



## Module 7 (Sample) Mathematical Exercises (part 2)

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## 2.5 Positive Strip Board

Positive Strip Board is divided into squares from left to right and top to bottom (i.e. 12 blank squares down by 18 squares across). The topmost squares on the strip board are numbered from 1-18. It is used with two set of number strips (each numbered from 1 to 9). One set, in red, has lines separating the numbers and the other set, in blue, has no lines separating the numbers.

### Exercise 1

#### Addition with Positive Strip Board Random Examples upto 18

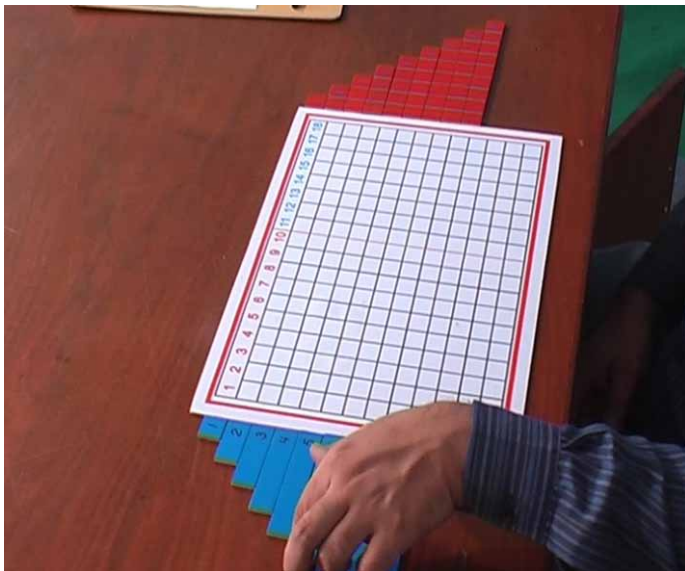
#### Material

- Addition Strip Board
- Two sets of number strips
- Addition tables summary
- Printed slips of addition tables question from  $1+9$  to  $9+1$

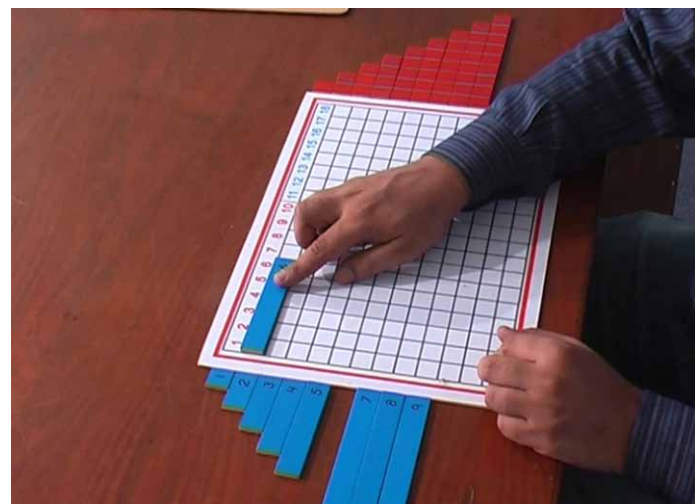
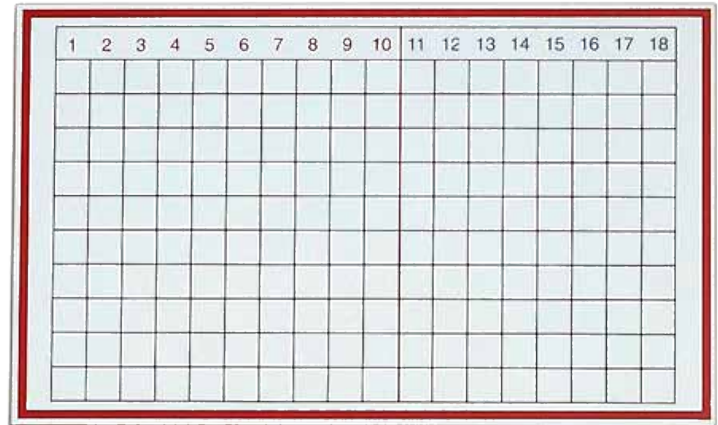
#### Presentation

**Note:** Complete work cycle is to be observed

1. Place the strip board in the center of the table.
2. Invite the child to build the two sets of stairs with blue strips towards the left and red strips towards the right side of the board.

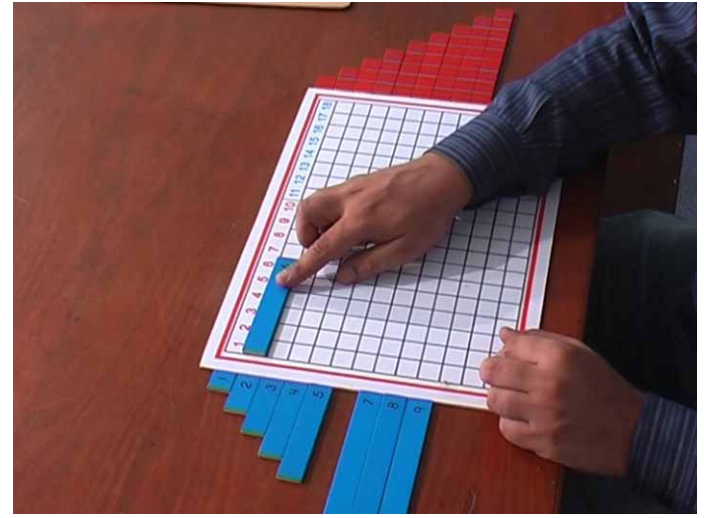


3. Based on the questions on the slip (e.g.  $6 + 9$ ), ask the child to take the “six” strip from the blue strips and place it on the first row of squares (just below the numbered row on the strip board).



4. Then ask him to take the “nine” strip from the red strips and place next to the blue strip in the first row on the board.

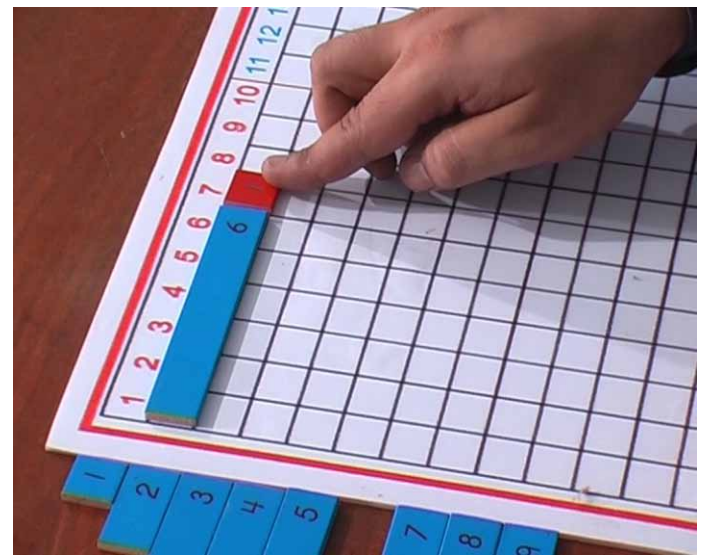




- The red strip will end on number 15 on the board in the top row which represents the sum.
- Pointing towards the two strips and the number where the red strip ends on the board, say, "6 plus 9 equals 15".
- Then show the child how to record the answer on the paper.
- Show the child how to verify answers from addition chart 1 and 2.

