

Belphegor's Prime



The Demon Printer, Félix-Hilaire Buhot, 1878

$$\nu = 10000000000000006660000000000000001$$

The Belphegor numbers are a sequence of integers which go 16661, 1066601, 100666001, and so on. Each Belphegor number is a palindrome; they are the same forwards and backwards. Each contains the number 666, which is associated with the devil in Western culture.

Some of the Belphegor numbers are prime numbers, meaning that their only divisors are one and themselves. The first Belphegor number that is prime is 16661. The next prime in the sequence is the number ν shown above. There are thirteen zeroes on either side of 666, for a total of thirty-one digits. Thirteen is considered to be unlucky in Western culture. Not only that, thirteen (13) written backwards is thirty-one (31)!

If we continue to add zeroes to the Belphegor numbers, there are more Belphegor primes. The next Belphegor prime is a 1 followed by 42 zeroes, then 666, then another 42 zeroes and finally another 1. The Belphegor prime after that has 506 zeroes on either side of the 666. What comes next?

The Demon Printer, 1878 <https://www.nga.gov/collection/art-object-page.139842.html>

Belphegor's prime https://en.wikipedia.org/wiki/Belphegor%27s_prime

Indices of Belphegor primes <https://oeis.org/A232448>