

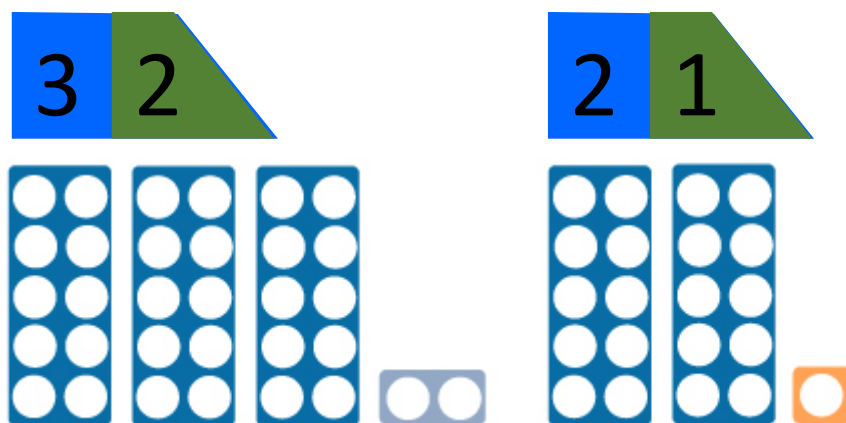
Square sums

Activity 1

Focus of activity: Adding 'friendly' 2-digit numbers using partitioning ($1s < 10$ and $10s < 100$).

Working together: conceptual understanding

- Give each pair of children a set of place value cards (10s and 1s). Put a good amount of number shapes in the middle of the table.
- Write $32 + 21$ on the flipchart. Ask one child in each pair to make 32 using place value cards and the other child to make 21.
- Ask children to take number shapes (10s and a single-digit number shape) to match the number they have made.



- One child collects the 10s - both number shapes and the place value cards. The other collects the 1s - both number shapes and place value cards.
- Ask children with the 10s to say how much they have got. Remind them that they can use 'clever counting' to add their 10s. They swap their two place value cards for one, i.e. swap 30 and 20 for 50.
- Ask children with the 1s to say how much they have got. They swap their two 1s cards for one card, i.e. swap 2 and 1 for 3.
- Ask children to now put their place value cards together. *What number have you made with your two new place value cards?*
- Children put their number shapes together to confirm. They will have five 10s and should put the 2 and 1 together to form a 3 shape.
- *To add 32 and 21, we partitioned (split) both numbers into 10s and 1s. We added the 10s. We added the 1s, and then added our two answers. So, 32 and 21 is 53.*
- Repeat for 24 and 23.

Up for a challenge?

Are children ready to find the total without number shapes? If so, ask them to make 35 and 22 using place value cards, but not number shapes. One child in each pair collects the 10s, the other the 1s. They each say their total, and find the matching place value card. They put their cards together to make the answer.

Now it's the children's turn:

- Children work in pairs to investigate what happens when they add pairs of numbers in opposite corners of 3 by 3 squares drawn on a number grid. They use place value cards and number shapes to help them partition to find the totals.
- Go round the group and mark their additions as they do them, e.g. initially after three examples.

S-t-r-e-t-c-h:

If children cope well, ask them to find the totals of numbers at opposite corners of 4 by 4 squares. Does the same thing happen? What if they draw a rectangle?

Things to remember

Remember that to add a pair of 2-digit numbers, we can use partitioning. We add the 10s, add the 1s then add our two answers together. Ask children to share what they found out in their investigation.

You may want to add something that has emerged from the activity. This may refer to misconceptions or mistakes made.

Resources	Outcome
<ul style="list-style-type: none">• Place value cards (10s and 1s)• Number shapes, e.g. Numicon®, or make card shapes (see child instructions)	<ol style="list-style-type: none">1. Children can add pairs of 2-digit numbers using partitioning (1s<10 and 10s<100)

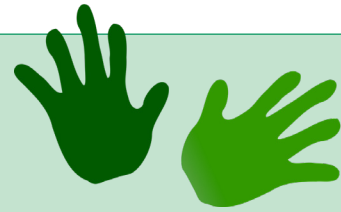
Square sums

Activity 1

Work in pairs

Things you will need:

- A set of place value cards
- Number shapes
- A pencil



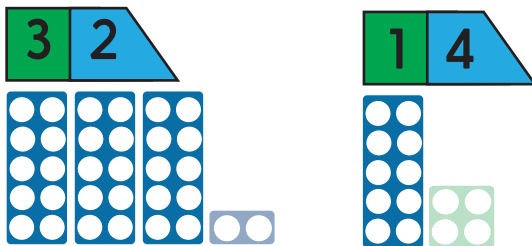
What to do:

- Draw a 3 by 3 square on the first grid.
- Ring the numbers in opposite corners.
- Add two numbers from one pair of opposite corners. Then add the other pair of numbers in opposite corners.
- To add the numbers, make each number using place value cards and number shapes.
- One person collects the 10s. The other person collects the 1s. Each person adds their two numbers and then swaps their two cards for a new place value card.
- Next put your two numbers together to find the answer.
- Write the two sums under the grid.

11	12	13	14	15
21	22	23	24	25
31	32	33	34	35
41	42	43	44	45
51	52	53	54	55

$12 + 34 = 46$

$32 + 14 =$



S-t-r-e-t-c-h:

Now find the totals of numbers at opposite corners of 4 by 4 squares. Does the same thing happen? What happens if you draw a rectangle?

Learning outcomes:

- I can add pairs of 2-digit numbers using partitioning ($1s < 10$ and $10s < 100$).

Square sums
Activity 1

11	12	13	14	15
21	22	23	24	25
31	32	33	34	35
41	42	43	44	45
51	52	53	54	55

11	12	13	14	15
21	22	23	24	25
31	32	33	34	35
41	42	43	44	45
51	52	53	54	55

11	12	13	14	15
21	22	23	24	25
31	32	33	34	35
41	42	43	44	45
51	52	53	54	55

11	12	13	14	15
21	22	23	24	25
31	32	33	34	35
41	42	43	44	45
51	52	53	54	55