Number Champions
1 2 3 4 5
fun + skills = confidence

Resource for Year 2 Core Curriculum

Addition: Add two 2-digit numbers with regrouping.

Check with the school or the child if they use the term 'regrouping' or 'exchange'.

Pupils should be taught to add numbers using concrete objects, then with pictorial representations (diagrams), and then with symbols.

Column method with pictorial representation
As with the video below, if the child is ready, you can accelerate the process by using a pictorial representations and symbols together in column addition.
https://www.youtube.com/watch?v=VPsYRPdlIpU&feature=youtu.be

Once the child is really confident with the symbols together with the picture, they can progress to doing the column addition without any picture:

I have 48 pencils and 26 pens. How many altogether? **48 + 26 = ?**

Step 1 – write the sum in columns

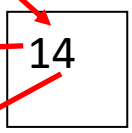
	Tens	Ones
48	4	8
+26	2	6

Step 2 – add the ones
It is important you always start with ones, even when there is no regrouping.

	Tens	Ones
48	4	8
+26	2	6
		14

Step 3 – Regrouping (or exchange)
The ones column can have only 0 to 9, so partition 14 as 1 ten and 4 ones

	Tens	Ones
	1	
48	4	8
+26	2	6
Total		**4**



Step 4 –Add the tens

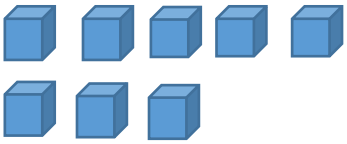
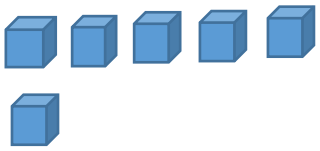
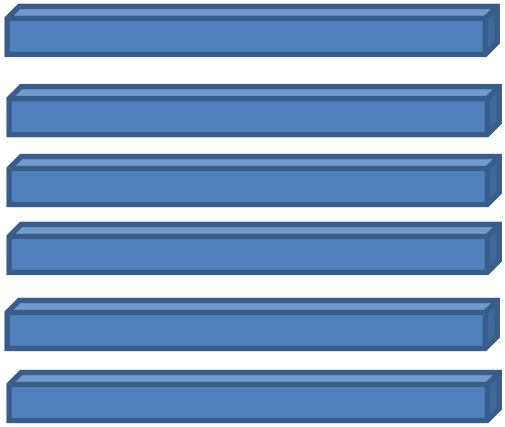
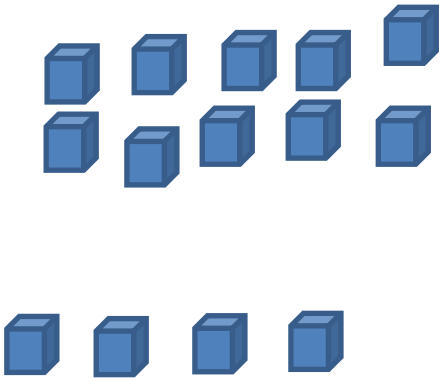
	Tens	Ones
	1	
48	4	8
+26	2	6
Total	**7**	**4**

So 48 + 26 = 74
If the child needs more help, you can start with the Dienes as concrete objects as shown below

Use concrete objects - Dienes

I have 48 pencils and 26 pens. How many altogether? 48 + 26 = ?

Partition 48 as 4 tens and 8 ones. Partition 26 as 2 tens and 6 ones.

Tens	Ones
 40	
 20	
 60	 14

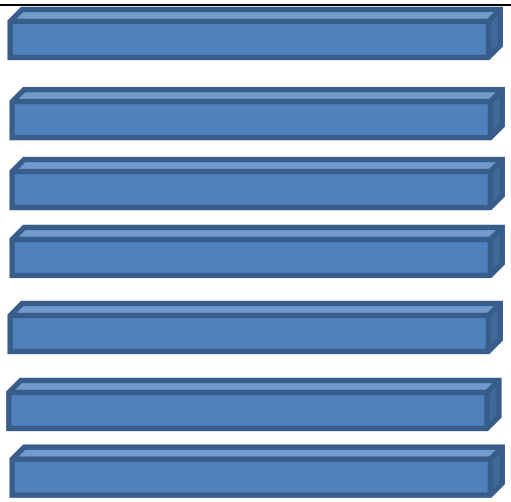
Add the ones 8 and 6 more makes 14 ones

This is bigger than 9 and the ones have to be 0 to 9 to be in the ones column.

The regrouping step (or exchange) is to partition 14 as 1 ten and 4 ones

The 4 ones can stay in the ones column

The 1 ten then is added to the 6 tens to make 7 tens which is 70. This gives

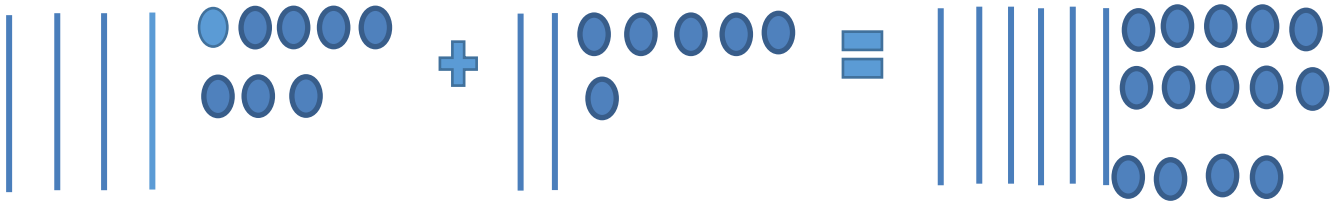
 70	 4

This makes 74

So 48 + 26 = 74

Pictorial representation

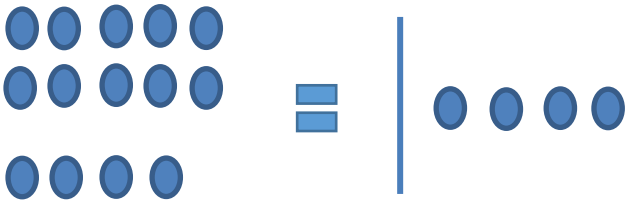
As a next step, or if you do not have access to base ten/dienes equipment tens can be represented as a picture as below. A line is a ten and a square or circle is a one.



