That's Sum Memory

The **Fibonacci Sequence is one of the most famous sequence of numbers in mathematics. Many books have been written on the area in nature where these numbers are found.**

1, 1, 2, 3 , 5, 8 , 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181,6765, ...

The first and second numbers in the sequence are a 1 and then a 1.
To find the 3rd number add the 1st and 2nd numbers 1 + 1 = 2 and place that number 3rd.
To find the 4th number add the 2nd and 3rd numbers 1 + 2 = 3 and place that number 4th.
To find the 5th number add the 3rd and 4th numbers 2 + 3 = 5 and place that number 5th.
To find the 6th number add the 4th and 5th numbers 3 + 5 = 8 and place that number 6th.
To find the 7th number add the 5th and 6th numbers 5 + 8 = 13 and place that number 7th

In general you do not memorize these numbers. You use a rule and starting with the first 2 numbers you find the other numbers using the rule. More advanced mathematics courses will expand on this concept. It is the basis for many calculus concepts.

You can have your students discover this sequence when you do this amazing memory trick.

Step 1: Write out the following 10 digit number **1 1 2 3 5 8 3 1 4 5** on a sheet of paper.

Step 2: Look at the first 2 numbers and hand the paper to a student. Say that you have the ability to memorize many large numbers. To show this is true you will repeat the numbers back to them. Say the numbers in order and have the student verify you are correct.

How do you know the digits: You may want to use a slip of paper to help with the work but if you can do it without paper its even more impressive. You **start with the 1 and the 1.** Add them together to get the next number. Keep adding the last 2 numbers to get the next one. If the total is a 2 digit number drop the 10s digit and say the ones digit. Stop when you get 10 digits

Extension 1. Hand out 4 or 5 more papers but start the sequence with numbers other than 1 and 1, and do the same thing. It will look like you have memorized several very large numbers.

1 4 5 9 4 3 7 0 7 7 5 7 2 9 1 0 1 2 3 5 3 9 2 1 3 4 7 1 8 9 2 7 9 6 5 1 6 7 3 0

Extension 2. Have students make up some of their own and try the trick on others. You may discover interesting issues develop. Some pairs start to repeat and do not make good sequences. Two examples of this is 5 5 0 5 5 0 5 5 0 5 are 2 6 8 4 2 6 8 4

Extension 3. Try making up entirely new rules of your own. Many of the rules you try will have repeats in the first few numbers and not be useful. It may take a few tries to find a rule you like. The effort will produce a chance to discover many number patterns.

Multiply 2 numbers and if the product is a 2 digit number drop the 10s digit and say the 1's digit.

2 7 4 8 2 6 2 2 4 8 8 9 2 8 6 8 8 4 2 8 3 8 4 2 8 6 8 6 2