

WELCOME TO XTRAGENIUS

ABACUS MENTAL ARITHMETIC LEARNING PROGRAM

XTRAGENIUS is not a class for teaching mental arithmetic but its aim is to bring around complete brain development. Mental math's is an added advantage garnered through the whole exercise. Initially Mental arithmetic is taught with the help of an ABACUS.

XTRAGENIUS Mental Arithmetic is a form of training which will enhance a child's ability to calculate without the aid of any instrument such as paper, pen, calculator or abacus, after initial abacus training. The child will be able to calculate with speed and accuracy using his/her own mental power. XTRAGENIUS Mental Arithmetic is fun filled learning.

XTRAGENIUS is a mental development program based on mental arithmetic system. It starts with the use of an abacus and soon the child learns to do calculations in his mind itself without a physical abacus. This training will enhance a child's ability to do calculation without the aid of any instrument such as the calculator, abacus etc. The child will be able to calculate with speed and accuracy using his own mental power and can surpass the speed of even a calculator.

Children who undergo XTRAGENIUS arithmetic training would have several positive benefits. Some of these are:

- Greater concentration
- Keen Listening skills
- Better reflexes
- Better application skills
- Improved analytical skills
- Better creative and imaginative skills
- Improved reading writing and learning skills
- Better Memory
- Sharper observation
- Self – confidence
- Better expression
- Better comprehension and calculation skills

Mental Arithmetic + Practice = Brain Development.

Guideline for Parents

Concept

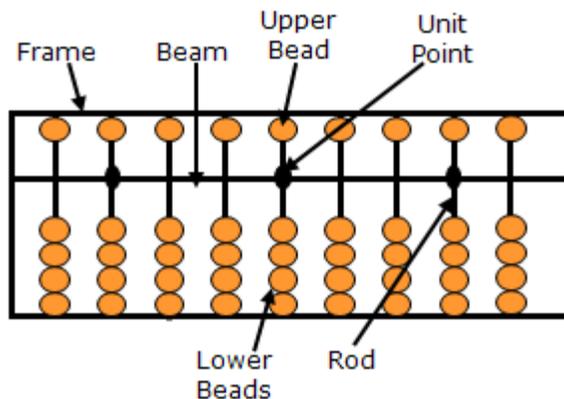
Our cerebrum is divided into right brain and left brain. The left brain is in charge of the logic, literate, numerical, analytical, sequential facts and remembrance whereas right brain is responsible for color, music, imagination, senses, rhyming, daydreaming, pattern and overall thinking. Left brain governs the right limbs and the right brain governs the left limbs. Conversely the action of the limbs also has an influence on the development of the brain. So, in order to give rain to the overall intelligence of the cerebrum, both the right and left brain must be trained at the same time. The creativity will be at its greatest only when both brains are communicating and co-operating with each other. To achieve the above goal we make the students work on Abacus with both their hands thus ensuring improved coordination between both the hemispheres of the brain.

CLASS 1

Definition of ABACUS

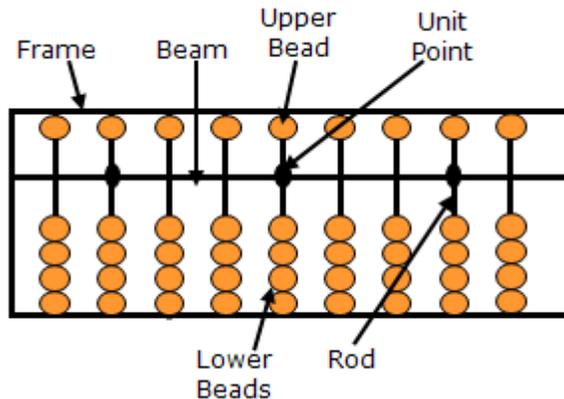
Abacus is a Latin word meaning sand tray. The word originates with the Arabic "abq", which means dust or fine sand. In Greek this would become abax or abakon which means table or tablet.

Abacus is an ancient tool which is used for fast and accurate calculation.



Components of an Abacus

Abacus is made up of a frame with vertical rods on which beads move up and down. Dividing the upper and lower portion of the abacus is a horizontal bar called a beam or reckoning bar.



Sitting Posture

Sit upright with both legs perpendicular. Inhale with broad chest. Occupy only half of the chair while sitting. Before using the Abacus, the Abacus must be placed vertically on left side of the table, pencil on right side and both hands placed on thighs.

