Name:_____ School: _____ Grade: _____

Mental Math Initiation Training

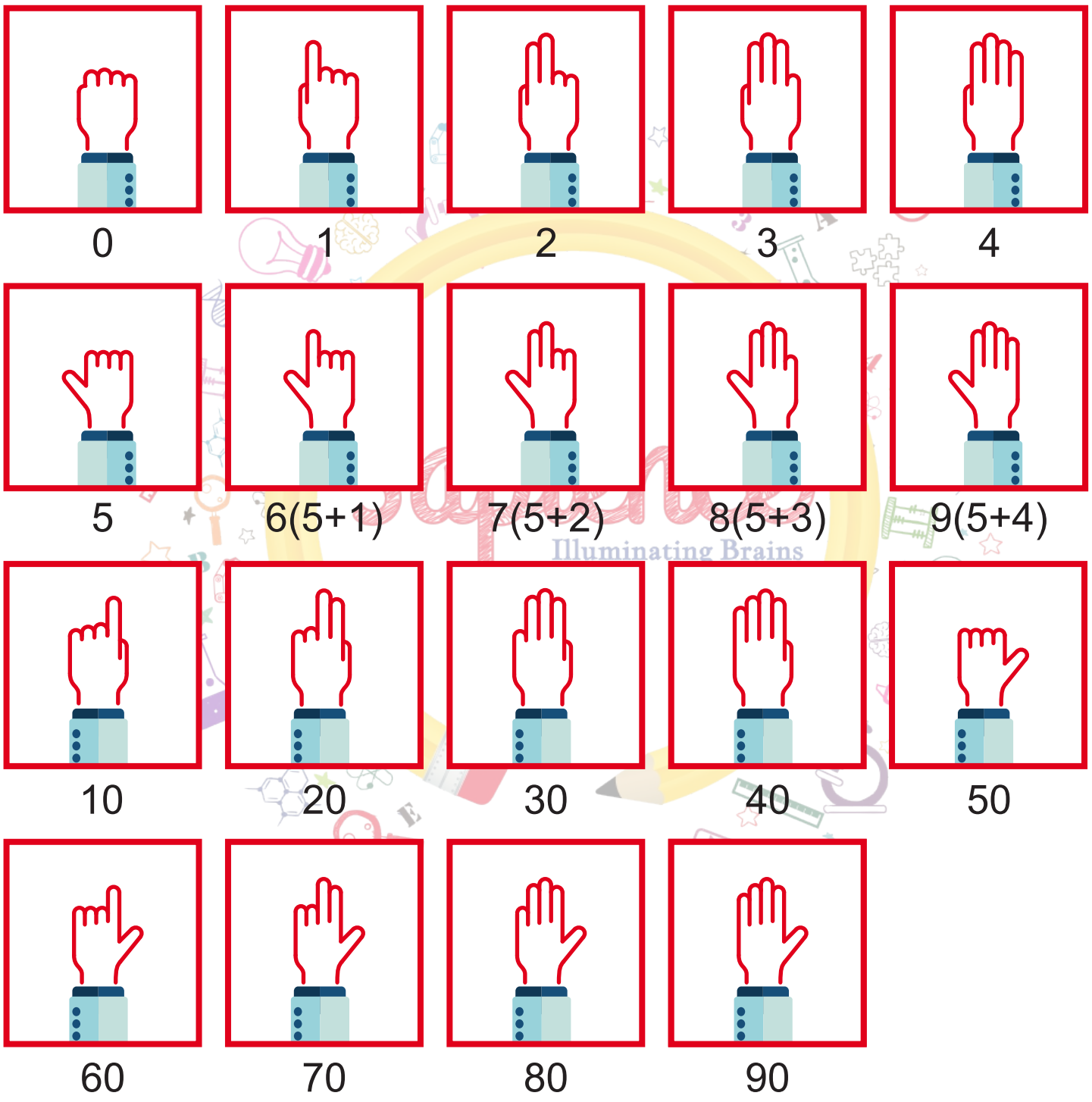
ABACUS

Transforming your child into a human computer!

