

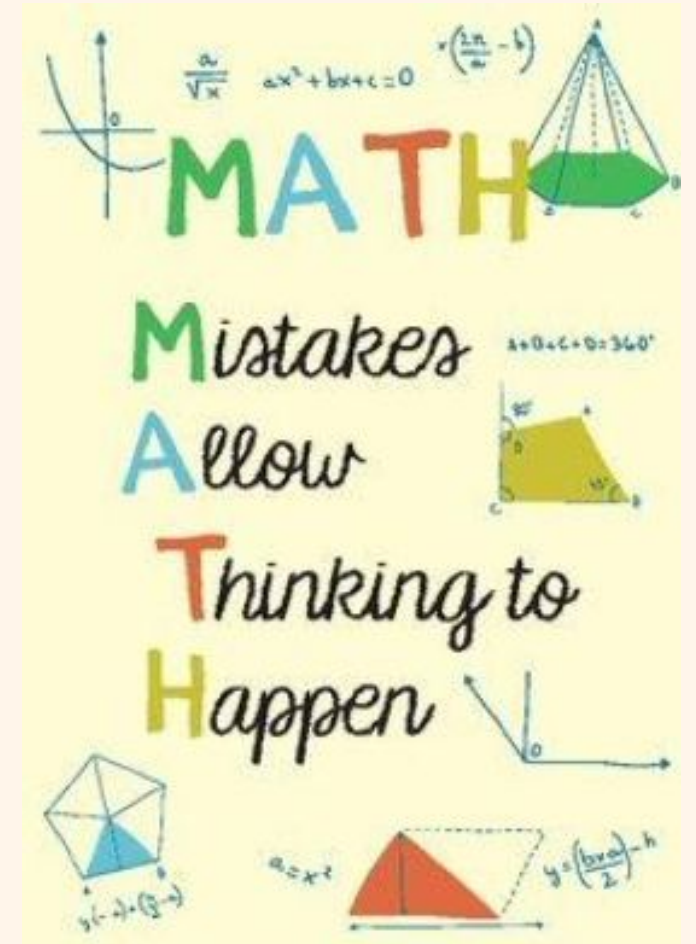
Oswald Road Primary School



EYFS Maths Workshop
Miss Roberts

Objectives

- Curriculum expectations for maths in Reception
- How we teach maths
- Maths misconceptions
- How to help at home
- Maths in literature
- Useful websites/Apps



Mathematics

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 manipulatives, 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. 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.

Statutory framework for the early years foundation stage, Mar 2021

Children at the expected level of development will:

ELG: Number

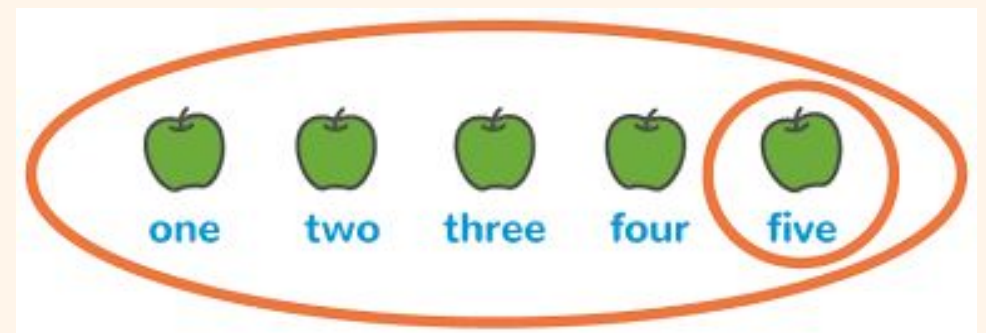
- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

ELG: Numerical Patterns

- 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.

