Title: 5-Golden Pattern
Author: Gabriel Martin Zeolla
Comments: 9 pages, 4 graphic tables.
Subj-class: Theory number
gabrielzvirgo@hotmail.com

Abstract: This paper develops the divisibility of the so-called **Simple Primes numbers-5**, the discovery of a pattern to infinity, the demonstration of the inharmonics that are 2,3,5 and the harmony of 1. The discovery of infinite harmony represented in fractal numbers and patterns. This is a family before the prime numbers. This paper develops a formula to get simple prime number-5 and simple composite number-5
The simple prime numbers-5 are known as the **7-rough numbers**.

Keywords: Golden Pattern, 7-Rough number, divisibility, Prime number, composite number.

Simple Prime Number-5

In order to understand how simple Primes numbers work in this text, the approach is partial, only use divisible digits from 1 to 5.
For a number to be considered Simple Prime number-5 by dividing it by 2, 3, 4, 5 must give a decimal result.
Simple Prime numbers-5 are those that are only divisible by themselves and by unity. Those that can be divided by other numbers from (2 to 5) are called Simple composite number-5
Positive integers that have no prime factors less than 7.

Simple Prime Number $\in \mathbb{Z}$
The simple prime numbers-5 maintain equivalent proportions in the positive numbers and also in the negative numbers.
In this paper the demonstrations are made with numbers $\in \mathbb{N}$

Introduccion

This work is the continuation of the **Golden Pattern** papers published in http://vixra.org/abs/1801.0064, in which the discovery of a pattern for simple prime numbers has been demonstrated (For a number to be considered Simple Prime number-7 by dividing it by 2, 3, 4, 5, 6, 7, 8, 9, must give a decimal result.). If it resulted in integers numbers, it would be simple composite number-7.
Reference A008364 The On-Line Encyclopedia of Integer Sequences.

In this paper we continue to develop demonstrations in which it is easy to see and with very simple accounts that the simple prime numbers of the 5-Golden Pattern maintain impressive proportions and equivalences.
All the numbers are kept in a precise order, forming equivalent sums and developing an infinite harmony.

Special cases

In this text the N ° 2, 3, 5 are not Simple Prime number-5. The calculations and proportions prove it and its reductions also. We can observe in the table that these numbers are simple composite number-5 since in the following patterns they work in that way.

The number 1 is a Simple prime number-5. It is a number that generates balance and harmony, it is a necessary number, it is the first number of the pattern, but it is also the representative of the first number of each pattern to infinity.
Graph 3 and 4 of this paper demonstrate this.
A007775 Reference The On-Line Encyclopedia of Integer Sequences.

The 1 is Simple Prime Number, since the subsequent reductions in the Patterns to infinity in its place always reduce to 1 and maintain a precise equivalence and proportions.
91 = 1 This is the first Number of Pattern 2
181 = 1 This is the first Number of Pattern 3

The sums of the digits of these examples is 1.
91=9+1=**10** =1+0= **1**

1+8+1=**10** =1+0= **1**

Construction of the 5-Golden Pattern

The product of the prime numbers up to number 5 inclusive, multiplied by 3, generates a result that indicates how many numbers there are in the 5-Golden Pattern. (The number 3 arises from the 3 different reductions that occur in each of its sequences: in A=6 * n + 1 (reductions 1,4,7) in B=6 * n-1 (reductions 2,5,8)

Example

(2*3*5)*3 = 30*3 = **90**

5-Golden Pattern

The pattern found is from 1 to 90. It repeats itself to infinity respecting that proportion every 90 numbers. The 5-Golden Pattern is formed by a rectangle of 6 columns x 15 rows.
The simple prime numbers-5 fall in only two columns in the one of the 1 (Column A) and the one of the 5 (column B) They are painted yellow. The rest of the columns are simple composite numbers-5. These are painted by red color.

The 5-Golden Pattern is divided into three Triplet Sectors. From 1 to 30, from 31 to 60 and from 61 to 90 proportional. These are identical, the only variable are their reductions. Which combine to the left in combinations of 1,4,7 and to the right in combinations of 2,5,8. We can see that each sector works as a pattern with the following. The same happens with the 5-Golden Pattern.

Example:

5-Golden Pattern (1 al 90)

Sector 1 (1 al 30)
Sector 2 (31 al 60)
Sector 3 (61 al 90).

Red: Reduction (sum of the digits of simple prime numbers-5)

.Red	Sector 1						Red
1	1	2	3	4	5	6	
7	7	8	9	10	11	12	2
4	13	14	15	16	17	18	8
1	19	20	21	22	23	24	5
	25	26	27	28	29	30	2

Red	Sector 2						Red
4	31	32	33	34	35	36	
1	37	38	39	40	41	42	5
7	43	44	45	46	47	48	2
4	49	50	51	52	53	54	8
	55	56	57	58	59	60	5

Red	Sector 3						Red
7	61	62	63	64	65	66	
4	67	68	69	70	71	72	8
1	73	74	75	76	77	78	5
7	79	80	81	82	83	84	2
	85	86	87	88	89	90	8

Graph table 1

In each **Sector** there are 8 simple prime numbers-5. And in the Total Pattern there is the triple, Then there are 24 Simple Primes numbers-5.
Nps= Simple Prime Numbers-5

In columns A there are composite numbers greater than 3 and simple prime numbers under the sequence $6 * n + 1$
In column B there are composite numbers greater than 3 and simple prime numbers under the sequence $6 * n - 1$

Throughout this text we will work with these two columns mainly.

1) Addition Simple Primes Number-5 by **Sector.**

Nps= Simple prime Numbers-5

$$Sector\ 1 \sum_{Nps \geq 1}^{30} 8\ Simple\ \text{prime}\ numbers - 5 = 120$$

$$Sector\ 2 \sum_{Nps \geq 31}^{60} 8\ Simple\ \text{prime}\ numbers - 5 = 360 \qquad \text{Difference 240}$$

$$Sector\ 3 \sum_{Nps \geq 61}^{90} 8\ Simple\ \text{prime}\ numbers - 5 = 600 \qquad \text{Difference 240}$$

Total

$$5 - Golden\ Pattern \sum_{Nps \geq 1}^{90} 24\ Simple\ Prime\ numbers - 5 = 1080$$

Conclusion 1

Each SECTOR is multiple x3, x5 with respect to the first. Also to infinity if we are adding 30 next numbers (x7, x9, x11, etc.)

The differences 240 are repeated for every 30 numbers. The difference is equal to the sum of **simple prime number-5 of Sector 1** by two.
The total is equal to the sum of **simple prime number-5 of Sector 1** by 9.
Total 1080=120*9

2) Addition of Composite numbers-5 by Sector (only composite numbers divisible by numbers greater than 3, column A, B)

Nc= Composite Numbers-5

$$Sector\ 1 \sum_{Nc \geq 1}^{30} 2\ \text{Composite}\ numbers - 5 = 30$$

$$Sector\ 2 \sum_{Nc \geq 31}^{60} 2\ \text{Composite}\ numbers - 5 = 90 \qquad \text{Difference 60}$$

$$Sector\ 3 \sum_{Nc \geq 61}^{90} 2\ \text{Composite}\ numbers - 5 = 150 \qquad \text{Difference 60}$$

Total

$$5 - Golden\ Pattern \sum_{Nc \geq 1}^{90} 6\ Composite\ numbers - 5 = 270$$

Conclusion 2

Each SECTOR is multiple x3, x5 with respect to the first. Also to infinity if we are adding 30 next numbers (x7, x9, x11, etc.).
The difference 240 are repeated for every 30 numbers. The difference is equal to the sum of **simple composite number-5 of Sector 1** by 2.
The total is equal to the sum of **simple composite number-5 of Sector 1** by 9.
Total =270=30*9

5-Golden Pattern, Simple Prime number-5

We can observe how the numbers are arranged in two columns, to the left the simple prime numbers-5 are reduced to combinations of 1,4,7 (column A) and to the right to combinations of 2,5,8 (column B). The reductions are formed by the sum of their digits.

