Abstract: This paper shows that the product of the prime numbers adding and subtracting one is always Simple Prime numbers.

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

Introduction
The product of the prime numbers adding one is always simple prime numbers, in all cases to infinity. Also the product of the prime numbers subtracting one is always a simple prime number, in all cases to infinity.

The simple prime numbers are known as the rough numbers.

1) Demonstration (The product of the prime numbers adding one is always simple prime numbers)

A) Example 3-Golden Pattern

\((2\times3)+1=7\)
The 7 is not divisible by 2 or 3 and is within the sequence of simple prime numbers-3

Reference https://oeis.org/A007310
http://vixra.org/abs/1803.0098

B) Example 5-Golden Pattern

\((2\times3\times5)+1=31\)
The 31 is not divisible by 2, 3 or 5 and is within the sequence of simple prime numbers-5

Reference https://oeis.org/A007775
http://vixra.org/abs/1802.0201

C) Example 7-Golden Pattern

\((2\times3\times5\times7)+1=211\)
The 211 is not divisible by 2, 3, 5 or 7 and is within the sequence of simple prime numbers-7

Reference https://oeis.org/A008364
http://vixra.org/abs/1801.0064
D) Example 11-Golden Pattern

\[(2 \times 3 \times 5 \times 7 \times 11) + 1 = 2311\]
The 2311 is not divisible by 2, 3, 5, 7 or 11 and is within the sequence of simple prime numbers-11

Reference https://oeis.org/A008365
http://vixra.org/abs/1802.0236

E) Example 13-Golden Pattern

\[(2 \times 3 \times 5 \times 7 \times 11 \times 13) + 1 = 30031\]
The 30031 is not divisible by 2, 3, 5, 7, 11 or 13 and is within the sequence of simple prime numbers-13

Reference https://oeis.org/A008366
http://vixra.org/abs/1802.0363

F) Example 17-Golden Pattern

\[(2 \times 3 \times 5 \times 7 \times 11 \times 13 \times 17) + 1 = 510511\]
The 510511 is not divisible by 2, 3, 5, 7, 11, 13 or 17 and is within the sequence of simple prime numbers-17

Reference https://oeis.org/A166061

G) Example 19-Golden Pattern

\[(2 \times 3 \times 5 \times 7 \times 11 \times 13 \times 17 \times 19) + 1 = 9699691\]
The 9699691 is not divisible by 2, 3, 5, 7, 11, 13, 17 or 19 and is within the sequence of simple prime numbers-19

Reference https://oeis.org/A166063

2) Demonstration (the product of the prime numbers subtracting one is always a simple prime number)

A) Example 3-Golden Pattern

\[(2 \times 3) - 1 = 5\]
The 7 is not divisible by 2 or 3 and is within the sequence of simple prime numbers-3

Reference https://oeis.org/A007310
http://vixra.org/abs/1803.0098

B) Example 5-Golden Pattern

\[(2 \times 3 \times 5) - 1 = 29\]
The 31 is not divisible by 2, 3 or 5 and is within the sequence of simple prime numbers-5
C) **Example 7-Golden Pattern**

\[(2^3 \cdot 5 \cdot 7) - 1 = 209\]
The 211 is not divisible by 2, 3, 5 or 7 and is within the sequence of simple prime numbers.

Reference [https://oeis.org/A007775](https://oeis.org/A007775)

D) **Example 11-Golden Pattern**

\[(2^3 \cdot 5 \cdot 7 \cdot 11) - 1 = 2.309\]
The 2.311 is not divisible by 2, 3, 5, 7 or 11 and is within the sequence of simple prime numbers.

Reference [https://oeis.org/A008364](https://oeis.org/A008364)
[http://vixra.org/abs/1801.0064](http://vixra.org/abs/1801.0064)

E) **Example 13-Golden Pattern**

\[(2^3 \cdot 5 \cdot 7 \cdot 11 \cdot 13) - 1 = 30.029\]
The 30.031 is not divisible by 2, 3, 5, 7, 11 or 13 and is within the sequence of simple prime numbers.

Reference [https://oeis.org/A008365](https://oeis.org/A008365)

F) **Example 17-Golden Pattern**

\[(2^3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17) - 1 = 510.509\]
The 510.511 is not divisible by 2, 3, 5, 7, 11, 13 or 17 and is within the sequence of simple prime numbers.

Reference [https://oeis.org/A166061](https://oeis.org/A166061)

G) **Example 19-Golden Pattern**

\[(2^3 \cdot 5 \cdot 7 \cdot 11 \cdot 13 \cdot 17 \cdot 19) - 1 = 9.699.689\]
The 9.699.691 is not divisible by 2, 3, 5, 7, 11, 13, 17 or 19 and is within the sequence of simple prime numbers.

Reference [https://oeis.org/A166063](https://oeis.org/A166063)

We could continue adding examples infinitely with the following prime numbers.
Final conclusion
The product of the prime numbers adding 1 always results in a simple prime number, also if we subtract one. This happens in all cases to infinity.

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