

Title: Simple prime numbers per Golden Patterns  
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**Abstract:** This paper develops the formula that calculates the quantity of simple prime numbers that exist by golden patterns.

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

### **Golden patterns**

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

### **Formula**

Nps= quantity of simple prime numbers

$$Nps = P1 * P2 * (P3 - 1) * (P4 - 1) * (P5 - 1) * (P6 - 1) * \dots \dots \dots (P_{\infty} - 1)$$

P1= 2 (Prime number)

P2= 3 (Prime number)

P3= 5 (Prime number)

P4= 7 (Prime number)

P5= 11 (Prime number)

P6= 13 (Prime number)

P7= 17 (Prime number)

P8= 19 (Prime number)

We can continue with the following Prime numbers.

## Demonstration

A) Example for 3-golden Pattern

$$Nps = 2 * 3 = 6$$

B) Example for 5-golden Pattern

$$Nps = 2 * 3 * (5 - 1) = 24$$

C) Example for 7-golden Pattern

$$Nps = 2 * 3 * (5 - 1) * (7 - 1) = 144$$

D) Example for 11-golden Pattern

$$Nps = 2 * 3 * (5 - 1) * (7 - 1) * (11 - 1) = 1.440$$

E) Example for 13-golden Pattern

$$Nps = 2 * 3 * (5 - 1) * (7 - 1) * (11 - 1) * (13 - 1) = 17.280$$

F) Example for 17-golden Pattern

$$Nps = 2 * 3 * (5 - 1) * (7 - 1) * (11 - 1) * (13 - 1) * (17 - 1) = 276.480$$

	Size of the Golden Patterns	Simple Prime Number
	<i>Pt</i>	<i>Nps by Pattern</i>
3-Golden Pattern	18	6
5-Golden Pattern	90	24
7-Golden Pattern	630	144
11-Golden Pattern	6.930	1440
13-Golden Pattern	90.090	17.280
17-Golden Pattern	1.531.530	276.480

To obtain information on how to calculate the size of the Golden Patterns, you can enter:

<http://vixra.org/abs/1803.0121>

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 composite numbers by Golden pattern.

### 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 prime 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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