Fresnillense Numbers

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About the Author

Jose de Jesus Camacho Medina graduated from the Higher Technical Institute of Fresnillo in the year 2007 as an engineer in Computer Systems with honors, their knowledge allowed him to make their way in the education sector and business from the year 2008.In the year 2011 concludes its Master studies in Mathematics Education with line of research in applied mathematics at the Autonomous University of Zacatecas. In the field of education professional training has been developed as a professor of the Interamerican University for the Development, Autonomous University of Durango, Tecnológico de Monterrey, Higher Technical Institute of Fresnillo , University CNCI Zacatecas and Institute of Education Monreal Sandoval, activity that shares with their daily work of Independent Assessor of Computer Systems. It is a research fellow at the OEIS.org (Encyclopedia of whole sequences) Making contributions from the year 2013 in the theory of numbers and Recreational Mathematics.

ABSTRACT

This article educational and recreational mathematics, broadcasts a new category of numbers designed by the author in the year 2014 to which I have called "Numbers Fresnillenses" which permeates this title to a sense of belonging because I have is a native from the city of Fresnillo Zacatecas Mexico. This new classification of numbers you have an exquisite property not previously discovered by the mathematical community; it will be a great pleasure for fans of the numbers.

Keywords: Fresnillense Number, New Number, Recreational Mathematics, Education, Number Theory.

The numbers FRESNILLENSES: A PROPOSAL FOR A Recreational Mathematics

"Wherever a number is the beauty"

[Proclo]

Is exquisite and incredible what one can come to find if you explore and ascertained by taste in the territories of the mathematics, in the year 2014, in symphony with the convenience of the home, single pencil and paper were sufficient to find a property sublime that only satisfy a finite amount of numbers, a property that emulates the poem and pours beauty in all its splendor.

The feat was to find natural numbers that meet the following:

"A natural number that is equal to the sum of its digits, where each digit is lifted from the power one until the power equal to the number of digits of number".

It has always been said that you are looking for is, after Squint to natural numbers of one, two and three figures began to emerge the first results:

A FIGURE	Two CRIFRAS	Three Figures
$\mathbf{1 = 1^1}$	$\mathbf{90 = (9^1 + 0^1) + (9^2 + 0^2)}$	$\mathbf{336 = (3^1 + 3^1 + 6^1) + (3^2 + 3^2 + 6^2) + (3^3 + 3^3 + 6^3)}$
$\mathbf{2 = 2^1}$		
$\mathbf{3 = 3^1}$		
$\mathbf{4 = 4^1}$		
$\mathbf{5 = 5^1}$		
$\mathbf{6 = 6^1}$		
$\mathbf{7 = 7^1}$		
$\mathbf{8 = 8^1}$		
$\mathbf{9 = 9^1}$		

The feat before mentioned is inspired by other known numbers by the mathematical community as ***numbers narcissistic***, to mention an example: **153=13+53 +33,** let us take a look at how you honor the term narcissism, are numbers that seem to love too themselves and in spite of applying certain mathematical operations such as powers and amounts to the digits that make up are not transformed, thus maintaining its original structure.

This was a starting point for designing the ***"Fresnillenses Numbers",*** which were until then eleven numbers found that compliance with the abovementioned special property, so much wonder generated numeric two questions:

1. How are infinite nature?

2. Do these numbers with exquisite property have already been discovered by the mathematical community?

One of the activities that I made in my daily work is the teaching practice and it is there where I try to merge the goals that I was entrusted with the execution of the Recreational Mathematics, always seeking to expand and disclose in an entertaining way the mathematical knowledge manifested in the classroom.

It is a common practice in my classes to allocate a space to mathematics recreational, ten to twelve minutes opens a section called "breaking of ice", where you share to students interesting and relevant issues of mathematics , with the purpose of increasing your acquis in this area, a space that at the same time serves as a rest and respite, a kind of pause for health where the curiosities mathematics, anecdotes, puzzles and challenges travel by the classroom in an entertaining way fostering an environment of reflection and the time of relaxation.

Recreational Mathematics has always fascinated me, I try to soak up the this area constantly and even to conceive new ideas for the generation of projects, the essence of this article is proof of this.

Returning to the article, the next step was to try to answer the two questions raised, for this I made a fundamental step: consult the **electronic encyclopaedia of sequences of integers** (**OEIS** by its initials in English, *On-Line Encyclopedia of Integer Sequences*) that is a database that records sequences of integers. The encyclopedia is freely available on the Internet at **Http://oeis.org/**.The information that contains the **OEIS** is of interest for mathematicians professional but also serves as entertainment for anyone who wishes to practice the Recreational Mathematics.

Had to check if this idea had been registered in the electronic encyclopaedia of whole sequences or in other sources of physical and digital, found no evidence of any kind.

As a member of the ***OEIS.org*** since 2013, checked in the sequence of these numbers, which was validated by administrators of the same and in cooperation with mathematicians responsible for the encyclopedia, showed that there are only 54 numbers, therefore responded to both questions, were numbers of novelty and finite.

The sequence has the registry **http://oeis.org/A240511** that you can consult on the internet without any problem. Mathematicians members of the OEIS.org calculated terms until $\mathbf{10^{32}}$ $(54\ \textit{términos de la secuencia} : http://oeis.org/A240511/b240511.txt)$

This list presents the first twenty terms of the sequence of the ***Numbers Fresnillenses***:

1, 2, 3, 4, 5, 6, 7, 8, 9, 90, 336, 4538775, 183670618662, 429548754570, 3508325641459, 3632460407839, 9964270889420, 10256010588126, 509608423720931, 589543349257828,…

As mathematical curiosity, I share a formula that I developed to calculate the numbers Fresnillenses, validated also by mathematicians of the OEIS.org:

$$f(n) = \sum_{i=1}^{\lfloor \log_{10} f \rfloor + 1} \left(\sum_{n=0}^{\lfloor \log_{10} f \rfloor + 1} \left(\left\lfloor \frac{f}{10^n} \right\rfloor - 10 \left\lfloor \frac{f}{10^{n+1}} \right\rfloor \right)^i \right)$$

Yes *f(n)-n*=0, then *'n'* is a number Fresnillense.

As you can see, the property that meet these exquisite numbers is inordinately beautiful, you can also take advantage for our students to practice their elementary arithmetic, through the operation of sums and powers, and even that student open your mind to other possibilities and generate new concepts and ideas, the theory of numbers is too fertile in that regard. Then they share an activity that can be transmitted in their classes where it applies this new mathematical concept.