- Select the strip of 1 from the red set of strips and place next to the blue strip.

Encourage the child to work through the questions on more work cards and record the answers.



### Purposes

- To give the child further experience in addition and memorization of addition tables.
- To reinforce the existing concepts of number bonds.

- Record the answer.

## Exercise 2

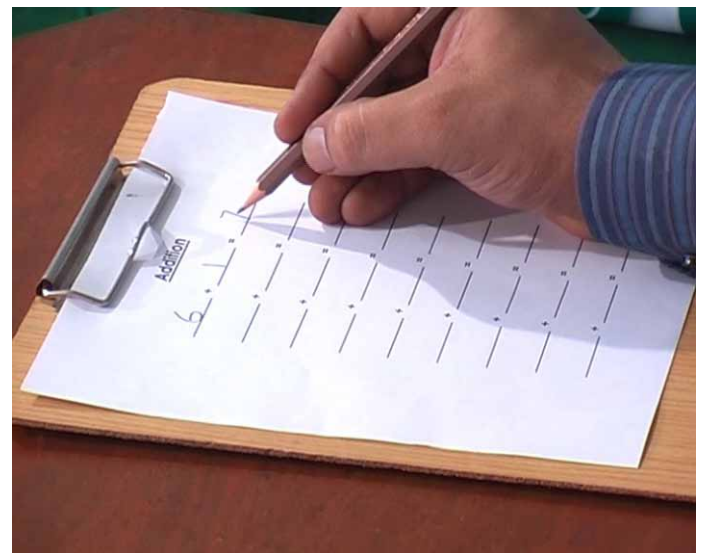
### Addition with Positive Strip Board Addition Tables

#### Material

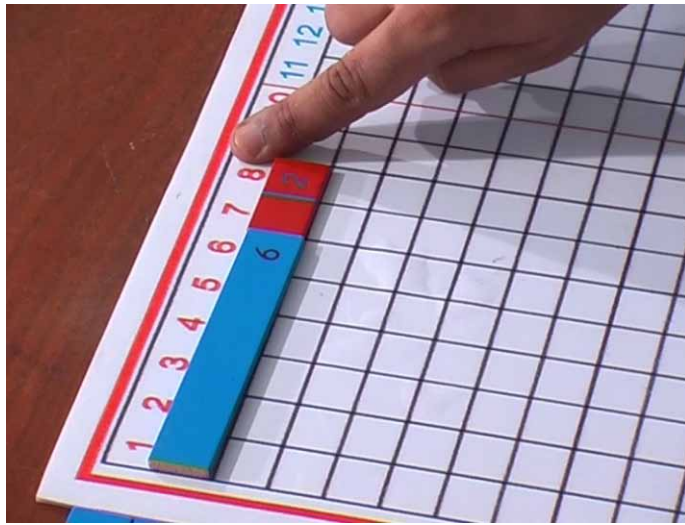
- Addition Strip Board Set
- Addition tables summary
- Printed addition tables

#### Presentation

- Set up the material as in the previous exercise.
- Show the printed addition table to the child e.g. the table of six.
- Select the strip of 6 from the blue set of strips and place it on the first row of squares (just below the numbered row on the strip board).



- Remove the red strip of 1 and replace with the red strip of 2 and record the answer as shown in the pictures on the next page.



7. Continue in the same way till the whole table is done.



8. Verify the answers with the summary of addition tables.
9. Allow the child to take over at any stage when he understands the exercise.
10. Encourage the child to work with more addition tables.

### Exercise 3

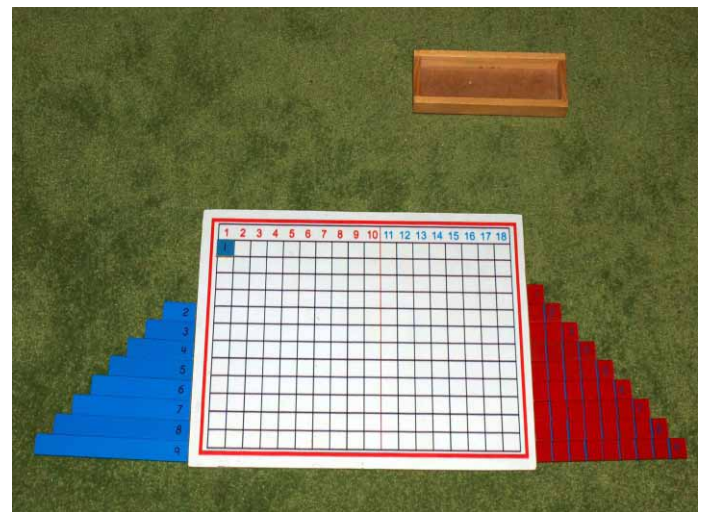
#### Addition with Positive Strip Board

Addition Questions in Sequence, e.g.  $9+1$  to  $1+9$

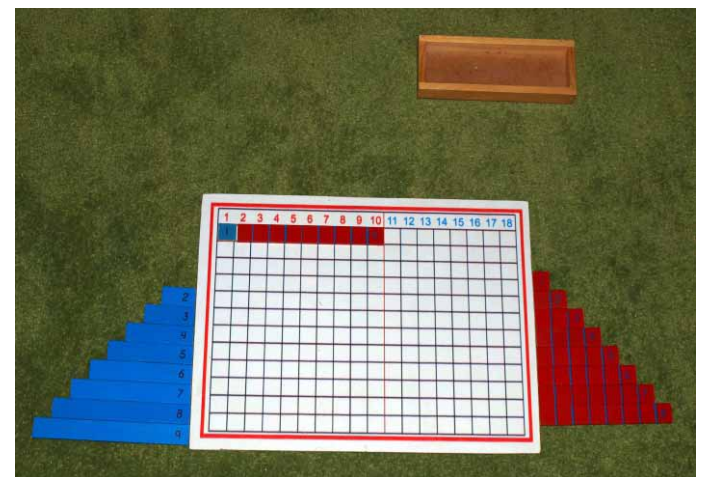
#### Presentation

**Note:** Complete work cycle is to be observed

1. Set up the board and the strips as described in the previous exercise and say, "I am going to show you different ways to make 10."
2. Take the "1" strip from the blue strips and place it on the first row of squares under the numbered row on the strip board.