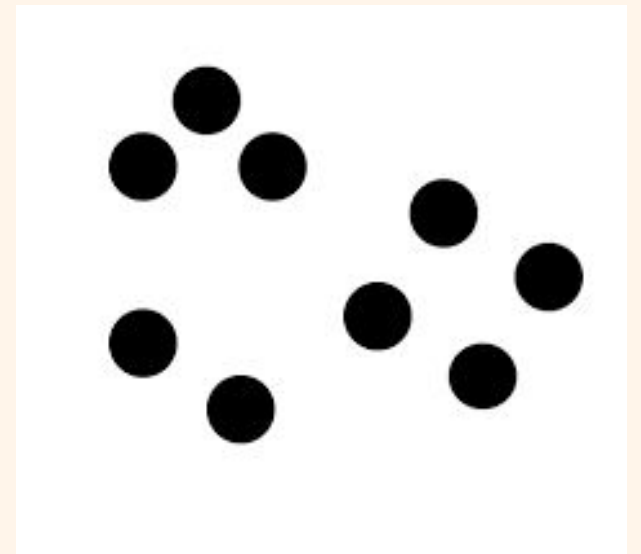
Count objects, actions and sounds

- Develop the key skills of counting objects including saying the numbers in order and matching one number name to each item.
- Say how many there are after counting – for example, “...6, 7, 8. There are **8 balls**” – to help children appreciate that the last number of the count indicates the total number of the group. This is the cardinal counting principle.
- Say how many there might be before you count to give a purpose to counting: “I think there are about 8. Shall we count to see?”
- Count out a smaller number from a larger group: “Give me seven...” Knowing when to stop shows that children understand the cardinal principle.



Subitise

- Show small quantities in familiar patterns (for example, dice) and random arrangements.
- Put objects into five frames and then ten frames to begin to familiarise children with the tens structure of the number system.
- Prompt children to subitise first when enumerating groups of up to 4 or 5 objects: “I don’t think we need to count those. They are in a square shape so there must be 4.” Count to check.
- Encourage children to show a number of fingers ‘all at once’, without counting.



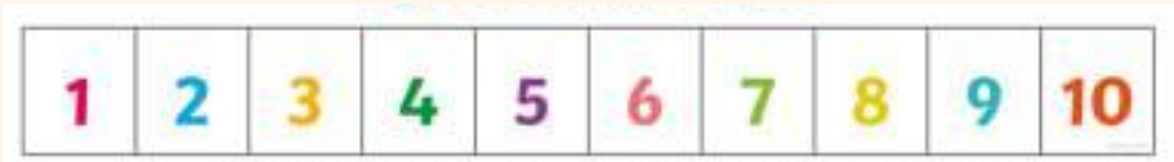
Link the number symbol (numeral) with its cardinal number value

- Display numerals in order alongside dot quantities or tens frame arrangements.
- Play card games such as snap or matching pairs with cards where some have numerals, and some have dot arrangements.
- Discuss the different ways children might record quantities (for example, scores in games), such as tallies, dots and using numeral cards.



Count beyond ten

- Count verbally beyond 20, pausing at each multiple of 10 to draw out the structure, for instance when playing hide and seek, or to time children getting ready.
- Provide images such as number tracks, calendars and hundred squares indoors and out, including painted on the ground, so children become familiar with two-digit numbers and can start to spot patterns within them.