Position of Abacus

Abacus is to be placed exactly below the sum being solved, with 'Unit Point' aligned straight with the sum and your nose. As you go to another sum, move Abacus so that it is now under the new sum being solved, just below the sum.

How to Hold Abacus

Abacus is to be placed on the table at a distance of 4 fingers from the edge of the table. Unit point of the abacus should be aligned with your nose. Hold the upper and lower frames of abacus with the thumb and last two fingers of your left hand.

How to Hold Pencil

Allow 2.5 cms projection at the end of the pencil

Right Hand: **The Pencil should run through thumb and index finger**

Left Hand: Hold the pencil with first three fingers & thumb, and end of the pencil is supported by the last/ little finger

Fingering

Home Rod or Unit Rod – Right Hand To Add Lower Beads, use Thumb (1~4)

To Add Upper Beads, use Pointer (5)

To Add Lower and Upper Beads together, use Thumb and Pointer together like a pinch (6~9)

To Less(MINUS) upper & Lower Beads, use pointer.

To Add & Minus Upper & Lower Beads together, use open Pinch (6~9) Rods on the left of Home Rod – Left Hand

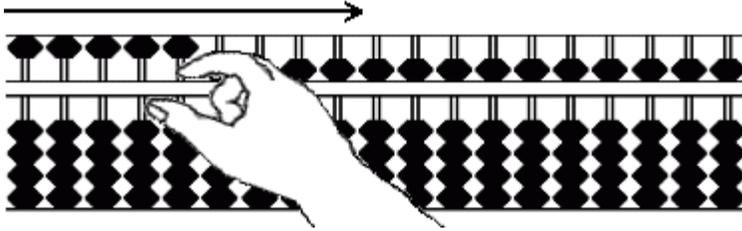
To Add & Minus Lower Beads, use Pointer (10~40)

To Add & Less Upper Beads, use Middle Finger (50)

To Add & Minus Lower and Upper Beads together, use Middle and Pointer together as a Scissors. (60~90)

Clearing abacus

Calculations normally begin with an empty or cleared abacus. Place the abacus flat on the table, then tilt the frame toward you. Gravity pulls all the beads down. At this point only the upper beads have been cleared away from the beam. Place the abacus back onto the table and hold it with the left hand. Then, using the back of the right index finger, make a sweeping motion from left to right between the top of the beam and the bottom of the upper beads. This forces the upper beads up away from the beam. When none of the rods shows any value, this is what is known as a **cleared frame**.



Abacus one bead sits above the beam and four beads sit below. The beads above the beam are often called **upper beads** and each has a value of 5. The beads below are often called **lower beads** and each has a value of 1.

Along the length of the beam, you'll notice that every third rod is marked with a dot. These specially marked rods are called **unit rods** because any one of them can be designated to carry the unit number. While the abacus operator makes the final decision as to which rod will carry the unit number, it is common practice to choose a unit rod just to the right of center on the abacus.

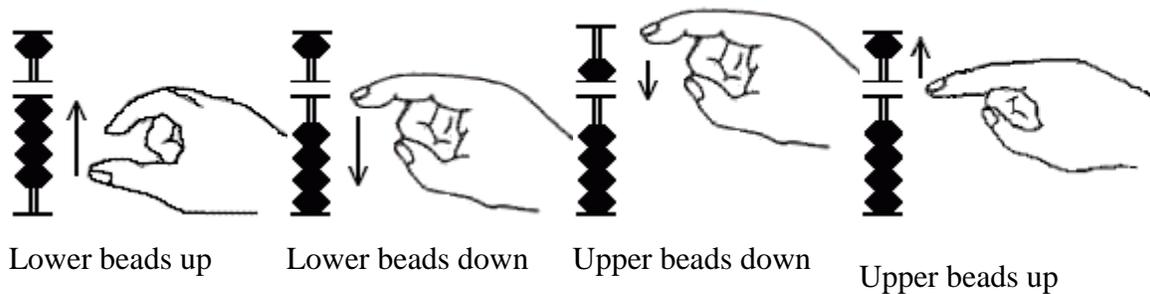
The dots also serve as markers by which larger numbers can be quickly and efficiently recognized

Always Work from Left to Right

Fundamental to good abacus technique is the rule **always work from left to right**. This may seem a little odd at first but it's extremely important. It's one of the abacus's biggest advantages. It allows us to solve mathematical problems with great agility and speed, in part, because numbers are added and subtracted in exactly the same way we read and hear them.

