

1. Winnie the Pooh picked 20 integers. His friend, Piglet can ask expressions about them, like: $x_1 - 2x_2 + 5x_17 = ?$ What is the minimal number of guesses that Pigélet can determine all 20 numbers?

2. What if Winnie the Pooh has picked positive integers?

3. We call a vector in \mathbb{R}^n “boring” if it has at most two distinct entries. How many boring vectors are needed to add up to $\begin{bmatrix} 0 \\ 1 \\ \vdots \\ n-1 \end{bmatrix}$? (Hint: k is sufficient if $n = 2^k$.)

4. There are 21 weights such that if we remove any of them then remaining 20 can be split into two equal size groups such that the cumulative weights are the same in each group. Show that every weight is equal.

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