This pattern works every 90 numbers. This works to infinity. If we started from 90 we would obtain the following table up to 180 in which we would find that the locations of the yellow colors (simple prime numbers-5) and red (Simple composite numbers-5) coincide in 100% of the cases.

The 5-Golden pattern keeps the colors in the same location and also the numbers match their reductions.

Example

1=1

91= 9+1=10, 1+0=**1**

Red: Reduction (sum of the digits of simple prime numbers-5)

Red	5- Golden Pattern						Red
1	1	2	3	4	5	6	
7	7	8	9	10	11	12	2
4	13	14	15	16	17	18	8
1	19	20	21	22	23	24	5
	25	26	27	28	29	30	2
4	31	32	33	34	35	36	
1	37	38	39	40	41	42	5
7	43	44	45	46	47	48	2
4	49	50	51	52	53	54	8
	55	56	57	58	59	60	5
7	61	62	63	64	65	66	
4	67	68	69	70	71	72	8
1	73	74	75	76	77	78	5
7	79	80	81	82	83	84	2
	85	86	87	88	89	90	8

Red	next Pattern						Red
1	91	92	93	94	95	96	
7	97	98	99	100	101	102	2
4	103	104	105	106	107	108	8
1	109	110	111	112	113	114	5
	115	116	117	118	119	120	2
4	121	122	123	124	125	126	
1	127	128	129	130	131	132	5
7	133	134	135	136	137	138	2
4	139	140	141	142	143	144	8
	145	146	147	148	149	150	5
7	151	152	153	154	155	156	
4	157	158	159	160	161	162	8
1	163	164	165	166	167	168	5
7	169	170	171	172	173	174	2
	175	176	177	178	179	180	8

Graph table 2

A007775 Reference The On-Line Encyclopedia of Integer Sequences

3) Simple Prime Numbers-5 by Pattern

Nps= Simple Prime Numbers-5

$$\text{Golden Pattern} - 5 \sum_{Nps \geq 1}^{90} 24\ \textit{Simple Prime numbers} - 5$$

$$\textit{Pattern}\ 2 \sum_{Nps \geq 1}^{180} 48\ \textit{Simple Prime numbers} - 5$$

$$\textit{Pattern}\ 3 \sum_{Nps \geq 1}^{270} 72\ \textit{Simple Prime Numbers} - 5$$

Conclusion 3

It is repeated to infinity every 90 numbers. The 5-Golden Pattern is multiplied by x2, x3, x4, x5, etc with respect to the following patterns.

4) Addition Simple Primes Numbers-5 by Pattern

Nps= Simple Prime Numbers-5

$$5 - \text{Golden Pattern} \sum_{Nps \geq 1}^{90} = 1.080$$

$$Pattern\ 2 \sum_{Nps \geq 91}^{180} = 3.240$$ Difference with the **5 − Golden Pattern is** x3

$$Pattern\ 3 \sum_{Nps \geq 181}^{270} = 5.400$$ Difference with the **5 − Golden Pattern** is x5

Conclusion 4

The model continues to multiply and is repeated to infinity every 90 numbers. (Odd Multiples for totals, x3, x5, x7,x9, etc.)
Difference with the previous value in all cases is 2160. The difference 2160 are repeated for every 90 numbers.
The difference is equal to the sum of simple prime number-5 of **5-Golden Pattern** by two.

