1. 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47
* I just went through all the natural numbers and picked out the prime numbers which are, numbers that cannot be written as the product of 2 smaller natural numbers.

6 → 3 × 2

24 → 8 × 3 = 2 × 4 × 3 = 2 × 2 × 2 × 3

27 → 9 × 3 = 3 × 3 × 3

35 → 7 × 5

120 → 12 × 10 = 6 × 2 × 10 = 3 × 2 × 2 × 10 = 3 × 2 × 2 × 2 × 5

each time that you factor these numbers, you must check to see if these factors are primes or not, if they are not primes then you simplify them to all primes

3) Conditions

- $n \geq 3$, $n+1$, odd

* No, n+1 can never be prime because any even # can be divided by 2. n is odd so adding 1 automatically makes it even. ex: take 9=n, add 1, it will equal 10; 10 is divisible by 2.

5+1=6 → can be divided by 2

21+1=22 → can be divided by 2

* If n=1 that means 1+1=2, which is prime.. good!

5 N = any # greater than 2 and even.
- Because there are an infinite amount of even #'s this would work, plus if it is even then it will be able to be divided by at least 2 and it is, therefore, not prime.

good.

... problem? so you can prove it never ends?

V. The smallest natural number n, greater than 1, for which $(1 \times 2 \times 3 \times \cdots \times n) + 1$ is not prime is 4.

$1 \cdot 2 + 1 = 3$

$1 \cdot 2 \cdot 3 + 1 = 7$ good!

$1 \cdot 2 \cdot 3 \cdot 4 + 1 = 25$

VI. No, "n" is not necessarily prime. Every number, prime or composite, have factors of itself and one. If these are the ONLY two factors, then the number is prime. good!

VII.

4 = 2+2	14 = 3+11	24 = 11+13
6 = 3+3	16 = 5+11	26 = 13+13
8 = 3+5	18 = 5+13	28 = 11+17
10 = 5+5	20 = 3+17	30 = 7+23
12 = 5+7	22 = 3+19	32 = 13+19

15) Every odd # > 3
Sum of two primes?
Examples:
5 = (2) + (3) ✓
7 = (3) + 4 x = (2) + (5) ✓
9 = (3) + 6 x = (2) + (7) ✓
11 = (2) + 9 x = (3) + 8 x = (5) + 6 x
= (7) + 4 x = (11) + 0 x
13
15
17

No, every odd # cannot be expressed as the sum of two prime numbers. 11 is def. not the sum of (2) prime #'s

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