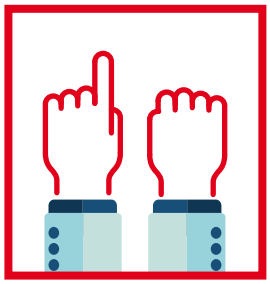
The mental math, or abacus, program focuses on exercising one's cognitive abilities and stimulating both hemispheres of the brain. Strengthening and conditioning a student's math comprehension skills and enhancing their computation speed and accuracy are some of the lifelong benefits. Brain exercise, in addition, aims to increase IQ, build interest and confidence in learning, and refine one's skills and abilities. With dedication and motivation, students can reach those outcomes by performing tasks that require them to memorize, visualize, and analyze in class and at home.

The course curriculum consists of learning to compute arithmetic problems using 3 methods: abacus, finger theory, and visualization. Among these, mastering visualization is of utmost importance, as this method is the most effective. In this lesson, however, we will only focus on abacus and finger theory.

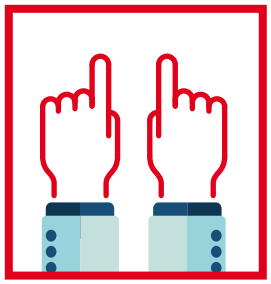
1. <u>The Finger Theory:</u> Finger theory is all about counting and calculating with our fingers. Since we are limited to 10 fingers, we can only work with single and double-digit numbers. Simply put, we use our right hand for numbers in the ones place and our left for numbers in the tens place. We always count, or add, left to right with the right hand, starting with the index finger. Conversely, we count, or add, right to left with the left hand. When subtracting, we do the reverse. The figure below illustrates how we use fingers to represent single and double-digit numbers.



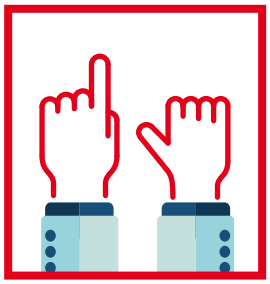
Most double-digit numbers require the use of both hands. Study the following figures and demonstrate.



