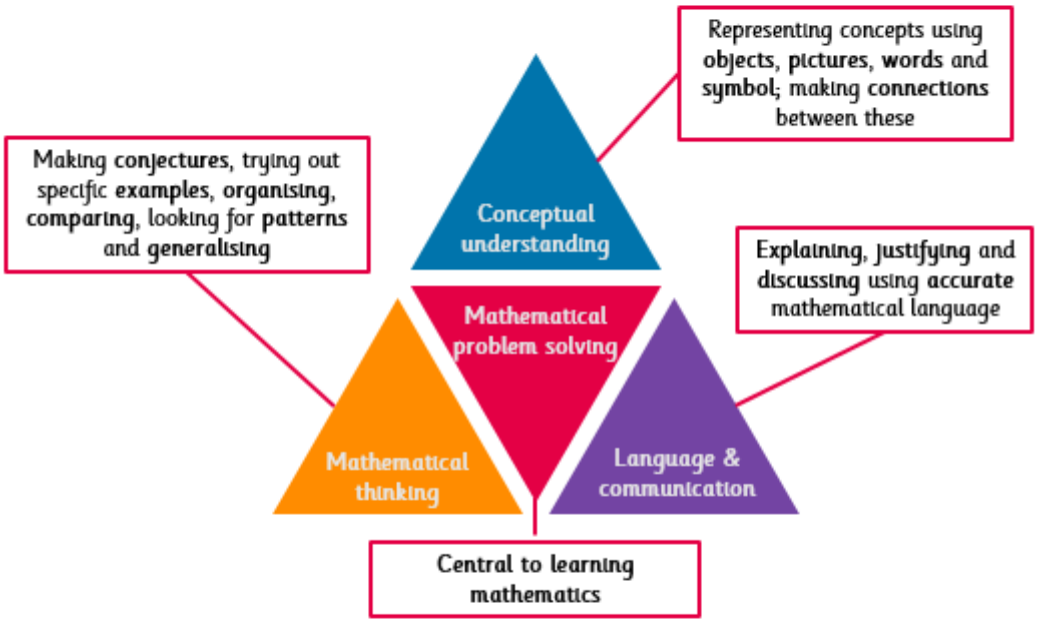
Reception handout – Autumn 2020

Mathematics Mastery

What is 'Mastery'?

The 'mastery approach' to teaching mathematics is the underlying principle of Mathematics Mastery. Instead of learning mathematical procedures by rote, we want your child to build a deep understanding of concepts which will enable them to apply their learning in different situations. To achieve this we aim to develop pupils' **Conceptual Understanding, Mathematical Thinking** and **Language and Communication**. (See diagram below).

