



Foundation Stage

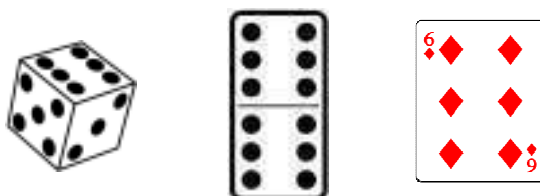
Number

Nursery and Reception

A key priority of any Primary School maths curriculum is to ensure that children develop a strong sense of number and place value. Children will continually encounter numbers in the world around them, whether that be on the bus they took to school this morning or on their front door at home. But the ability to recognise the symbol 5, and name it, is very different from understanding the 'fiveness' of it, and it is the development of this latter skill that is crucial to a child's mathematical ability.

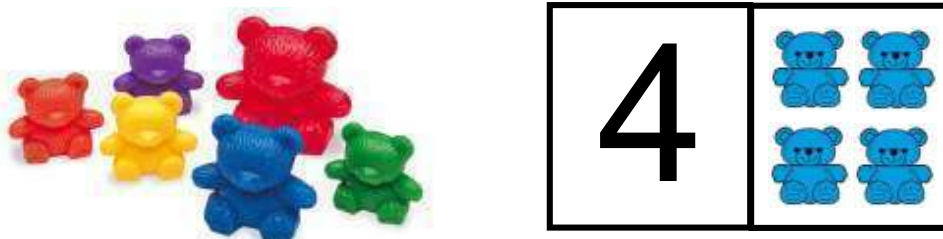
Furthermore, it is important to recognise that just because a child can recite number names in order, does **not** necessarily mean that they can count. As with learning the alphabet, children can recall a sequence of numbers by rote without any real grasp or understanding of what they mean (hence young children often omit numbers as they count). Gaining familiarity with number names through songs and rhymes is of course helpful, but emphasis should be placed on helping children make links between these number names and the number of objects they equate to.

An intuitive sense of number begins at a very early age, and even before they start school, many children can identify one, two or three objects in a group, regardless of whether they can count. This ability to instantly compute the total in a small group of objects derives from stable, mental images of number which have developed over time from a variety of experiences with different patterns of number. For example, a child might immediately recognise the 6 on a dice, domino piece or playing card:



It is possible that the child has memorised this familiar arrangement of 6 dots. Alternatively, they may have mentally sub-grouped them into two sets of 3, fostering an understanding that a number can be composed of smaller parts. In both cases, no actual counting of objects is involved; instead, the child has relied on other mental strategies.

In the Foundation Stage, as well as teaching the children to count objects, significant attention is given to cultivating number recognition and the development of mental representations. In order to do this, much of their experience with number play in the early years will involve concrete, movable objects.



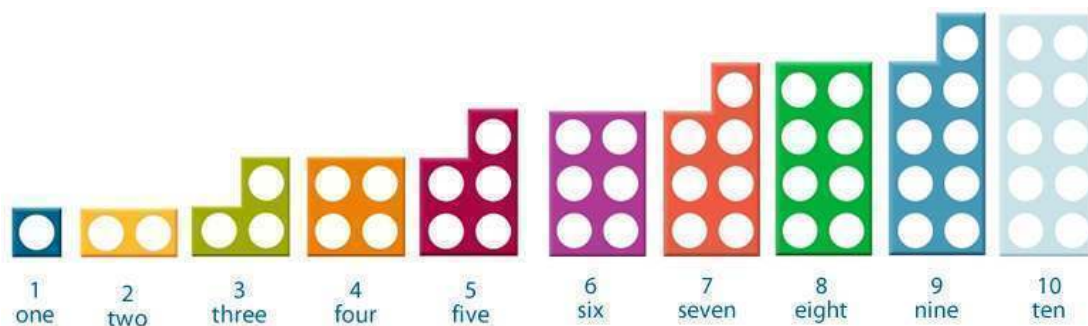


Foundation Stage

Number

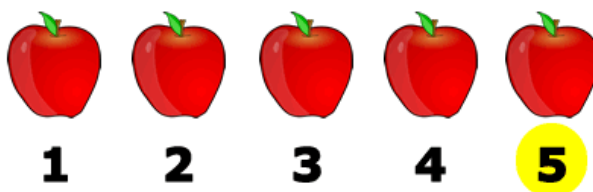
Nursery and Reception

Use of **Numicon** is another great way to help children develop mental representations of number.



These experiences and number representations will help children:

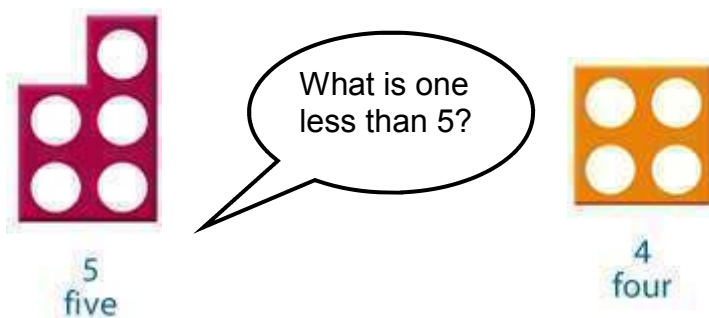
- **Reliably count the number of objects in a set using the numbers one to twenty.**



- **Place numbers in order.**

Numicon, in particular, helps children visualise how the size of numbers relate to each other.

- **Say which number is one more or one less than a given number.**



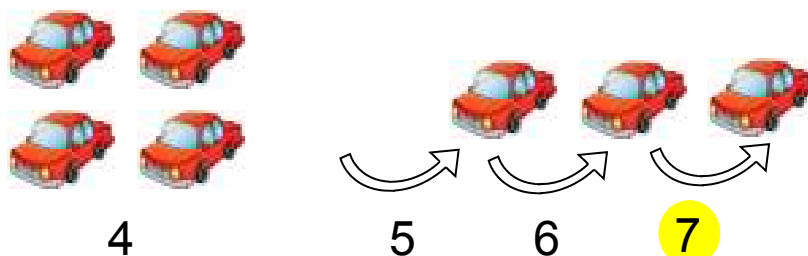


Foundation Stage

Number

Nursery and Reception

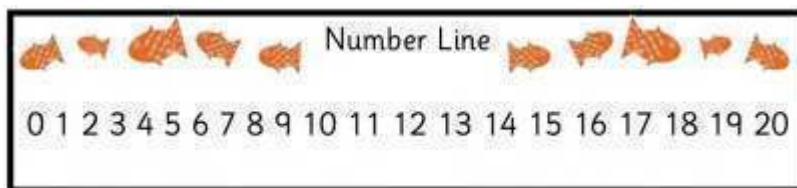
- Use objects to add two single-digit numbers by counting on to find the answer.



$$4 + 3 = 7$$

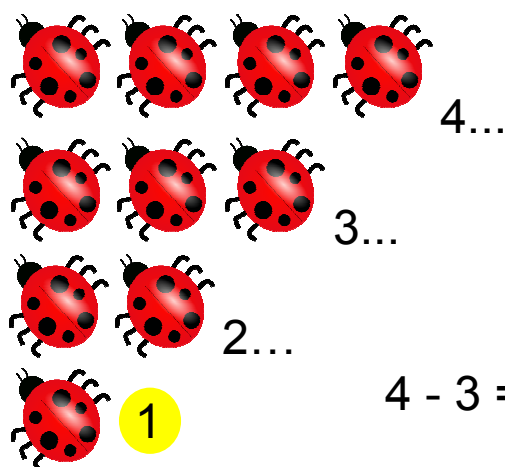
- Use objects to subtract two single-digit numbers by counting back to find the answer.

The first step into **subtraction** is to learn how to count **backwards**.



Let's count
backwards
from 14!

Children will then utilise this strategy to solve simple subtractions:



$$4 - 3 = 1$$

There were 4
ladybirds on a leaf.
How many will be
left if 3 fly away?

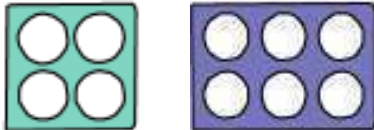
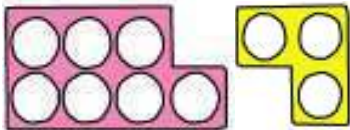
**Key Stage 1** Addition and Subtraction**Year 1**


Children are expected to:

- **Represent and use number bonds and related subtraction facts within 20.**

Once a basic number sense has developed for the numbers up to ten (see the Foundation Stage section of the calculation policy), children must establish a **strong sense of 'ten'**. Children will become familiar with the **'tenness'** of ten using a variety of practical resources:

Numicon:


$$10 = 7 + 3 \qquad 4 + 6$$

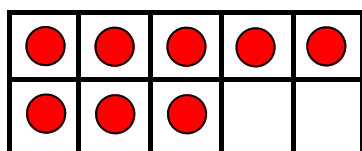

$$20 = 11 + 9$$

Children should also be made familiar with the **related subtraction facts**:

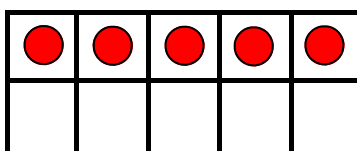

$$10 - 7 = 3$$

Ten-Frames:

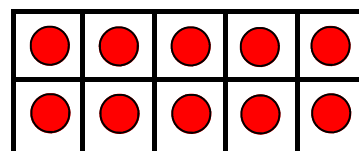
A ten-frame, like the one below, is a great tool for embedding an understanding of ten. By placing counters in different arrangements on the frame, children can begin to generate **various mental images** of the number ten, as well as how other numbers relate to it.



