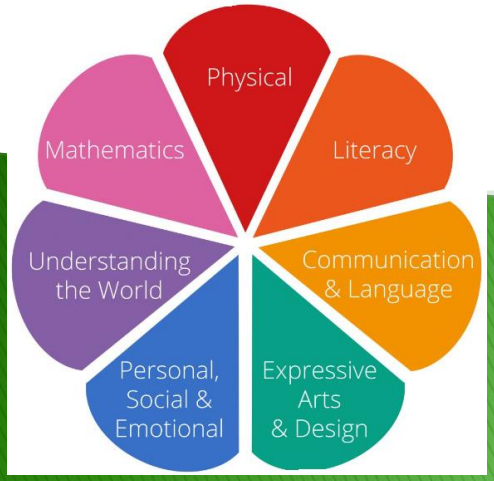
Whiteheath Infant School

Early Years Maths Workshop

Mrs D Jelavic-Wade, EYFS Assistant Headteacher, Primary Maths specialist



Aims of the session

- To provide you with more in depth information about the Early Years Maths curriculum
- To tell you about how we teach Maths in our Early Years
- To inform you of end of Reception expectation in terms of the Early Learning Goals for Maths
- To show you some of the practical resources we use at the school



Early Years



- *'The first few years of a child's life are especially important for mathematical development. Research shows that early mathematical knowledge predicts later reading ability and general education and progress.'- NCETM website*

"Children are born ready, able and eager to learn. They actively reach out to interact with other people, and in the world around them. Development is not an automatic process, however. It depends on each unique child having opportunities to interact in positive relationships and enabling environments."[(i)]

EYFS Maths curriculum



- Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically.

- Children should be able to count confidently, develop a **deep understanding** of the numbers to 10, the **relationships** between them and the **patterns** within those numbers.

- By providing frequent and varied opportunities to build and apply this understanding – such as using practical resources, including small pebbles and tens frames for organising counting – children will develop a secure base of knowledge and vocabulary from which **mastery** of mathematics is built.

EYFS Maths curriculum



- In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures.

- It is important that children develop positive **attitudes** and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Early Years

- The objective is for children to develop firm foundations in a way that is *engaging and appropriate for their age*. *This is predominantly done through play.*

- **Six key areas of mathematics learning**:
- – cardinality and counting
- – comparison
- – composition
- – pattern
- – shape and space
- – measures



- **Cardinality** and counting- understanding that the cardinal value of a number refers to the **quantity**, or 'howmanyness' of things it represents
- **Comparison**- understanding that comparing numbers involves knowing which numbers are worth **more or less** than each other
- **Composition**- understanding that **one number can be made up from (composed from) two or more smaller numbers**
- **Pattern**- looking for and finding patterns helps children notice and understand mathematical relationships
- **Shape and space**- understanding what happens when shapes move, or combine with other shapes, helps develop wider mathematical thinking
- **Measures**- comparing different aspects such as length, weight and volume, as a preliminary to using units to compare later
- *Even though these areas are progressive, they are not hierarchical.*