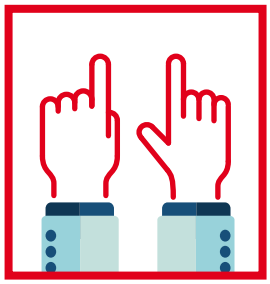
10



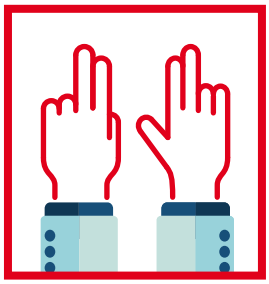
11



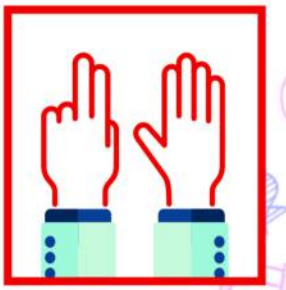
15



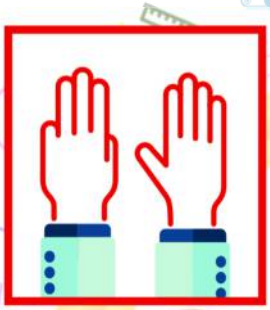
16



27



29

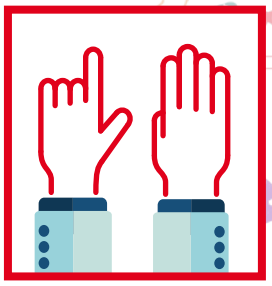


39

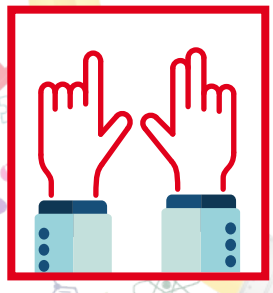
42

56

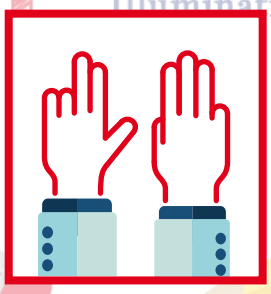
61



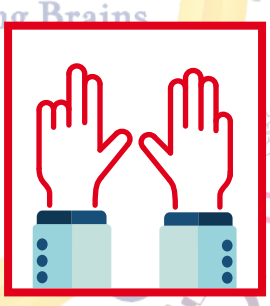
64



67

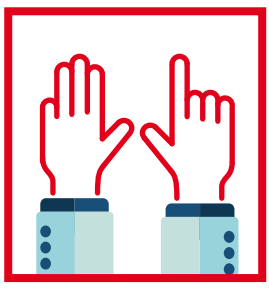


73

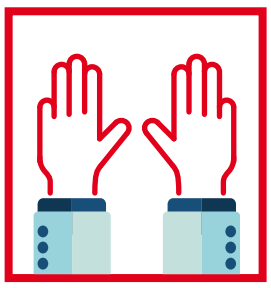


78

82



86



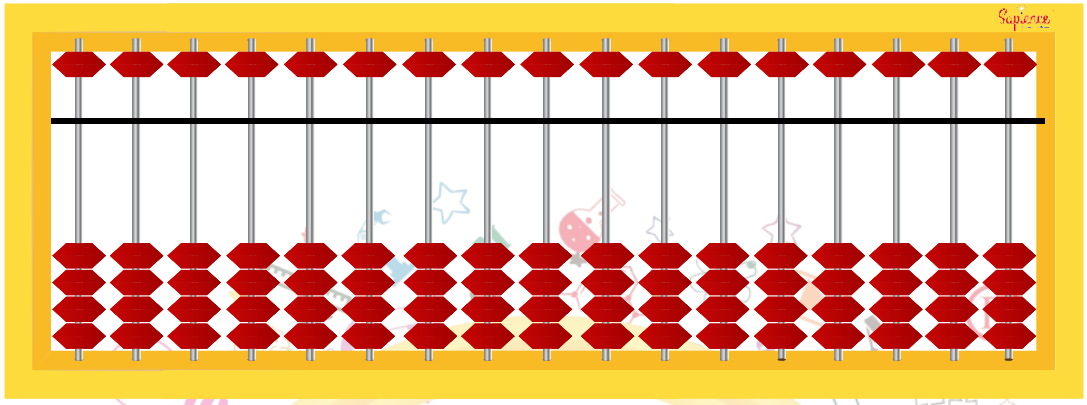
88

92

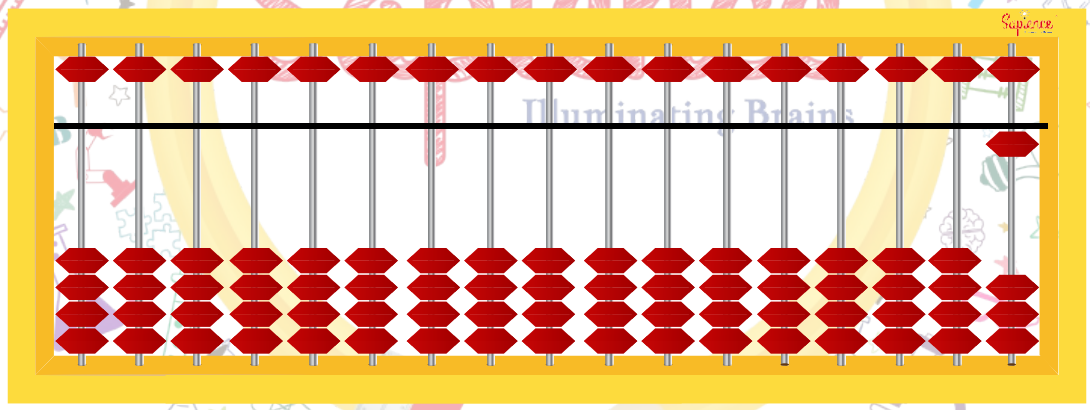
95

99

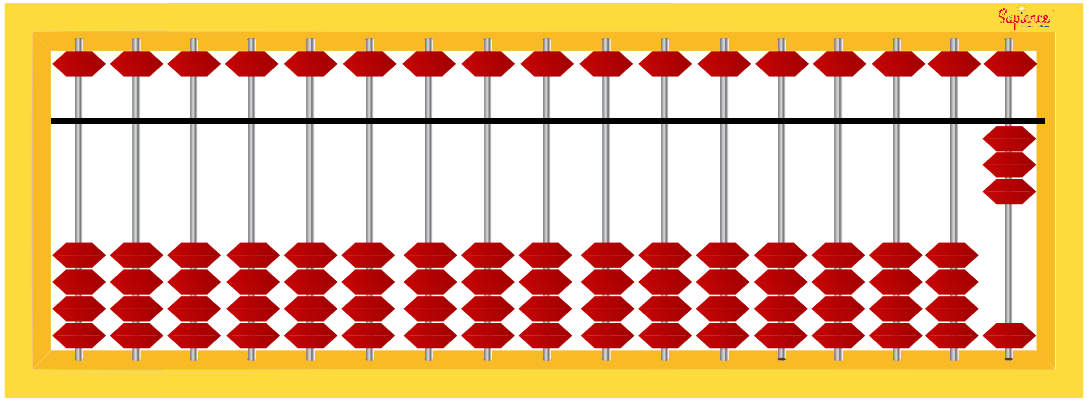