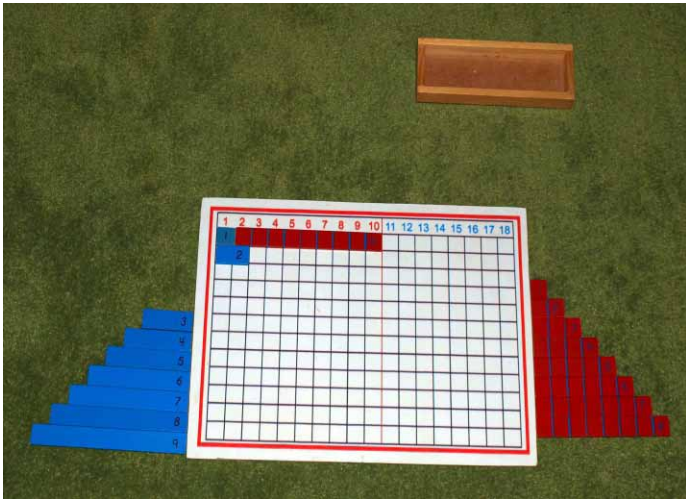


3. Then take the "9" strip from the red strips and place it right next to the blue strip on the board in the same row.

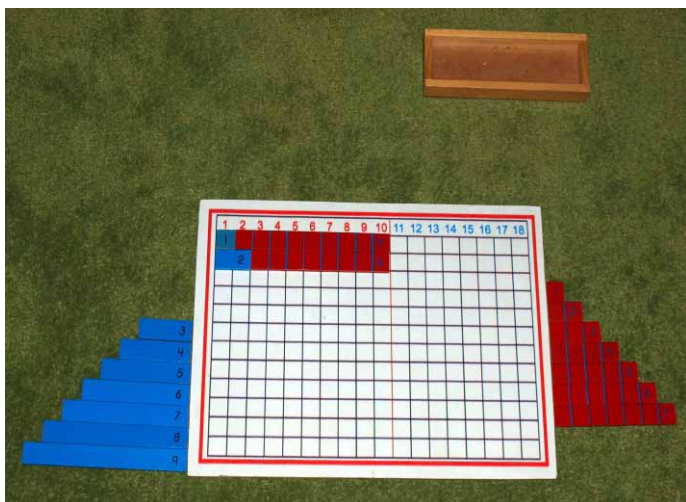


4. The red strip will end on number 10 on the numbered row of the board, which represents the sum.
5. Pointing towards the two strips and the number where the red strip ends on the board, say  $1 + 9$  equals 10.

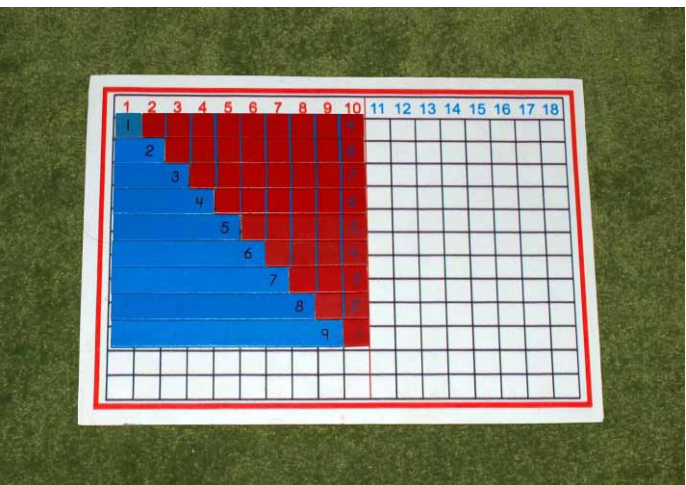
6. Take the “2” strip from the blue strips and place it on the second row of squares under the numbered row on the strip board.



7. Then take the “8” strip from the red strips and place it right next to the “2” blue strip in the second row.



8. Pointing towards the two strips and the number where the red strip ends on the board, say  $2 + 8$  also equals 10
9. Continue in the same way till all the combinations of ten are made on the board.



10. Point out to the child that the sum of all the additions is 10.
11. Allow the child to work on his own and encourage him to try other combination e.g.  $9+2$ ,  $8+3$ ,  $7+4$ ,  $6+5$ ,  $5+6$ , etc. will all be equal to 11.

### Variations

- Show  $1+9=10$  and  $9+1=10$  by just switching the number strips (alternating the blue and red strips) on the board.
- Place the “one” strip from the blue set and the “nine” strip from the red set on the first row of the board. On the second row change the regular pattern e.g. place the “Nine” strip from the blue set and “one” strip from the red set.

### Control of Error

1. The answers are present at the top of the board.
2. Addition chart 1 and addition chart 2 can be used to verify work.

### Age

5.5 to 6 years

## 2.6 Addition Charts

### Addition Charts 3

0	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	10
2	3	4	5	6	7	8	9	10	11
3	4	5	6	7	8	9	10	11	12
4	5	6	7	8	9	10	11	12	13
5	6	7	8	9	10	11	12	13	14
6	7	8	9	10	11	12	13	14	15
7	8	9	10	11	12	13	14	15	16
8	9	10	11	12	13	14	15	16	17
9	10	11	12	13	14	15	16	17	18

The addition chart 3 is divided into squares from left to right and top to bottom (i.e. 10 squares down by 10 squares across) all filled with numbers. The squares in the top row are coloured blue and the squares in the left most column are coloured red.

#### Exercise 1 Addition Chart 3

##### Material

- Addition Chart A
- A summary of the addition tables (or addition chart 1)
- All the combinations from 1+1 to 9+9 written on separate slips and kept in a box.

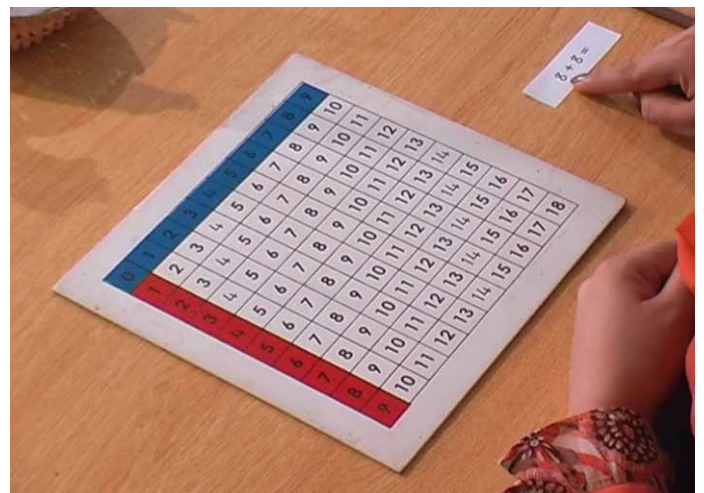
##### Purpose

To give the child more practice with number combinations, and to help him memorize the addition tables.

##### Presentation

**Note:** Complete work cycle is to be observed

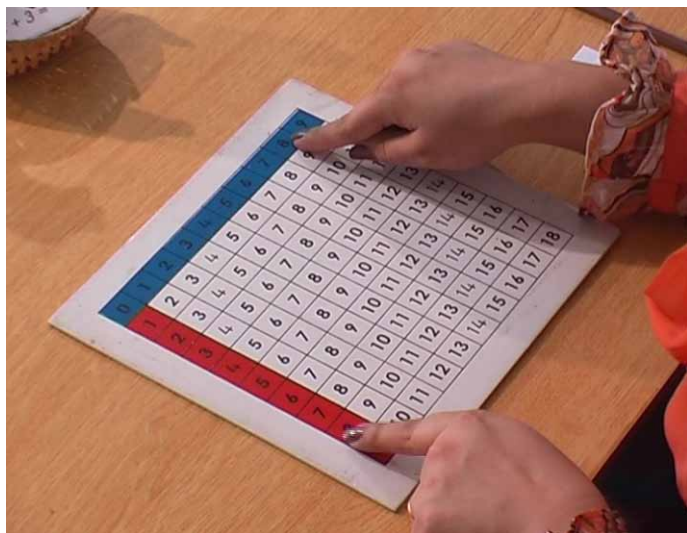
1. Show the child a question on the slip (e.g.  $8 + 8 =$ ), and put it aside.



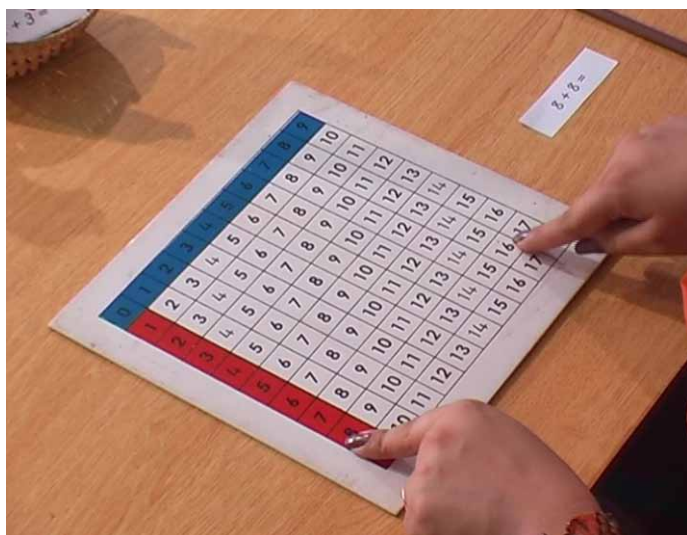
2. Look out for number 8 in the top row of the board, and place the index finger of your right hand on it.



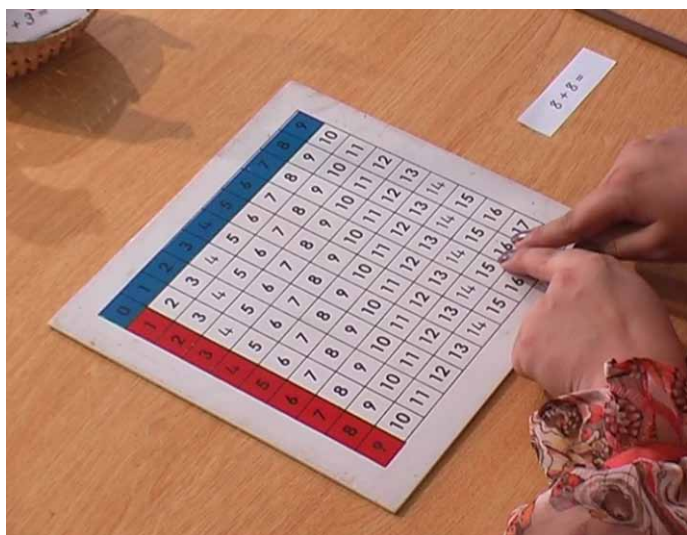
3. Keeping the index finger of the right hand on number 8 in the top row, look for number 8 in the left-most column and place the index finger of your left hand on it as shown on the next page.



4. Slide the finger on number 8 on the top row downwards slowly, as dropping a perpendicular, till the finger reaches the row where the other finger is placed.



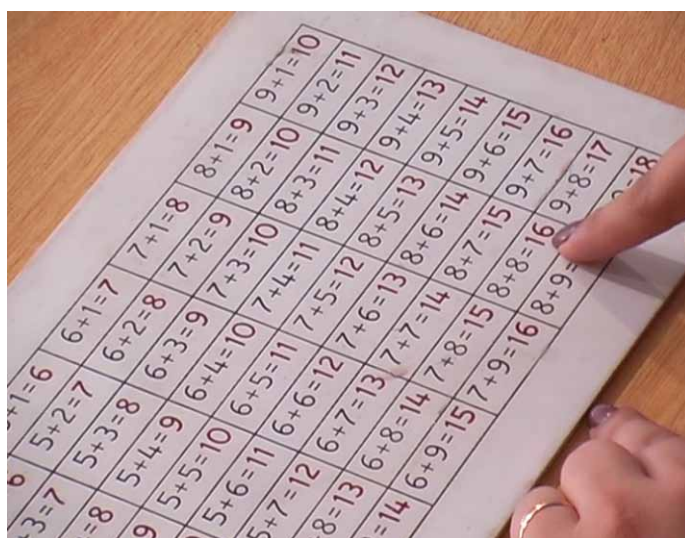
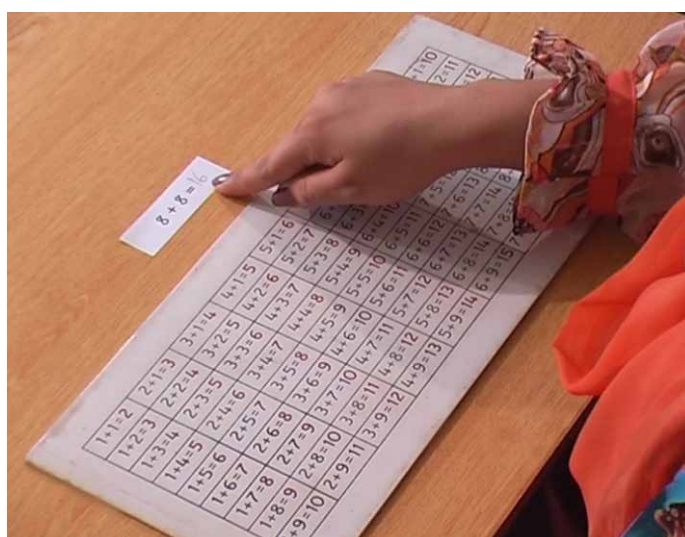
5. Now, slide the left finger on number 8 in the left most column towards the right till it comes in contact with the right finger. The meeting point is the answer.



6. Say out loud, " $8 + 8 = 16$ "  
7. Show the child how to record the answer.

$$8 + 8 = 16$$

8. Put the slip away, face down and take another slip from the box.  
9. Work through a few more examples in the same way and then encourage the child to work on his own taking a new slip each time from the basket. The answer may be checked on the summary of the addition tables or an answer provided on the back of each slip.



### Control of Error

- The board itself controls the error.
- Answers can be checked with control chart 1 (summary of addition tables).

## Exercise 2

### Addition Chart 4

1	2																		
2	3	4																	
3	4	5	6																
4	5	6	7	8															
5	6	7	8	9	10														
6	7	8	9	10	11	12													
7	8	9	10	11	12	13	14												
8	9	10	11	12	13	14	15	16											
9	10	11	12	13	14	15	16	17	18										

The addition chart 4 is different from chart 3 as there is only the red column of squares on the left with numbers from 1 to 9, but no blue row of squares on the top. The number of columns in the chart also increases with every increment in the numbers in the red column.

#### Material

- Addition Chart 4
- A summary of the addition tables (or addition charts 1 & 2)
- All the combinations from 1+1 to 9+9 written on separate slips and kept in a box.

#### Purpose

To give the child more practice with number combinations, and help him to memorize the addition tables in a new way.



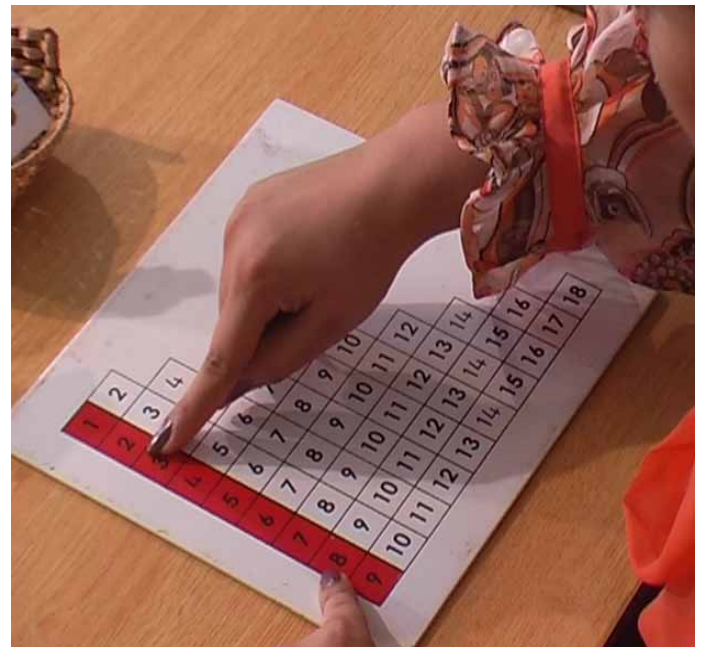
#### Presentation

**Note:** Complete work cycle is to be observed.

1. Show the child a question on the slip (e.g.  $8 + 3 =$  ), and put it aside.

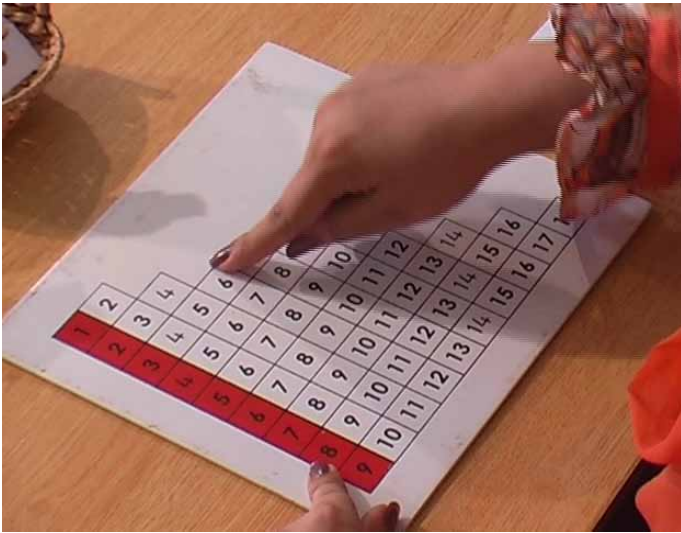


2. Look out for smaller number i.e. 3 in the red column, and place the index finger of your right hand on it.
3. Keeping the index finger of the right hand on number 3 in the red column, also look for number 8 in the red column and place your left hand's finger on it.

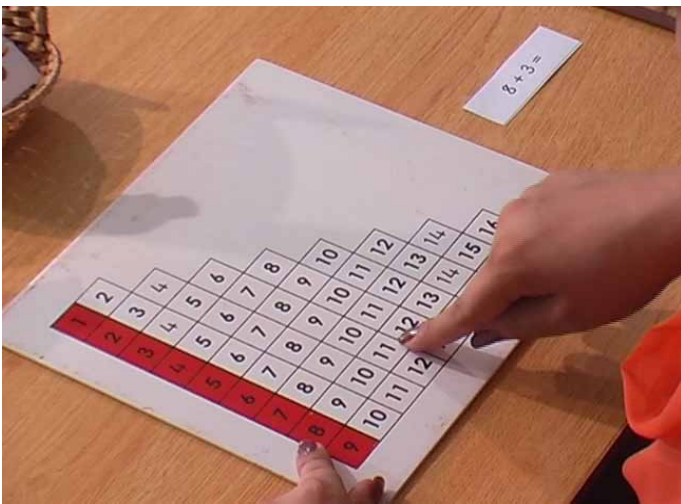


4. Slide the finger of the right hand, which is on the smaller number i.e. 3, towards right till it reaches the end of the row.

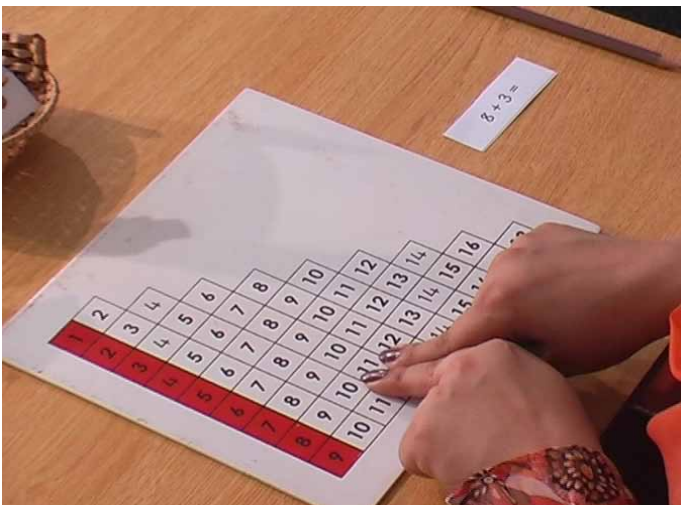




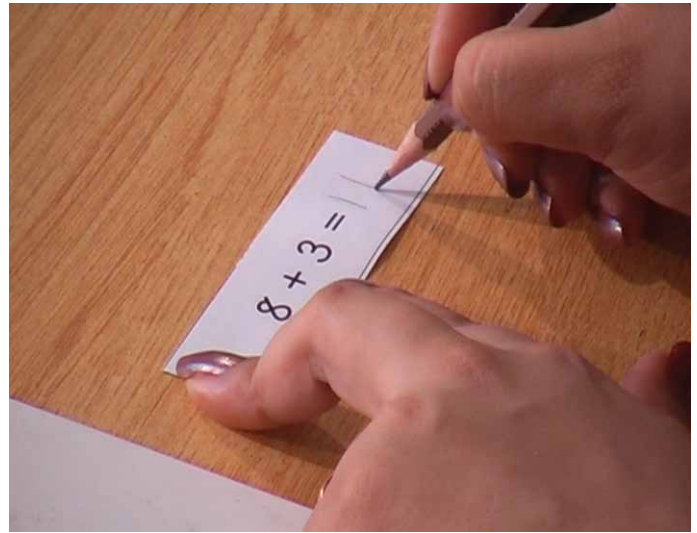
5. Then, slide it downwards, as dropping a perpendicular, till it reaches the row in which the other finger is placed.



6. Now, slide the left index finger on number 8 towards the right till it comes in contact with the right finger. The meeting point is the answer.



7. Say out clearly, " $8 + 3 = 11$ "  
8. Show the child how to record the answer.



9. Put the slip away face down and take another slip from the box.  
10. Work through a few more examples in the same way and then encourage the child to work on his own taking a new slip each time from the basket.  
11. The answer may be checked on the summary of the addition tables or an answer provided on the back of each slip.

**Note:** Always place your left index finger on the largest number in the equation.

### Control of Error

The material itself controls the error.

## Exercise 3

### Addition Chart 5

Both addends are even or both are odd

1	2								
2	3	4							
3		5	6						
4			7	8					
5				9	10				
6					11	12			
7						13	14		
8							15	16	
9								17	18

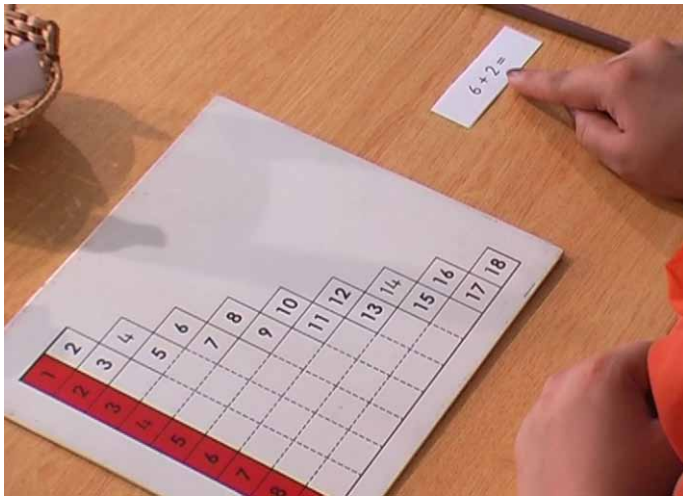
The addition chart 5 is similar to the chart 4, except only the last two squares in each row are numbered. The rest of the squares are blank.

**Material**

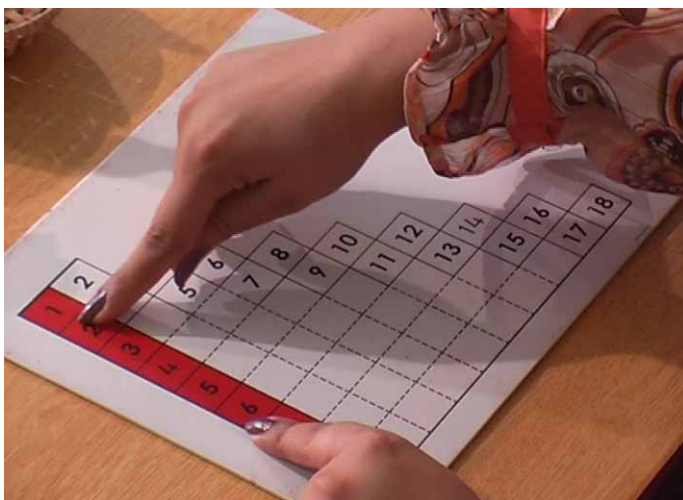
- Addition Chart 5
- A summary of the addition tables.
- All the combinations from 1+1 to 9+9 written on separate slips. The slips are to be kept in two separate boxes;
  - Box 1 contains slips with questions having both even numbers e.g.  $4 + 6 = \underline{\quad}$  or both odd numbers e.g.  $3 + 5 = \underline{\quad}$ . These are to be used with presentation 1.
  - Both 2 contains slips with questions having one even and one odd number e.g.  $3 + 6 = \underline{\quad}$ . These are to be used with exercise 2 on the next page.

**Presentation**

1. Show the child a question on the slip from box 1 (e.g.  $6 + 2 = \underline{\quad}$ ), and put it aside.



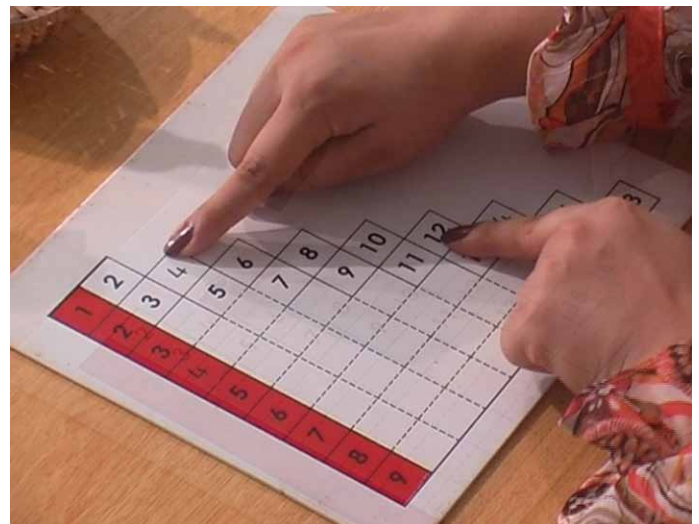
2. Look out for the smaller number i.e. 2 in the red column, and place the index finger of your right hand on it.
3. Keeping the index finger of the right hand on number 2 in the red column, look for the second number i.e. 6 in the red column and place the index finger of your left hand on it.



4. Slide the finger of the right hand, which is on the smaller number i.e. 4, towards right till it reaches the end of the row.



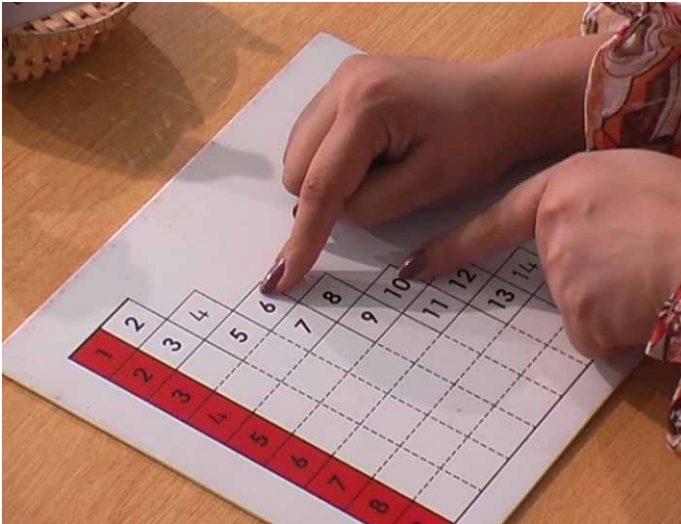
5. Then, slide the left index finger on number 8 towards the right till it also reaches the end of the row.



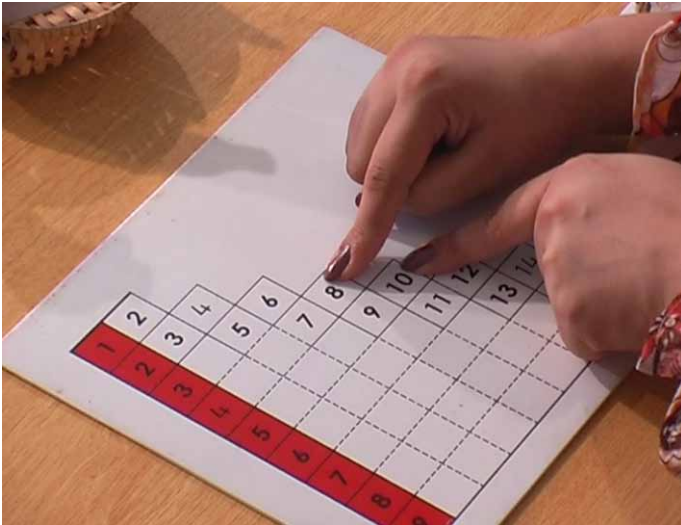
6. Now move the right finger down the stairs saying, "One step down".



