



Problem of the Week

Problem D

Teacher Road Trip 2

To help pass time on a long bus ride, a group of math teachers created a sequence of numbers, with each teacher saying one term in the sequence. The first and second teachers each said a non-negative integer, and every teacher after that said the sum of all of the previous terms in the sequence.

For example, if the first teacher said the number 2 and the second teacher said the number 8, then

- the third teacher would say the sum of the first and second terms, which is $2 + 8 = 10$, and
- the fourth teacher would say the sum of the first, second, and third terms, which is $2 + 8 + 10 = 20$.

How many possible sequences could the teachers have said if the first teacher said the number 3 and another teacher said the number 3072?

