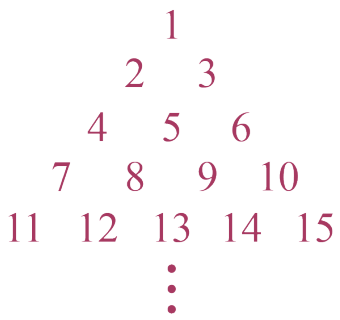
Problem of the Week

Problem D

Number Triangle

Consecutive positive integers are arranged in rows into the shape of a triangle. In this triangle, the top row contains the integer 1, and each row below the top row contains one more integer than the row above, starts with the next consecutive integer after the largest integer in the row above, and lists the consecutive integers in increasing order. That is, the first row contains the integer 1, the second row contains the integers 2 and 3, the third row contains the integers 4, 5, and 6, the fourth row contains the integers 7, 8, 9, and 10, and so on.

In which row will the integer 2026 appear? What integers are in this row?



In solving this problem, it may be helpful to use the fact that the sum of the first n positive integers is equal to $\frac{n(n+1)}{2}$. That is,

$$1+2+3+\cdots+n=\frac{n(n+1)}{2}$$