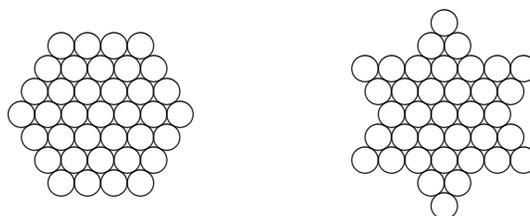# 37 Thirty-Seven XXXVII

Corresponding ordinal: thirty-seventh.

The number 37 is the nineteenth odd number, the twelfth prime number, and the twenty-ninth deficient number.

The number 37 is both a centered hexagonal number and a hexagram number, as you can see. It is the only such number, other than (possibly) 1.

The reverse of 37, that is, 73, is also a hexagram number. Hexagram numbers have the form $1 + 12T$ where T is a triangle number. The triangle numbers corresponding to 37 and 73 are 3 and 6. Centered hexagonal numbers have the form $1 + 6T$ and $37 = 1 + 6 \cdot 6$.

As a sum of four or fewer squares: $37 = 1^2 + 6^2 = 1^2 + 2^2 + 2 \cdot 4^2 = 3 \cdot 2^2 + 5^2$.

As a sum of nine or fewer cubes: $37 = 2 \cdot 1^3 + 2^3 + 3^3 = 5 \cdot 1^3 + 4 \cdot 2^3$.

As a difference of two squares: $37 = 19^2 - 18^2$.

The number 37 appears in two Pythagorean triples: $[12, 35, 37]$ and $[37, 684, 685]$. Both are primitive, of course.

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

Every positive integer is the sum of 37 or fewer fifth powers.

The Sultan's Dowry Problem. A sultan presents his 100 daughters, and their dowries, one-by-one to a commoner. The commoner is to choose the daughter with the largest dowry—only then can he marry her. The problem is that he must decide immediately on presentation whether to choose the daughter or not. The best strategy? Reject the first 37 daughters, and then choose the first one, if any, whose dowry exceeds those of the first 37. Chances of a wedding? About 37%.

The thirty-seventh President of the United States was Richard Milhous Nixon.

The thirty-seventh state to enter the Union was Nebraska.

The thirty-seventh largest state in the United States is Kentucky.

Normal human body temperature is $37°$C. It is pure luck that this is a whole number of degrees—the Celsius scale was not devised with body temperature in mind. We weren't so lucky with the Fahrenheit scale.

The product of 37 and 73 is 2701, which is the numerical value of the Hebrew letters in the opening statement of the Bible: "In the beginning, God created the heaven and the earth."

Chinese checkers is played with marbles on a hexagram board of size 121, which is the next hexagram number after 37 and 73.

The X-37 Orbital Test Vehicle is a robotic spaceplane of the U.S. Air Force. Its first orbital mission took place from April 22 to December 3 in 2010.