2. <u>Abacus:</u> The abacus has many features. One of the first things you may notice are the columns and the beads. Each column represents a place value and the beads each have a number value. Starting from the very right, the first column is the ones. The second column to its left is the tens. And as we continue to shift left, the place value increases ten times. As for the beads, each bead below the middle, or answer, line has a value of 1, 10, 100, etc. The beads above the line, however, represent the 5s. The value of the beads is determined by the column in which it resides.



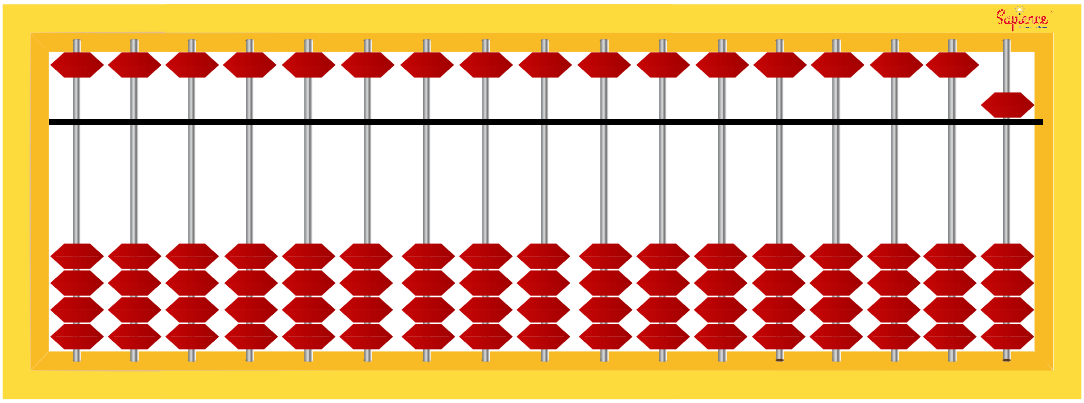
The answer only changes on the abacus if a bead (or beads) is pushed towards the answer line. In this example, the answer is 1 because 1 bead has been pulled up from first, or ones, column.



