



**Lasswade ASG**

**Addition and Subtraction  
Guide**

This information booklet has been produced to explain how we teach addition and subtraction.

This booklet contains the strategies and progression of addition and subtraction.

Pupils and parents can use this booklet for support when working on addition and subtraction at home.



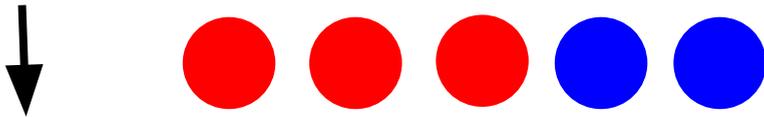
# Teaching Numeracy

We use the **S**tages of **E**arly **A**rithmetical **L**earning (SEAL) approach to teach numeracy. This is implemented from the beginning of a pupils numeracy journey and builds essential foundations and skills to develop understanding when working with numbers.

The SEAL approach is mainly implemented in the Early and First level stages of the numeracy journey with their foundations underpinning the work pupils progress on to in second and third level.

Children are taught to think about numbers in a progressive way -

**Concrete** - Using concrete materials such as counters.



**Pictorial** - Using pictorial resources such as number lines  
And bar models



**Abstract** - No use of concrete or pictorial resources.

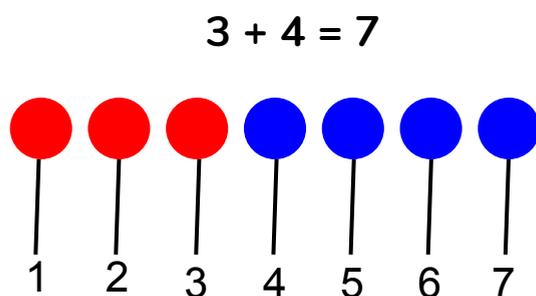
$$3 + 2 = 5$$

Many strategies are taught to children in a fun, engaging way through games and practical activities allowing children to explain their understanding of Numeracy. This will often mean there is not a huge emphasis on workbook or jotter work at the Early stages.

# Addition and Subtraction Within 20

## Concrete (addition)

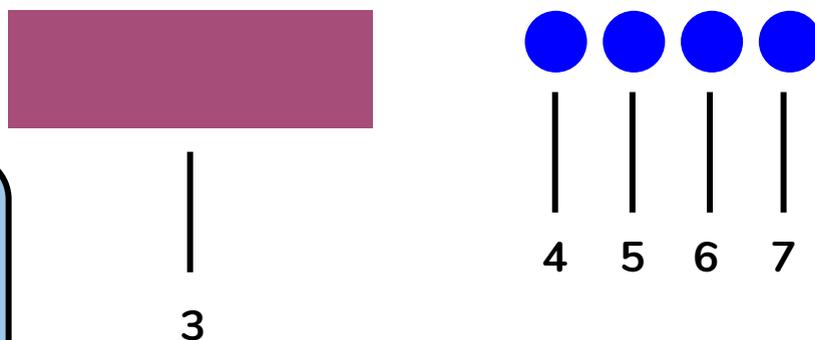
In addition children start by counting from one using concrete materials.



Concrete material allow children to physically count the objects in front of them as well as identify different number patterns within addition. Concrete materials can be anything from counters, cubes and fingers to everyday objects such as toys.

Once confident with this process they will progress to counting on from a number bigger than 1. We can use concrete materials to help develop this.

$$3 + 4 = 7$$



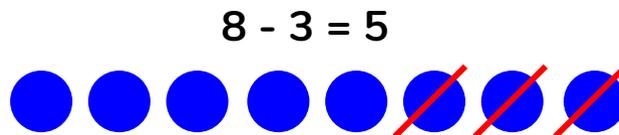
Children may visualise 3 counters under the screen

Start at 3 and count on

## Concrete (subtraction)

Subtraction is introduced once children have started to build confidence with addition

In subtracting children start by counting out counters to represent the first number in the subtraction sentence and removing the amount given by the second number. They then count how many counters are left.



Concrete materials allow children to move and physically see the results of a subtraction sum.

Once children are confident with this process we can progress to screening counters/concrete materials to encourage pupils to visualise the numbers and process.

$$8 - 3 =$$

'I have 8 counters under here.'

'I have taken 3 counters away'

How many are left?

Progress  
to  
→

$$8 - ? = 5$$

'I started with 8 counters under here.'

'I now have 5 counters under here.'

How many did I take away?

