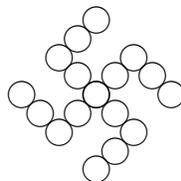# 17 Seventeen XVII

Corresponding ordinal: seventeenth.

The number 17 is the ninth odd number, the seventh prime number, and the fifteenth deficient number.

The number 17 is the third Fermat prime. The first and second are 3 and 5.

The number 17 appears in the fourth pair of twin primes 17, 19.

Since $17 - 1$ is divisible by 4, and 17 is a prime, Fermat's result shows that 17 must be the sum of two squares: $17 = 1^2 + 4^2$.

Every power of 17 is also the sum of two squares: $17^2 = 8^2 + 15^2$ and $17^3 = 47^2 + 52^2$.

As the sum of four or fewer squares: $17 = 1^2 + 4^2 = 2^2 + 2^2 + 3^2$.

As the sum of nine or fewer cubes: $17 = 1^3 + 2^3 + 2^3$.

As the difference of two squares: $17 = 9^2 - 8^2$.

The number 17 occurs in two Pythagorean triples: $[8, 15, 17]$ and $[17, 144, 145]$. Both are primitive, of course.

As the sum of three odd primes: $17 = 3 + 3 + 11 = 3 + 7 + 7 = 5 + 5 + 7$.

There are exactly 17 ways to express 17 as the sum of 1 or more primes. Indeed, 17 is the only integer which is equal to the number of partitions of itself into primes. (Number Gossip)

In 1796, Gauss, at age 19, showed how to construct a regular 17-gon with straightedge and compass, the first advance of this nature in over 2000 years.

In any sequence of fewer than 17 consecutive numbers, there is always one that is relatively prime to the rest. Not so for the 17 consecutive numbers starting at 2184. (Number Freak)

The smallest number of givens (prefilled squares) that a Sudoku puzzle can have is thought to be 17. No one knows of a puzzle with fewer than 16 givens. Gordon Royle

of the University of West Australia has a list of 49151 of the 17-given Sudoku puzzles. Here is one of them:

							1	
4								
	2							
				5		4		7
		8				3		
		1		9				
3			4			2		
	5		1					
			8		6			

The famous probabilist William Feller called 17 the "least arbitrary number."

The seventeenth President of the United States was Andrew Johnson.

The seventeenth state to enter the Union was Ohio.

The seventeenth largest state is South Dakota.

Seventeen is a magazine for teen-agers.