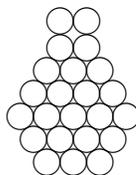


23 Twenty-Three XXIII



Corresponding ordinal: twenty-third.

The number 23 is the twelfth odd number, the ninth prime, and the nineteenth deficient number.

The prime 23 remains prime when its digits are reversed in each of the first seven prime bases 2, 3, 5, 7, 11, 13, and 17. However 23 is 14_{19} in base 19 and $41_{19} = 77$ is not a prime. The number 23 is the largest prime p less than a million that remains prime in each prime base less than $p/2$.

The number $23 = 19 + 4$ is the sum of a centered hexagonal number and a square, as you can see.

As the sum of four or fewer squares: $23 = 1^2 + 2^2 + 3^2 + 3^2$.

As the sum of nine or fewer cubes: $23 = 7 \cdot 1^3 + 2 \cdot 2^3$. This is the first number to require nine cubes. The only other such number is 239. No number requires more than nine cubes.

As the difference of two squares: $23 = 12^2 - 11^2$.

The number 23 appears in only one Pythagorean Triple: [23, 264, 265].

As a sum of three odd primes: $23 = 3 + 3 + 17 = 3 + 7 + 13 = 5 + 5 + 13 = 5 + 7 + 11$.

The 23-digit number 11111111111111111111111 is a prime. A number whose digits are all 1 is called a *repunit*.

The number 23 is the only prime p such that $p!$ is p digits long. (Number Gossip and Prime Curios) Indeed, $23! = 25\,852\,016\,738\,884\,976\,640\,000$ —count them. In fact, 23 is one of only four numbers n such that $n!$ is n digits long. The others are 1, 22, and 24.

The number $23!$ is the smallest pandigital factorial—it contains each digit at least once. (Number Gossip)

The number 23 is the smallest prime that is not a twin prime. (Number Gossip and Prime Curios)

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The number 23 is the smallest number of people for which there is more than a fifty percent chance that two of them have the same birthday. (Number Gossip and Prime Curios)

The twenty-third President of the United States was Benjamin Harrison.

The twenty-third state to enter the Union was Maine.

The twenty-third largest state in the United States is Florida.

“The Number 23” is a 2007-movie starring Jim Carrey who plays a man obsessed by the number 23. The dog in the movie is named Ned. The three letters in “Ned” have positions 14, 5, and 4 in the alphabet, which sums to 23.

The first telegraph message, “What hath God wrought?”, is from Numbers 23:23.

“Twenty-three skidoo!” is an old American phrase meaning “let’s get out of here!” or “go away!”.