There are 8 counters. I need 2 more to make 10.



5 and 5 make 10.



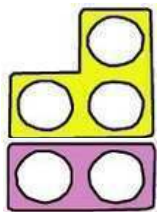
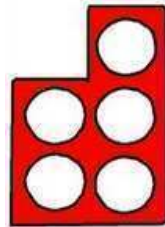
I have 10 counters. If I take away 4 of them, I will have 6 left.

**Key Stage 1** Addition and Subtraction**Year 1**

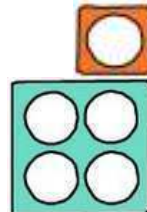
A knowledge of **number bonds** is not just about knowing how to make the numbers 10 and 20. Children should also start to investigate ways to make other numbers less than 20. Several resources can aid this learning:

Numicon:

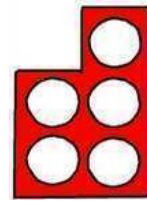
What numicon pieces will help us make the number 5?



$$\begin{aligned} 3 + 2 &= 5 \\ 5 - 3 &= 2 \\ 5 - 2 &= 3 \end{aligned}$$



$$\begin{aligned} 4 + 1 &= 5 \\ 5 - 1 &= 4 \\ 5 - 4 &= 1 \end{aligned}$$

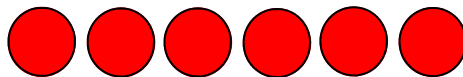


$$\begin{aligned} 5 + 0 &= 5 \\ 5 - 0 &= 5 \end{aligned}$$

The **concrete** or **pictorial representations** of number facts should always be linked to the **abstract** (i.e. the number sentence it relates to).

Double-sided counters:

Red-Yellow counters can be used to help children find out about different ways of making the same number. They may also start to spot patterns.



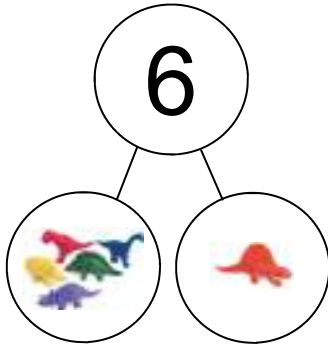
6 red counters	$6 + 0 = 6$
5 red, 1 yellow counter	$5 + 1 = 6$
4 red, 2 yellow counters	$4 + 2 = 6$
3 red, 3 yellow counters	$3 + 3 = 6$
2 red, 4 yellow counters	$2 + 4 = 6$
1 red, 5 yellow counters	$1 + 5 = 6$
0 red, 6 yellow counters	$0 + 6 = 6$

How can we arrange these counters to make the number 6?

Can you use these to help you write some **take away** number sentences?

**Key Stage 1** Addition and Subtraction**Year 1****Part Part Whole**

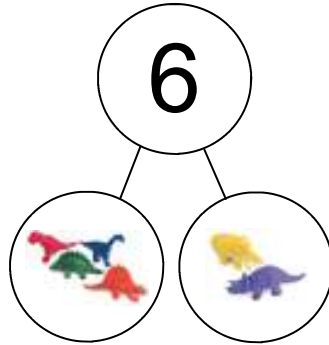
The 'Part Part Whole' model allows children to visualise the concept that numbers are made up of **2 or more parts** (i.e. other numbers)



$$5 + 1 = 6$$

$$6 - 1 = 5$$

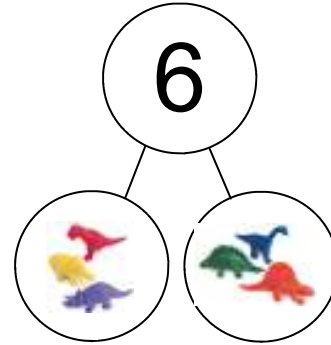
$$6 - 5 = 1$$



$$4 + 2 = 6$$

$$6 - 2 = 4$$

$$6 - 4 = 2$$

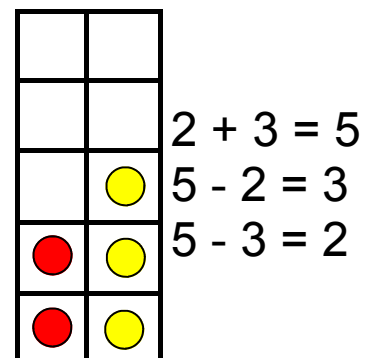
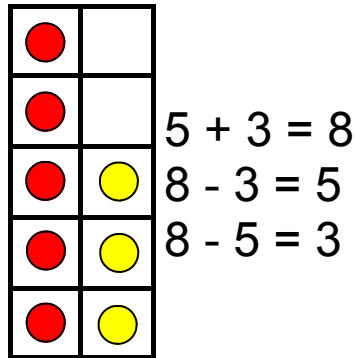
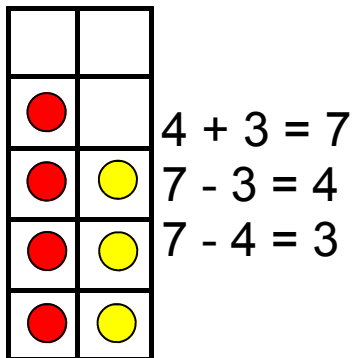


$$3 + 3 = 6$$

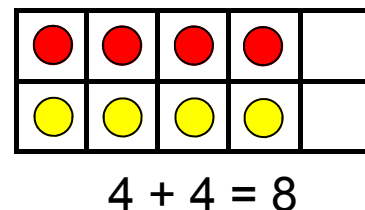
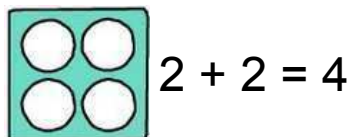
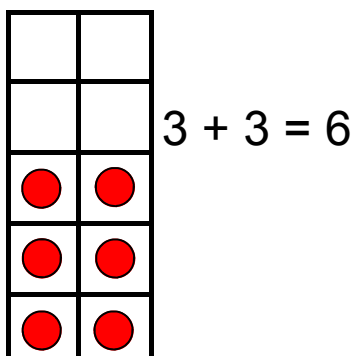
$$6 - 3 = 3$$

Ten-frames

Ten-frames (and Numicon resources) can naturally lead the eye to **addition concepts**:

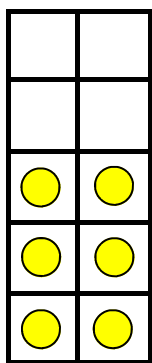
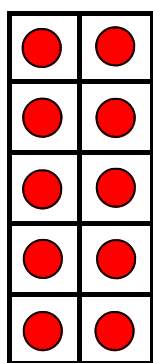


They can also help the children visualise **addition doubles**:



**Key Stage 1** Addition and Subtraction**Year 1**

Furthermore, Numicon and ten-frame resources can provide the first step into understanding **2-digit numbers**. By using two ten-frames simultaneously, children can start to see **the value of each digit** in a '**teen**' number.

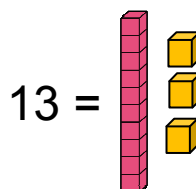
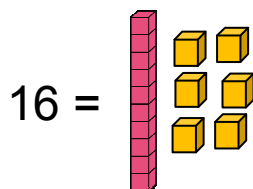


10 and 6 more
make 16.

10 and 2 make
12.



It will also be helpful, at this stage, to introduce the children to **Base 10 resources** and use them to partition '**teen**' numbers into **tens** and **units**.



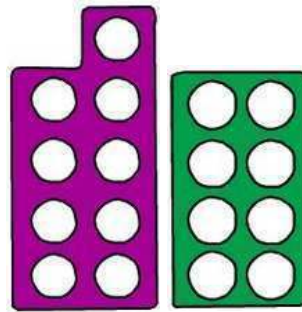
Through all of the above, children should start to recognise the **relationship** between **addition** and **subtraction** facts.

**Key Stage 1** Addition and Subtraction**Year 1**

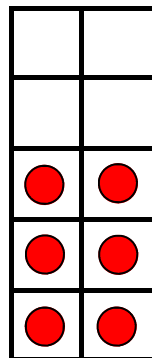
- **Identify one more or one less than a given number.**

With visual representations to support them, children should be able to tell you what is **one more** or **one less** than any given number.

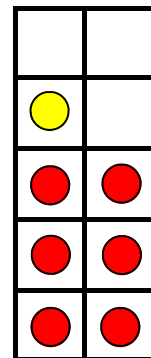
8 is **one less**
than 9.



What is **one more**
than 6?



Seven!



My number line



$$3 + 1 = 4$$



$$10 - 1 = 9$$

**Key Stage 1** Addition and Subtraction**Year 1**

- **Add and subtract any one-digit or two-digit number up to (and including) 20.**

We have already seen how children can start to understand addition as combining groups. To help them work out the total of two numbers, children may initially count them up. Once again, concrete, movable objects will support this process.