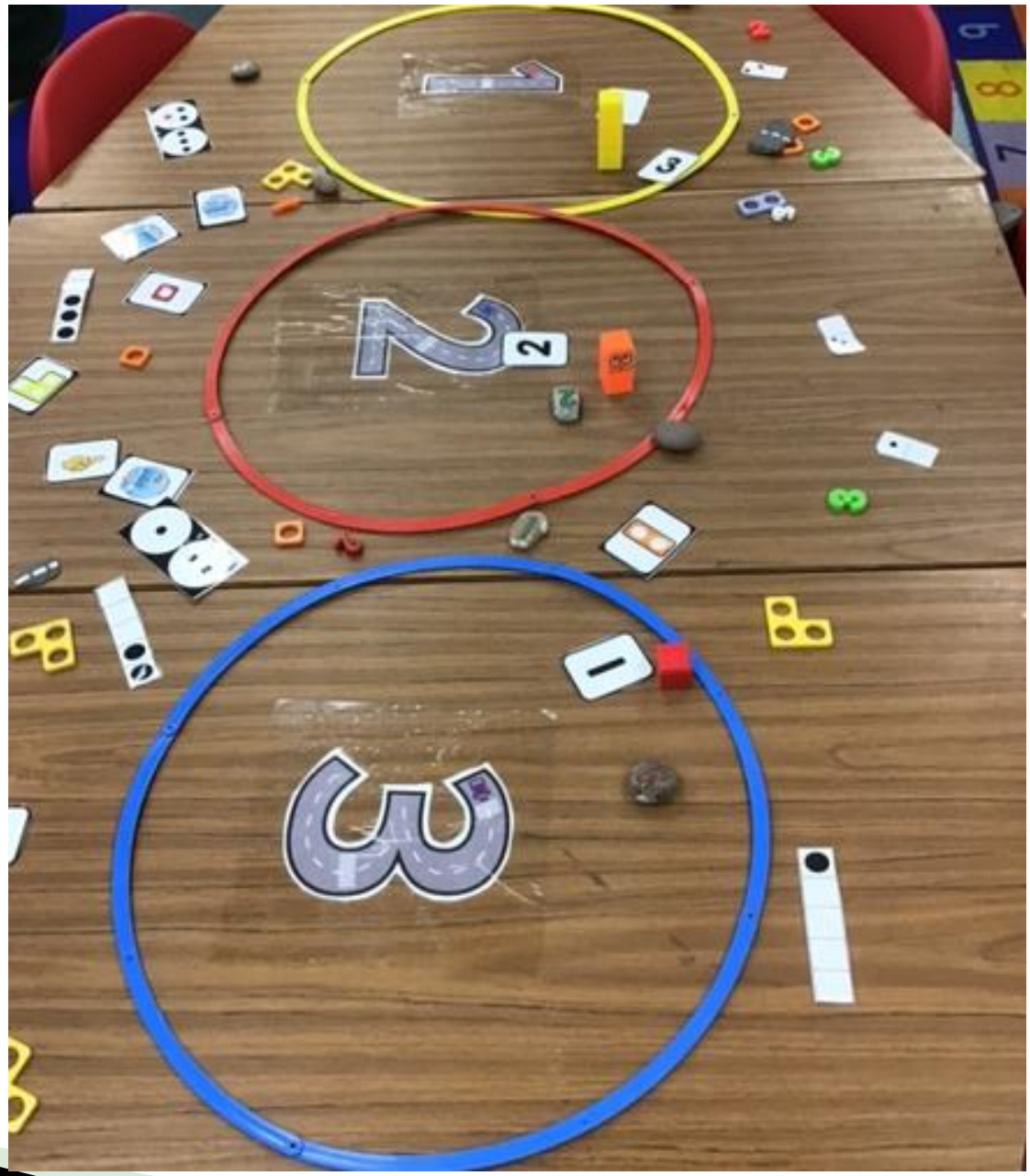
Cardinality and counting- progression

- Counting- saying number words in sequence (counting **forwards and backwards**, starting from different numbers)
- Counting- **tagging each object with one number word** (counting things of different sizes, things that can't be seen and things that can't be moved)
- Counting- **knowing the last number counted gives the total** so far (playing dice games to collect a number of things, playing track games and counting along a track)
- **Subitising**- recognising small quantities without counting them (using dot cards, dominoes and dice in a game)
- Numeral meanings- **matching a number symbol with a number of things** (using numeral dice in games, reading number books, putting the right number of snacks on a tray)
- **Conservation**- knowing that number does not change if things are re-arranged, as long as none have been added or taken away (contexts such as sharing things out, children making different patterns with a given number of things)

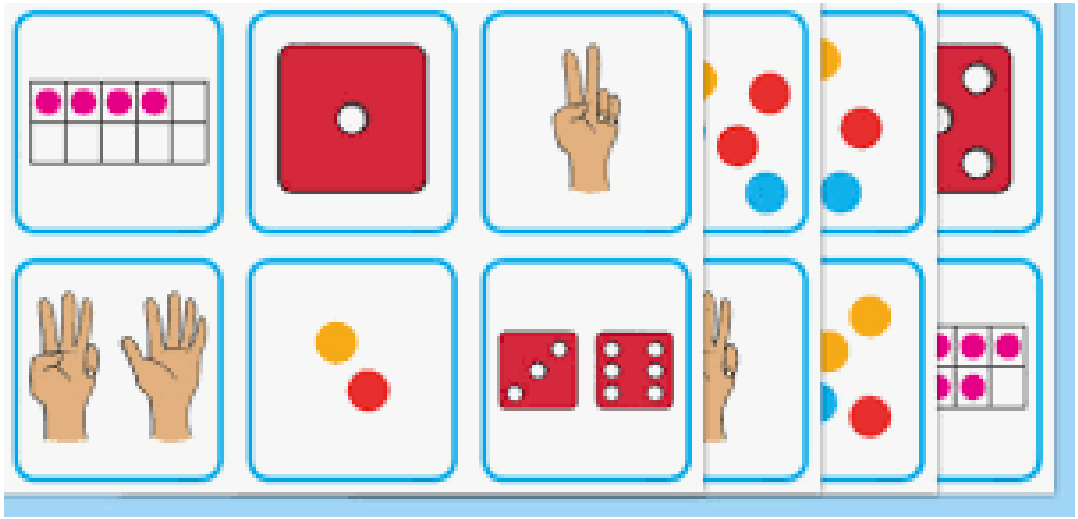



10


10
36
46
47
57
58
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8
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9