7. Move the left finger up the stairs one step saying, "One step up".



8. Again move the right finger one step down saying, "One step down".

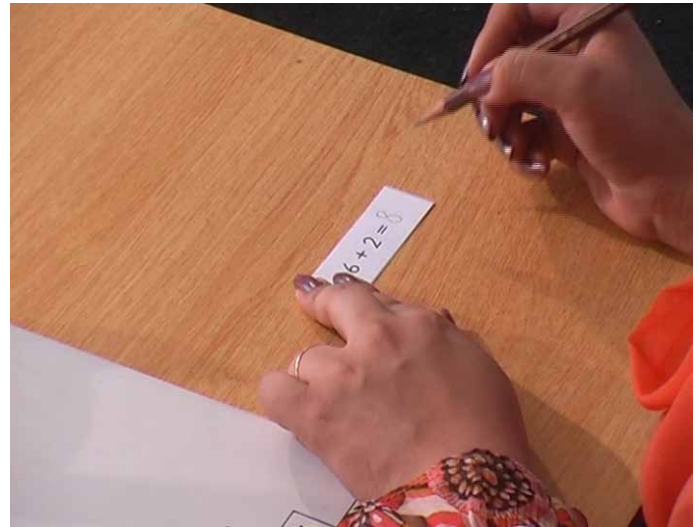


9. Finally, move the left finger up saying, "One step up". The meeting point is the answer.



10. Say out loud, " $6 + 2 = 8$ "

11. Show the child how to record the answer.



12. Put the slip away, face down and take another slip from the box.  
13. Work through a few more examples in the same way, and then encourage the child to work on his own taking a new slip each time from the basket.  
14. The answers may be checked on the summary of the addition tables or an answer provided on the back of each slip.

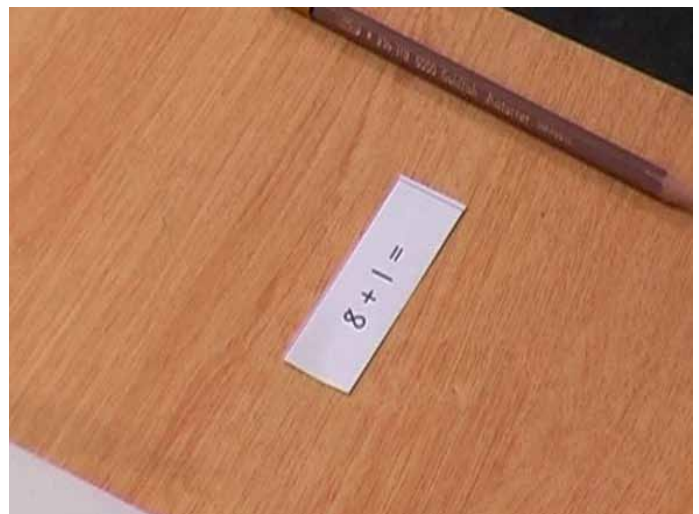
**Note:** Tell the child that each time you move our right finger one step down, you must move our left finger one step up.

## Exercise 4 Addition Chart 5

One addend is even while the other is odd

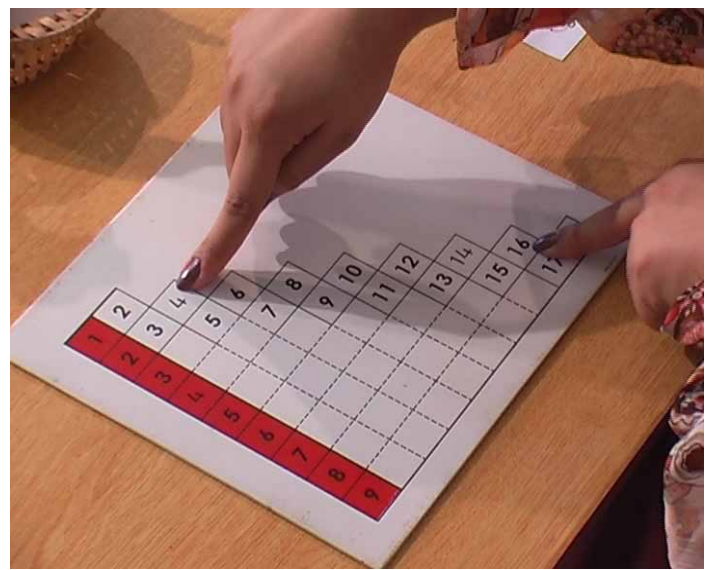
### Presentation

1. Choose a slip from box 2 with one even and one odd number, such as  $8 + 1 = \underline{\quad}$ .



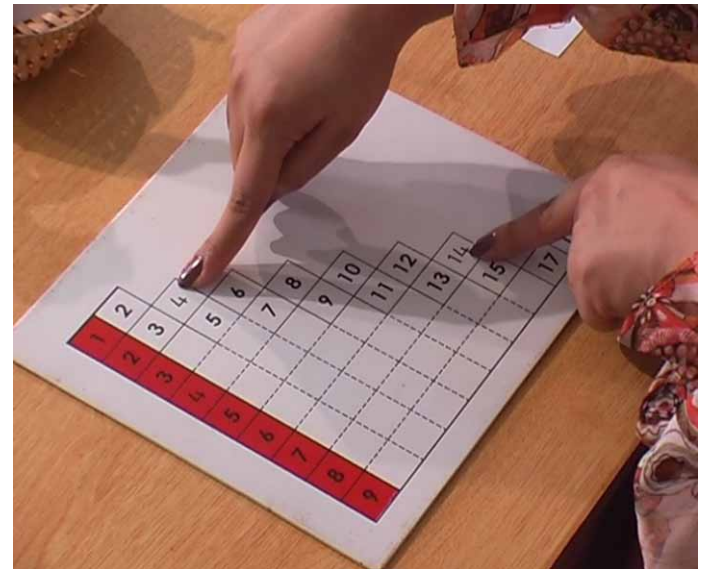
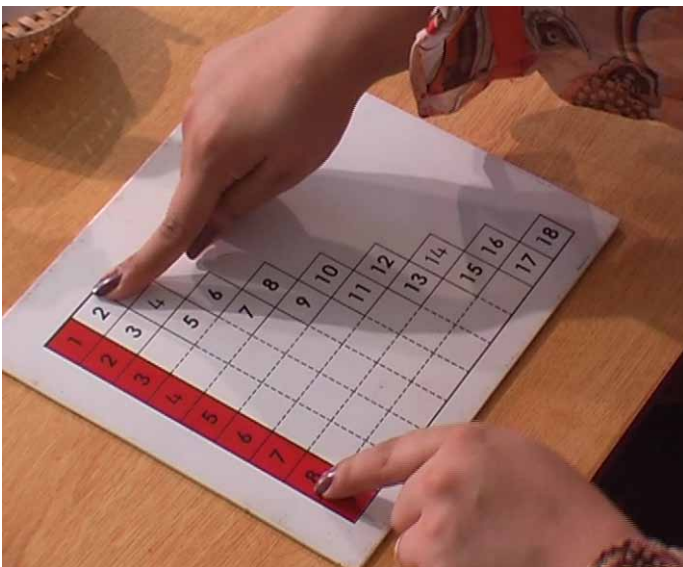
2. Place your right finger on the smaller number

and the left finger on the bigger number.