Setting Numbers on ABACUS

Use only the thumb and index fingers to manipulate beads on a abacus. The thumb moves the lower beads up toward the beam. The index finger moves everything else (all upper beads down away from the beam and all upper beads up & down).



Place the abacus flat on the table, then Hold the abacus with left hand and hold pencil in the right hand

Bringing up 1 lower bead so that it touches the beam gives a rod a value of 1.

Three lower beads touching the beam give that rod a value of 3.

To make a value of 5 clear all the lower beads and move one upper bead down so that it touches the beam.

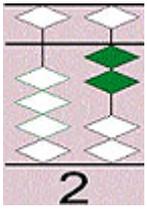
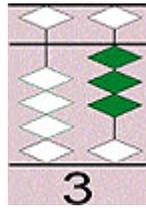
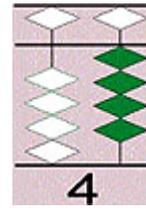
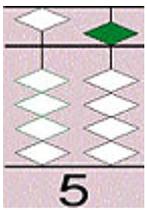
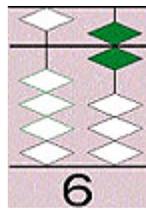
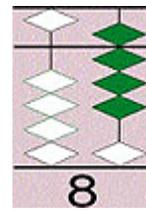
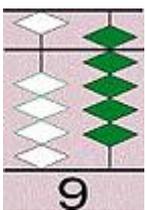
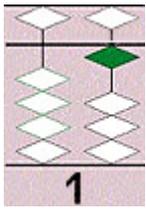
Pinching together one upper bead and one lower bead sets a value of 6 and

Pinching together one upper bead and two lower beads sets a value of 7

Pinching together one upper bead and three lower beads sets a value of 8

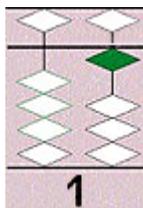
Pinching together one upper bead and four lower beads sets a value of 9

Setting Numbers 1 to 9 on the ABACUS
 Clear the ABACUS first

LESSON 1		
 2	 3	 4
 5	 6	 8
 9	 1	

Fingering Exercise:

1. Set +1 on all the rods



using right hand thumb , move lower bead up which means PLUS 1 (+1)

2. -1 on all the rods

Using right hand index finger , move lower beads down which means MINUS 1 (-1)

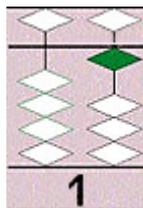
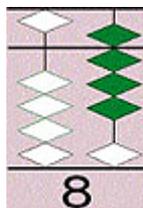
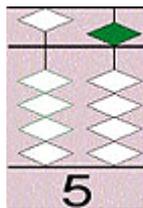
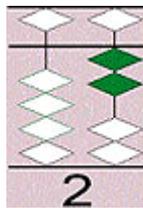
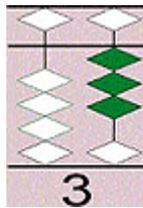
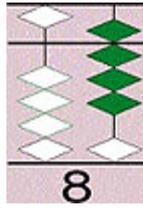
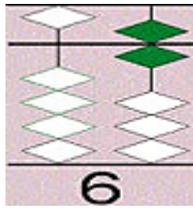
DO IT YOURSELF:

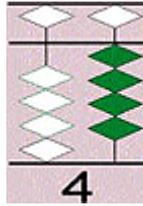
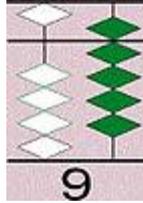
PRACTICE for 5 times and similarly for +2, -2, +3, -3, +4, -4 and upto +9, -9

Simple Exercise

Write the values for the beads shown (Flash the beads)

6, 8, 3, 2, 5, 8, 1, 9, 4



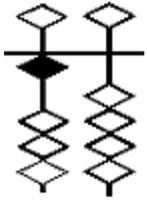
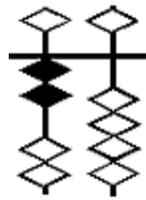
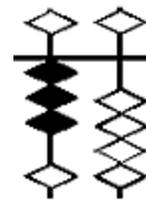
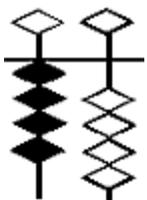
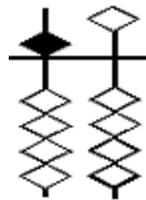
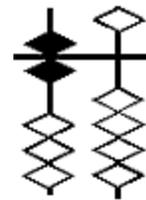
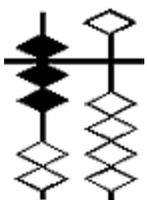
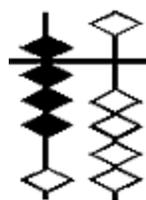
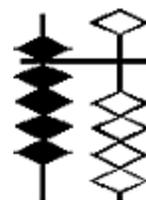