Children should visualise the 8 counters and then visualise taking the 3 away.

This is quite tricky for pupils but starts to develop their awareness of different ways to solve subtraction sums.

## Pictorial (addition and subtraction)

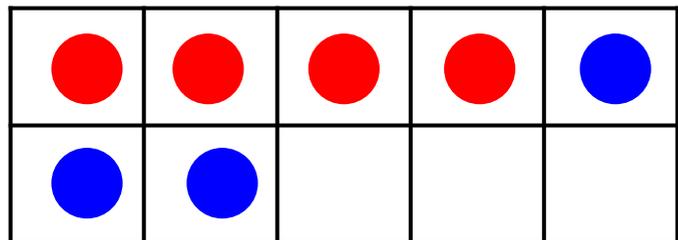
When are children feel confident and secure with using practical materials to add and subtract they can try using pictorial resources such as ten frames and number lines.

### Ten Frames (these can be used as concrete or pictorial resources)

$$4 + 3 = 7$$

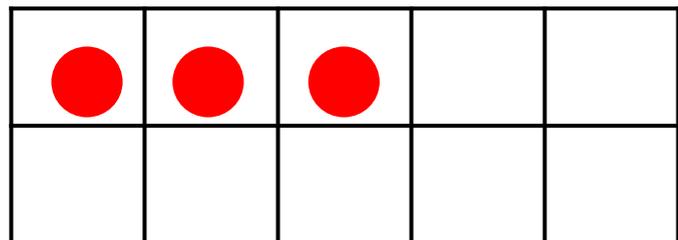
Draw 4 circle  
and then 3.  
How many  
altogether?

How else could  
you find the  
answer?

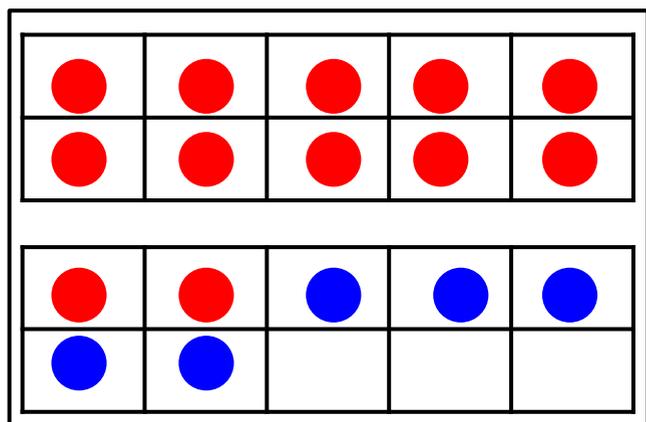


$$3 + ? = 10$$

I have 3 how  
many more do  
I need to get  
10?



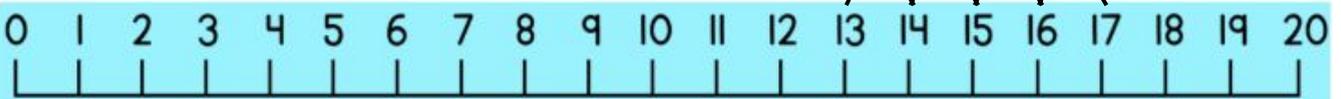
$$12 + 5 = 17$$



# Pictorial (addition and subtraction)

## Number Lines

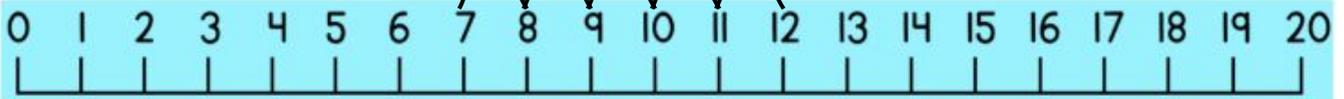
$$13 + 4 = 17$$



Start at the first number and jump 4 places forwards.

As children start to feel more confident they may jump in bigger increments (2,3 etc)

$$12 - 5 = 7$$



Start at the first number and jump 5 places backwards.

Number lines are a helpful resource for children when learning how to add and subtract. It emphasises the movements forwards and backwards and children also develop confidence in jumping in different increments.

## Abstract (addition and subtraction)

Abstract thinking means children can use their knowledge of patterns, visualisation and number bonds to solve sums without concrete or pictorial resources. They should be able to explain how they got their answer if asked.

Number bond knowledge is very important when children are learning to add and subtract and will be a vital tool in their numeracy toolkit all throughout their life.

