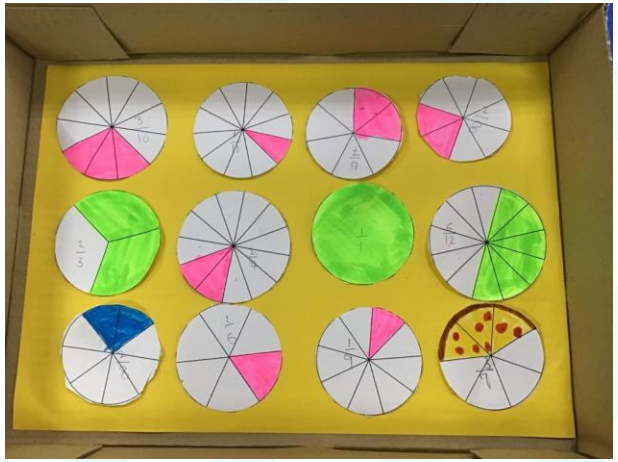
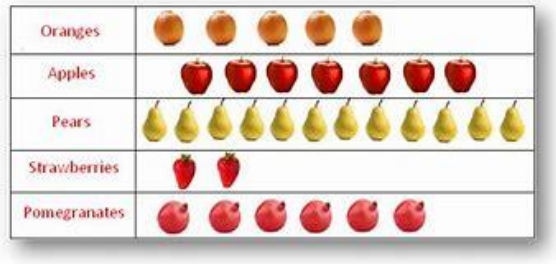
Pictorial- The 'seeing' stage

In maths, teachers often refer to pictorial representations. As the name suggests, this means that the **children are looking at a picture (or visual representation) to help them solve the calculation**. This could be a drawing of objects to be counted, but could also be a bar model, a part-whole diagram or base ten drawings.









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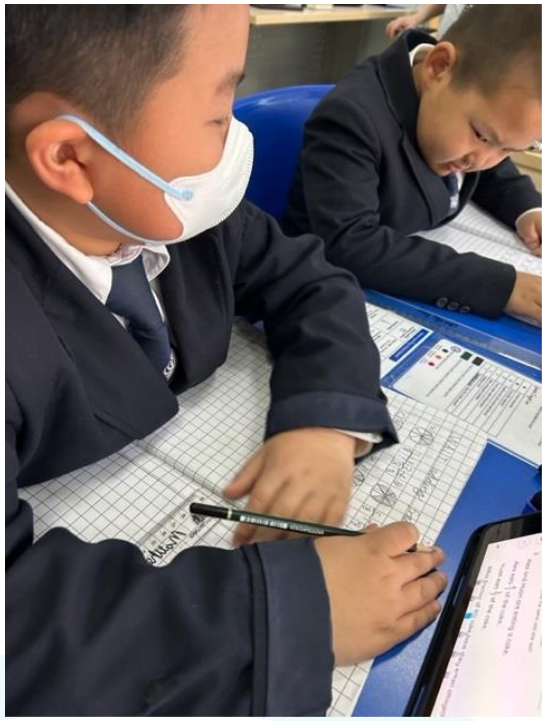
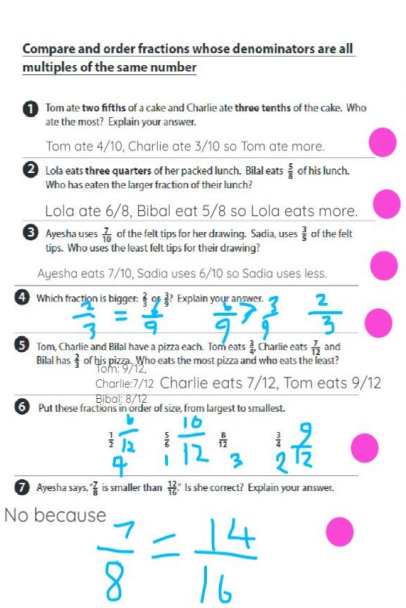
Abstract- The 'symbolic' stage

Once children have a secure understanding of the concept through the use of concrete resources and visual images, they are then able to move on to the abstract stage. Here, children are using abstract symbols to model problems – usually numerals. To be able to access this stage effectively, children need access to the previous two stages alongside it.
For the most effective learning to take place, children need to constantly go back and forth between each of the stages. This ensures concepts are reinforced and understood.