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Subitising





Comparison- progression



- More than/ less than
- Children have progressive experiences where they can compare collections and begin to talk about which group has more things.
- Initially, the groups are very obviously different, with one group having a widely different number of things.
- Collections also offer challenges, such as including more small things and fewer large things, to draw attention to the **numerosity** of the comparison, i.e. the number of things, not the size of them.
- Children have the opportunity to see that groups could consist of equal numbers of things. They check that groups are equal, by matching objects on a one-to-one basis.
- Children compare numbers that are far apart, near to and next to each other. For example, 8 is a lot bigger than 2 but 3 is only a little bit bigger than 2.
- 'one more than/one less than' relationship between sequential numbers.



Composition- progression



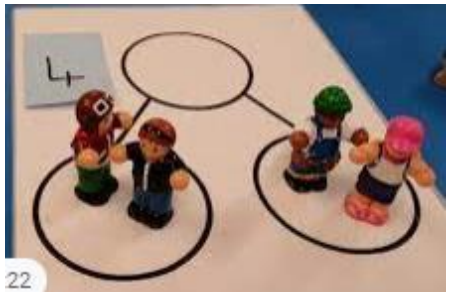
- Part- whole- **identifying smaller numbers within a number** (making arrangements)
- Inverse operations- children have opportunities to **partition** a number of things into two groups, and to recognise that those groups can be **re-combined** to make the same total (songs like Five currant buns, playing skittles- how many are standing)
- They partition a number into different pairs of numbers- identifying pairs of numbers that make a total
- They learn that a number can be partitioned into more than two numbers
- They learn number bonds- knowing which pairs make a given umber

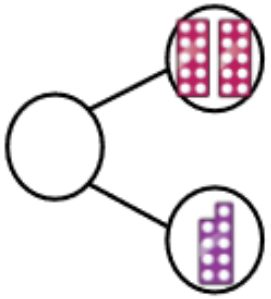
Part whole

- Children have opportunities to see small numbers within a larger collection. 'Number talks' allow children to discuss what they see. For instance, with giant ladybirds: 'There are 5 spots altogether. I can see 4 and 1, I can see 3 and 2, and I can see 1 and 1 and 1 and 1 and 1.'
- We encourage exploration of all the ways that 'five' can be and look. Children are encouraged to look closely at numbers to see what else they can see. This reinforces the concept of conservation.
- They are encouraged to make arrangements with (e.g.) ten. They talk about the different arrangements they can see within the whole

