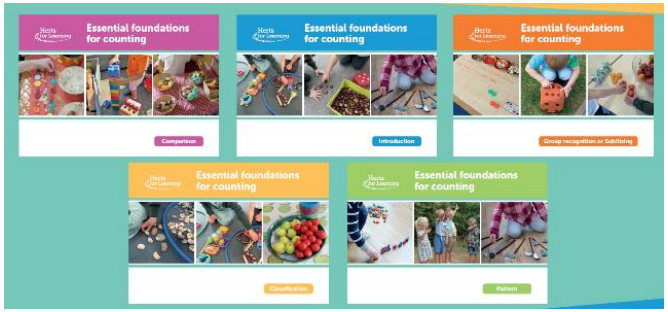
Implementing ReceptionESSENTIALmaths In Your School

ReceptionESSENTIALmaths is written to support teachers in Reception. The sequences are written as a spiral curriculum in which learning is built upon step by step, sequence by sequence, providing for a progression in the children's conceptual understanding. This should not be seen as a scheme of work or teaching programme as this would ignore the necessity for repetition and the rich variation in context that is essential for all good practice. The sequencing of the learning is intended to inform the direct teaching and adult roles when responding to the children's learning but should not be seen as a series of lessons. The mathematical focus is identified at the top of each step and guidance is given for mathematical modelling and highly effective language that will provide strong teaching points for further exploration across the environment. Mathematical modelling is used throughout. Reliable manipulatives and models are deliberately repeated in order to become familiar and reinforce the conceptual understanding of the children. This will develop firm foundations for children to move on to ESSENTIALmaths in Year 1.



You may be familiar with HfL Essential Foundations for Counting that provides practical suggestions to achieve firmly embedded pre-counting skills in pattern, comparison, classification and group recognition. These four skills continue to develop throughout ReceptionESSENTIALmaths and remain the foundation of mathematical learning.

All of the sequences follow the same format. Please see the subsequent pages for details of how to use the sections on each page.

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Front Page

HfL Outcomes and ELG links

'Key Concepts' outlines the overview of learning in the sequence. This includes language to be used and areas of possible difficulty and misconception. It is a crucial read for teachers.

The 'Steps within the Learning Sequence' details the progression of learning that will enable children to meet the HfL Learning Outcome and later, the linked Early Learning Goal. The Steps are not 'daily lessons'.

Reception

Learning Sequence 2

Counting Skills (stable order and one to one correspondence)

HfL Learning Outcome

Count reliably using number names in order and with one to one correspondence

Early Learning Goal

Count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number

Key Concepts

In this learning sequence, children will learn to use the standard list of number names in order and will reliably count each object only once. This is often referred to as the 'stable order' principle of counting. This sequence will **not** use numerals (written numbers), in order to focus on establishing a firm understanding of value.

By matching counting words to items being counted, they will rehearse the correct order of the names without necessarily understanding that the last counting word indicates the amount of the set (the cardinality of the set will be explored in another sequence). This is often referred to as 'one to one correspondence' and is an essential early part of attaching meaning to counting.

Some children may show some understanding of cardinality and this should be celebrated. However, the focus of the learning here is to deepen all children's understanding of the stable order principle and the one to one correspondence when using the number names in sequence.

Steps within the Learning Sequence

Step 1: Touching a small set of similar objects (more than one) one at a time and rehearsing the number names in the correct order

Step 2: Touching a small set of mixed objects one at a time and rehearsing the number names in the correct order

Step 3: Using number names to count a set of objects accurately when they could be moving

Step 4: Using number names to count a set of moving objects accurately when they cannot be touched and / or seen

What this learning builds upon

Children are ready for this learning when they:

- Identify and compare quantities by rehearsing their subitising skills (RLS1), but are also beginning to gain an awareness of the place of counting in this concept
- Show developing understanding of the value of quantities, gaining confidence in identifying amounts by the number names
- Recognise the importance of the order of number names, indicating a total in a set through the use of counting
- Begin to recite some number names with a sense of value
- Begin to use counting purposefully to try to identify small quantities

What this learning leads to

- Enabling children to use counting with purpose in order to identify and compare quantities
- Developing a sense of number while improving the accuracy of counting skills and confidence with number names through group recognition
- Eventually, the children will know that the last number said, when counting a group of objects, indicates the number in that set

Year group and number of learning sequence. This is RLS2.

Details of the mathematical progression and understanding that will help to decide if a child is ready for this learning.

Indication of where these mathematical foundations will lead in later learning for the children.

The HfL Learning Outcomes have been designed to develop understanding over time working towards meeting the end of year objectives in the Early Learning Goals.

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Second Page

Guidance to aid adults when observing children's learning

Reception

Learning Sequence 2

Behaviours pupils could demonstrate to show understanding
• Children will consistently recite the number names in the correct order across varied ranges and in different contexts. • Children will allocate a number name to each item counted only once and in the correct order. • Children will **not** miss out an item, count an object twice or continue to recite the number sequence beyond the set to be counted. • Children will recite the counting sequence accurately even if they are unable to touch the items e.g. pictures displayed on the board. • Children will recite the counting sequence accurately even if they are unable to see or touch the items, e.g. hearing marbles being dropped into a cup and counting the sounds. • Children **will not** miss out an item, count an object twice or continue to recite the number sequence beyond the set to be counted when counting a small number of sounds or objects which they cannot touch.

Ways to check understanding
Children could: • Touch and count a variety of static objects in many different group arrangements using the number names accurately. They should recognise when the number sequence stops at the same value for different groupings of the same set of objects. • Move items into a line as they count to aid accurate counting (to make sure they only count each one once). • Use one to one correspondence to count accurately items across all zones of provision including some that cannot be moved to form a line. • Begin to recognise small quantities by subitising and confirm the number name by counting. • Subitise a small number of objects and continue the counting sequence without returning to one. When they check by using one to one correspondence, counting each object, do they stop at the same number? • Count objects in a line starting at the third object for example. When the third object is number one in the count, are they still able to count all the objects accurately? For example, if this is the group to be counted, the children will start here to count 1,2,3,4,5,6,7 but must return to the beginning of the line  to count the two toys that have not yet been counted. 8 9

What you see:

- Formative assessment
- Ongoing tracking assessment
- Observations

Prompts are provided to guide assessment and these will help to refine observations of the children's understanding of a specific mathematical concept.

For learning goals to be judged as secure, the children will demonstrate their understanding naturally and so these hints should not be confused with further tasks or adult led learning.

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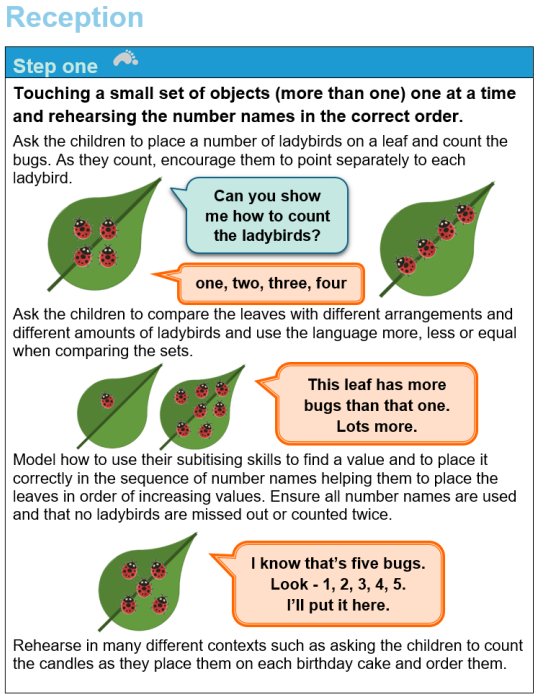
Third Page

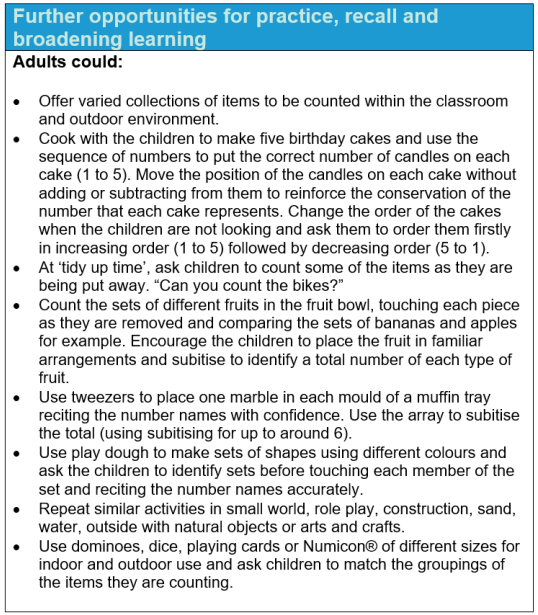
Bold print at the top of each step indicates the mathematical skill or concept focus.

Blue speech bubbles indicate key questions and teaching points for the adult Often, the remodelling of language is seen.

Models, drawings and symbols show how concrete resources can be used during the direct teaching session.

Orange speech bubbles exemplify the standard of talk and reasoning expected of children.





Suggestions for further exploration and rich variation that will deepen and rehearse the children's learning.

The third page begins the progression of the adult led learning (guided by steps). The number of steps varies in each sequence as the learning seen in the HfL Outcome is broken down and ordered in an age appropriate way. The narrative of the guidance is punctuated by examples of resources and mathematical models that may be used. Examples of high quality dialogue between adults and children provide key questions, guidance for the level of reasoning in children's response and opportunities for adults' remodelling of the talk wherever possible. For each step, there are some suggestions for further exploration across provision within the environment. These lists are not exhaustive and many will be familiar but reinvigorated by the precise mathematical focus.