 +  5 and 1 more is **6**
1, 2, 3, 4, 5.....**6**

 +  5 and 2 more is **7**
1, 2, 3, 4, 5.....**6, 7**

 +  5 and 3 more is **8**
1, 2, 3, 4, 5.....**6, 7, 8**

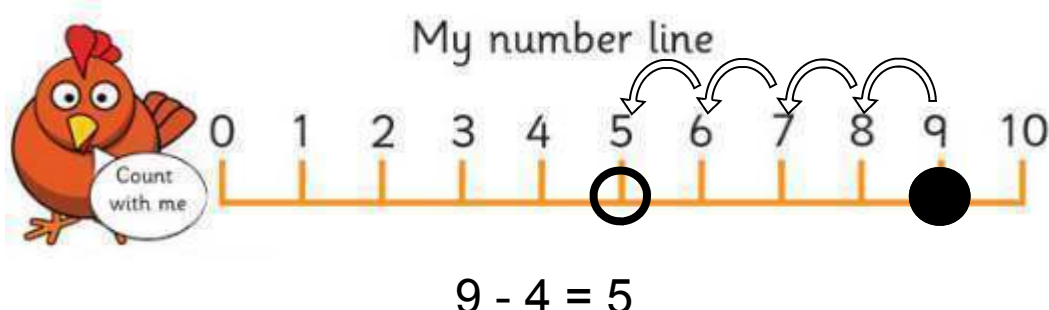
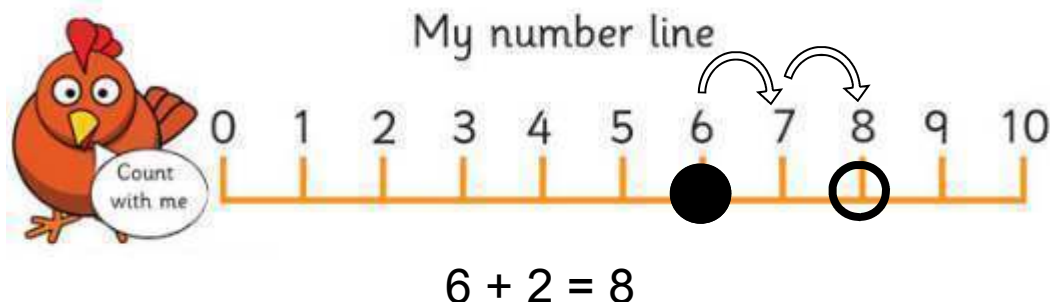
Eventually, as children become more competent, they will be able to hold the **biggest number** in their head and then **count on** - perhaps using their fingers - from there. Using two sets of dice, one with digits and another with dots, is a great way to encourage children to practice this skill.

 +  = **11**

I'm going to put 6 in my head and then count on 5, using the dots to help.

**Key Stage 1** Addition and Subtraction**Year 1**

They will also begin to use a **number line** to add or subtract numbers.

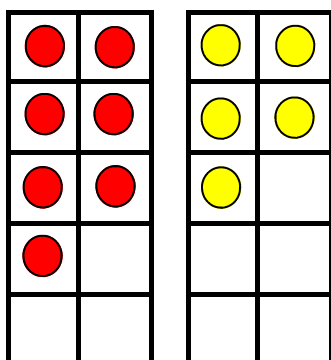


Through these processes, children should start to understand that **addition** makes numbers **bigger** whilst **subtraction** makes numbers **smaller**.

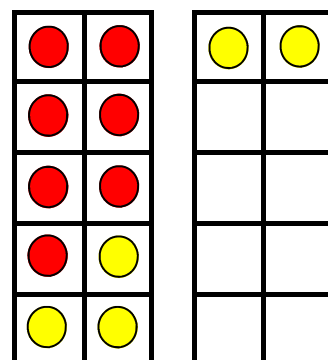
They should also recognise that they can add numbers **in any order** and still get the **same answer**.

Ten-frames will help the children visualise what is happening when they add two numbers that bridge through 10.

For example, with the calculation $7 + 5 = ?$ children will begin to identify the opportunity to make 10 first, and then add the remainder.



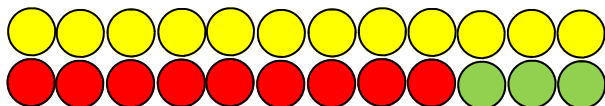
$$\begin{aligned}7 + 5 &= ? \\7 + 3 + 2 &= ? \\10 + 2 &= 12\end{aligned}$$



**Key Stage 1** **Addition and Subtraction****Year 1**

Children should begin to understand **subtraction** as both **taking away** and **finding the difference** between.

A simple **bar model** can help them get to grips with the latter:



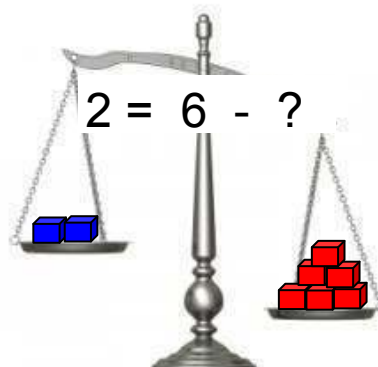
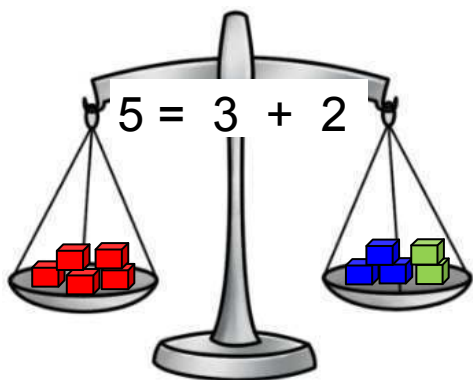
The difference between **12** and **9** is **3**.

or $12 - 9 = 3$

This model is introduced using concrete objects first (including cards with pictures), which the children can move, before progressing to pictorial representations.

- **Understand that the equals sign (=) is a sign of equivalence.**

Many children develop the misconception that the **answer** to a calculation is on the right hand side of the equals sign. Scales can be used to help children explore the idea that **both sides** of a calculation must **balance**:



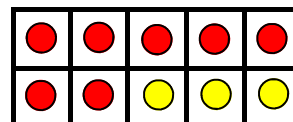
It is important that the children experience the **equals sign (=)** in **different positions**.

By writing calculations either side of the equals sign (e.g. $2+4=5+1$), the children will not just interpret it as meaning 'the answer'

Through all this, the children should start to see that **addition** and **subtraction** are **related operations**.

For example: $7 + 3 = 10$ is related to $7 = 10 - 3$.

This understanding can be supported with a tens frame:



**Key Stage 1** Addition and Subtraction**Year 1**

- **Solve missing number problems.**

Children must be able to complete missing number problems, where the 'missing number' can be placed in all possible positions:

For example: $7 + \square = 9$

$$\square - 3 = 11$$

$$\square = 8 + 5$$

- **Vocabulary**

addition, add, forwards, put together, more than, total, altogether, distance between, difference between, equals = same as, pattern, odd, even, digit, counting on, subtraction, subtract, take away, minus, less than, most, least.

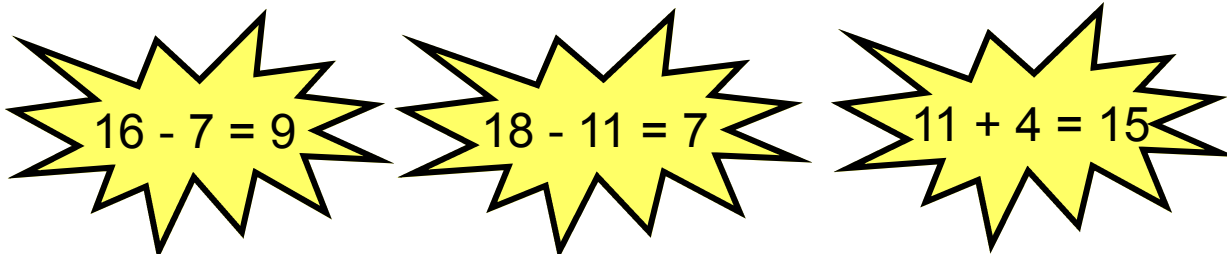
**Key Stage 1** Addition and Subtraction**Year 2**

Children are expected to:

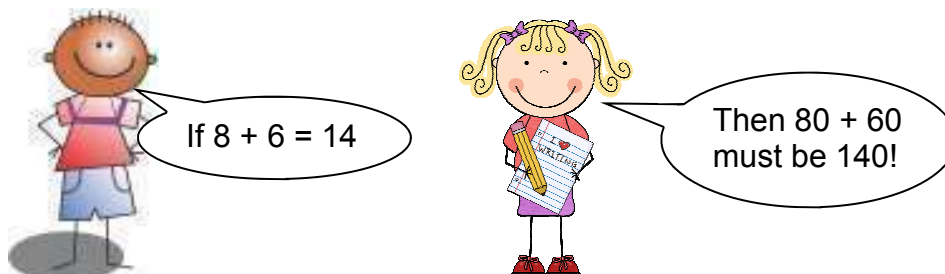
- **Recall addition and subtraction number facts to 20 fluently.**

In Year 1, a great deal of emphasis is placed on generating different mental images and internal representations of number, with a view to build up a bank of facts about them. In order to achieve this, a wide variety of concrete and pictorial resources (please see the Year 1 calculation policy for more details) are used to support the children's investigations.