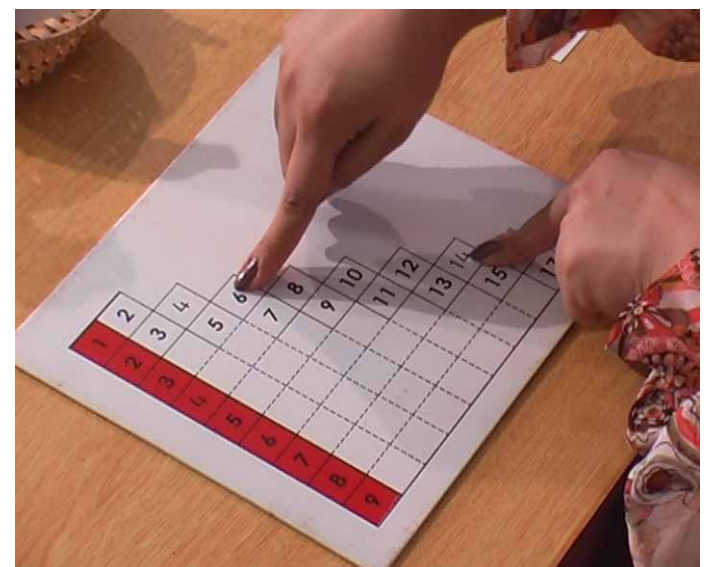
3. Firstly, move the right finger to the end of the row.

5. Move the left finger one step up.

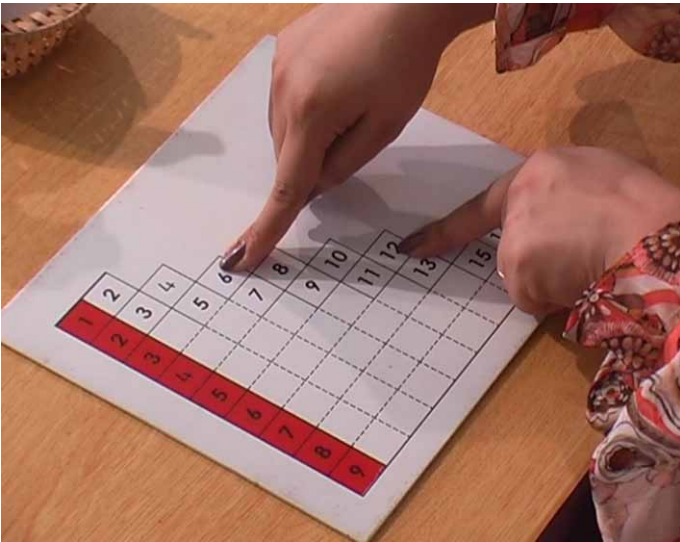


4. Then, move the left finger to the end of the row.

6. Move the right finger one step down.



7. Move the left finger one step up.



8. Move the right finger one step down.

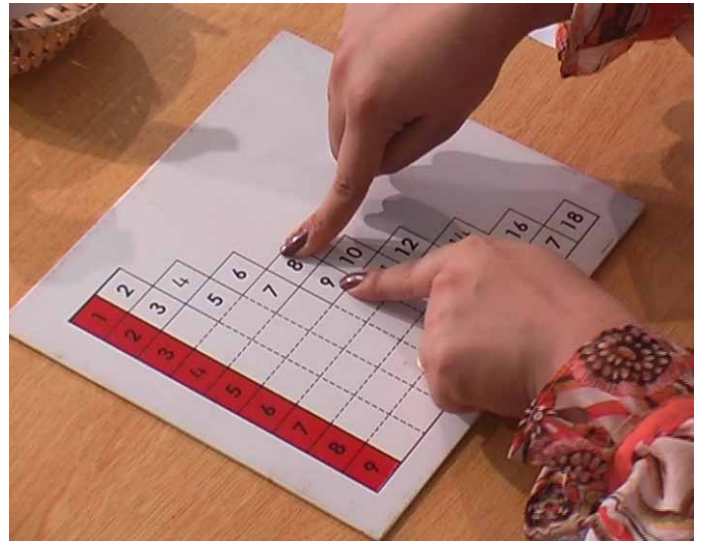


9. Move the left finger one step up.

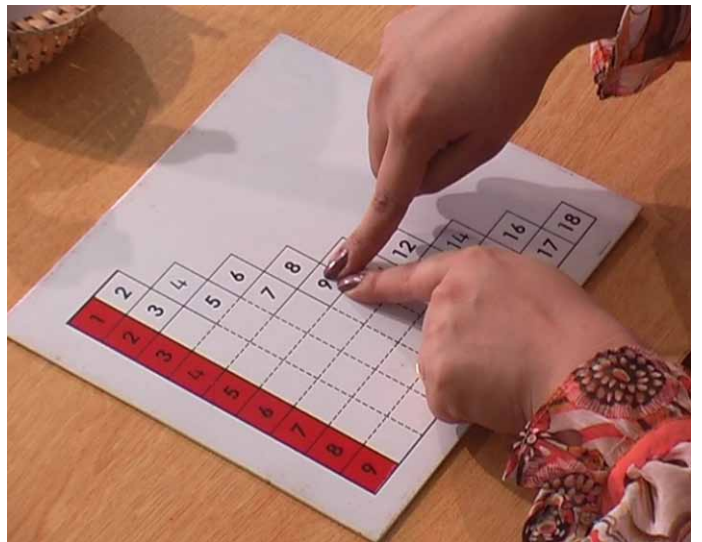


10. Draw the child's attention to the fact that the fingers at the end do not meet. If this happens we need to move the fingers inward.

11. Move the left finger across on the previous number in same row saying, "One step across".



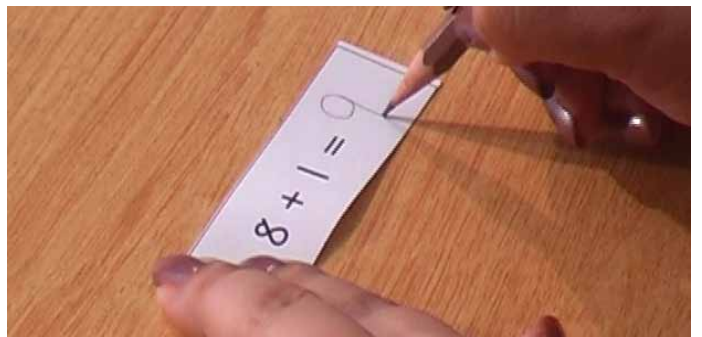
12. Then move the right finger downward on the second last number on the row below saying, "One step down" ..



13. The meeting point is the answer.

14. Say out loud, " $8 + 1 = 9$ "

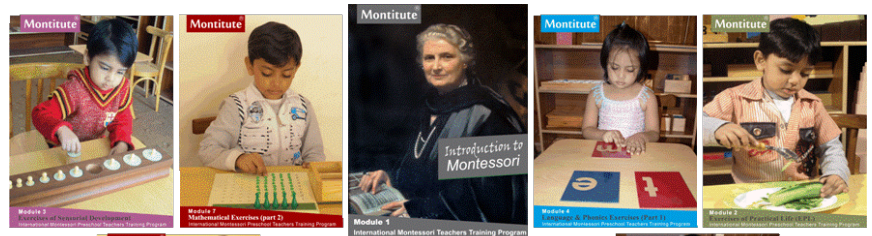
15. Show the child how to record the answer.



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