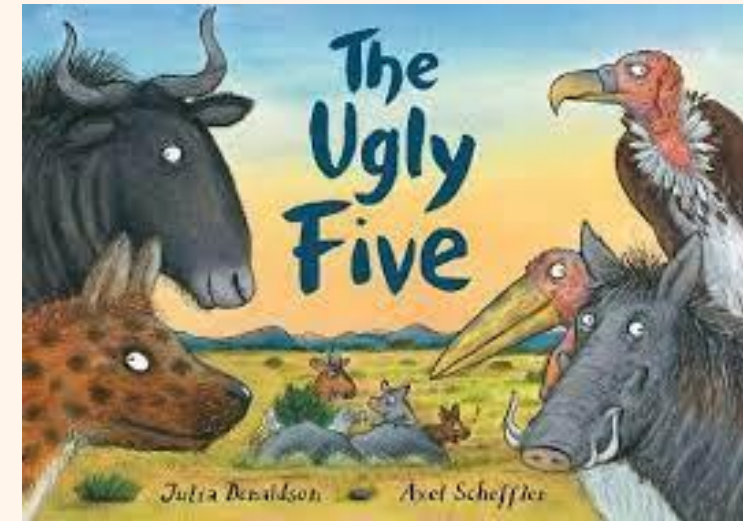
Compare numbers

- Provide collections to compare. Include more small things and fewer large things, spread them out and bunch them up, to draw attention to the number not the size of things or the space they take up. Include groups where the number of items is the same.
- Use vocabulary: 'more than', 'less than', 'fewer', 'the same as', 'equal to'. Encourage children to use these words as well.
- Distribute items evenly, for example: "Put 3 in each bag," or give the same number of pieces of fruit to each child. Make deliberate mistakes to provoke discussion.
- Tell a story about a character distributing snacks unfairly and invite children to make sure everyone has the same.



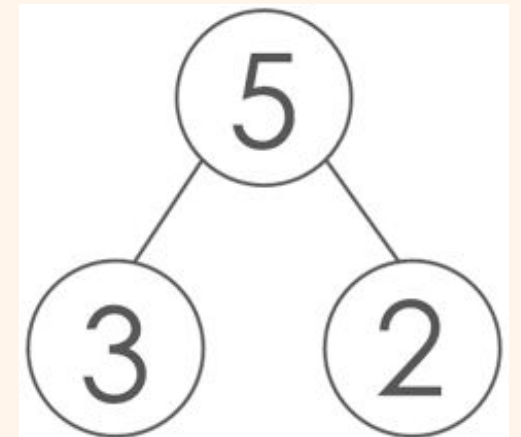
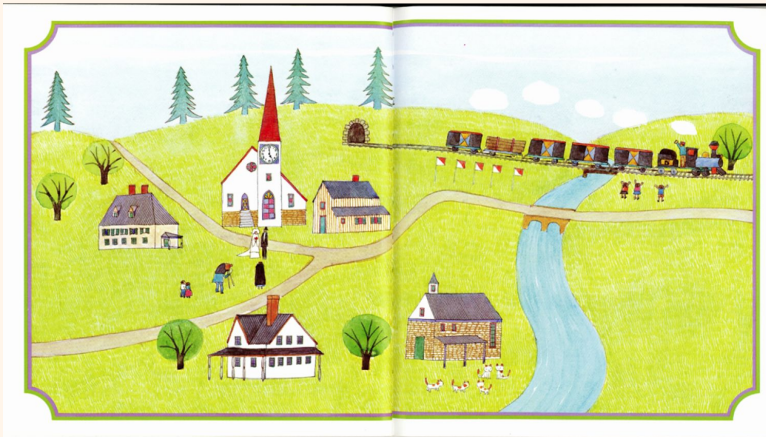
Understand the 'one more than/one less than' relationship between consecutive numbers

- Make predictions about what the outcome will be in stories, rhymes and songs if one is added, or if one is taken away.
- Provide 'staircase' patterns which show that the next counting number includes the previous number plus one.



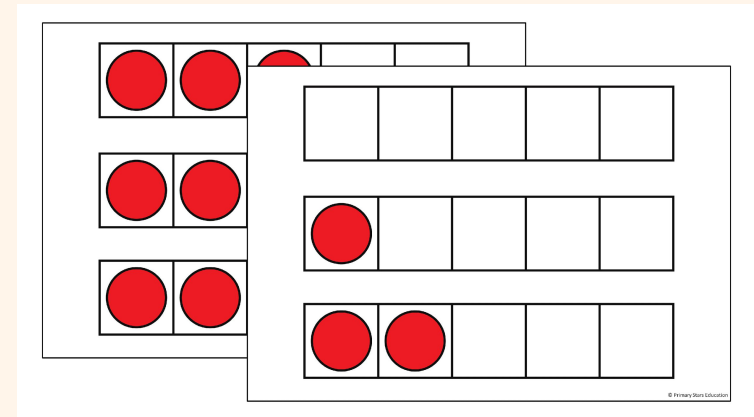
Explore the composition of numbers to 10

