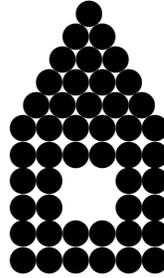


47 Forty-Seven XLVII



Corresponding ordinal: forty-seventh.

The number 47 is the twenty-fourth odd number, the fifteenth prime number, and the thirty-seventh deficient number.

The prime 47 remains prime when its digits are reversed in each of the first eight prime bases 2, 3, 5, 7, 11, 13, 17, and 19. For example, 47 is 65_7 in base 7 and $56_7 = 41$ is a prime. However, 47 is 21_{23} in base 23, and $12_{23} = 25$ is not a prime. The prime 47 is the largest prime p less than a million that remains prime when its digits are reversed in each prime base less than $(p - 1) / 2$.

As a sum of four or fewer squares: $47 = 1^2 + 1^2 + 3^2 + 6^2 = 2^2 + 3^2 + 3^2 + 5^2$.

As a sum of nine or fewer cubes: $47 = 4 \cdot 1^3 + 2 \cdot 2^3 + 3^3$

As a difference of two squares: $47 = 24^2 - 23^2$.

The number 47 appears in only one Pythagorean triple, [47, 1104, 1105], which is primitive, of course.

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

A (geometric) cube cannot be dissected into 47 cubes, but it can be dissected into n cubes for any number greater than 47. The numbers n less than 47 such that a cube can be dissected into n cubes are 1, 8, 15, 20, 22, 27, 29, 34, 36, 38, 39, 41, 43, 45, 46. For example, the equation $4^3 = 37 \cdot 1^3 + 3^3$ shows that a cube can be cut up into 38 cubes.

At age 47, Grover Cleveland was inaugurated as President of the United States.

The forty-seventh state to enter the Union was New Mexico.

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The forty-seventh largest state in the United States is Hawaii.

The 47 Society is “dedicated to exploring the phenomenon that is 47”. They claim that 47 is “the quintessential random number of the universe.” Check out their interesting web site at <http://www.47.net/47society/>.