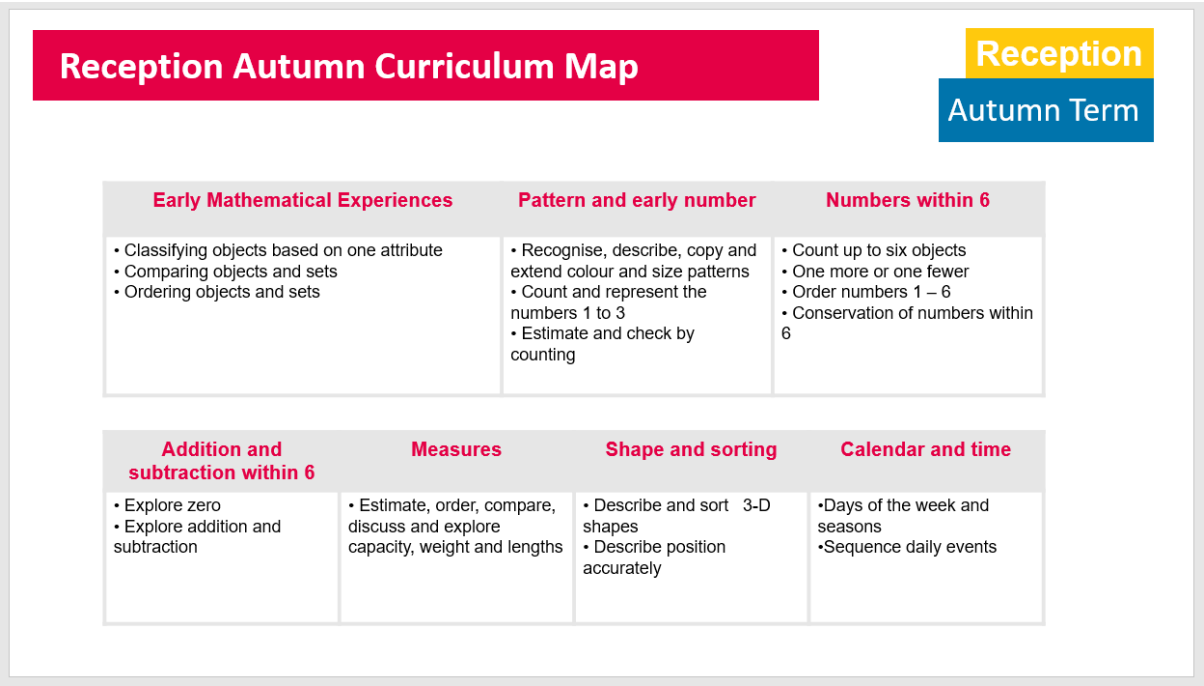


Success for all

At school we believe **all** pupils can achieve success in maths. We encourage pupils to have a 'growth mindset' – a belief that effort leads to success and that challenges are opportunities to learn.

Here are a few tips to encourage your children at home with maths:

- ✓ Talk to your child about everyday maths
- ✓ Play games with them
- ✓ Value mistakes as learning opportunities
- ✓ Recognise that there is more than one way to work things out.
- ✓ Praise your child for effort over outcome.
- ✓ Avoid saying things like "I'm useless at maths".



Reception Autumn Curriculum Map

Reception
Autumn Term

Early Mathematical Experiences	Pattern and early number	Numbers within 6
• Classifying objects based on one attribute • Comparing objects and sets • Ordering objects and sets	• Recognise, describe, copy and extend colour and size patterns • Count and represent the numbers 1 to 3 • Estimate and check by counting	• Count up to six objects • One more or one fewer • Order numbers 1 – 6 • Conservation of numbers within 6

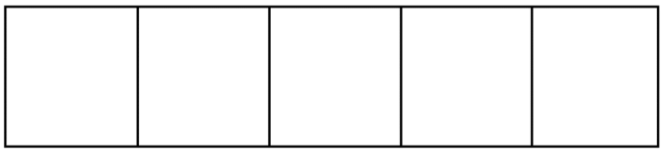
Addition and subtraction within 6	Measures	Shape and sorting	Calendar and time
• Explore zero • Explore addition and subtraction	• Estimate, order, compare, discuss and explore capacity, weight and lengths	• Describe and sort 3-D shapes • Describe position accurately	•Days of the week and seasons •Sequence daily events

It is really important to look deeply at the structures of numbers and the importance of pupils being able to represent numbers in more than one way to emphasise different properties.

Our scheme, Mathematics Mastery, supports a deep understanding of number and although children may be able to count to ten and beyond, it doesn't mean they understand the structure and the value of each number. This is why we begin with just numbers 1-3, building up to numbers 1 – 6 this Autumn.

On the following pages, there are examples of key representations that we use in Reception to support our work on numbers.

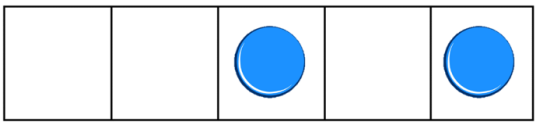
Key representation – five frame



Although seeing various representations builds understanding, we talked about how particular representations can draw out different aspects of mathematics. For this reason, we ensure the models and representations we use are purposeful so that learning can remain cumulative, be built upon and strengthened over time.

One representation we use in school is the five frame.