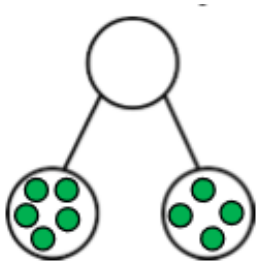


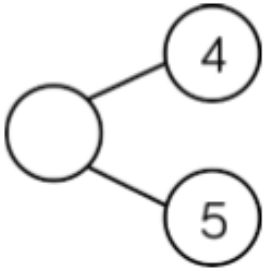






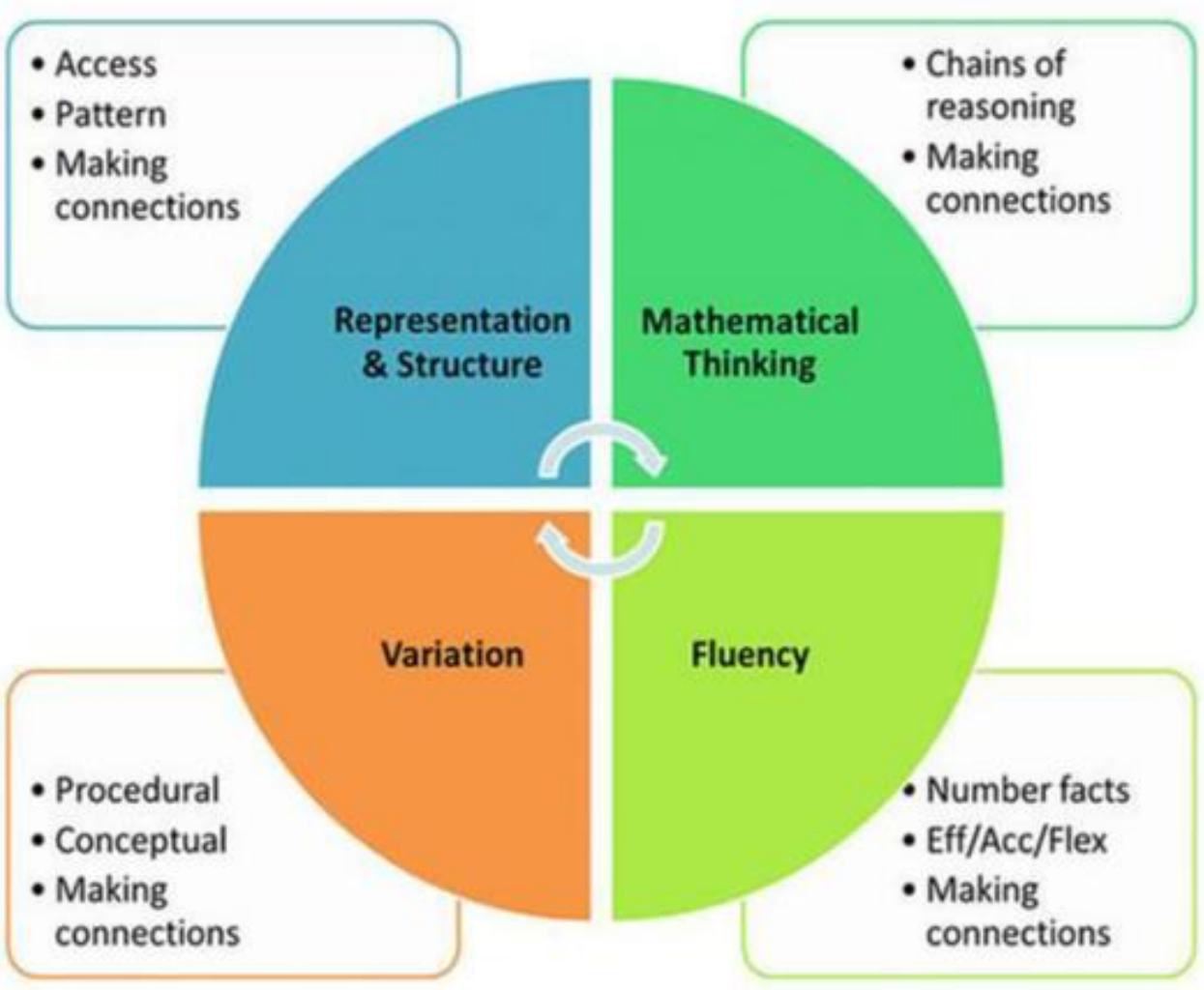
Part-whole progression



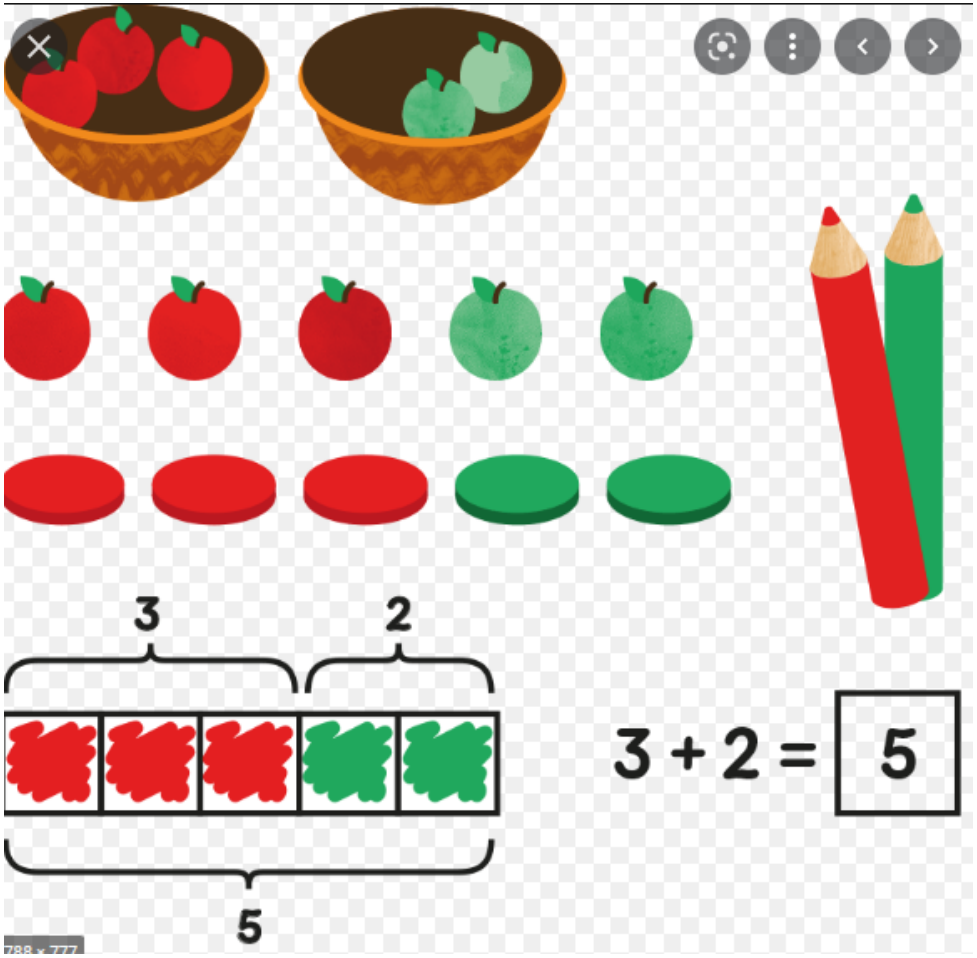




Maths mastery approach



Concrete, pictorial, abstract



Maths learning at our school

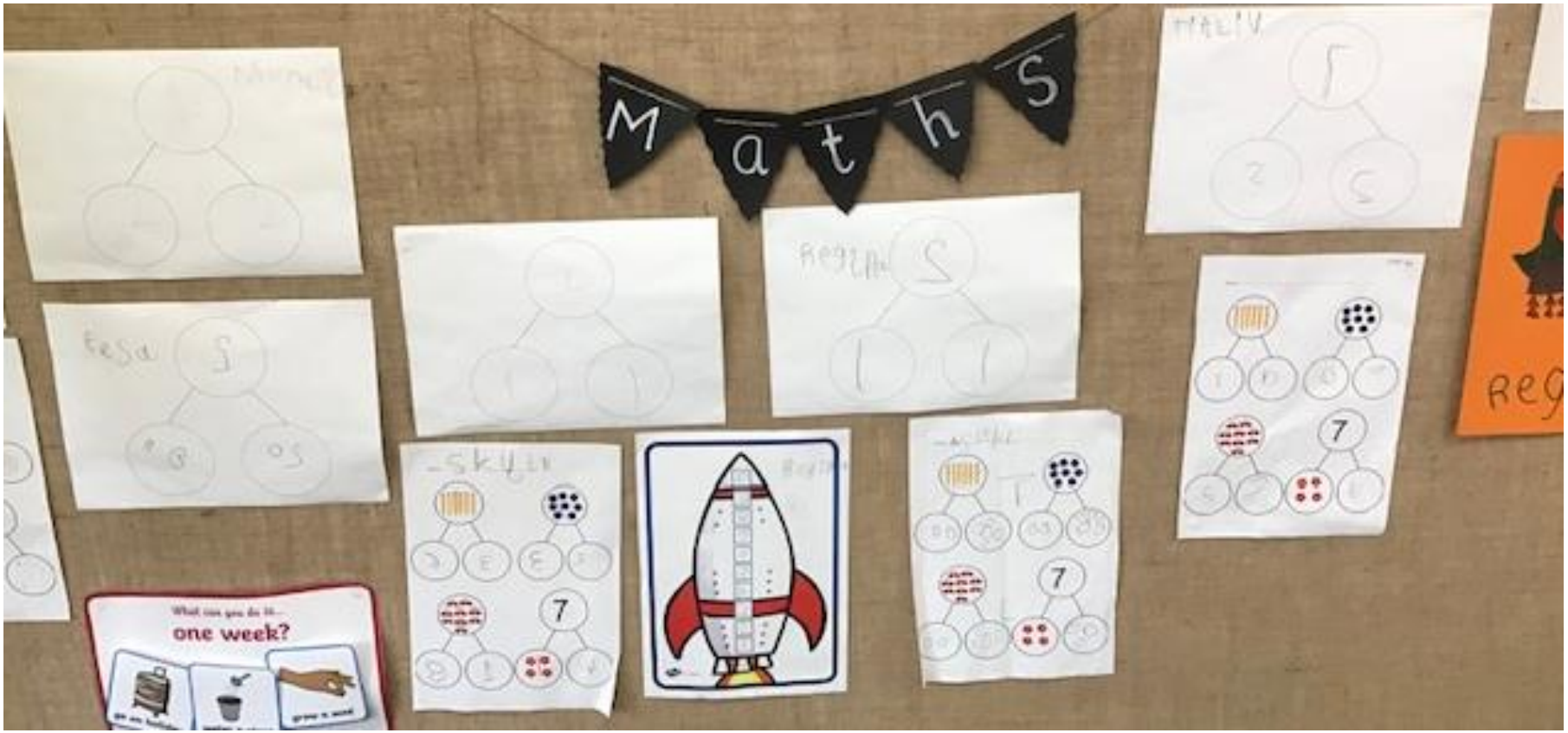
- **Nursery**- focus teaching is done either whole class or in 'key groups'
- Maths is part of play during 'free flow', indoors and outdoors
- Practical maths resources are freely available to children all the time (very much led by children's interest)

- **Reception**- Maths is taught whole class four times a week; the learning is continued during free flow though carefully set up activities and resources on 'Maths table' in each classroom
- We use White Rose hub planning ideas
- In Reception, maths is also part of 'free flow' play throughout the day where children can practise number, explore shape, use money in role play context, measure etc.