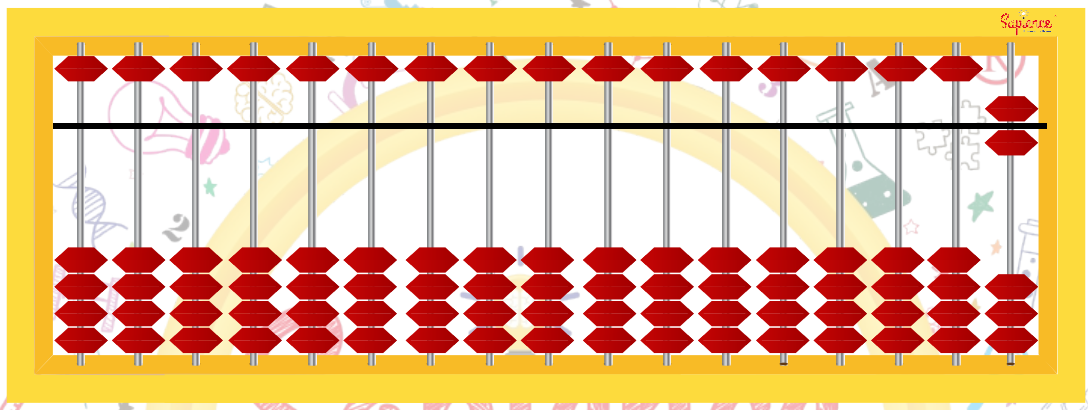
In this figure, the answer is 3, as 3 beads from the first column has moved up to the answer line.



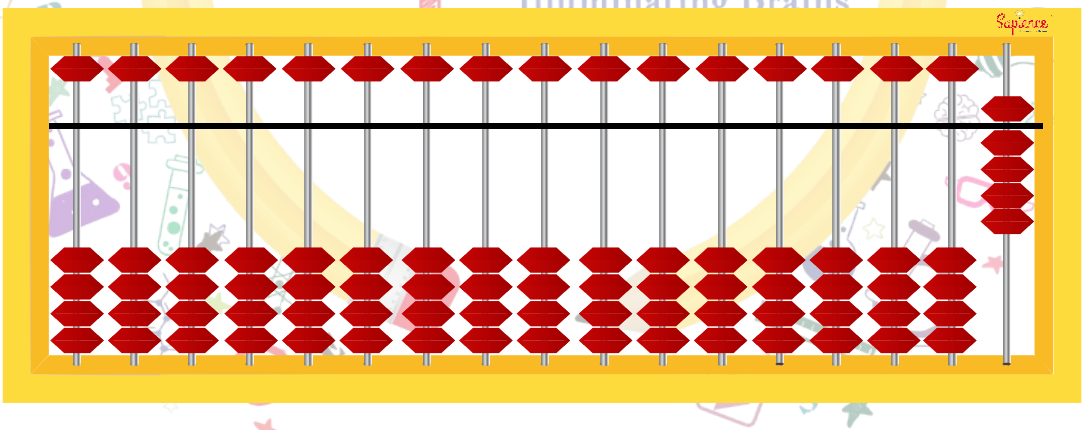
As mentioned, 5 is the bead above the answer line. When pushed down to the answer line, the answer becomes 5.