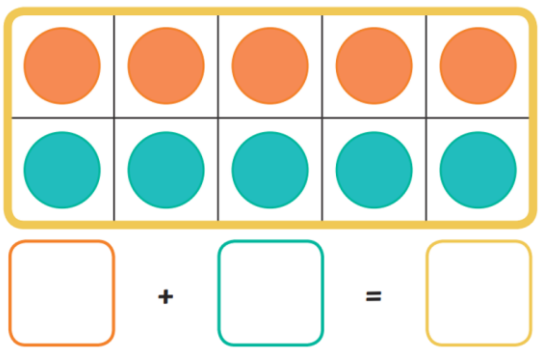
- The five frame builds pupils understanding of one to one correspondence – each counter has one space.
- It allows pupils to subitise numbers up to five, E.g. "I can see that I have three counters without having to count", or "I can see that I have two counters on the left and one on the right"
- We can also use this model as a number tracker using vocabulary of 1st, 2nd, 3rd etc. to develop pupils' vocabulary of ordinal numbers
- It creates opportunities to explore conservation of number – for example, in the five frames below we can make the number two and then if we move the counters into a different position we still have two.

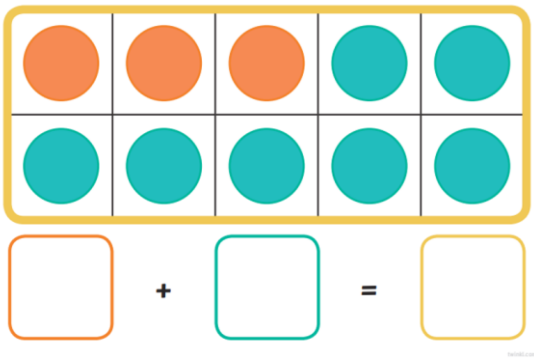


Key representation – tens frame

This representation will be introduced to pupils after they have had the opportunity to explore the five frame. Similarly, to the five frame it can support pupils' understanding about the early number skills and allows them to being thinking about number facts within and up to ten.

For example,

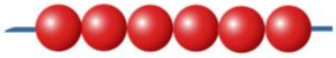


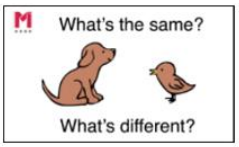


Key representation – bead string

To support conservation of number and mathematical thinking, pupils compare representations that show the same number in different ways.

For example, here are three different representations of six using a bead string.





** Linking back to the presentation, the sticker here is one of our 'ideas for depth.' The children would articulate what is the same about the representation, e.g. there is six beads, but also what is different, e.g. there are gaps between a group of three beads and another group of three beads, the beads are in pairs.

Star words

same	different
one	two
four	five
six	

Try this at home – workshop games

Flip and Create
2-4 players

one two three four five six more fewer less

What you need: 12 dot cards with a variety of dot patterns representing numbers 1 to 6 (see the following page) and counters/buttons/stones/cubes etc. (6 per person required).

How to play: Have the cards in a pile face don. The first player flips over one card. The rest of the players then use counters to replicate the arrangement of dots on his/her card and says the number out loud The dealer checks the results. The next player then flips over the next card and places it on top of the previous card. The players rearrange their counters. This continues until all the cards are used.

Variations
More or fewer: Each child can predict aloud whether the new card has more, fewer or the same number of dots as the previous card. The prediction is checked by the dealer, by observing whether counters need to be taken away or added.
Create your own dot cards: Change the arrangements or increase/decrease the number of dots on the cards.

Pairs
2 players

What you need: 12 dot cards with a variety of dot patterns representing numbers 1 to 6 (see the following page.)

How to play: Spread all the cards out face down. The first player turns over any two cards. If they are a pair (i.e. have the same number of dots), the player removes the cards and scores a point. If they are not a pair, both cards are turned back down in their places. The second player then turns over two cards and so on. When all the cards have been matched, the player with more pairs wins.

Variations
1. Increase the number of pairs of cards used.
2. Use a greater number of dots on the cards.
3. Pair a dot card with a numeral card.

one two three four five six

Resource: dot cards