Heading: Draw the beads for the numbers shown

3,7,4,8,4,6,1,9

CLASS 2

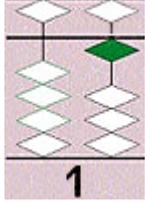
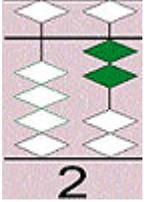
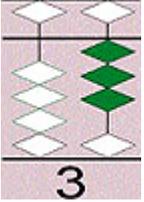
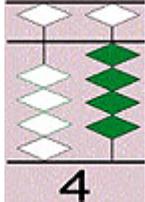
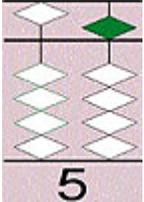
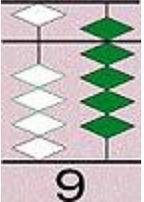
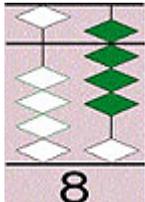
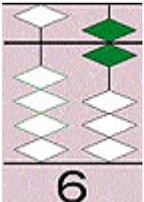
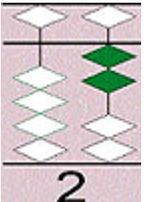
Setting Numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 on the ABACUS

 10	 20	 30
 40	 50	 60
 70	 80	 90

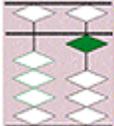
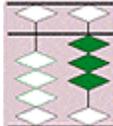
Simple addition & subtraction

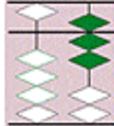
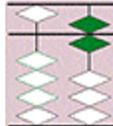
When using an abacus to solve problems of addition and subtraction, the process can often be quite straightforward and easy to understand. In each of the examples below beads are either added or subtracted as needed.

Simple Addition

1	 1	+	 2	=	 3
2	 4	+	 5	=	 9
3	 8	-	 6	=	 2

Do it Yourself

Q1:  +  = ?

Q2:  +  = ?

Do it Yourself

Q1: Q1: An abacus with two columns. The left column has one black bead on the top wire and one white bead on the bottom wire. The right column has two white beads on the bottom wire. A plus sign is between the columns, and an equals sign followed by a red question mark is to the right.

Q2: Q2: An abacus with two columns. The left column has two black beads on the top wire and one white bead on the bottom wire. The right column has one black bead on the top wire and two white beads on the bottom wire. A plus sign is between the columns, and an equals sign followed by a red question mark is to the right.

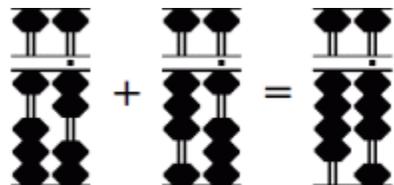
Some Examples

1 + 2 = 3

An abacus with three columns. The first column has one black bead on the top wire and one white bead on the bottom wire. The second column has two black beads on the top wire and two white beads on the bottom wire. The third column has three black beads on the top wire and three white beads on the bottom wire. Below the columns are the numbers 1, 2, and 3.

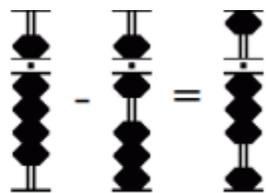
237 + 152 = 389

An abacus with three columns. The first column has two black beads on the top wire and three white beads on the bottom wire. The second column has three black beads on the top wire and five white beads on the bottom wire. The third column has seven black beads on the top wire and nine white beads on the bottom wire. Below the columns are the numbers 237, 152, and 389.