The expectation in Year 2 is that children should now be able to recall these number facts to 20 **from memory**, no longer requiring concrete resources to support them.

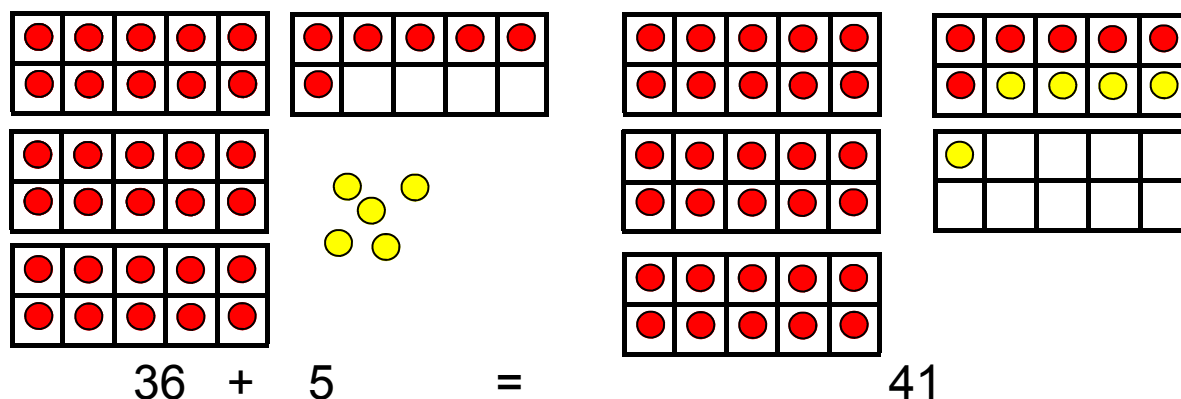


- **Use these addition and subtraction facts to 20 to derive related facts to 100.**



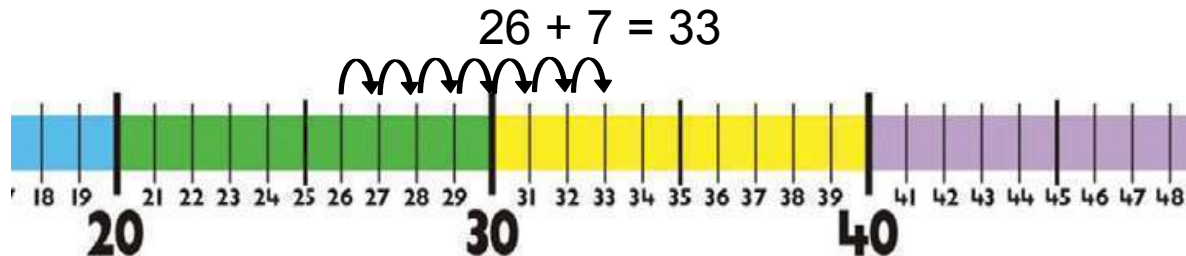
- **Add or subtract a 2-digit number and ones.**

Following on from Year 1, multiple ten-frames can be used as a starting point to **add a single-digit number to a 2-digit number**.



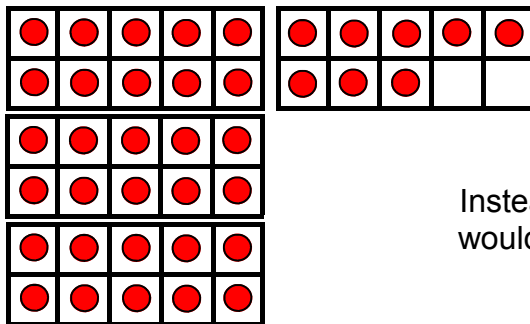
**Key Stage 1** Addition and Subtraction**Year 2**

Another early strategy might be to use a **number line** to count up in ones.



As a child's number knowledge develops, they will begin to use their known **number facts** to help them solve calculations mentally.

For example, you could present a child with the following calculation:

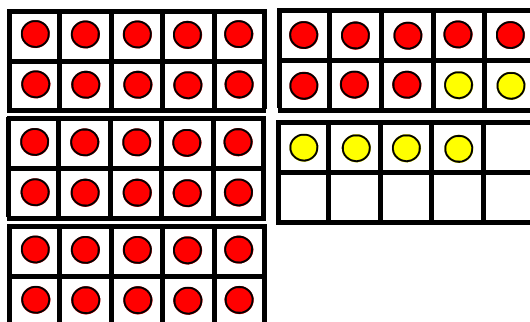
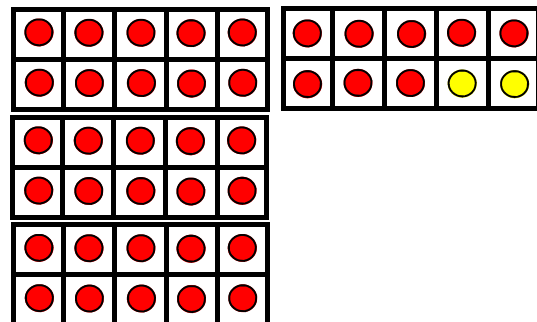


$$38 + 6 = ?$$

Instead of counting on in ones, children would mentally partition the **6** into **2** and **4**.

This way, the calculation is broken down into 2 steps.

$$38 + 2 = 40$$



$$40 + 4 = 44$$

This child has simultaneously recalled their **number bonds to ten**, since they knew that **2** needed to be added to the **38** to reach the next ten (i.e. **40**).

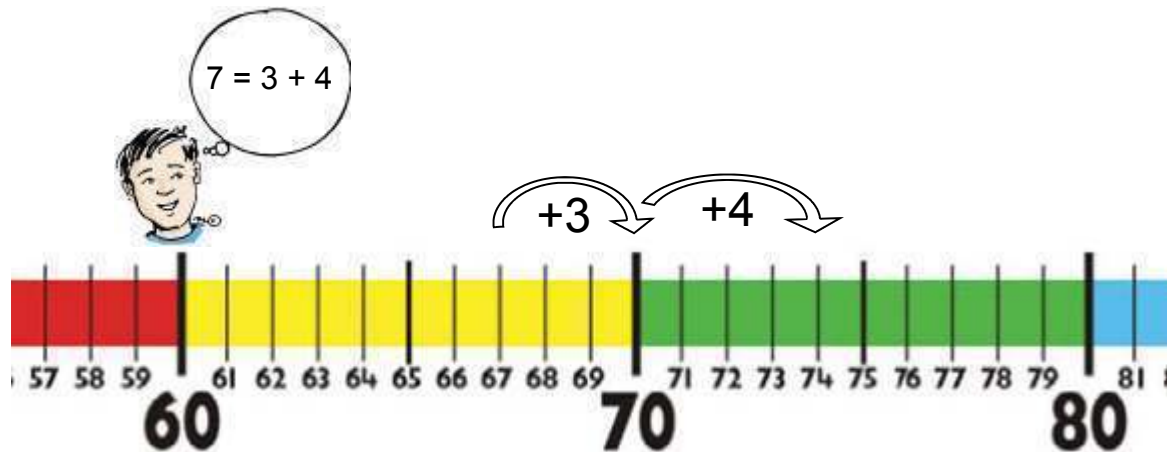
The value of practising this strategy on ten-frames first is that it is very visual for the children and facilitates their understanding of how to add across a ten.

**Key Stage 1** **Addition and Subtraction****Year 2**

Children can use the same strategy on a number line.

$$67 + 7 = ?$$

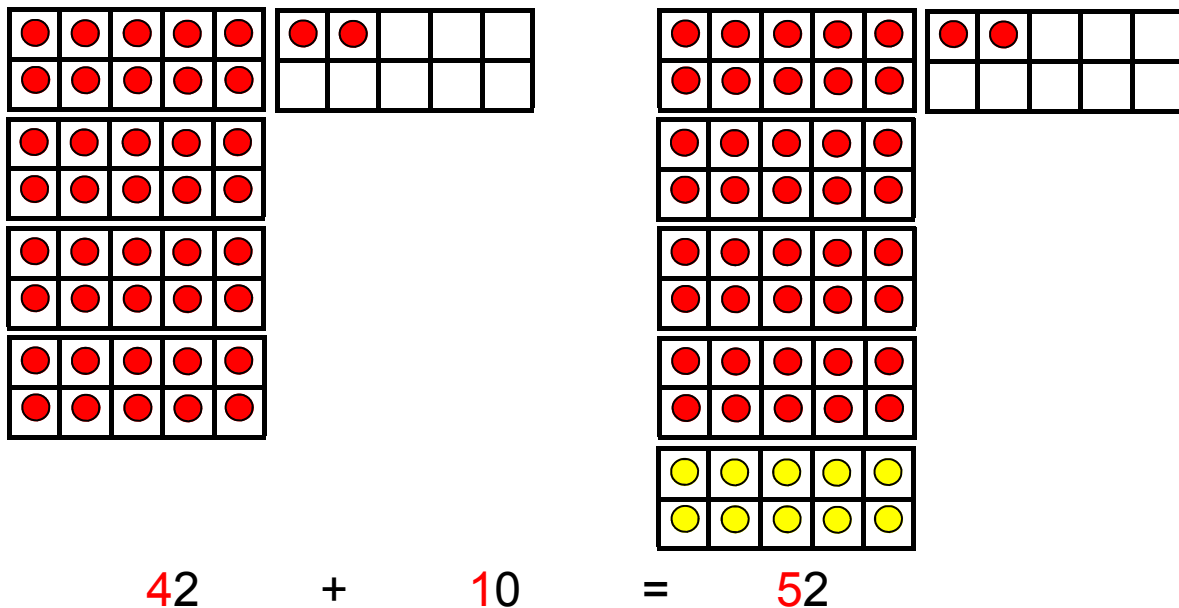
The child recalls a known fact by **partitioning** the 7 into 3 and 4 first and then:



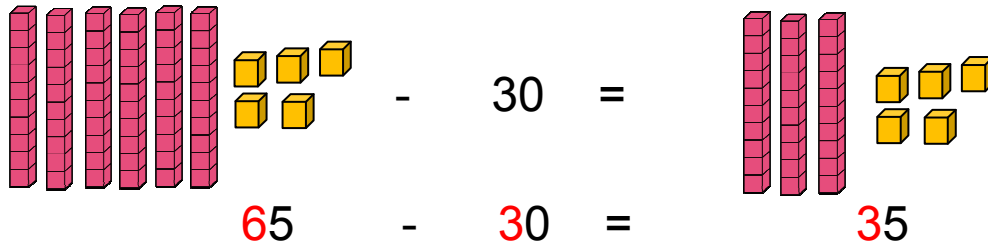
Questions, like the ones above, involve 'bridging 10'.

- **Add or subtract a 2-digit number and tens.**

Ten-frames, base 10 and **Numicon** are all useful resources to help children build on their conceptual understanding of place value and adding on tens.

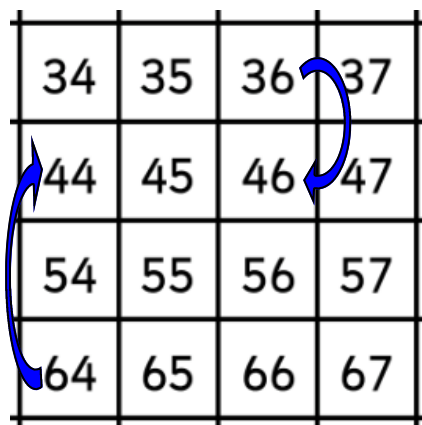


By placing the 'units' frame to the right of the others, you will reinforce their understanding of place value.

**Key Stage 1** Addition and Subtraction**Year 2****Base 10:**

These examples clearly illustrate to the children that when you are adding or taking away tens alone, the number of units remains unchanged.

Once children have grasped this concept using concrete resources, they can move on to using more abstract, pictorial representations.



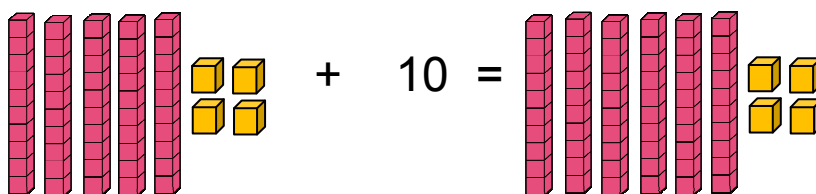
A **hundred square** is a useful tool with regards to enabling children to add or subtract 10s from any number. It will also reinforce the idea that the **units don't change** but that the **tens increase** or **decrease** respectively.

For example: $36 + 10 = 46$

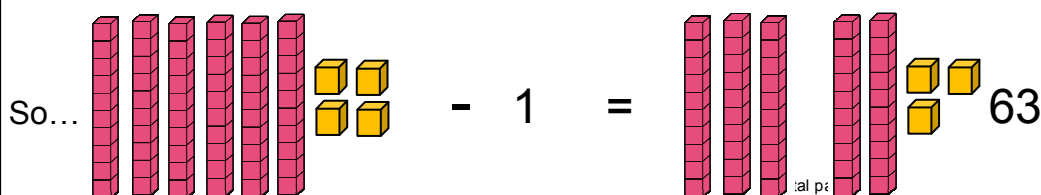
Or: $64 - 20 = 44$

Children can also use this knowledge to help them **add or subtract 9 or 11**, by adding/ subtracting 10 and then **adjusting by 1**.

$$54 + 9 = ?$$

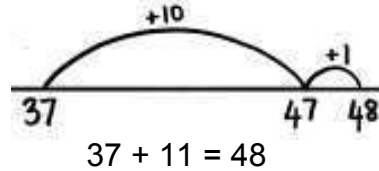
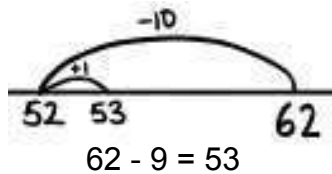


By adding 10, I have added one too many.



**Key Stage 1** Addition and Subtraction**Year 2**

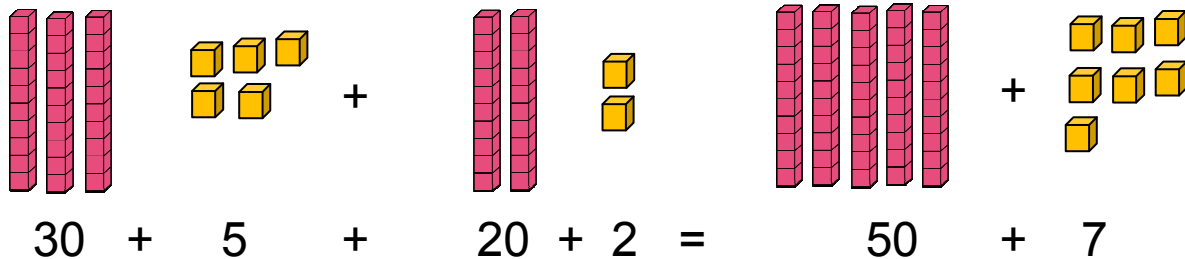
With time and practice, children will be able to use this strategy mentally.



- Add or subtract two 2-digit numbers**

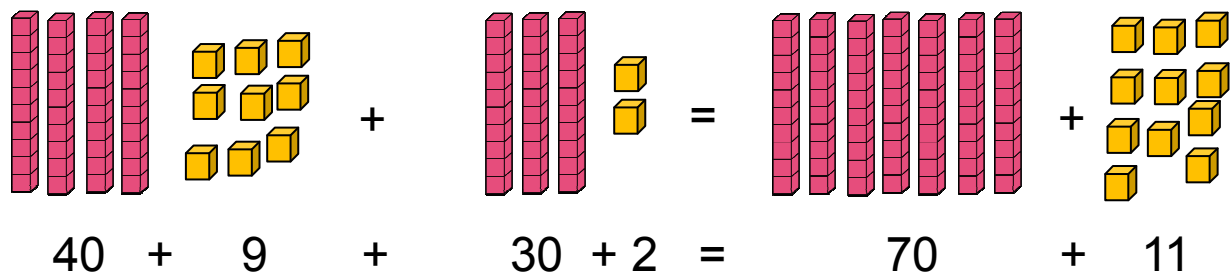
Initially, the children might use base 10 resources to **partition** the numbers into their **tens** and **units** and then add them separately.

For example: $35 + 22$

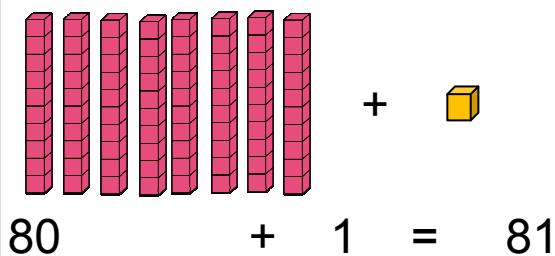


A more challenging example is when the children are required to **bridge 10**:

$$49 + 32 = ?$$



Ten of the **units** can be exchanged for a **rod**:



**Key Stage 1** Addition and Subtraction**Year 2**

To begin with, children can record their work with **jottings** such as:

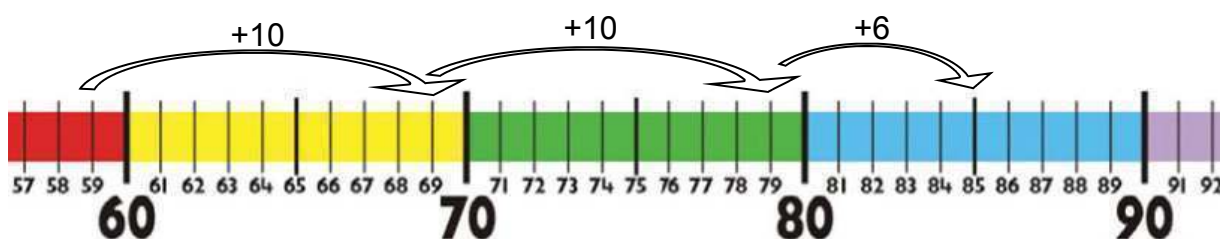
4	9	+	3	2	=				
4	0	+	3	0	=	7	0		
9		+	2		=	1	1		
7	0	+	1	0	+	1		=	8 1

