2018-2019 Undergraduate Problem Solving Contest

Problem Number 2

Due December 4, 2018

How many terms are there in the expansion of $(x + y + z)^{2018}$? (Please, DO NOT simplify or compute your answer, once you find it!) In general, how many terms are there in the expansion of $(x_1 + x_2 + ... + x_k)^n$, where n and k are natural numbers?

Hint: Start with $(a + b)^2$, which has three terms, and consider how it can represent 3 ways to split 2 cookies among 2 people. Extend the problem to some number of cookies split among some number of people. You decide if k represents cookies or people and, the same for n.