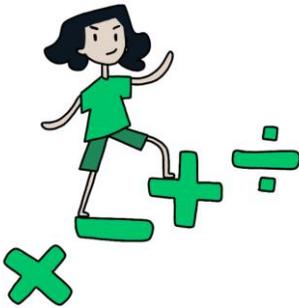


Language and Maths

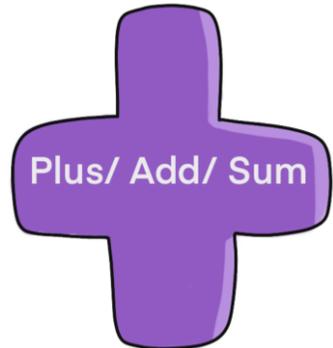
The early years



How many more?



How many are left?



Groups of?

What this book sets out to help you understand

What skills are needed for maths?

The language difficulties in maths

How to help with concepts in maths

How to help with the words and phrases used in problem solving

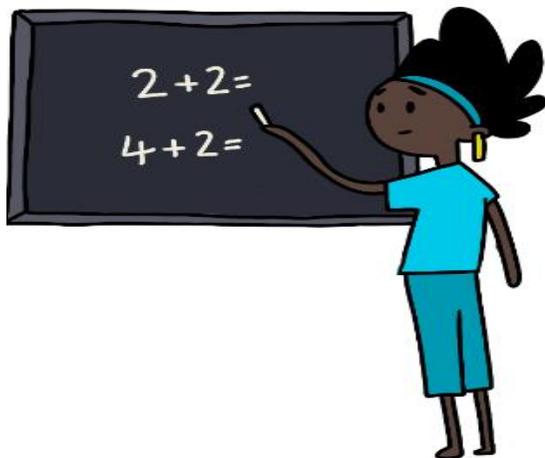
How to help when the questions are too long

Maths uses many skills:

Visual perception	Skills that help us make sense of what we see.
Attention	The ability to focus on the maths question without being distracted by what is going on in the classroom
Memory	The ability to store information in our brain and to manipulate the information and numbers as needed for the maths question
Reading	The ability to recognise and decode groups of letters and link them with spoken words
Language Comprehension	Understanding what is said

This booklet aims to help support children's understanding of the language used in early maths

Some children, when given a maths problem in number form can seem to do better than when given the same problem in a sentence or even more challenging, in a paragraph!



Some children find it hard to know what they are being asked when there is a lot of language.



Maths uses **CONCEPT** words

What is a concept?

Unlike a noun, which is an object that you can see, or a verb which is an action, a concept is an idea. We cannot see or act a concept and that makes it harder to learn.

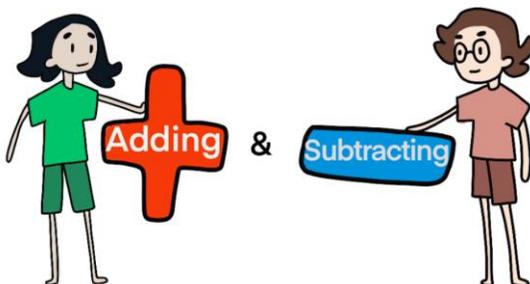
An example of a concept is **time**. We cannot see time but we have an understanding that time will pass and that there is a 'before' and 'after' this current time.

In early maths, children are asked to write down numbers before or after they add or take away other numbers.

Maths also uses the concept of place-prepositions. These are words that describe the position of one item in relation to another item. For example write the 2 on the top line and the 1 on the bottom line.

Maths uses many new words and phrases that a child may not be used to.

The words give the clues to the maths signs used!



Children are taught the specific vocabulary that matches the maths symbol.

Confusion can happen when other words and phrases are used that indicate the above maths symbols.

Johnny has 5 apples, Sarah has 7 apples.

How many apples are there altogether?



HELP!

In maths the questions get longer as the child gets older.

- The questions can become more difficult when the language is expanded and includes two or more statements requiring sums within one question.

"Niamh had three pencils, she gave one to Cormac and one to Tom. Fiona then gave everyone a new pencil. How many pencils has Niamh got now?"

- This uses skills of understanding on how to tackle the question in a logical sequence, based on the language provided.