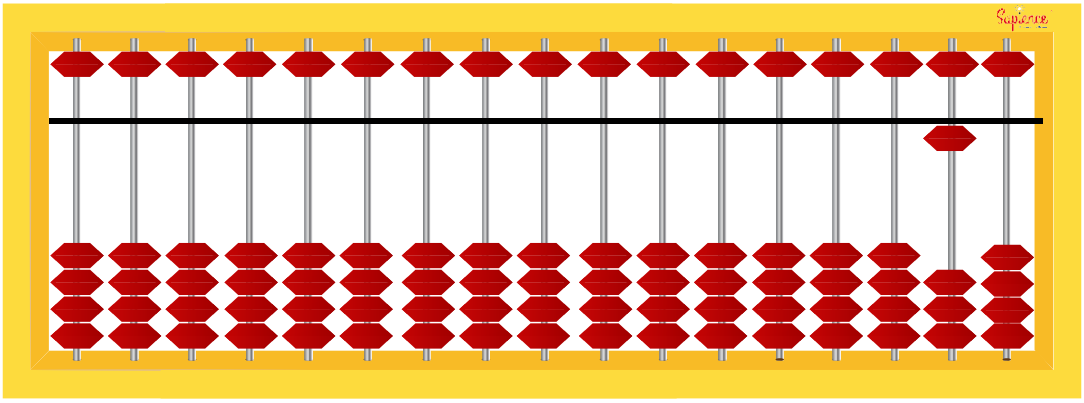
Here the answer is 6, as 1 (1) bead from the bottom and 1 (5) bead from the top are both on the answer line.



9 is when every bead from the first column is pushed towards the answer line.

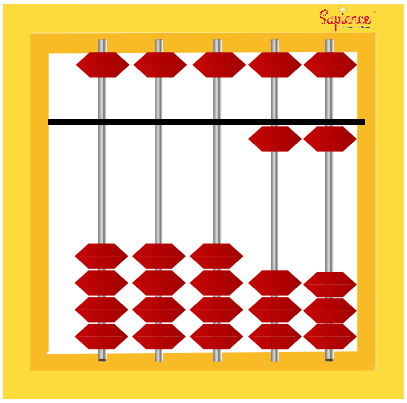


Similar to how we write 1 on the tens place and 0 on the ones place to form the number 10, one bead from the second column (from the right side of the abacus) is pushed up to the answer line and nothing changes in the first column to create the answer 10 on the abacus.