- Children's number work and mark making is celebrated and displayed daily




Week 2
more
fewer
Week 3
Week 5
Same as
Maths
Regina


Maths
one week?










ZAP!




Maths
Week 2
Week 3
fewer
Week 5







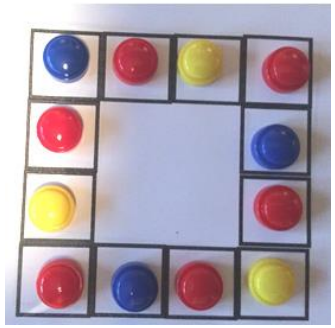

2
3

Pattern















Number blocks- used both in Nursery and Reception



- Numberblocks, first broadcast in January 2017, is **a pre-school BBC television series aimed at introducing children to early number.**

- Snappy animation and loveable characters combine with engaging storylines to gently introduce concepts of number to support early mathematical understanding.

- https://www.youtube.com/watch?v=YpH2W3fgUJs

3-4 year olds are learning to:

- Fast recognise of up to 3 objects
- Recite numbers past 5
- Say one number for each item in order 1,2,3,4,5
- Know that the last number reached when counting a set of objects tells you how many there are in total ('cardinal principle')
- Show 'finger numbers' up to 5
- Link numerals and amounts: showing the right number of objects to match the numeral up to 5
- Understand position through words alone, for example 'The bag is under the table'
- Describe a familiar route



3-4 year olds are learning to:

- Discuss routes and locations, using words like ‘in front of’ and ‘behind’
- Make comparisons between objects relating to size, length, weight and capacity
- Select shapes appropriately, flat surfaces for building, a triangular prim for a roof etc
- Combine shapes to make new ones- an arch, a bigger triangle etc



3-4 year olds are learning to:

- Talk about and identify patterns around them- stripes on clothes, designs on rugs and wallpaper
- Use informal language like ‘pointy, spotty, blobs etc
- Extend and create ABAB patterns- stick, leaf, stick, leaf
- Notice and correct errors in a repeating pattern
- Begin to describe a sequence of events, real or fictional using words such as ‘first’, ‘then’ etc



Examples of how to support this at home:

- Point to small groups of two or three objects: ‘Look, there are two!’ Ask your child how many there are in a small set.
- Regularly say the counting sequence in a variety of contexts, inside and outdoors, forwards and backwards
- Count things and repeat the last number, for example 1, 2, 3…3 cars!
- Ask your child to get you a number of things and emphasise the total number in your conversation



Examples of how to support this at home:

- Use small numbers to label pots/ boxes to support keeping the environment tidy, for example have a pot labelled ‘5 pencils’,’3 trucks’ etc.
- Encourage your child to play freely with blocks, shapes, shape puzzles and shape sorters. Ask questions like ‘What is the same, what is different?’
- Cut out a large shape from a cereal box (circle, triangle), then cut that shape into 2-4 smaller pieces to make a simple puzzle.
- Encourage your child to talk about shape properties using words like ‘sharp corner’, ‘pointy’ or ‘curvy’.
- When we’re at the park, use words like ‘up’, ‘under’, and ‘between’ to talk about what we see.



Examples of how to support this at home:

- Talk to children about everyday ways of comparing size, length, weight, capacity
- Provide a range of natural and everyday objects and materials, as well as blocks and shapes, for children to play with freely and to make patterns with
- Talk about the sequence of events in stories, use vocabulary like ‘morning, afternoon, evening, night time, earlier, later, too soon, in a minute
- Refer to the days of the week, and the day before or day after, ‘yesterday’ and ‘tomorrow’



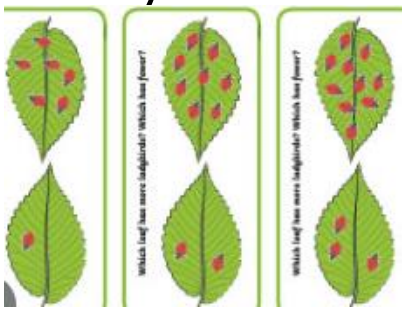
Reception children are learning to:

- Develop the skill of counting objects including saying the numbers in order and matching one number name to each item
- Say how many there might be before they count to give a purpose to counting
- Sing counting songs and number rhymes, read stories and play games that involve counting
- Practise subitising groups of up to 5 objects, count to check
- Show a number of fingers ‘all at once’ without counting
- Play card games such as snap or match pairs with cards where some have numerals and some dot arrangements



Reception children are learning to:

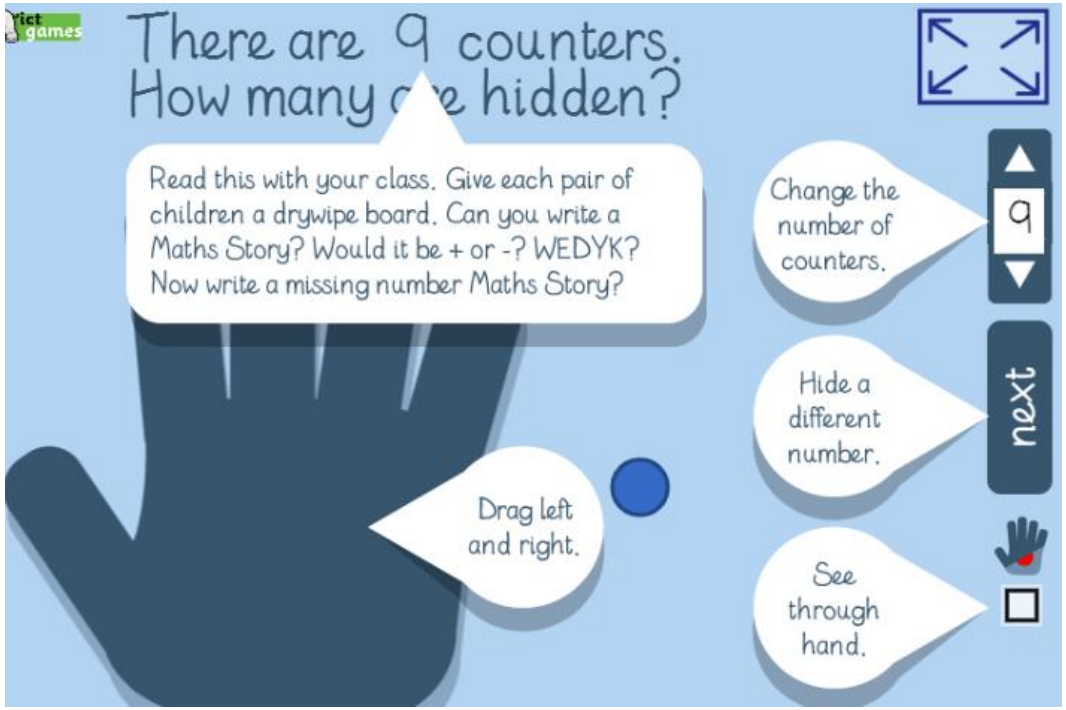
- Start recoding quantities such as tallies, dots, numerals
- Count verbally beyond 20, pausing at each multiple of 10 to draw out structure
- Compare groups of objects of different size, starting with a different number of things. Use vocabulary ‘more than, less than, fewer, same as, equal’
- Share items evenly, discuss how to do it in a fair way
- Compose numbers to 10 in different ways using a range of practical and visual resources
- Play games which involve partitioning sets. For example throw 5 beanbags, how many go in and how many don’t?



Reception children are learning to:

- Play hiding games with a number of objects in a box, a tent, a cave, under the hand…
- Solve problems involving number bonds. For example ‘There are 6 of us but only 2 clipboards. How many more do we need?’
- Place objects into a five frame and talk about how many spaces are filled and unfilled
- How to combine shapes to make new ones and find different 2D and 3D shapes in the environment
- Make patterns with varying rules

https://www.ictgames.com/mobilePage/handyCounters/index.html



http://www.ictgames.com

Examples of how to support this at home:



- count backwards, for example *number rhymes*
- start from different numbers
- count things of different sizes – this helps children to focus on the numerosity of the count
- count things that can't be seen, such as sounds, actions, words
- count things that cannot be moved, such as pictures on a screen, birds at the bird table, faces on a shape.
- play dice games to collect a number of things
- play track games and counting along the track.
- use dot cards, dominoes and dice as part of a game, including irregularly arranged dots (e.g. stuck on)

Examples of how to support this at home:

- Play hidden objects games where objects are revealed for a few seconds, for example, small toys hidden under a bowl – shuffle them, lift the bowl briefly and ask how many there were
- Name small groups of things to help to ‘subitise’ (instantly seeing), say how many without counting) e.g. “There are 3 slices of pizza left.”
- Make number snap or bingo with numerals and pictures. Match the numerals with the right amount.
- Make patterns with objects, e.g. buttons or shells. such as ‘big, small, big…’ Make a mistake and talk with me about how to fix it.