How to help with Concepts

There are hundreds of concepts. Here are some of the most commonly used ones in maths:

1. The concept of **Sequence**, examples include:

First / Next/ Last

Before / After/ Then

2. The concept of **Place**, examples include:

Above / Below,

On the top / On the bottom,

Next to

3. The concept of **Quantity**, examples include:

More / Less

Introduce concepts in stages

- A. Make it real
- B. Make it in relation to objects familiar to your child
- C. Make it appear on paper

Introduction of Concepts in Stages

A. Make it real

See example below for **First / Last / Next**

When in a queue for something of interest to the child, and with people known to him/her, say the name of the person who is first and last and say who is next.

This can be done when handing out dinner or items to play with. Take turns. Children can be very interested in fairness and will often relate to how turns affect them.

An example:

Mary is in a queue for ice-cream, her mother could say "Looks like Sarah got in there **first** again!"

Make the important word stand out using louder voice. Careful not to upset Sarah!



B. Make it in relation to objects familiar to your child

Use toys such as teddies, dolls, animals or cars and place them in a line facing a toy that represents something that they would line up for. For example food!

Say which toy is **first/next/last** in line.



Move the toys so that other toys get a turn being **first** and discuss which is **first/next/last**.

When you are watching a show that interests the child, discuss events that involve taking turns. Use the words to comment.

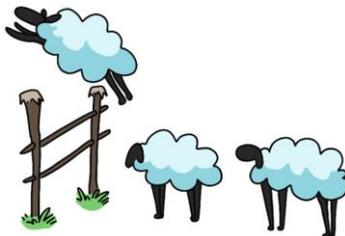
For example who is dancing first in Strictly Come Dancing or who is getting the football cup first to hold up high?

C. Make it appear on paper

To be extra meaningful for the child, start with a photo of the child in line with other willing participants. Discuss who is **first** and who is **last**.



After this, use pictures of the toys that were lined up in Step B activities (objects activities).



Make a game of placing stickers on **first/next/last**.

After using pictures try out a similar activity with simple line drawings. Simple drawings are more likely to appear in a maths workbook. It's a good idea to start with drawings of objects that are of interest to the child to help keep them motivated.

1. The concept of SEQUENCE

First/Next/Last can also be used to describe the order that an event happens, or a procedure or task is to be followed. For example, the everyday routine of getting ready in the morning (first we get up, next we dress and last we eat our breakfast).

The words **Before** and **After** can be introduced when the sequence is understood.

A. Make it real!

Discuss simple 3 step sequences at Home and school as the child is involved in the activity. Say things such as.

'First we get out of bed, next we get dressed and last we eat our breakfast.'

Use this type of language every day and for different activities.

B. Make it in relation to objects!

Talk about real events to help show the concepts of sequence.

For example the sequence of brushing teeth:

First - we put tooth paste on the toothbrush

Then/next - we brush our teeth, and

Last, we rinse our mouths with a cup of water”.

C. Make it appear on paper!

Use three photos and share an activity of putting them in order.

Use line drawings of sequences and put the drawings in order.

When **first/next/last** is mastered then introduce **before/after** by following the same three steps - **A B C!**

2. The concept of 'PLACE'

Maths uses many words that describe 'Place'.

For example. Put the number 2 **next to** the 4, or put the number 3 **above** the Number 5, or put the number 5 **below** the line.

Using the same approach as the previous concepts:

1. Make it real for your child,
2. Make it in relation to objects that your child is familiar with and then
3. Make it appear on paper

A. Make it real for your child

Choose one of the 'place' words that is being used in the maths lesson, for example '**on**' and also choose a word that is opposite to that, such as "**under**".

Comment on real life experience as it happens.

*"Mark is **on** the stepping stone"*

*"Mark is **on** the chair"*

*"Mark is **on** the footpath"*

*"Mark is **under** the tree"*

*"Mark is **under** bridge"*

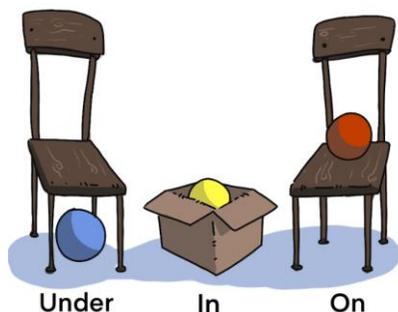
A. Make it in relation to objects

Place objects the child is interested in on top of or under a surface (e.g chair) while explaining in short phrases like

"The (name of object) is on the chair"

Move the object to under the chair and say
"Now, the (name of object) is under the chair"

Make the important new words stand out by saying them a little louder!



