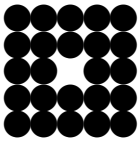
24 Twenty-Four XXIV



Corresponding ordinal: twenty-fourth.

The number 24 is the thirteenth even number and the fourteenth composite number.

As a product of primes: $24 = 2^3 \cdot 3$.

The number 24 has eight divisors: 1, 2, 3, 4, 6, 8, 12, 24.

The number 24 is the third abundant number: $s(24) = 1 + 2 + 3 + 4 + 6 + 8 + 12 = 36 > 24$. Notice that the number 6 is perfect, and its next three multiples, 12, 18, and 24, are abundant. It is not difficult to show that a proper multiple of perfect number, and any multiple of an abundant number, is abundant.

The number 24 is a factorial number: $24 = 4! = 4 \cdot 3 \cdot 2 \cdot 1$. The next factorial number is $5! = 120$.

As the sum of four or fewer squares: $24 = 2^2 + 2^2 + 4^2$.

As the sum of nine or fewer cubes: $24 = 2^3 + 2^3 + 2^3$.

As the difference of two squares: $24 = 5^2 - 1^2 = 7^2 - 5^2$. The first expression is illustrated in the figure above

The number 24 appears in seven Pythagorean triples:

$[7, 24, 25]$ $[10, 24, 26]$ $[18, 24, 30]$ $[24, 32, 40]$
$[24, 45, 51]$ $[24, 70, 74]$ $[24, 143, 145]$

The first and the last are primitive

As a sum of two odd primes: $24 = 5 + 19 = 7 + 17 = 11 + 13$. It is the smallest number that is the sum of two odd primes in three different ways.

The sum of the first 24 nonzero squares is a square: $1^2 + 2^2 + 3^2 + \cdots + 23^2 + 24^2 = 70^2$. The number 24 is the only number greater than 1 with that property.

There are 24 ways to rotate a cube: you can bring a specific corner to any of the 8 corners in 3 different ways. Alternatively, there are 3 nontrivial rotations around each of the 3 lines joining the centers of opposite faces, 2 nontrivial rotations around each of the 4 long

diagonals, 1 nontrivial rotation around each the 6 lines joining the midpoints of opposite edges, and the trivial rotation that doesn't move anything. A total of $3{\cdot}3{+}2{\cdot}4{+}6{+}1 = 24$ rotations.

The number 24 can be written as a Roman-numeral palindrome: IV$\times$VI. (Number Freak)

The twenty-fourth President of the United States was Grover Cleveland.

The twenty-fourth state to enter the Union was Missouri.

The twenty-fourth largest state in the United States is Georgia.

There are 24 hours in a day. Many clocks show only 12 hours, but there are 24-hour clocks throughout the world and in the U. S. military.

There are 24 time zones in the world, each with a width of 15 degrees.

There are 24 scruples in a Troy ounce. We don't have scruples anymore.

Pure gold is 24-karat gold. Pure gold is very soft, so it is mixed with other metals in the making of jewelry. If the fraction of gold in such a metal is $1/2$, the metal is 12-karat gold; if the fraction is $3/4$, it is 18-karat gold.

A famous nursery rhyme refers to 4 and 20 blackbirds baked in a pie.

There are 24 points on a backgammon board: