

# 9 Nine IX



Corresponding ordinal: ninth.

The number 9 is a square number (see the pattern above).

The number 9 is the fifth odd number and the fourth composite number.

The number 9 is the fourth square number since  $9 = 3^2$  and the smaller squares are 0, 1, and 4. This expresses 9 uniquely as a product of primes.

The number 9 has three divisors: 1, 3, 9.

The number 9 is the eighth deficient number:  $s(9) = 1 + 3 = 4 < 9$ .

As a sum of two triangular numbers,  $9 = 3 + 6$ .

As the sum of four or fewer squares:  $9 = 3^2 = 1^2 + 2^2 + 2^2$ .

As the sum of nine or fewer cubes:  $9 = 1^3 + 2^3$ .

As a difference of two squares:  $9 = 5^2 - 4^2$ .

The number 9 appears in two Pythagorean triples: [9, 12, 15] and [9, 40, 41]. The second one is primitive.

Christian Goldbach (1690–1764) conjectured that every odd number greater than or equal to 9 is the sum of three odd prime numbers. To this day, the conjecture, known as the *weak Goldbach conjecture*, has not been proved or disproved.

The number 9 is the tenth and last digit in our system of numeration. The number that follows 9 is 10, which is a two-digit number.

The number 9 is the second of an enigmatic pair of numbers. In 1342, Rabbi Levi ben Gershon proved that 8 and 9 are the only proper powers of 2 and 3 that differ by one. In 1814, Eugene Charles Catalan conjectured that 8 and 9 are the only proper powers of *any* numbers that differ by one. A number of the form  $b^n$  is called a *power*, and if  $n$  is greater than 1, it is called a *proper power*. So  $8 = 2^3$  and  $9 = 3^2$  are proper powers, and they differ by one. Catalan's conjecture was proved in 2002 by Preda Mihăilescu.

A polygon with nine sides is called a *nonagon*.

The ninth President of the United States was William Henry Harrison.

The ninth state to enter the Union was New Hampshire.

There are nine justices on the Supreme Court.

The first ten amendments to the United States Constitution are called the *Bill of Rights*. The ninth amendment says that “The enumeration in the Constitution of certain rights shall not be construed to deny or disparage others retained by the people.”

The ninth largest state in the United States is Wyoming.

The ninth month is September. The Latin “septem” suggests that it is the seventh month, just as “octo” suggests that October is the eighth month, and similarly that November is the ninth month and December the tenth month. Indeed, they used to occupy those places in the calendar, in which the first month of the year was March. About forty years after the founding of Rome, the two months January and February were added. About seven hundred years later the months Quintilis and Sextilis had their names changed to July and August, in honor of Julius and Augustus Caesar.

If you are on cloud nine, you are in a state of blissful happiness.

There used to be a general agreement that there were nine planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.

There are nine players on a baseball team.

The gestation period for humans is about nine months.

A popular pool game is called *nine ball*.

A well-known adage is that a stitch in time saves nine.

Cats are supposedly endowed with nine lives.

A cat-o'-nine-tails is a whip made of nine knotted lines (usually rope or leather) that are fastened to a handle. The name comes from the fact that it leaves scars that resemble the scratches of a cat.

“Casting out nines” is a well known method for checking arithmetic computations done by hand. The method has been known since at least the third century.

The nine of diamonds is known as the “Curse of Scotland”.

There are 9 justices on the Supreme Court.