Add in some fun or extra meaning to activities:

- Play hide and seek with the object. Giving clues relating to on/under.
- Tidy up belongings/shopping/clothes using the new words.

Words and phrases used in Maths Problems

Here are some of the words and phrases you will find in the maths

Addition



Add, Plus, Sum of, Total of,
How many altogether?

Subtraction



Take away,
How much smaller is number 3 than
number 10?
How much was left?
What change did he get?
How much more did he need?

Multiplication



How many altogether?
When given groups, sets, boxes of items.
What is the product of?
How much?
Times? What is this times that?
How many lots of?

Division



How many are there in?

How many boxes/containers /bags do you need?

Share? How much does each person/container get?

This number of cakes cost this much, how much does one cost?

Equals



Makes

Total

Same as

Equivalent

Balances

Phew, it's a lot to learn - How can we help???

Use of colour can help as a reminder of numbers to get bigger (warm colours - reds/oranges) or smaller (cool colours - blues/greens)

Ideas to help with understanding these type of Maths problem questions

One Idea! Make it real

Children are often motivated by fairness when they are involved in the dishing out of things that interest them. Choose just one or two of the questions to introduce to them, in an everyday routine or when a treat is involved.



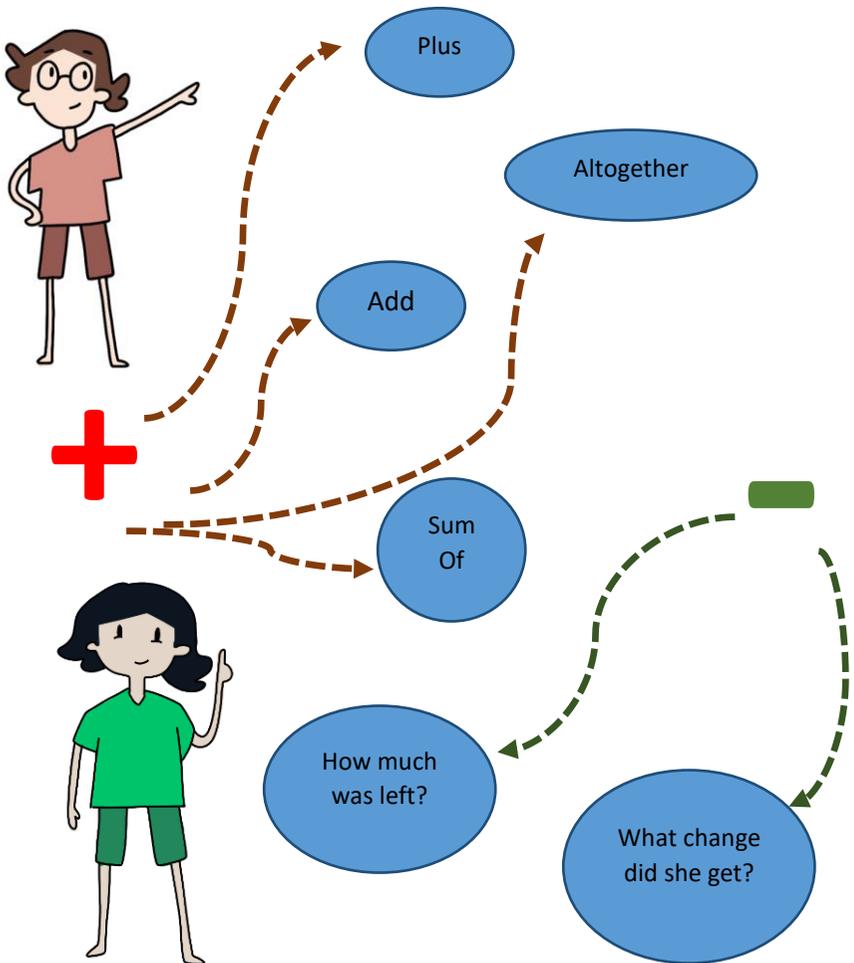
Another Idea! Make it real

For the above example have fun drawing simple circles and lines for sweets shared amongst 3 children.



