MathLovers

Problems 09/30/2025
(Boy's Day)

Solutions to the following problems
will be published on Friday 10/03/2025

Problem 1. In a team preparing a surprise for Boy's Day, there are 16 girls, each from a different grade and a different specialization. Can they sit in 4 rows and 4 columns so that in no row or column there are two girls from the same grade or the same specialization?

Problem 2. As part of the surprise, a volleyball tournament was organized in a round-robin system (each team plays against every other team). Volleyball is played until one team wins three sets. The tournament had n teams, and in total s sets were played. Prove that:

$$5 \cdot \binom{n}{2} < s < 3 \cdot \binom{n}{2}$$

The binomial coefficient (Newton's symbol) is defined as

$$\binom{n}{k} = \frac{n!}{k!(n-k)!}.$$

Good luck!

We encourage you to submit your solutions via
https://mathlovers.eu/submit-solution/!