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ALEX'S ADVENTURES IN NUMBERLAND

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World's fastest number game wows spectators and scientists

Flash Anzan, in which contestants add up numbers with an imaginary abacus, reveals the astonishing potential of the human brain – and makes for a breathtaking spectacle too



Sum talent:

Contestants at the All Japan Soroban Championship 2012

As I mentioned in a [previous post](#), a million Japanese children every year learn the abacus, which they call *soroban*.

The high point of the abacus calendar is the All [Japan](#) Soroban Championship, which took place earlier this year in Kyoto.

And the high point of the championship is the category called "Flash Anzan" – which does not require an abacus at all.

Or rather, it requires contestants to use the mental image of an abacus. Since when you get very good at the abacus it is possible to calculate simply by imagining one.

In Flash Anzan, 15 numbers are flashed consecutively on a giant screen. Each number is between 100 and 999. The challenge is to add them up.

Simple, right? Except the numbers are flashed so fast you can barely read them.

I was at this year's championship to see Takeo Sasano, a school clerk in his 30s, break his own world record: he got the correct answer when the numbers were flashed in 1.70 seconds. In the clip below, taken shortly before, the 15 numbers flash in 1.85 seconds. The speed is so fast I doubt you can even read *one* of the numbers.

Click [here](#) to see a longer clip from 2011, showing Sasano break the world record at 1.80 seconds. Note that the format of the competition is a bit like an arithmetical version of a spelling bee. The remaining contestants are sitting in chairs. The numbers are flashed.

The contestants write down their answers and exchange papers for marking. The result is displayed on the screen, and those who got the correct answer stand up.

Flash Anzan was invented a few years ago by an abacus teacher, Yoji Miyamoto, who wanted to design a maths game that was only solvable by calculation with an imaginary abacus, a skill known as *anzan*.

When the contestant sees the first number he or she instantly visualizes the number on the imaginary abacus. When they see the second number they instantly add it to the number already visualized, and so on. At the end of the game the contestants cannot remember any of the numbers, or the intermediate sums. They only retain the final answer on the imaginary abacus.

Performing arithmetic using an imaginary abacus is the fastest way to perform mental calculations. Earlier this year the Japanese Naofumi Ogasawara won the Mental Calculation World Cup using the technique. The previous winner, Priyashi Somani, from India, did too.

When I returned to London, I met up with Brian Butterworth, professor of cognitive neuropsychology at University College London and the author of *The Mathematical Brain*, and showed him some video clips of Flash Anzan.

He was flabbergasted. "I don't see how you can represent whatever that number was on a mental abacus faster than you can say it," he said, adding: "A lot of money should be spent doing research on how the brain can manage to do this, because I think this is a really extraordinary thing!"

In 2008 I visited Yoji Miyamoto's abacus school in Tokyo and he showed me another fascinating aspect of Flash Anzan. Since abacus and anzan calculation use a different part of the brain from pencil and paper arithmetic, as discussed here, it is possible to play language games while playing Flash Anzan.

In this clip the two girls are adding up 30 digits in 20 seconds while simultaneously playing "shiritori", a Japanese game in which you must say a word beginning with the last syllable of the previous word.

If you want to practise Flash Anzan there are several sites on the internet and some mobile apps. How about a British contestant at the All Japan Soroban Championship in 2013?

*I was in Japan making a radio documentary about numeracy, *Land of the Rising Sums*, which was broadcast on BBC Radio 4 at 11am on Monday 29 October. [Listen again](#)*

Reference : <http://www.guardian.co.uk/science/alexs-adventures-in-numberland/2012/oct/29/mathematics> (Downloaded Dec 16,2012)