They will then progress to a more **formal columnar method** (in preparation for Year 3):

	4	0	+	9		
+	3	0	+	2		
	8	0	+	1	=	8 1
	1	0				

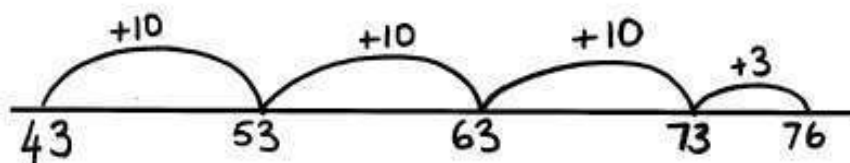
Number lines can also be used to add two 2-digit numbers:

$$59 + 26 = ?$$



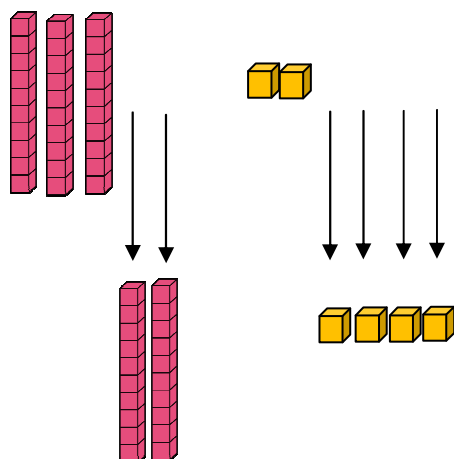
Starting with the biggest number, the children add the tens first and then the units.

More able children will be able to use the **same strategy** on a **blank number line** or **mentally**.



**Key Stage 1** Addition and Subtraction**Year 2**

Subtraction calculations can also be carried out using base 10 resources:



$$56 - 24 = 32$$

Children will record their workings informally to start with...

5	6	-	2	4	=		
5	6	-	2	0	=	3	6
3	6	-	4		=	3	2

...before progressing to a more formal **partitioned columnar method** (in preparation for Year 3):

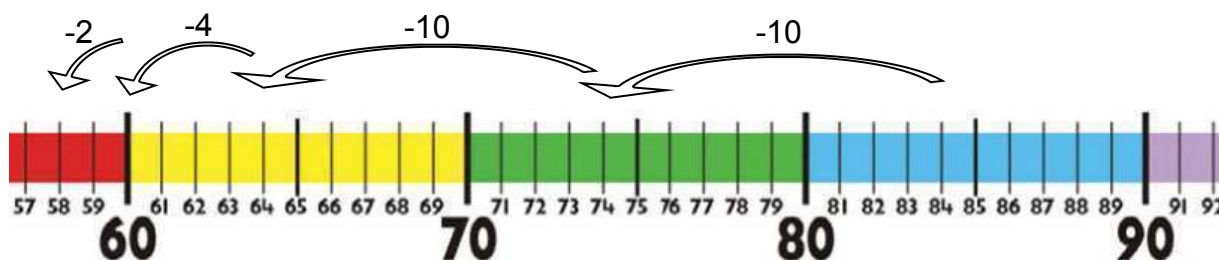
	5	0	+	6			
-	2	0	+	4			
	3	0	+	2	=	3	2

Please note: At this stage, **ONLY** use examples where the number of units being taken away is **smaller** than the number of units there were initially.
e.g. $79 - 34$ (where 4 is **smaller** than 9)

Children will move beyond this in Year 3.

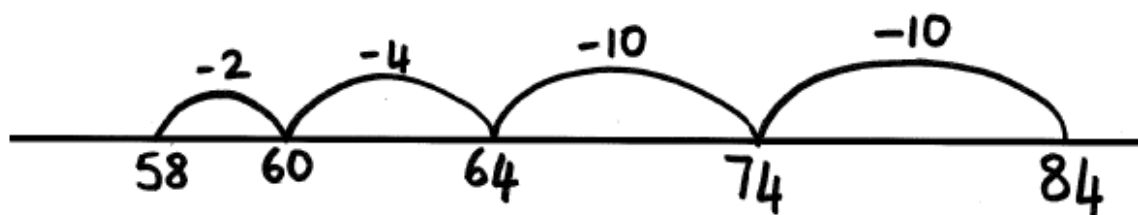
**Key Stage 1** Addition and Subtraction**Year 2**

Children can solve **subtraction calculations** on a number line in the same way; they start on the **biggest number** and then take away the **tens**, followed by the **units**.



$$84 - 26 = 58$$

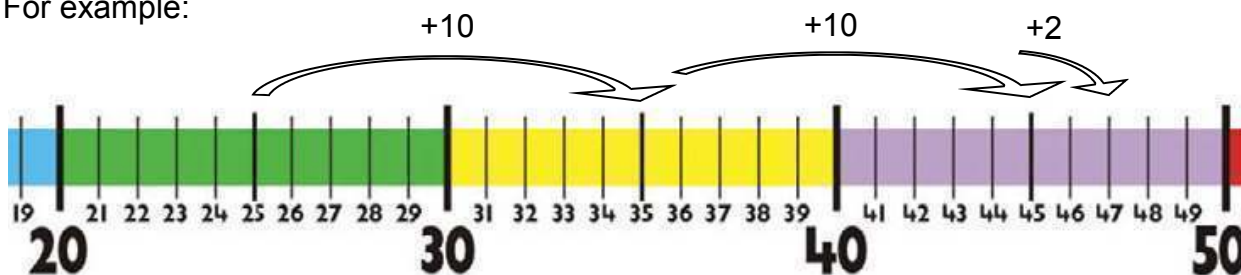
This can also be done on a **blank number line** or **mentally**:



The children are also taught to understand that a **subtraction** calculation can be solved by **finding the difference** between two numbers.

The **difference between** two numbers can be calculated by counting up from the smaller **number** to the **bigger one**.

For example:



So, the difference between 47 and 25 is 22.

$$\text{Or } 47 - 25 = 22$$

**Key Stage 1** Addition and Subtraction**Year 2**

- **Add three 1-digit numbers.**

Children should use a **number line** or **known number facts** to help them.

$$6 + 8 + 5$$

They may want to change the order of the calculation so that they are able to use facts they are more certain of first. For instance, they may do:

$$\begin{aligned} 6 + 5 &= 11 \\ 11 + 8 &= 19 \end{aligned}$$

- **Know that the addition of two numbers can be done in any order (commutative) but that subtraction cannot.**

$41 + 22 = 63$ is the same as $22 + 41 = 63$
However, $55 - 18 = 37$ is NOT the same as $18 - 55$

- **Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.**

The **inverse** of a function is the **reverse** of it.

For example:

The inverse of $8 + 9 = 17$ is $17 - 9 = 8$
or
 $17 - 8 = 9$

because **subtraction** is
the **reverse** of **addition**.

$$18 + 7 = 11 + \square$$

$$35 + \square + \square = 100$$

$$64 - \square = 49$$

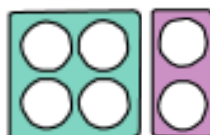
$$29 = \square - 24$$

**Key Stage 1** Addition and Subtraction**Year 2**

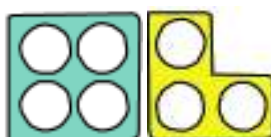
- **Solve problems with addition and subtraction, applying their increasing knowledge of mental and written methods.**

In particular, children should be given the opportunity to explore the pattern derived from adding odd and even numbers.

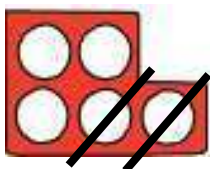
Even + Even = Even



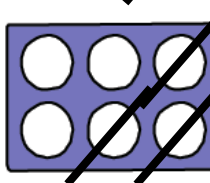
Even + Odd = Odd



Odd - Even = Odd



Even - Odd = Odd



And so on...

- **Vocabulary**

+, add, addition, more, plus, make, sum, total, altogether, how many more to make...? how many more is... than...? how much more is...? =, equals, sign, is the same as, tens, units, partition, multiple of 10, tens boundary, more than, one more, two more... ten more... one hundred more, -, subtraction, subtract, take away, difference, difference between, minus, less than, one less, two less... ten less... one hundred less

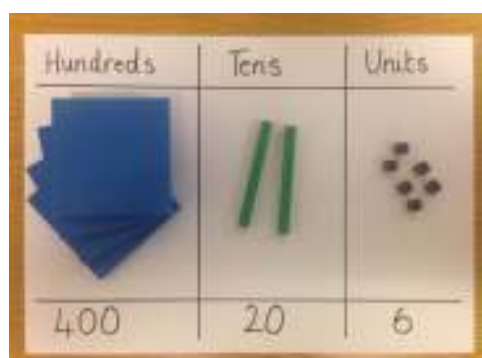
**Key Stage 2** Addition and Subtraction**Year 3**

Children are expected to:

- **Add and subtract mentally:**
 - a 3-digit number and ones
 - a 3-digit number and tens
 - a 3-digit number and hundreds

To grasp these, children must be able to **partition** a 3-digit number into **hundreds**, **tens** and **units**.