- Focus on composition of 2, 3, 4 and 5 before moving onto larger numbers
- Provide a range of visual models of numbers: for example, six as double three on dice, or the fingers on one hand and one more, or as four and two with ten frame images.
- Model conceptual subitising: “Well, there are three here and three here, so there must be six.”
- Emphasise the parts within the whole: “There were 8 eggs in the incubator. Two have hatched and 6 have not yet hatched.”
- Plan games which involve partitioning and recombining sets. For example, throw 5 beanbags, aiming for a hoop. How many go in and how many don’t?



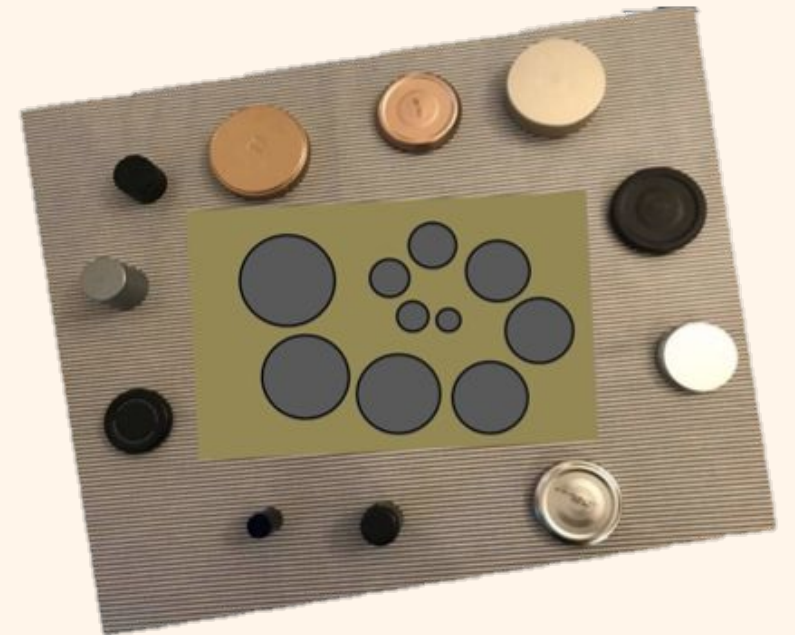
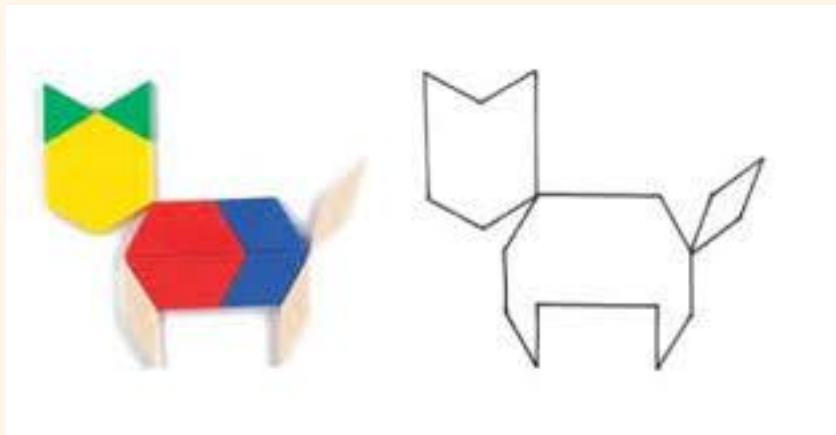
Automatically recall number bonds for numbers 0–5 and some to 10

- Help children to learn number bonds through lots of hands-on experiences of partitioning and combining numbers in different contexts, and seeing subitising patterns.
- Play hiding games with a number of objects in a box, under a cloth, in a tent, in a cave, etc.: “6 went in the tent and 3 came out. I wonder how many are still in there?”
- Intentionally give children the wrong number of things. For example: ask each child to plant 4 seeds then give them 1, 2 or 3. “I’ve only got 1 seed, I need 3 more.”
- Spot and use opportunities for children to apply number bonds:
“There are 5 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.



