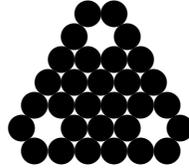
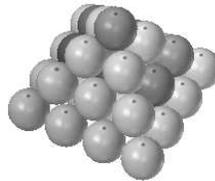


# 30 Thirty XXX



Corresponding ordinal: thirtieth.

The number  $30 = 1 + 4 + 9 + 16 = 1^2 + 2^2 + 3^2 + 4^2$  is a *pyramidal number*: You can stack the four squares up to get a pyramid.



The number 30 is the sixteenth even number and the nineteenth composite number.

As a product of primes:  $30 = 2 \cdot 3 \cdot 5$ . It is the smallest number divisible by three different primes.

The number 30 has eight divisors: 1, 2, 3, 5, 6, 10, 15, 30.

The number 30 is the fifth abundant number:  $s(30) = 1 + 2 + 3 + 5 + 6 + 10 + 15 = 42 > 30$ . Note that 30 is a proper multiple of the perfect number 6, so it is necessarily abundant.

As the sum of four or fewer squares:  $30 = 1^2 + 2^2 + 5^2 = 1^2 + 2^2 + 3^2 + 4^2$ .

As the sum of nine or fewer cubes:  $30 = 3 \cdot 1^3 + 3^3 = 6 \cdot 1^3 + 3 \cdot 2^3$ .

As a sum of two primes:  $30 = 7 + 23 = 11 + 19 = 13 + 17$ .

The number 30 appears in five Pythagorean triples: [16, 30, 34], [18, 24, 30], [30, 40, 50], [30, 72, 78], [30, 224, 226]. None are primitive because 30 is twice an odd number.

The dodecahedron and the icosahedron are Platonic solids named for how many faces they have: 12 and 20. Each has exactly 30 edges.

The number 30 is the largest number that has a factor in common with each smaller composite.

## 2 Chapter 30 Thirty XXX

Thirty different dice can be made by putting the numbers one through six on the faces of a cube.

The thirtieth President of the United States was Calvin Coolidge.

The thirtieth state to enter the Union was Wisconsin.

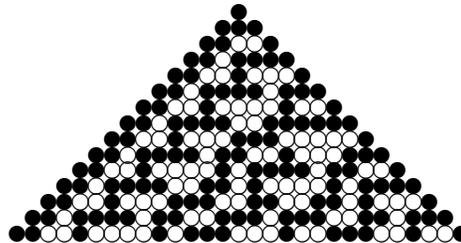
The thirtieth largest state in the United States is Alabama.

“-30-” is a traditional closing for a press release. One theory is that it dates back to the Civil War when telegraphers sent XXX, the Roman numeral for 30, to indicate the end of a transmission.

Four months of the year have 30 days. The rhyme is, “Thirty days hath September, / April, June, and November.”

The minimum age to serve in the U. S. House of Representatives or Senate is 30 years.

Rule 30 is one of the elementary cellular automata introduced by Stephen Wolfram in 1983. The automaton is a line of cells. The rule specifies the next color (black or white) of a cell in terms of its present color and that of its immediate neighbors. The rule is encoded by the binary representation  $00011110_2$  of the number 30. Here are fifteen stages of the evolution from a single black cell (white cells implied at the two ends of each horizontal line):



Rule 30 is especially interesting because of its chaotic behavior.

A 30 year fixed mortgage is a common way to finance a home.