Base10 resources, **place value counters** and **arrow cards** can support children with this.



426

 $+ 100$ 

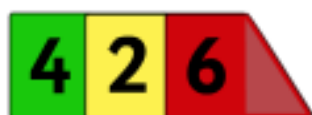
526

 $+ 10$ 

436

 $+ 1$ 

427

 $+ 100$  $+ 10$  $+ 1$ 

**Key Stage 2** Addition and Subtraction**Year 3**

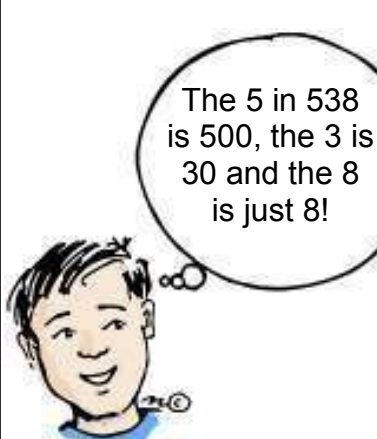
- **Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction.**

Children should continue to develop the **partitioned columnar method** for **addition**.

$$538 + 247 = ?$$

5	0	0	+	3	0	+	8												
+	2	0	0	+	4	0	+	7											
								7	0	0	+	8	0	+	5	=	7	8	5
										1	0								

...before moving on to the **expanded columnar method** where the children are expected to **partition** the numbers in their head.

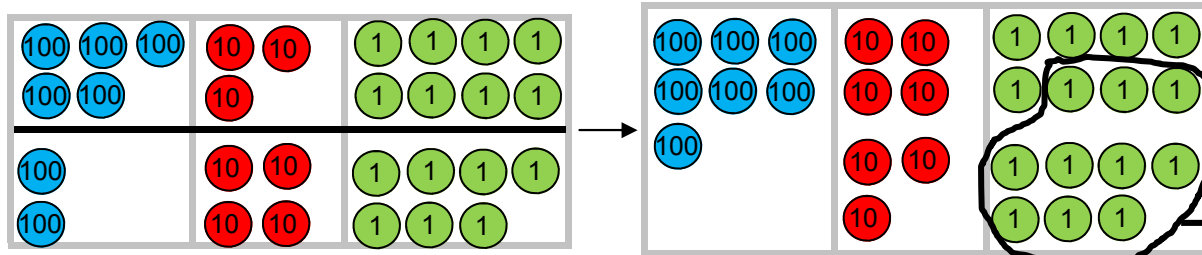


The 5 in 538
is 500, the 3 is
30 and the 8
is just 8!

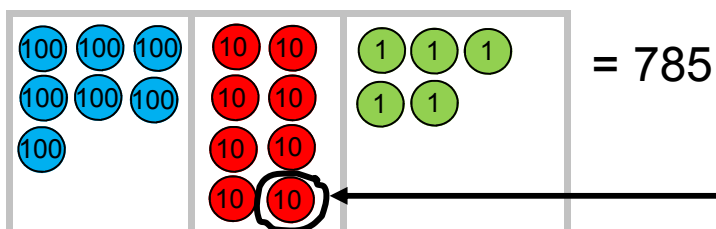
It is very important, even
at this stage, to get the
children into the habit of
adding the units first,
then the tens and so on...

	5	3	8		
+	2	4	7		
			1	5	
			7	0	
			7	0	0
			7	8	5

These written methods can be modelled using **place value counters**:



In this particular example, the children will learn to understand the idea of exchange between tens and units.

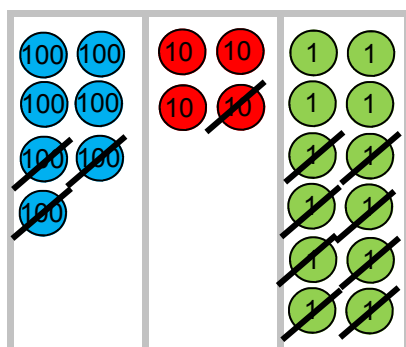
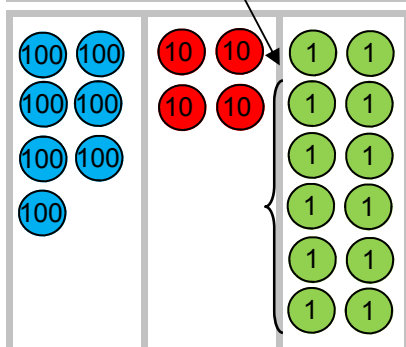
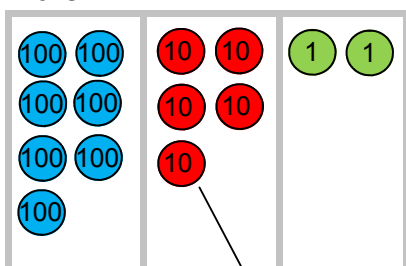


**Key Stage 2** Addition and Subtraction**Year 3**

When subtracting, children should start by consolidating simple examples of the **expanded columnar method**, whereby the units and tens in the first number are always **greater than** the second number (in the example below, **4** is greater than **1**, **70** is greater than **20**)

$$\begin{array}{r} 600 + 70 + 4 \\ - 100 + 20 + 1 \\ \hline 500 + 50 + 3 = 553 \end{array}$$

Once the children are familiar with this method, you can introduce the idea of **exchanging**. **Place value counters** or **Base 10** resources can be used to support the children.



With the example $752 - 318$, there are currently not enough units to take away **8**.

It is therefore necessary to **exchange** one of the **tens into units**:

$$\begin{array}{r} 700 + 40 + 12 \\ - 300 + 10 + 8 \\ \hline 400 + 30 + 4 = 434 \end{array}$$

This gives **12** units and **4** tens. Now the calculation can be completed as normal.

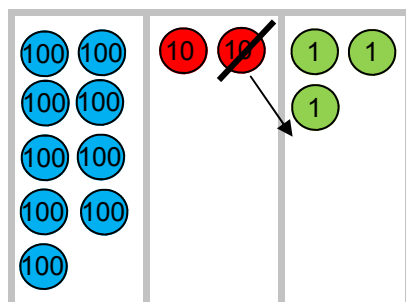
$$= 434$$



Key Stage 2 Addition and Subtraction

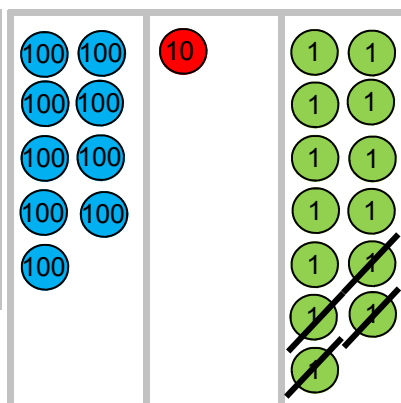
Year 3

Here is another example: $923 - 564$



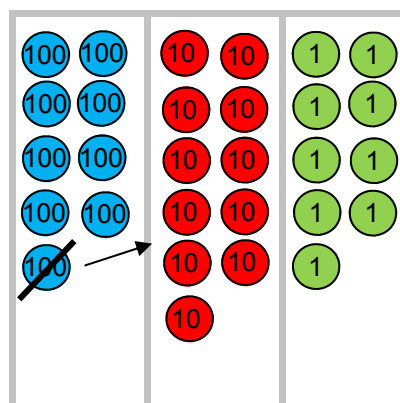
$$\begin{array}{r} 900 \\ - 500 \\ \hline \end{array} \quad \begin{array}{r} 20 \\ - 60 \\ \hline \end{array} \quad \begin{array}{r} 3 \\ - 4 \\ \hline \end{array}$$

At the moment we can't do $3 - 4$ so we exchange a ten for 10 units. Now we can do $13 - 4 = 9$



$$\begin{array}{r} 900 \\ - 500 \\ \hline \end{array} \quad \begin{array}{r} 10 \\ - 60 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ - 4 \\ \hline 9 \end{array}$$

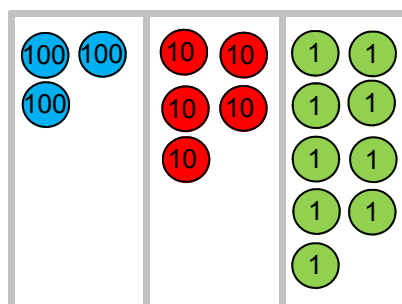
However, we now can't do $10 - 60$ so we need to exchange a hundred for 10 tens.



$$\begin{array}{r} 800 \\ - 500 \\ \hline \end{array} \quad \begin{array}{r} 110 \\ - 60 \\ \hline \end{array} \quad \begin{array}{r} 13 \\ - 4 \\ \hline 9 \end{array}$$

Now we can do
 $110 - 60 = 50$ and
 $800 - 500 = 300$

Leaving us with **359**



Not all children will need to use place value counters for support. Instead, they should record their workings-out like this:

$$\begin{array}{r} 800 \quad 10 \\ 900 + 20 + 3 \\ - 500 + 60 + 4 \\ \hline 300 + 50 + 9 = 359 \end{array}$$