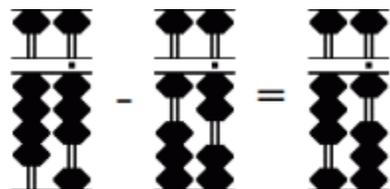


$$12 + 31 = 43$$

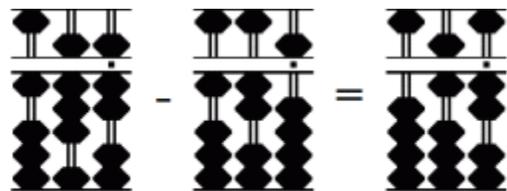
Simple Subtraction



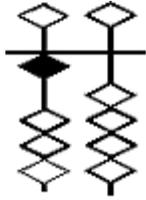
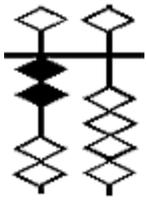
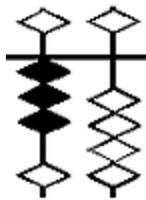
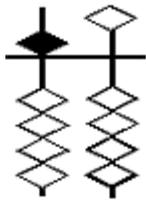
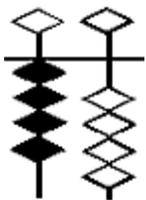
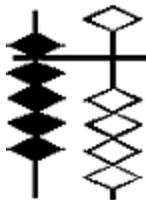
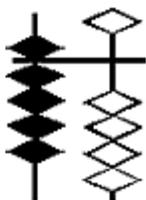
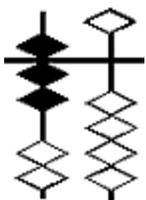
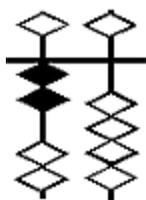
$$9 - 6 = 3$$

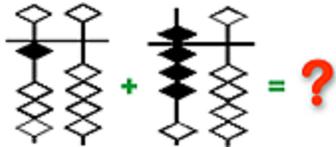
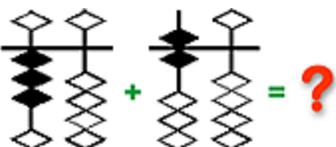


$$43 - 12 = 31$$



$$187 - 125 = 62$$

1	 10	+	 20	=	 30
2	 50	+	 40	=	 90
3	 90	-	 70	=	 20

Do it Yourself	
Q1:	
Q2:	

Slogan for oral sums: Ready that is. E.g. for the sum $2+1+5-1-5+1$, say Ready two...+ one... five... minus one... five...+ one. that is?

Book Work

Maximum 5 to 6 pages should be done in a week, but have to finish only one page a day (one page will take approximately 5-12 minutes)

Everyday Practice

SPEEDWRITING Fun

0123456789 or 9876543210

Speedwriting should be written horizontally and should be properly aligned

START writing the above number continuously when your count starts 1 and STOP when it reaches 60 which means the time limit is set for 1 minute. You will hear a BEEP sound to STOP.

OK get ready !! Take your Book and Pencil

YOUR COUNT STARTS now!!!!

If you have written 6 lines, your score is 60 . If you have written 10 lines then your score is 100.

Write YOUR SCORE on your notebook

RANDOM NUMBERS FUN

Take your book , get ready, the numbers will be displayed n called out randomly on the screen and you start writing the numbers .

Dear kids if you skip any number doesn't matter continue with the next number. OK ready.

COMPLEMENTARY NUMBERS

A Process of Thoughtlessness

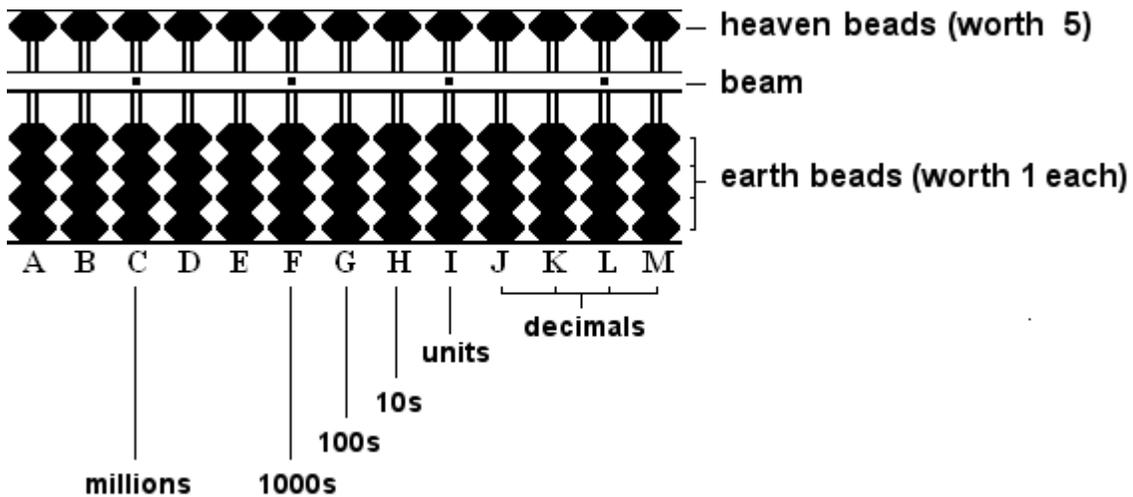
In competent hands, abacus is a very powerful and efficient calculating tool. Much of its speed is attributed to the concept of **mechanization**. The idea is to minimize mental work as much as possible and to perform the task of adding and subtracting beads mechanically, without thought or hesitation. In a sense to develop a process of thoughtlessness. With this in mind, one technique employed by the operator is the use of **complementary numbers** with respect to 5 and 10.