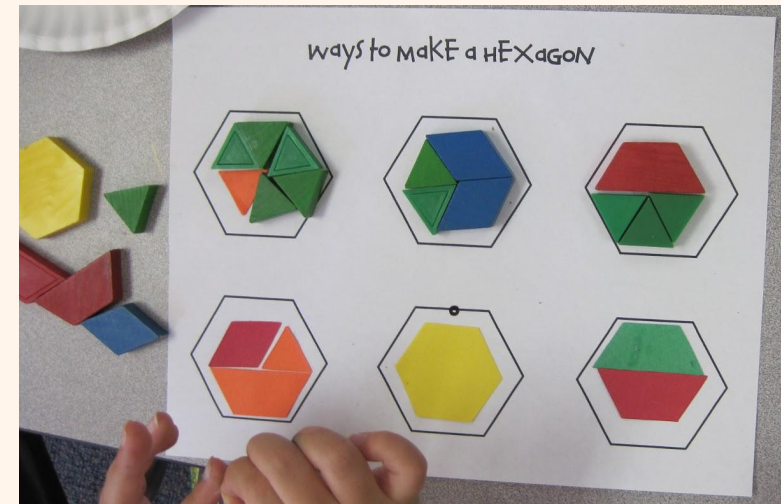
Select, rotate and manipulate shapes to develop spatial reasoning skills

- Provide high-quality pattern and building sets, including pattern blocks, tangrams, building blocks and magnetic construction tiles, as well as found materials.
- Challenge children to build bridges, roads, enclosures and towers using resources. They should be encouraged to think of positioning of objects when building to explore pattern, symmetry and balance.
- Teach children to solve a range of jigsaws of increasing challenge.



Compose and decompose shapes so that children recognise a shape can have other shapes *within* it, just as numbers can

- Investigate how shapes can be combined to make new shapes: for example, two triangles can be put together to make a square. Encourage children to predict what shapes they will make when paper is folded. Wonder aloud how many ways there are to make a hexagon with pattern blocks.
- Find 2D shapes within 3D shapes, including through printing or shadow play.



Continue, copy and create repeating patterns

- Make patterns with varying rules (including AB, ABB and ABBC) and objects and invite children to continue the pattern.
- Make a deliberate mistake and discuss how to fix it.
- Recognise patterns in their environment: patterns on natural objects, wallpaper etc



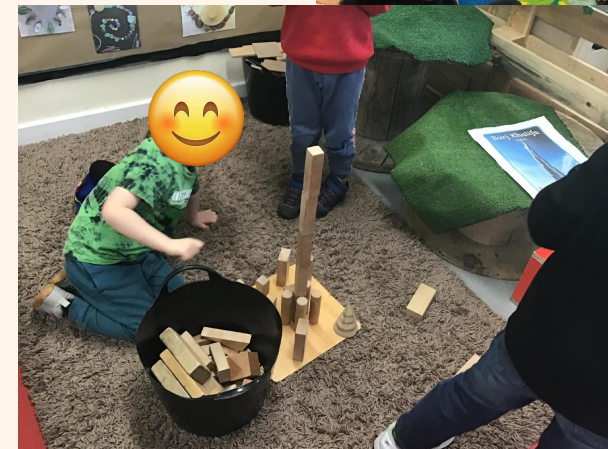
Compare length, weight and capacity

- Model comparative language using 'than' and encourage children to use this vocabulary. For example: "This is heavier than that."
- Ask children to make and test predictions. "What if we pour the jugful into the teapot? Which holds more?"