Good level of development-Early learning goal at the end of EYFS



- NUMBER:
- Have a deep understanding of number to 10, including the composition of eac number

- Subitise (recognise quantities without counting) up to 5;

- Automatically recall (without reference to rhymes, counting or other aids) number bonds for numbers 0-5 (including subtraction facts) and some number bonds to 10, including double facts.

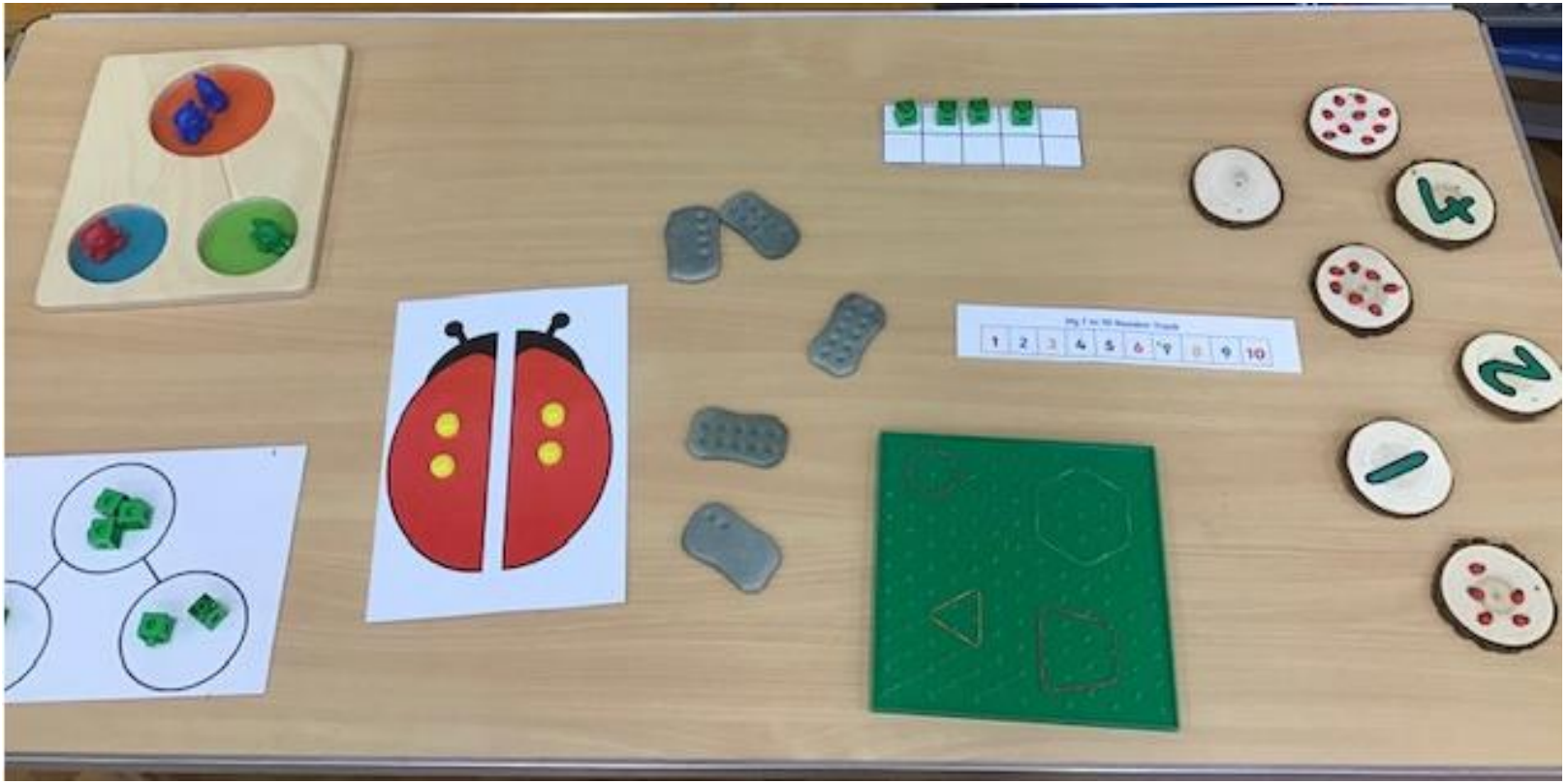
NUMERICAL PATTERNS

- Verbally count beyond 20, recognising the pattern of the number 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.


5
five
1
one
10
ten
4
four


1 2 3 4 5 6 7 8 9 10

Thank you for attending.

Any questions?