Title: Simple Composite numbers by Golden Patterns
Author: Gabriel Martin Zeolla
Comments: 3 pages and 1 table.
Subj-class: Theory number
gabrielzvirgo@hotmail.com

Abstract: This paper develops the formula that calculates the quantity of simple composite numbers that exist by golden patterns.

Keywords: Golden Pattern, rough number, prime number, simple prime number, simple composite number.

Golden patterns

All the golden patterns have the same characteristics for which I have discovered a formula to calculate how many simple composite numbers exist by Golden pattern.

Formula

Nc= quantity of simple composite numbers

Pt= Size of Golden Pattern http://vixra.org/abs/1803.0121

$$\boldsymbol{Nc = Pt - (P1 * P2 * (P3 - 1) * (P4 - 1) * (P5 - 1) * (P6 - 1) * \ldots\ldots\ldots\ldots\ldots (P\infty - 1))}$$

P1= $\mathbf{2}$ (Prime number)
P2= $\mathbf{3}$ (Prime number)
P3= $\mathbf{5}$ (Prime number)
P4= $\mathbf{7}$ (Prime number)
P5= $\mathbf{11}$ (Prime number)
P6= $\mathbf{13}$ (Prime number)
P7= $\mathbf{17}$ (Prime number)
P8= $\mathbf{19}$ (Prime number)

We can continue with the following Prime numbers.

Demonstration

A) Example for 3-golden Pattern

$\boldsymbol{Nc} = 18 - (\mathbf{2} * \mathbf{3})$= ***12***

B) Example for 5-golden Pattern

$\boldsymbol{Nc} = 90 - \big(\mathbf{2} * \mathbf{3} * (\mathbf{5} - \mathbf{1})\big)$= ***66***

C) Example for 7-golden Pattern

$\boldsymbol{Nc} = 630 - (\mathbf{2} * \mathbf{3} * (\mathbf{5} - \mathbf{1}) * (\mathbf{7} - \mathbf{1}))$ = ***486***

D) Example for 11-golden Pattern

$\boldsymbol{Nc} = 6.930 - (\mathbf{2} * \mathbf{3} * (\mathbf{5} - \mathbf{1}) * (\mathbf{7} - \mathbf{1}) * (\mathbf{11} - \mathbf{1}))$ = ***5.490***

E) Example for 13-golden Pattern

$\boldsymbol{Nc} = 90.090 - (\mathbf{2} * \mathbf{3} * (\mathbf{5} - \mathbf{1}) * (\mathbf{7} - \mathbf{1}) * (\mathbf{11} - \mathbf{1}) * (\mathbf{13} - \mathbf{1}))$ = ***72.810***

F) Example for 17-golden Pattern

$\boldsymbol{Nc} = 1.531.530 - (\mathbf{2} * \mathbf{3} * (\mathbf{5} - \mathbf{1}) * (\mathbf{7} - \mathbf{1}) * (\mathbf{11} - \mathbf{1}) * (\mathbf{13} - \mathbf{1}) * (\mathbf{17} - \mathbf{1}))$ = ***1.255.050***

The difference obtained by subtracting the size of the pattern minus the quantity of simple prime numbers gives us as a result the quantity of simple composite numbers by Golden pattern.

	Size of the Golden Patterns $\boldsymbol{Pt}$	Simple Prime Number $\boldsymbol{Nps}$ by Pattern	Simple Composite Number $\boldsymbol{Nc}$ by Pattern
3-Golden Pattern	18	6	**12**
5-Golden Pattern	90	24	**66**
7-Golden Pattern	630	144	**486**
11-Golden Pattern	6.930	1.440	**5.490**
13-Golden Pattern	90.090	17.280	**72.810**
17-Golden Pattern	1.531.530	276.480	**1.255.050**

Table 1

To obtain information on how to calculate the size of the Golden Patterns, you can enter:
http://vixra.org/abs/1803.0121

To obtain information on how to calculate the quantity of simple prime numbers that exist by golden patterns, you can enter: http://vixra.org/abs/1803.0178

Reference:
The simple prime numbers are known as the **rough numbers**.

Final conclusion

The formula is a simple method which helps us to know how many simple composite numbers exist for Golden Pattern.
All Golden Patterns are closely linked, and this formula manages to connect absolutely to all of them.

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

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Professor Zeolla Gabriel Martin
Buenos Aires, Argentina
03/2018
gabrielzvirgo@hotmail.com