How we teach maths in Reception

- We follow White Rose Maths.
- We focus on the concept of exploration in maths and children discovering concepts and patterns for themselves. We are working on developing fluency, problem solving and reasoning skills.
- We teach a daily whole class maths lesson followed up by a consolidation task in groups based on that weeks learning.
- We have maths enhancements in provision for independent learning.
- Continuous provision for independent exploration.



Resources we use

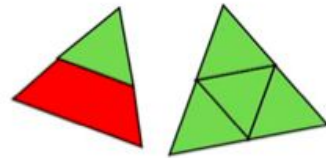
- Visual representations – 5 and 10's frames, part whole models
- Counting objects – everyday objects and maths resources
- Maths equipment
- Sticks and ribbons
- Books
- Number songs and rhymes



Misconceptions

'Bigger numbers are harder'

Triangles



Provide a set of pattern blocks or similar and challenge the children to build as many different triangles as they can. Who can build the largest triangle? The smallest?

How many different ways can they find to build the same sized triangle? (Cardboard templates with a cut out triangle for the children to fill will provide support)

Pirate Treasure

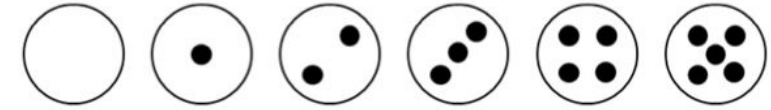
Pick a number card and count out the corresponding number of gold coins. One player covers their eyes whilst the second 'steals' some of the coins, hiding them in their hand.

The first player then has to work out how many coins have been stolen.



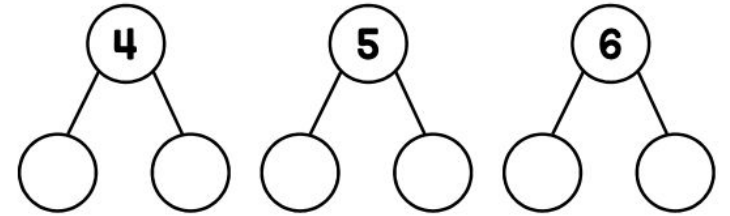
Dot Plates

Provide children with dot plates or cards from 0 to 5



Ask the children to arrange the 6 plates so that they have:

- a pair of plates with a total of 4 dots
- a pair of plates with a total of 5 dots
- a pair of plates with a total of 6 dots



Is there more than one way to solve the problem?

How can you help at home?

Maths skills can be developed at home through everyday activities.

- Baking and cooking.
- Tidying, shopping, setting the table, etc.
- Containers in the bath exploring capacity.
- Discussing daily routines and time.
- Timing everyday activities.
- Noticing numerals: door numbers, numbers on buses, road signs, etc.
- Exposure to coins and other forms of money/payment.

How can you help at home?

Maths skills are developed through play and meaningful questioning.

- Counting games, memory games, jigsaws, turn taking games
- Role play: “Can we share all the sweets out so that the teddies all have the same amount?”
- Den building and model making.
- Numbers, shapes and patterns every where, going on ‘hunts’ looking for specific things whilst out and about.
- Outdoor learning: recognising and making patterns, counting, comparing amounts.

Books

We often use books to support our maths sessions. Lots of stories have maths opportunities, here are few examples:

- Pattern Fish/Bugs by Trudy Harris – Patterns
- One to ten and back again by Nick Sharratt and Sue Heap – Counting patterns
- How to count to one by Casper Salmon – Subitising
- How many legs? By Kes Gray and Jim Field – Combining groups
- None the number by Oliver Jeffers - Zero
- Sidney the Silly Only Eats Six by M W Penn – Numerical Pattern
- Jaspers Beanstalk by Nick Butterworth – Time/Days of the week

Useful Websites/Apps

- Numberblocks – BBC iPlayer
- www.topmarks.co.uk
- White Rose Maths app
- Numbots
- Khan Academy Kids
- www.ictgames.com