Number bond fluency is when number bonds and patterns become so familiar a child can recognise and answer it instantly. Double and near doubles are helpful too.

<u>Number Bonds to 10</u>	
$1 + 9$	$6 + 4$
$2 + 8$	$7 + 3$
$3 + 7$	$8 + 2$
$4 + 6$	$9 + 1$
$5 + 5$	$10 + 0$

<u>Number Bonds to 20</u>			
$1 + 19$	$6 + 14$	$11 + 9$	$16 + 4$
$2 + 18$	$7 + 13$	$12 + 8$	$17 + 3$
$3 + 17$	$8 + 12$	$13 + 7$	$18 + 2$
$4 + 16$	$9 + 11$	$14 + 6$	$19 + 1$
$5 + 15$	$10 + 10$	$15 + 5$	$20 + 0$

<u>Number Family of 8</u>	
$1 + 7$	$5 + 3$
$2 + 6$	$6 + 2$
$3 + 5$	$7 + 1$
$4 + 4$	$8 + 0$

# Addition and Subtraction Within 100

Once children are confident in adding using the concrete, pictorial and abstract strategies we start to introduce 'Addition and Subtraction Strategies'.

**Jump, Over Jump, Jump the decuple, split, split-jump, compensation and transformation strategy**

It is essential children have a good understanding of these strategies and are able to explain how to use them effectively to solve sums.

Children need to know these before moving on to the written column method as they lay the foundation required to understand the processes involved in using the column method.

Describe how to use 'jump strategy'	e.g. $32 + 25$ ( $32 + 10 + 10 + 5 + 2$ )	e.g. $54 - 31$ ( $54 - 10 - 10 - 10 - 1$ )
Describe how to use 'over-jump'	e.g. $37 + 29$ ( $37 + 30 - 1$ ) = 66	e.g. $42 - 18$ ( $42 - 20 + 2$ ) = 24
Describe how to use 'jump to the decuple'	e.g. $37 + 25$ ( $37 + 3 + 20 + 2$ ) = 62	e.g. $53 - 27$ $53 - 3 = 50$ $50 - 20 = 30$ $30 - 4 = 26$
Describe how to use 'split strategy'	e.g. $42 + 26$ $40 + 2$ $20 + 6$ $40 + 20 = 60$ $2 + 6 = 8$ $60 + 8 = 68$	e.g. $46 - 22$ $40 - 20 = 20$ $6 - 2 = 4$ $20 + 4 = 24$
Describe how to use 'split-jump'	e.g. $37 + 25$ ( $30 + 20 + 7 + 3 + 2$ ) = 62	e.g. $42 - 26$ $42 - 20 = 22$ $22 - 2 = 20$ $20 - 4 = 16$
Describe how to use 'compensation'	e.g. $46 + 27$ $46 + 4 = 50$ $50 + 27 = 77$ $77 - 4 = 73$	e.g. $52 - 37$ $52 - 2 = 50$ $50 - 37 = 13$ $13 + 2 = 15$
Describe how to use 'transformation'	e.g. $58 + 25$ ( $58 + 2$ ) ( $25 - 2$ ) $60 + 23 = 83$	

# Addition and Subtraction

## Using the written column method

Once children are confident with the processes in the addition and subtraction strategies we move on to the written column method. This is usually in second level.

### Addition

When adding, the ones, the tens and hundreds must be lined up in the correct column

**Example 1** *by a single digit*

Add 356 and 78:

$\begin{array}{r} 356 \\ + 78 \\ \hline \hline \end{array}$ <p style="text-align: center;">✓</p> <p style="text-align: center;">This is laid out correctly.</p>	$\begin{array}{r} 356 \\ + 78 \\ \hline \hline \end{array}$ <p style="text-align: center;">✗</p> <p style="text-align: center;">This is not correct. The 8 must go underneath the 6 as they are both <b>units</b>.</p>
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To complete the sums, start at the **right**. Each time, write down the ones and “carry” the tens. We now refer to “carrying” as exchange.