5) Addition Simple Primes Numbers-5 by Pattern in total

Nps= Simple Prime Numbers-5

$$24 \text{ simple prime number in } 5 - \text{Golden Pattern} \sum_{Nps \geq 1}^{90} = 1.080$$

$$48 \text{ simple prime number} - 5 \ \ to\ Pattern\ 2 \sum_{Nps \geq 1}^{180} = 4.320$$

Difference with the **5 − Golden Pattern** is **x 4**

$$72 \text{ simple prime number} - 5 \ \ to\ Pattern\ 3 \sum_{Nps \geq 1}^{270} = 9.720$$

Difference with the **5 − Golden Pattern** is **x 9**

$$96 \text{ simple prime number} - 5 \ \ to\ Pattern\ 4 \sum_{Nps \geq 1}^{360} = 17.280$$

Difference with the **5 − Golden Pattern** is **x 16**

$$120 \text{ simple prime number} - 5 \ \ to\ Pattern\ 5 \sum_{Nps \geq 1}^{450} = 27.000$$

Difference with the **5 − Golden Pattern** is **x 25**

Conclusion 5

The model continues to multiply and is repeated to infinity every 90numbers. (Odd Multiples for totals, x4, x9, x16,x 25, etc.).

The differences work with the formula x^2

Example

5-Golden Pattern $1^2 = \mathbf{1}$
Pattern 2= 2^2=**4**
Pattern 3= $3^2 = \mathbf{9}$
Pattern 4= $4^2 = \mathbf{16}$
Pattern 5= 5^2= **25**

6) <u>Addition of Composite numbers-5 by Pattern (only composite numbers divisible by numbers greater than 3)</u>

Nc= Composite Numbers-5

$$5 - \text{Golden Pattern} \sum_{Nc\geq 1}^{90} 6\ composite\ number - 5 = \quad 270$$

$$Pattern\ 2 \sum_{Nc\geq 91}^{180} 6\ composite\ number - 5\ =\ 810$$

Difference with the 5 – Golden Pattern is x3

$$Pattern\ 3 \sum_{Nc\geq 181}^{270} 6\ composite\ number - 5 = 1350$$

Difference with the 5 – Golden Pattern is x5

<u>Conclusion 6</u>

There is also a difference between each Pattern of 540. These is equal to the sum of the numbers composite-5 by 2.
We could keep multiplying, x7, x9, x11, etc. To infinity every 90 more numbers.

7) <u>Addition of composite Numbers-5 by Pattern in total, (only composite numbers divisible by numbers greater than 3)</u>

Nc= Composite Numbers-5

$$6\ \text{Composite number in}\ 5 - \text{Golden Pattern} \sum_{Nc\geq 1}^{90} = 270$$

$$12\ Composite\ number - 5\ \ to\ Pattern\ 2 \sum_{Nc\geq 1}^{180} = 1.080$$

Difference with the **5 – Golden Pattern** is **x 4**

$$18\ Composite\ number - 5\ \ to\ Pattern\ 3 \sum_{Nc\geq 1}^{270} = 2.430$$

Difference with the **5 – Golden Pattern** is **x 9**

<u>Conclusion 7</u>

The number of composite number-5 is related to the next pattern every 6 more numbers.
The model continues to multiply and is repeated to infinity every 90 numbers. (Odd Multiples for totals, x4, x9, x16,x 25, etc.).

The differences work with the formula x^2

<u>Example</u>

5-Golden Pattern $1^2 = \mathbf{1}$
Pattern 2= 2^2=**4**

Pattern 3= $3^2 = \mathbf{9}$
Pattern 4= $4^2 = \mathbf{16}$
Pattern 5= 5^2= **25**

Demonstration 1
Formula to get simple prime number-5

Example and demonstration of the formula is divided into 2 columns.

On the left we will calculate the simple prime number-5 located in (A), on the right we will calculate the prime numbers located in (B).