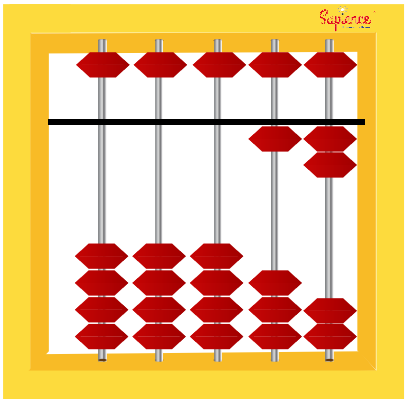


Let's see some more numbers on Abacus

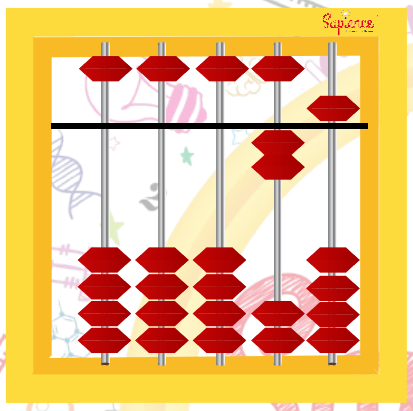
The answer in this picture is **11.**



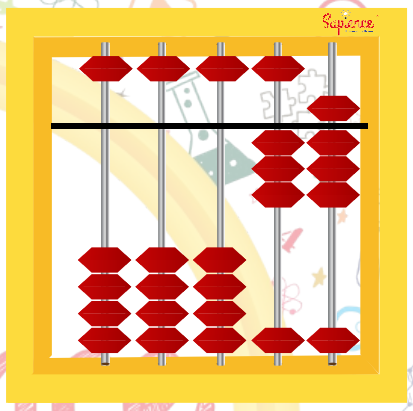
The answer in this picture is **12.**



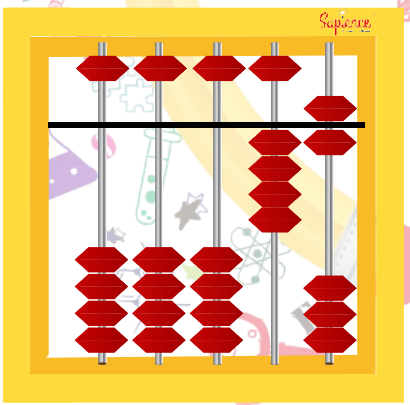
The answer in this picture is **25.**



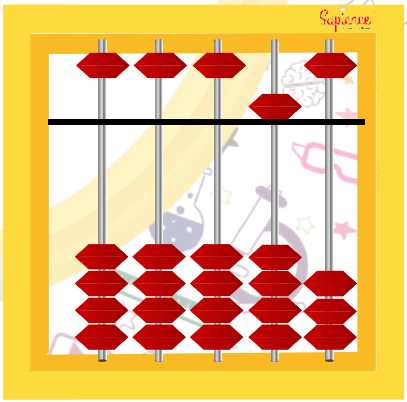
The answer in this picture is **38.**



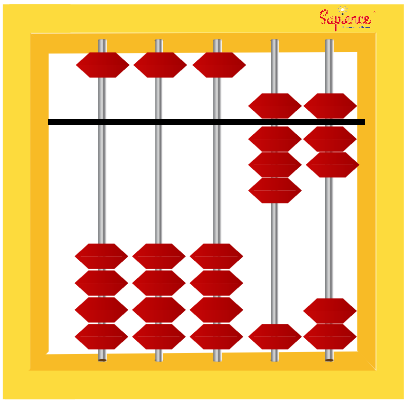
The answer in this picture is **46.**



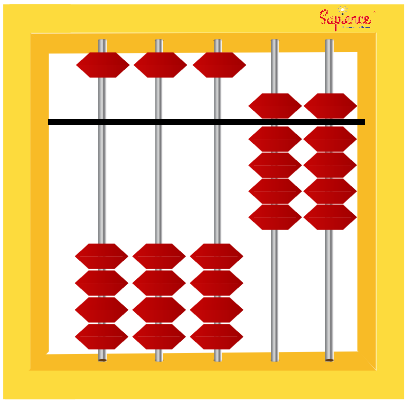
The answer in this picture is **50.**



The answer in this picture is **87.**



The answer in this picture is **99.**



Solve the Problems

Time Taken:

A	3 + 5 - 2 - 1 + 2 - 2	
B	2 + 1 - 2 + 2 - 1 + 2	
C	5 + 3 - 1 - 1 - 5 + 3	
D	2 + 2 - 1 - 1 + 2 - 4	
E	9 - 5 - 2 - 2 + 3 - 2	
F	4 - 2 - 1 + 3 - 1 - 2	
G	6 - 1 + 2 - 5 + 1 - 3	
H	4 - 1 - 1 + 2 - 2 + 1	
I	3 + 5 - 2 - 5 -1 + 5	
J	4 - 3 + 1 - 2 + 2 - 1	

K	L	M	N	O
15 11 -5 17 -37 11	31 -20 15 -16 21 5	8 21 -27 35 -5 -12	21 -11 16 -25 31 -1 -11	1 37 -7 5 -20 -15 38

Let's see what you learned in the Initial Training

Finger Theory

A	B	C	D	E	F	G	H	I	J
7 2 -3 -5 5	6 3 -3 2 -5	2 1 1 -1 5	3 1 5 -5 -2	1 3 -2 5 1	21 13 -12 15 1	51 25 -11 23 11	15 13 -12 20 -30	12 2 5 20 -32	38 51 -25 5 -18

Abacus

K	L	M	N	O	P	Q	R	S	T
2 2 5 -4 2	7 2 -5 -2 7	8 -3 4 -3 1	3 5 -2 3 -9	9 -4 -5 4 -2	21 22 -32 55 22	43 50 -21 5 11	52 25 -21 31 12	23 -12 53 -14 -50	34 -23 25 -16 21