48 + 26 = 6 tens + 14 ones

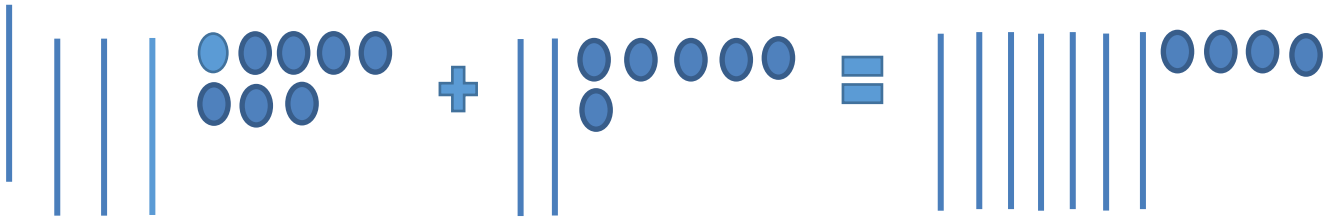
To make a 2-digit number you need the ones to be from 0 to 9

So we exchange the 14 ones into a ten and some ones



14 = 1 ten and 4 ones

Exchanging this in the diagram above gives

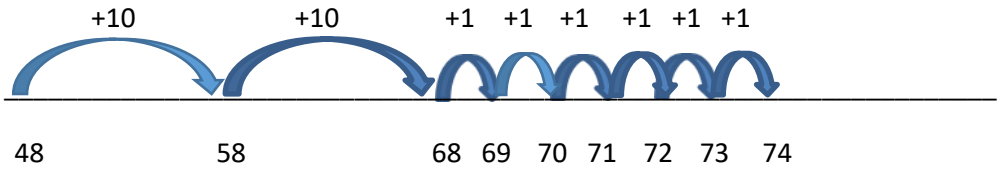


So 48 +26 = 74

Partitioning and jump counting
This is a completely different method to give the child a different way to work with symbols and a diagram.

You can use a 100 square to help with the jumps of 10. Help the child remember that adding ten on the 100 square means moving 1 row down – show that this is the same as counting on ten.

48 +26 = 74
Put the bigger number first (48)
Partition the smaller number (26= 20 +6)
Count on: 48 +20 +6



If children are confident use more efficient jumps – for example count the 6 as 3 jumps of 2

Partitioning with no diagram
This is another different way for the child to work at adding using only symbols,
The child needs to be confident with each of the individual steps – otherwise the method will not be appropriate for them at this stage.

First show the method with no exchange, then repeat with an example that needs exchange,

43 + 24 = ?

Explain that you can do this by partitioning the numbers into tens and ones and then it is easy to add the tens and the ones separately.

Partition each number into tens and ones
43 = 40 + 3
24 = 20 + 4

The sum is 43 + 24 which = 40 + 3 + 20 + 4

Remember that the order doesn't matter in adding – you still get the same answer. ('Commutative')
So we can change the order to put the tens together and then the ones together

The sum is 40 + 3 + 20 + 4 which = 40 + 20 + 3 + 4
We can add the ones to give 3 + 4 = 7
We can add the tens to give 40 + 20 = 60

(Note: in the step above we are adding the ones first and then the tens, because this is the order that you have to use for column arithmetic. Although you can use either order here, it is better to keep the child accustomed to adding the ones first.)

The sum is 40 + 20 + 3 + 4 which = 60 + 7
This is an easy sum – you can see the total is 67

So 43 + 24 = 67

Now do an example which needs regrouping
37 + 45 = ?

Remind the child that the addition is easier when you partition into tens and ones.

Partition each number into tens and ones
37 = 30 + 7
45 = 40 + 5

The sum is 37 + 45 which = 30 + 7 + 40 + 5

Remember that the order doesn't matter in adding – you still get the same answer. ('Commutative')
So we can change the order to put the tens together and then the ones together

The sum is 30 + 7 + 40 + 5 which = 30 + 40 + 7 + 5
We can add the tens to give 30 + 40 = 70
We can add the ones to give 7 + 5 = 12

The sum is 30 + 40 + 7 + 5 which = 70 + 12

Oops – we still are trying to add a number with tens to a number with only tens (70) to a number with tens and ones (12).

We can solve this problem by portioning again – we partition 12 into 10 + 2
The sum Is 70 + 12 which is 70 + 10 + 2
The ones are 2 – there is nothing to add
We can add the tens to give 70 + 10 = 80

So the sum is 70 + 10 + 2 which is 80 + 2

This is an easy sum – you can see the total is 82

So 37 + 45 = 82

Extra resource for addition using Dienes
Here is a video clip showing regrouping using Dienes equipment. It covers only a two digit number plus a one digit number and does this very slowly and with every detail. If you want to see every possible step you might have to explain to the child this may be helpful for you.
https://www.youtube.com/watch?v=NmqvASX8OAY&feature=youtu.be