$P_{5\ (A)}$= $S. Prime\ numbers - 5\ in\ column(A)$ $Z = numbers \geq 0$	$P_{5\ (B)}$ = $S. Prime\ numbers - 5\ in\ column\ (B)$ $Z = numbers \geq 0$
$P_{5\ (A)} = (6 * n_{\substack{n\geq 0 \\ n\neq 4+5*Z}} + 1)$ $n \neq 4,9,14,19,24,29, \dots \dots$ **Using values correct for:** $n = 0,1,2,3,5,6,7,8,10,11,12, \dots$ **We get the following Simple prime numbers-5.** $P_{5\ (A)} = 1,7,13,19,31,37,43,49,61,67,73,79,97, \dots$	$P_{5\ (B)} = (6 * n_{\substack{n>1 \\ n\neq 6+5*Z}} - 1)$ $n \neq 6,11,16,21,26, \dots \dots$ **Using correct values for** $n = 2,3,4,5,7,8,9,10,12,13,14, \dots$ **We get the following Simple prime numbers-5.** $P_{5\ (B)} = 11,17,23,29,41,47,53,59,71,83,89, \dots$

The formula for calculating the Simple Prime numbers-5 is based on Zeolla Gabriel's paper on how to obtain prime numbers.
http://vixra.org/abs/1801.0093

Reference A007775 The On-Line Encyclopedia of Integer Sequences

Demonstration 2
Formula to get simple composite number-5

Example and demonstration of the formula is divided into 2 columns.

On the left we will calculate the simple composite number-5 located in (A), on the right we will calculate the composite numbers-5 located in (B).

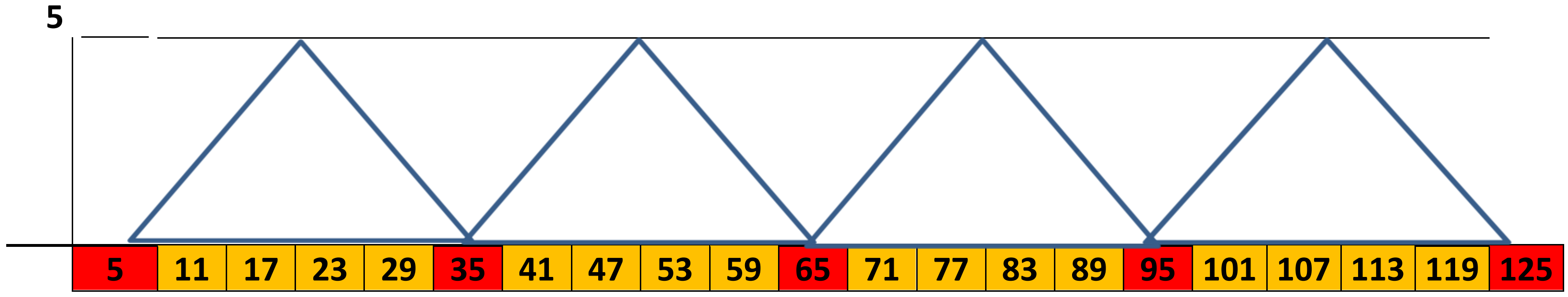
$Nc_{5\ (A)}$= $S. Composite\ numbers - 5\ in\ column(A)$ $Z = numbers \geq 0$	$Nc_{5\ (B)}$= $S. Composite\ numbers - 5\ in\ column\ (B)$ $Z = numbers \geq 0$
$Nc_{5\ (A)} = (6 * n_{n=4+5*Z} + 1)$ $n = 4,9,14,19,24, \dots$ **We get the following S. Composite numbers-5.** $Nc_{5\ (A)} = 25,55,85,115,145, \dots$	$Nc_{5\ (B)} = (6 * n_{n=1+5*Z} - 1)$ $n = 1,6,11,16,21, \dots \dots$ **We get the following S. Composite numbers-5.** $Nc_{5\ (B)} = 5,35,65,95,125, \dots$

Graphics

In the vertices of the triangles on the line are the composite numbers-5. The rest are Simple Prime numbers-5

The base triangles 5 form composite numbers multiples of 5.

