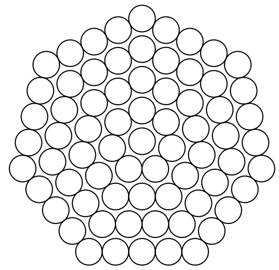
71 Seventy-One LXXI



Corresponding ordinal: seventy-first.

The number 71 is the thirty-sixth odd number, the twentieth prime number, and the fifty-fifth deficient number.

The prime 71 appears in the eighth pair of twin primes 71, 73.

As a sum of four or fewer squares: $71 = 1^2 + 3^2 + 5^2 + 6^2 = 2^2 + 3^2 + 3^2 + 7^2$.

As a sum of nine or fewer cubes: $71 = 7 \cdot 1^3 + 4^3 = 1^3 + 2 \cdot 2^3 + 2 \cdot 3^3$.

As a difference of two squares: $71 = 36^2 - 35^2$.

The number 71 appears in only one Pythagorean triple $[71, 2520, 2521]$. It is primitive, of course.

As a sum of three odd primes: $71 = 3 + 7 + 61 = 3 + 31 + 37 = 5 + 5 + 61 = 5 + 7 + 59 = 5 + 13 + 53 = 5 + 19 + 47 = 5 + 23 + 43 = 5 + 29 + 37 = 7 + 11 + 53 = 7 + 17 + 47 = 7 + 23 + 41 = 11 + 13 + 47 = 11 + 17 + 43 = 11 + 19 + 41 = 11 + 23 + 37 = 11 + 29 + 31 = 13 + 17 + 41 = 13 + 29 + 29 = 17 + 17 + 37 = 17 + 23 + 31 = 19 + 23 + 29$.

The number 71 is a centered heptagonal number, as you can see.

Brocard's problem (1876) is to find numbers m such that $m! + 1$ is a square. Only three such numbers m are known, 4, 5, and 7. For the largest of these, the square is $71^2 = 7! + 1$. So 71 is the largest number known whose square is a factorial plus one. A search by Berndt and Galway in 2000 showed that there are no further numbers m with fewer than nine digits. Thus any number greater than 71 whose square is a factorial plus one must have over $90,000$ digits.

The numbers 71, 701, 7001, 70001, and 700001 are all prime.

The triplet $(71, 73, 79)$ is a prime triplet consisting of emirps.

The number $\left(71^{71} - 71!\right)/71$ is a prime.

The number 71 divides the sum of the primes that are less than 71. What numbers n have the property that they divide the sum of the primes that are less than n? Among the primes, the first four are 2, 5, 71, and 369119. The first three composites with this property are 25, 32, and 2745.

Clint Eastwood was Inspector 71 in the movie, *Dirty Harry*, 1971.