Compare and order fractions whose denominators are all multiples of the same number

1. Tom ate **two fifths** of a cake and Charlie ate **three tenths** of the cake. Who ate the most? Explain your answer.
   Tom ate 4/10, Charlie ate 3/10 so Tom ate more.
2. Lola eats **three quarters** of her packed lunch. Bilal eats $\frac{5}{8}$ of his lunch. Who has eaten the larger fraction of their lunch?
   Lola ate 6/8, Bibal eat 5/8 so Lola eats more.
3. Ayesha uses $\frac{7}{10}$ of the felt tips for her drawing. Sadia, uses $\frac{3}{5}$ of the felt tips. Who uses the least felt tips for their drawing?
   Ayesha eats 7/10, Sadia uses 6/10 so Sadia uses less.
4. Which fraction is bigger: $\frac{2}{3}$ or $\frac{2}{9}$? Explain your answer.
   $\frac{2}{3} = \frac{6}{9}$ $\frac{7}{9}$ $\frac{3}{9}$ $\frac{2}{3}$
5. Tom, Charlie and Bilal have a pizza each. Tom eats $\frac{3}{4}$, Charlie eats $\frac{7}{12}$ and Bilal has $\frac{2}{3}$ of his pizza. Who eats the most pizza and who eats the least?
   Tom: 9/12, Charlie:7/12, Bibal: 8/12 Charlie eats 7/12, Tom eats 9/12
6. Put these fractions in order of size, from largest to smallest.
   $\frac{1}{2}$ $\frac{5}{6}$ $\frac{8}{12}$ $\frac{3}{4}$
   $\frac{6}{12}$ $\frac{10}{12}$ $\frac{9}{12}$
   4 1 3 2
7. Ayesha says, '$\frac{7}{8}$ is smaller than $\frac{12}{16}$.' Is she correct? Explain your answer.
   No because $\frac{7}{8} = \frac{14}{16}$

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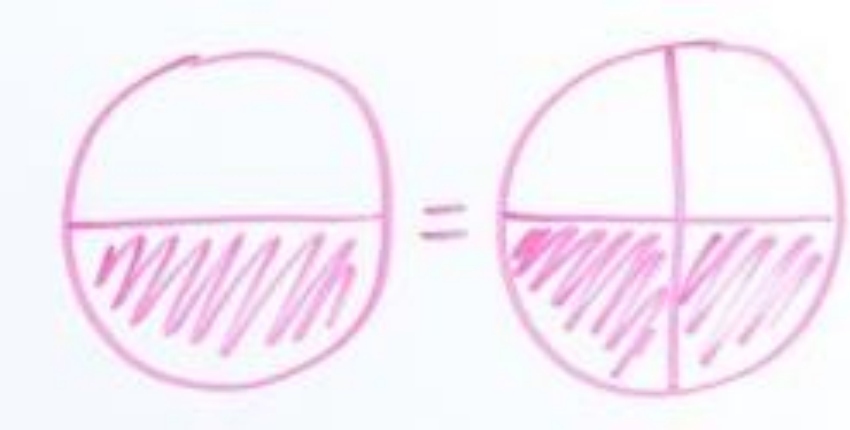
Concrete

Pictorial



Abstract

$$\frac{1}{2} = \frac{2}{4}$$

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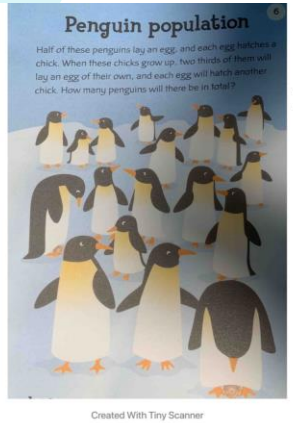
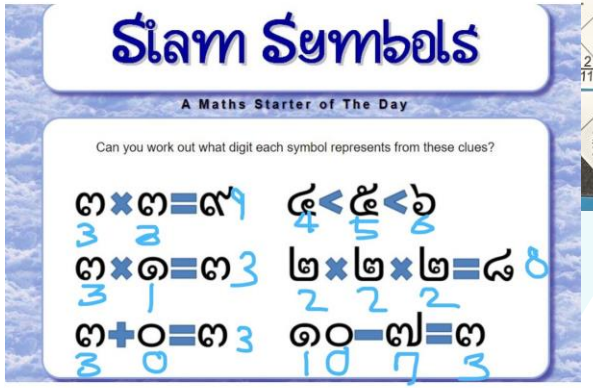
Reasoning/Challenge

It is essential that children are challenged to further develop neurological pathways by applying what they already know to new challenges.



33 penguins



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Let's have a go

On your tables you have one of these activities.

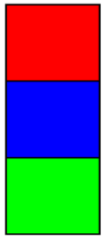
٩٥٥	13	٤٧	١٣	=+五
٤٣	٣	٢٤	83	٥٥٥
=	五+八	2	٥٧	-五
٣٥	٨٣	٩٣	٢	58
25	٧٥	٢	٨+=	١٠٠
٥٨	+=	100	٤٤	٢٤

3 Block Towers

You need some coloured blocks, three different colours, maybe **red**, **green** and **blue**.

Make a tower using one of each colour.

Here's one with **red** on top, **blue** in the middle and **green** on the bottom.



Now make another tower with a *different* colour on top.

How many different towers can you make?

When you are sure you have found them all, try it with **four colours**.

Maths

How to Help at home

Hands on activities

Books

Question Books

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Questions

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