- In the case of 5, the operator uses two groups of complementary numbers:
4 & 1 and 3 & 2.

- In the case of 10, the operator uses five groups of complementary numbers:
9 & 1, 8 & 2, 7 & 3, 6 & 4, 5 & 5.

With time and practice using complementary numbers becomes effortless and mechanical. Once these techniques are learned, a good operator has little difficulty in keeping up with (even surpassing) someone doing the same addition and subtraction work on an electronic calculator.

The following examples illustrate how complementary numbers are used to help solve problems of addition and subtraction. In all cases try not to think beforehand what the answer to a problem will be. Learn these simple techniques and you'll be amazed at how quickly and easily correct answers materialize, even when problems contain large strings of numbers.



Addition

In addition, always subtract the complement.

Add: $3 + 3 = 6$

Set 3 on rod A.

Add 3.

Because rod A doesn't have 3 available, use the complementary number.

The complementary number for 3 with respect to 5 is 2.

Therefore add 5 and subtract the complementary 2 from 3 on rod A .

The answer 6 remains. (Fig.8)

$3 + 3 = 6$ becomes $3 + 5 - 2 = 6$

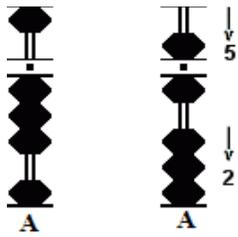


Fig.8

Add: $4 + 4 = 8$

Set 4 on rod A.

Add 4.

Rod A doesn't have 4 available so use the complement again.

The complementary number for 4 with respect to 5 is 1.

Therefore add 5 and subtract the complementary 1 from 4 on rod A .

This leaves the answer 8. (Fig.8a)

$4 + 4$ becomes $4 + 5 - 1 = 8$

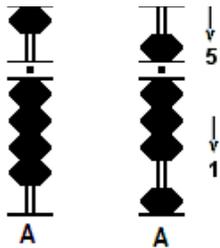


Fig.8a

Similar exercises:			3+2
3+3	3+4	4+1	4+2
4+3	4+4		

Add: $4 + 8 = 12$

Big Friends Small Friends Combinations

$+9 = -1 + 10$	$-9 = -10 + 1$
$+8 = -2 + 10$	$-8 = -10 + 2$
$+7 = -3 + 10$	$-7 = -10 + 3$
$+6 = -4 + 10$	$-6 = -10 + 4$
$+5 = -5 + 10$	$-5 = -10 + 5$
$+4 = -6 + 10$	$-4 = -10 + 6$
$+3 = -7 + 10$	$-3 = -10 + 7$
$+2 = -8 + 10$	$-2 = -10 + 8$
$+1 = -9 + 10$	$-1 = -10 + 9$
$+4 = +5 - 1$	$-4 = +1 - 5$
$+3 = +5 - 2$	$-3 = +2 - 5$
$+2 = +5 - 3$	$-2 = +3 - 5$
$+1 = +5 - 4$	$-1 = +4 - 5$
$+9 = +4 - 5 + 10$	$-9 = -10 + 5 - 4$
$+8 = +3 - 5 + 10$	$-8 = -10 + 5 - 3$
$+7 = +2 - 5 + 10$	$-7 = -10 + 5 - 2$
$+6 = +1 - 5 + 10$	$-6 = -10 + 5 - 1$