Mechanization

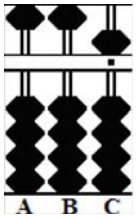
Occasionally the process of mechanization can be looked at in a slightly different way. Specifically when adding or subtracting 6, 7, 8 & 9, the process can sometimes be simplified. Here is a pattern that works very well for some bead configurations.

By way of explanation, I'll offer some simple examples.

ADDITION:

Example 1: 5 + 8 = 13

Rod C is the unit rod. Set 5 on rod C.

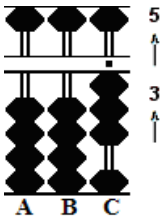


Conventionally we're taught to subtract the compliment of 8 (in this case 2) from the unit rod. This leaves 3. From here we continue by adding a 10 bead to make 13. While this is completely correct, there is another way to think of it.

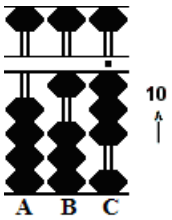
Try thinking of it this way. When adding 8 to 5 on rod C all we really need to do is move the beads **up 5** and **up 3**; in essence **up 8.** Then add the 10 bead to equal 13.

In other words; in order to add 8 all we do is **up 8**.

Thinking this way the problem 5 + 8 = 13 becomes:



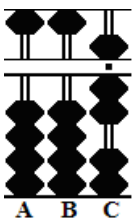
up 5 and **up 3**



then **up 10** to equal 13

Example 2: 7 + 7 = 14

Rod C is the unit rod. Set 7 on rod C.

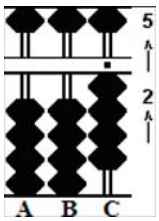


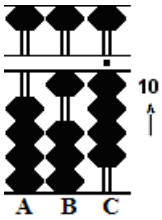
In this example, when we add 7 to 7 we're taught to subtract 3 which is the complement of 7. This leaves 4. Then add a 10 bead to equal 14. Once again if we think of it in a slightly different way the process may be a little easier to see.

Think of it this way; when we add 7 to 7 all we have to do is move **up 5** and **up 2**; in essence **up 7**. Then add the 10 bead to rod B to equal 14.

In other words; in order to add 7 all we do is **up 7**.

Thinking this way the problem 7 + 7 = 14 becomes:





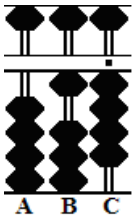
up 5 and **up 2** then **up 10** to equal 14

SUBTRACTION:

In subtraction the process works the same way but in reverse.

Example 3: 14 - 8 = 6

Rod C is the unit rod. Set 14 on your soroban.

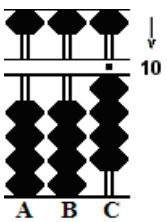


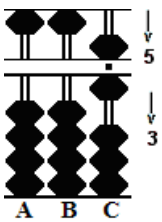
First subtract the 10 bead. Then we're taught to add the compliment of 8 (which is 2). This leaves 6. While perfectly valid thinking slightly differently makes the subtraction a little easier.

Think of it this way; first subtract the 10 bead. Then on the unit rod move **down 5** and **down 3**.

In other words; in order to subtract 8 all we do is **down 8**.

Thinking this way the problem 14 - 8 = 6 becomes:

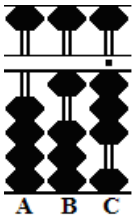




down 10 then **down 5** and **down 3** to equal 6.

Example 4: 13 - 6 = 7

Rod C is the unit rod. Set 13 on your soroban.

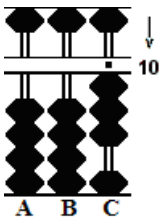


First subtract the 10 bead. Then we're taught to add the compliment of 6 (which is 4). This leaves 7.

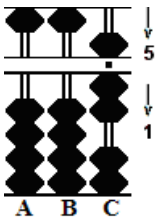
Try it this way. First subtract the 10 bead. Then on the unit rod move **down 5** and **down 1**.

In other words; in order to subtract 6 all we do is **down 6**.

13 - 6 = 7 becomes



down 10



then **down 5** and **down 1** to equal 7.

It's evident that no matter the thought process, the bead movements in the two schools of thinking are exactly same. Each is equally efficient. But for some reason many soroban operators I've talked to do their work using this slightly altered mindset. Having said that, one of the most fascinating things about learning soroban is that everyone will come to this in their own way.

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