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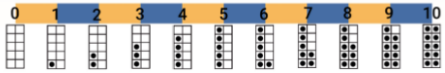
Reception

Step three

Practice the count – 1 more, 1 less

Provide another model of the numbers to 10 on a number line using tens frame representations of the numbers 0-10. Discuss with the children whether the dot on the tens frames increases by one each time as the towers did (in steps 1 and 2).



Practice counting up and down the number line starting from a variety of numbers to develop fluency. Incorporate games such as:

- Boomerang: place a picture of a boomerang on the counting stick which indicates the number the children are to count up to and then back from. For example, if the boomerang is placed on 6 – 0, 1, 2, 3, 4, 5, 6, 5, 4, 3, 2, 1, 0.
- Hiccup: children count forwards or backwards until an adult hiccups. Children then go back to the previous number and then continue. For example 10, 9, 8, (hiccup) 9, 8, 7… or 3, 4, 5, (hiccup), 4, 5, 6…

Through regular rehearsal, pupils will be saying one more and one less when counting but they will need to be able to state the numbers one more or one less than any given number. How this can be stated can vary and children need to be confident will all variations. Children could pick a number between 1 and 9, using a number line to help state one more and one less than the chosen number is a variety of ways.

One more than ☐ is ☐.
One less than ☐ is ☐.
☐ is one more than ☐.
☐ is one less than ☐.

Learning Sequence 9

Further opportunities for practice, recall, broadening and deepening learning

Adults could:

- Provide a visual number line in the environment at child height. This could be horizontal or vertical and should have a variety of different representations of the numbers 0-10 which change over a period of time.
- On the visual number, line numbers could be swapped around for the children to notice and then explain and correct the mistake.
- On the number line, some of the numbers/number representations could be 'blown off by the wind' and need replacing. Ask the children to put the numbers back in the correct places, reasoning their choices.
- For children that are ready, find two more or less than a given number within ten. Ensure that they can articulate what they know using the variety of models shown within step 3. For example, "Two more than 6 is 8. So 8 is two more than 6."

Some sequences may include speaking frames to support with the accuracy and consistency of the children's language.

Reception

Step two

Comparing sets of mixed objects by their values through counting and matching values in grids to numerals

Ask the children to gather natural objects (such as stones, leaves or conkers) and to place the correct number in the basket on the labelled bike.

How can we check if the right number of things are in the basket?

We can count them.

Continue to decompose numbers and focus on making and identifying (subitising) smaller quantities in slightly larger sets. This allows you to start the count at different numbers so that the children do not become too reliant on counting in ones as their only strategy. They must be encouraged to continue to improve their subitising skills.

How many things do you see?

Three grasshoppers there and two spiders there.

What happens when you count them?

One, two, three, four five.

Children will need plenty of practice in all zones of the environment to match values using many different variations. This may include using handout_RLS6_step2_value_match. The term zero or nought must be used regularly to identify a total in order to be satisfied that the children can subitise zero and will begin to secure the understanding that zero is one less than one.

Learning Sequence 6

Further opportunities for practice, recall and broadening understanding

Adults could:

- Use opportunities such as counting the sets of different fruits in the fruit bowl to challenge where the children will begin to count the fruits, for example which type to count first.
- Continue to encourage the children to place the fruit in familiar arrangements in order to subitise and continue the sequence in counting wherever possible.
- When the children use tweezers to place one marble in each mould of a muffin tray, change the starting point in the mould several times when reciting the number names with confidence and identifying the total quantity of marbles. Reinforce the use of the array to subitise the quantity too and identify the matching total.
- Embed the subitising and change of position to start the count again when children work with the play dough to make sets of shapes using different colours. The children should continue to identify sets before touching each member of the set and reciting the number names accurately to find the total.
- Repeat similar activities in small world, construction, sand, water, outside with natural objects or arts and crafts modelling the development of subitising and counting to link number names to their positions in the counting order and establish the last number name tallies the count.

Where included, handouts are indicated in the narrative.

Further Considerations

The materials are written to guide learning across the whole Reception year in order to achieve the Early Learning Goals but the starting point will not be in September for all learners and the progress is informed by the response to the children's learning as usual. If the children are not yet secure in their pre-counting skills, you can use HfL Essential Foundations for Counting which will make the transition manageable when they are ready to begin the first sequence of ReceptionESSENTIALmaths.

It will be necessary for teachers to judge prior learning before beginning each sequence. This can be guided by the "What this learning builds upon" section on the front page but will also include how well children are coping with the language and variety of representation in their mathematical learning.

Planning recognises the professional in the room. Teachers are still required to make decisions to match the steps appropriately to the different learners. Examples are provided for further provision but teachers will need to supplement these themselves and they will also need to decide how quickly to move through the sequences. For this reason, no long-term plans have been provided.