**Example 2**

Add 3074 and 689:

$\begin{array}{r} 3074 \\ + 689 \\ \hline \hline \end{array}$	→	$\begin{array}{r} 3074 \\ + 6\overset{1}{8}9 \\ \hline \hline \end{array}$	→	$\begin{array}{r} 3074 \\ + 6\overset{1}{8}\overset{1}{9} \\ \hline \hline \end{array}$	→	$\begin{array}{r} 3074 \\ + 6\overset{1}{8}\overset{1}{9} \\ \hline \hline \end{array}$
<u>3</u>		<u>63</u>		<u>763</u>		<u>3763</u>
<div style="border: 1px solid gray; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <span style="color: green;">4 + 9 = 13</span> </div>		<div style="border: 1px solid gray; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <span style="color: green;">7 + 8 + 1 = 16</span> </div>		<div style="border: 1px solid gray; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <span style="color: green;">0 + 6 + 1 = 7</span> </div>		<div style="border: 1px solid gray; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> <span style="color: green;">3 + 0 = 3</span> </div>
Some people write their carries underneath the sum: this is fine!						<b>Final Answer:</b> 3763

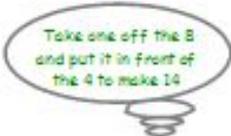
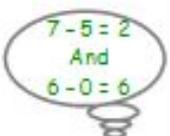
## Subtraction

Line the numbers up by place value (like Example 1 on the addition page) and begin taking away from the **right**.

When the number on the top is smaller than the one on the bottom, "borrow" 1 from the column to the left. "Borrowing" may now be referred to as regrouping.

**Example 1**

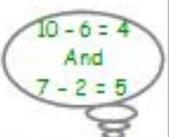
Take away:  $684 - 57$

$\begin{array}{r} 684 \\ - 57 \\ \hline \end{array}$	$\rightarrow$	$\begin{array}{r} 6\overset{7}{\cancel{8}}4 \\ - 57 \\ \hline \end{array}$	$\rightarrow$	$\begin{array}{r} 6\overset{7}{\cancel{8}}\overset{1}{\cancel{4}} \\ - 57 \\ \hline 7 \\ \hline \end{array}$	$\rightarrow$	$\begin{array}{r} 6\overset{7}{\cancel{8}}\overset{1}{\cancel{4}} \\ - 57 \\ \hline 627 \\ \hline \end{array}$
						

**Final Answer: 627**

**Example 2**

Take away:  $813 - 269$

$\begin{array}{r} 813 \\ - 269 \\ \hline \end{array}$	$\rightarrow$	$\begin{array}{r} 8\overset{0}{\cancel{1}}3 \\ - 269 \\ \hline 4 \\ \hline \end{array}$	$\rightarrow$	$\begin{array}{r} 7\overset{10}{\cancel{8}}\overset{1}{\cancel{1}}3 \\ - 269 \\ \hline 4 \\ \hline \end{array}$	$\rightarrow$	$\begin{array}{r} 7\overset{10}{\cancel{8}}\overset{1}{\cancel{1}}\overset{1}{\cancel{3}} \\ - 269 \\ \hline 544 \\ \hline \end{array}$
						

**Final Answer: 544**

# Addition and Subtraction Language

It is important children understand the words associated with addition and subtraction to ensure they use the correct calculations to answer a question.

- add
- more
- plus
- make
- sum
- total
- altogether



- subtract
- minus
- leave
- less
- take away
- difference between



# Things to Remember

Children learn at different paces and should work with strategies and methods they are comfortable with to develop confidence in working with numbers.

It is very important children are able to explain their thinking and reasoning when working with numbers. It is not just about finding the answer and moving on.

What sort of questions can I ask my child when working with numbers?

- How did you get that answer?
- What strategy did you use?
- Could you do it a different way?
- What would happen if we changed 'x'?
- Can you draw out how you did it? (If they did it in their head)

# Useful Websites

## Online manipulatives

- <https://www.didax.com/math/virtual-manipulatives.html>
- <https://toytheater.com/category/teacher-tools/virtual-manipulatives/>
- <https://mathsbot.com/#Manipulatives>

## Games and resources

- <https://www.topmarks.co.uk/maths-games/hit-the-button>
- <https://www.ictgames.com/>
- <https://www.topmarks.co.uk/>
- <https://www.doorwayonline.org.uk/>
- [https://www.youtube.com/results?search\\_query=numberjacks](https://www.youtube.com/results?search_query=numberjacks)
- <https://www.themathsfactor.com/>
- <https://www.mathsisfun.com/games/>
- <https://mathsframe.co.uk/en/resources/category/22/most-popular>
- <https://home.oxfordowl.co.uk/kids-activities/fun-maths-games-and-activities/>
- <https://www.mangahigh.com/en-gb/games>
- <http://www.sheppardsoftware.com/math.htm>
- <https://www.mathplayground.com/>
- <https://mathszone.co.uk/>