**Key Stage 2** Addition and Subtraction**Year 3**

Some children may be able to progress on to the **compact columnar addition** method:

$$\begin{array}{r} 371 \\ + 124 \\ \hline 495 \end{array}$$

$$\begin{array}{r} 419 \\ + 576 \\ \hline 995 \\ 1 \end{array}$$

$$\begin{array}{r} 538 \\ + 247 \\ \hline 785 \\ 1 \end{array}$$

Here $9 + 6 = 15$ so the ten is carried over into the tens column.

$$\begin{array}{r} 283 \\ + 462 \\ \hline 745 \\ 1 \end{array}$$

In this example, $80 + 60 = 140$ so a hundred is carried over.

$$\begin{array}{r} 642 \\ + 559 \\ \hline 1201 \\ 1 \end{array}$$

They may also progress to the **compact columnar subtraction** method:

$$\begin{array}{r} 599 \\ - 234 \\ \hline 365 \end{array}$$

$$\begin{array}{r} 674 \\ - 121 \\ \hline 553 \end{array}$$

$$\begin{array}{r} 7^4 \cancel{8} 12 \\ - 318 \\ \hline 434 \end{array}$$

$$\begin{array}{r} 2^2 \cancel{8} 129 \\ - 153 \\ \hline 176 \end{array}$$

$$\begin{array}{r} 3^3 \cancel{4}^5 \cancel{6} 12 \\ - 284 \\ \hline 178 \end{array}$$

You can't do $2 - 8$ so a ten needs to be borrowed from the 50.

Because $20 - 50$ can't be done, a hundred is borrowed to make $120 - 50 = 70$

$$\begin{array}{r} 8^8 \cancel{9}^1 \cancel{2}^1 \cancel{3}^1 \\ - 564 \\ \hline 359 \end{array}$$

**Key Stage 2** Addition and Subtraction**Year 3**

- **Solve missing number problems**

$$125 + 36 = 79 + \square$$

$$35 + \square + \square = 346$$

$$582 - \square = 253$$

$$428 = \square - 198$$

- **Vocabulary**

Hundreds, tens, ones, estimate, partition, recombine, difference, decrease, near multiple of 10 and 100, inverse, rounding, column subtraction, exchange.

See also Y1 and Y2

**Key Stage 2** Addition and Subtraction**Year 4**

Children are expected to:

- **Add and subtract numbers up to 4 digits using the formal written methods of columnar addition and subtraction.**

Children should continue to consolidate the **compact columnar addition** method.

$$\begin{array}{r} 4924 \\ + 3793 \\ \hline 8717 \end{array}$$

$$\begin{array}{r} 9635 \\ + 6856 \\ \hline 16491 \end{array}$$

$$\begin{array}{r} 5643 \\ + 8389 \\ \hline 14032 \end{array}$$

They can choose to revert to the **expanded columnar method** at any point if they are experiencing difficulty.

Children should also be able to add numbers with up to **2 decimal places** (at this stage, both numbers should have the **same number of decimal places**):

$$\begin{array}{r} 136.42 \\ + 344.59 \\ \hline 481.01 \end{array}$$

$$\begin{array}{r} 39.8 \\ + 27.4 \\ \hline 67.2 \end{array}$$

$$\begin{array}{r} 6422.53 \\ + 7426.67 \\ \hline 13849.20 \end{array}$$

Children must remember to keep the **decimal point** in the same place.

They should also be able to use the same method to add up more than two numbers with different numbers of digits:

$$\begin{array}{r} 2751 \\ + 643 \\ + 383 \\ \hline 3777 \end{array}$$

$$\begin{array}{r} 4398 \\ + 874 \\ \hline 5272 \end{array}$$

$$\begin{array}{r} 317.7 \\ + 84.6 \\ \hline 402.3 \end{array}$$

**Key Stage 2** Addition and Subtraction**Year 4**

Children should continue to consolidate the **compact columnar subtraction** method using 4-digit numbers:

		7	15				2	0				8	9			
	7	8	6	4			2	2	1	1		5	9	10	3	
-	2	4	9	8			-	1	6	0	2		4	6	2	8
	5	3	6	6				1	6	0	9		1	2	7	5

They should revert to the expanded columnar method and/or use place value counters if they experience difficulties.

- **Estimate and use inverse operations to check answers to a calculation.**

For the calculation $3782 + 2136$...

To estimate the answer, round both numbers to the nearest thousand:

$$4000 + 2000 = 6000$$

or to the nearest hundred for a more accurate guess

$$3800 + 2100 = 5900$$

5918 is very similar to my estimate so it's probably correct. I'll use the inverse to check.



Solve the calculation using the compact columnar addition method:

$$\begin{array}{r} 3782 \\ + 2136 \\ \hline 5918 \end{array}$$

If $3782 + 2136 = 5918$ then
 $5918 - 3782$ should equal 2136

- **Vocabulary**

add, addition, sum, more, plus, increase, total, altogether, double, near double, how many more to make...?, how much more?, ones boundary, tens boundary, hundreds boundary, thousands boundary, tenths boundary, hundredths boundary, inverse, how many more/fewer? Equals sign, is the same as.

**Key Stage 2** Addition and Subtraction**Year 5**

Children are expected to:

- **Add and subtract whole numbers with more than 4 digits.**

Children should continue to consolidate their understanding of the **compact columnar addition and subtraction** methods using numbers with more than 4 digits.

	6	5	4	4	2
+	2	6	8	9	4
<hr/>					
	9	2	3	3	6
	1	1	1		

	⁷ 8	4	5	⁵ 6	3
-	5	8	1	0	9
<hr/>					
	2	6	4	5	4

They should be able to use the same method to add decimal numbers and to add more than two numbers.

	4	3	6	5
+	2	6	7	4
+	3	9	1	3
<hr/>				
	1	0	9	5
	1	1	1	

Place value counters could be used initially to support the children's understanding of adding decimal numbers.

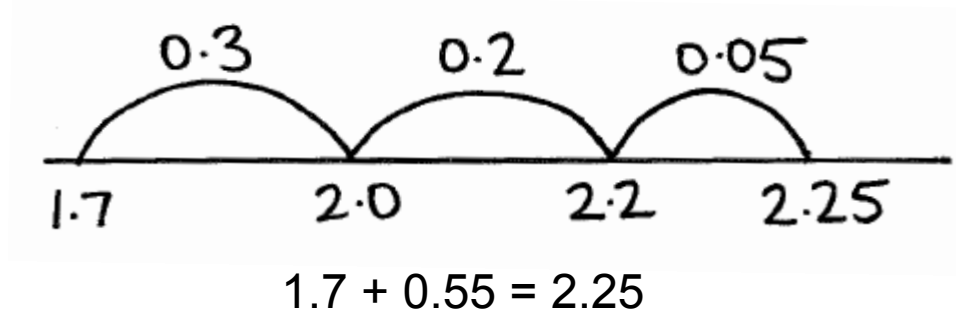
**Key Stage 2** Addition and Subtraction**Year 5**

- **Add and subtract numbers mentally with increasingly large numbers.**

Children should be encouraged to use a variety of different mental maths strategies in order to solve calculations involving large whole numbers and decimals in their head.

They should be able to count on and back in tenths and hundredths. They could use a number line and/or informal jottings to help them.

0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.2
0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.3
0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.4
0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.5



Some calculations may be reordered to make them easier to work with.

For example:

$$4.7 + 5.6 - 0.7 \text{ becomes } 4.7 - 0.7 + 5.6 = 4.0 + 5.6 = 9.6$$

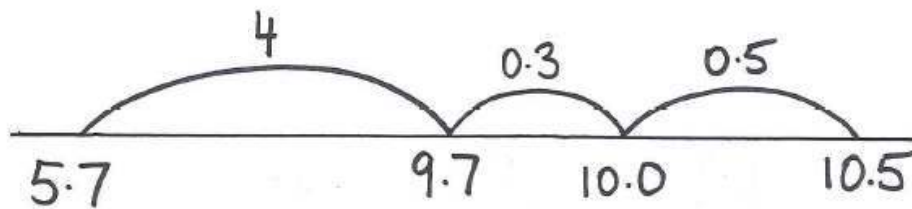
**Key Stage 2** Addition and Subtraction**Year 5**

Children can also partition numbers in a variety of ways:

- By using place value in order to count on or back:

$$540 + 280 = 540 + 200 + 80 = 820$$

- By using number bonds to bridge through 10:



$$5.7 + 4.8 = 10.5$$

- By compensating:

$3.4 + 2.9$ becomes $3.4 + 3 - 0.1$ $6.4 - 0.1$ 6.3

- **Vocabulary**

tens of thousands.

Also see previous years.



Key Stage 2 Addition and Subtraction

Year 6

Children in Year 6 should continue to develop their mental and written calculation methods for addition and subtraction. They should progress to larger numbers and continue calculating with decimals, including those with different numbers of decimal places.

Please see the Year 5 (or earlier) calculation policy for more information about the mental and written strategies for addition and subtraction they should use.