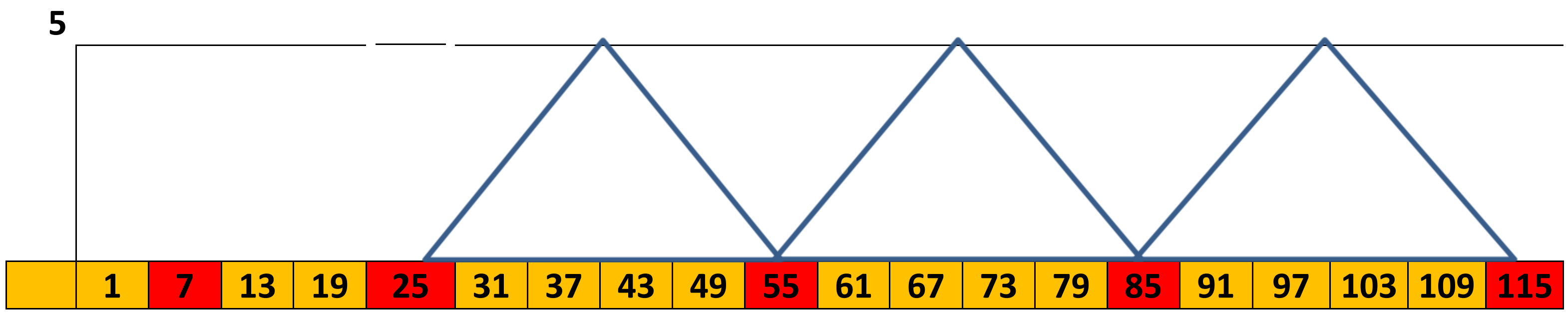
$$\text{Sequence } B = 6 * n - 1 \qquad n > 0$$



Graphic 3

Reference A016969 (The On-line Enciclopedia of integers sequences)

$$\text{Sequence } A = 6 * n + 1 \qquad n \geq 0$$



Graphic 4

Reference A016921 (The On-line Enciclopedia of integers sequences)

Final conclusion

The 5-Golden Pattern is the confirmation of an order to infinity in equilibrium, each column is in harmony and balance with the other, the demonstration of the inharmony of 2, 3, 5, is very great. The number 1 is necessary and generates balance. Simple Prime Numbers-5 are a family prior to the Classical Prime Numbers.
The sum of the composite numbers-5 and the simple prime numbers-5 demonstrate incredible proportions that indicate that they have a fractal behavior.
The reductions of the 5-Golden Pattern are infinitely repeated every 90 numbers.
The proportions of the 5-Golden pattern are exactly equal and proportional to the 7-golden pattern.
(http://vixra.org/abs/1801.0064), and other patterns with different prime numbers.
The formula for obtaining the simple Prime numbers-5 and composite number-5 works successfully, we only have to condition (n) to obtain the expected results.
I can affirm that there are infinite different patterns with different prime divisors, which maintain a great harmony between columns A, B, they are always in balance, they present infinite proportions, fractal symmetries, All patterns have the same procedure. They are all different and they are very linked.

This Paper is extracted from my book The Golden Pattern II
ISBN 978-987-42-6105-2, Buenos Aires, Argentina.

References

Enzo R. Gentile, Elementary arithmetic (1985) OEA.
Burton W. Jones, Theory of numbers
Iván Vinográdov, Fundamentals of Number Theory
Niven y Zuckermann, Introduction to the theory of numbers
Dickson L. E., History of the Theory of Numbers, Vol. 1
Zeolla Gabriel Martin, Golden Pattern. http://vixra.org/abs/1801.0064
Zeolla Gabriel Martin, Expression to get Prime Numbers and Twin Prime Numbers, http://vixra.org/abs/1801.0093
Zeolla Gabriel Martin, 7-Golden Pattern, Formula to Get the Sequence. http://vixra.org/abs/1801.0381
A007775 The On-Line Encyclopedia of Integer Sequences

Professor Zeolla Gabriel Martin
Buenos Aires, Argentina
01/2018
gabrielzvirgo@hotmail.com