

# Baltic Way 2016 Mathematical Team Competition

## Regulations

1. The competition takes place in Oulu, Finland, on November 3–7, 2016. Participation is by invitation only.
2. The participating teams consist of five contestants, a leader and a deputy leader. The contestants must be secondary school students or possible candidates for IMO 2017. They must not have formally enrolled at a university or any other equivalent post-secondary institution.
3. The Organizing Committee covers the costs of the participating teams in Oulu during the time of competition.
4. The contest consists in solving 20 mathematical problems selected by the Jury. The time for the contest is 4 hours 30 minutes. Each team works together and the contestants are free to discuss the works between them. Only writing and drawing materials are allowed during the contest; in particular calculators, computers and telecommunication devices are not allowed. The solutions — at most one for each problem for each team — are to be written on the paper provided by the organizers. Each problem should be answered on a separate sheet and only one side of the paper should be used. The teams can use their own language.
5. During the first 30 minutes of the contest, the teams may present written questions about the problems. The Jury decides how the questions should be answered.
6. The Jury consists of the team leaders and a chairman appointed by the Organizing Committee. A motion shall be carried by a simple majority of votes. Only the leaders can vote, but in the event of a tie, the chairman shall have a casting vote. The deputy leaders may participate in the work of the Jury, but they are not allowed to vote. If the team leader is unable to participate in the meetings of the Jury, her or his rights and duties may be transferred to the deputy leader.
7. The Jury shall:
  - choose the 20 contest problems from the problems submitted by the participating countries before the contest (modifying or editing the problems is thereby allowed);
  - prepare and approve the translations of the problems to the languages used by the teams;
  - consider and answer questions raised by the contestants during the first 30 minutes of the contest and pertaining to the problems;
  - resolve any dispute on scoring between the individual team leaders and the coordinators;
  - approve the final scores of the teams;
  - decide on possible Special Mentions awarded to teams for solutions of singular merit;
  - discuss general matters concerning the Baltic Way contests, particularly the schedule of hosting in the following years.
8. The solutions of single problems are marked by integers on a scale from 0 to 5 points. A preliminary marking is done by the leader and deputy leader of each team, and the final marking is done by the leader in collaboration with coordinators appointed by the Organizing Committee. If the leader and the coordinators cannot agree on the marking, the problem is considered by the Chief Coordinator. If there is no agreement between the leader and the Chief Coordinator, the matter is decided by the Jury.

9. Ranking of teams will be decided by the sum of the marks of individual problems. In the case of a tie for the first, second and third prize, teams with a higher number of fives will be ranked above teams with a lower number of fives. If there is still a tie, the number of fours will decide the ranking. Then one counts the number of threes, and then the number of twos. If there is still a tie, the team having scored the most on the hard problems will be ranked above. This is determined in the following way: Let  $P(k)$  be a team's score on problem  $k$ , and let  $T(k)$  be the total score of all the teams on problem  $k$ . Let  $Q$  be the sum of  $P(k) \times T(k)$  taken over all 20 problems. Teams with a lower  $Q$  will be ranked above teams with a higher  $Q$ . If there is still a tie, the Jury decides if and how the tie should be broken. In the case of a tie for the fourth place and lower, no action will be taken to resolve the tie.
10. The results (i.e., both partial and total scores, as well as rankings) are kept secret until the moment when they are officially announced at the closing ceremony of the competition.