Another idea! Join the symbols to the words

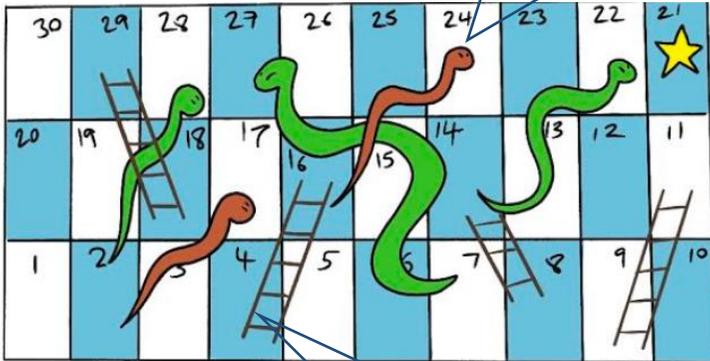
Children can join the symbols using dot to dot or bright lines.



Another Idea!

Add the words to snakes and ladder

Yikes a snake! Down we go! 24 minus 8, how many altogether?



Woohoo, a ladder – up we go!
4 plus 12, how many altogether?

As the children play the game they are hearing and reading the short phrases that link with adding and subtracting.

Another Idea! Make a game of lotto

Print out 2 lotto cards with words that match one of the maths symbols.

For example one card could show words that all mean 'Divide' and one card could have words that mean 'Add'.

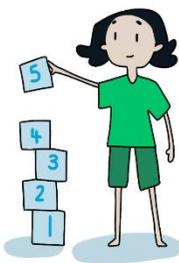
Copy the lotto sheet to cut out the individual squares.

Turn the cards upside down and take turns turning over the cards to see if they match your card.

Use colour to help make it easier to match squares to cards.

Lotto Card Examples:

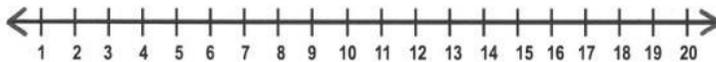
Card 1			
\div	How many are there in?	How many if you share?	One pencil case holds 20 pencils, how many cases needed for 60 pencils?
Divide	This many sweets cost €5, how much is 1 sweet?	One box holds 5 apples, how many boxes needed for 10?	

Card 2			
$+$	How many altogether?	What is the sum of?	What number is 3 greater than 7?
Add	Plus	What is the value of?	 <p style="text-align: center;">Four plus one equals five</p>

How to help when questions get longer

We can see how much a child has understood once they start their sum but some children can be seen to freeze like a rabbit in the headlights and you realise they do not know where to start!

- We can instantly make the task easier by providing supports such as number lines or blocks to reduce the amount of areas to think about at one time.



- We can also help the child break the question down into smaller parts by hiding the second part of the question until the first part has been completed.
- **Draw the objects** mentioned in the question. In early maths the numbers should be small - see page 18.

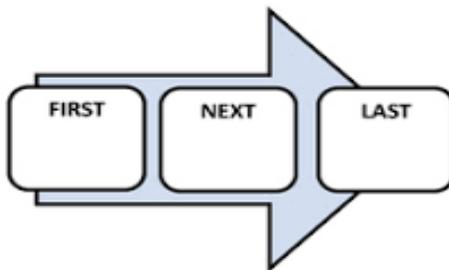
- **Highlight the problem words**

Use the colours that remind us if the numbers are expected to get larger (warm colours like reds/oranges) or smaller (cool colours like greens/blues)

Example:

Julie had 18 apples. She made them into **groups of four**. How many apples were **left over**?

Help the child understand the steps to be taken. Use the words **first, next, last** (see Concepts on page 12.) Then write the steps down on **first, next, last** diagram.



Every child is different and some of the ideas in this book may help them understand maths questions a little bit more.

For further help with language support please contact the Speech and Language Therapy Department.

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