Why Maths Battles? Maths Battles give some idea about the level and style of problems offered at mathematical olympiads. Participation in them trains students to present their solutions in a clear and in a mathematically rigorous way. As "speakers" students learn to deliver concise, but at the same time comprehensive, reports. As "opponents" they are trained to detect gaps and faults in practically correct solutions, which the opposite team presents. During Maths Battle competitions students gain a necessary understanding of the factors that constitute a good presentation. Also, they learn to accurately estimate the scores that they get when participating in maths competitions. Apart from that, it is a strategic game, and it can be lots of fun.

Generalities.

The Battle. Maths Battle is a problem-solving competition between two teams. Usually, there are 8 to 10 problems in the problem set. Each problem is worth 12 points. To win, a team must get at least 4 more points than the opposing team; otherwise, the result of a Maths Battle is consider to be a draw.

Preliminary stage. The participants form two teams, each consisting of 7–10 people. The teams get a problem set, and a date for the actual battle (usually in about a week after the problems are made available). During the time before the battle, the teams are supposed to attempt the problems, and on the day of the battle be ready to present their solutions and to challenge the other team. On the day of the battle, about two hours are designated for the battle itself. The battle is conducted by the Jury.

Jury and Captains. The Jury conducts the Maths Battle and dictates its stages. All their decisions are final. The Captain is responsible for:

- Deciding the Maths Battle strategy,
- Assigning Speakers and Opponents,
- Requesting Timeouts,
- Changing Speakers and Opponents,
- Speaking on behalf of the Team.

Captain may confer with his or her teammates; however, all the decisions are solely up to the Captain.

Captain's Contest. At the very beginning of the Maths Battle, the Jury asks both Captains whether or not they would like to challenge or to be challenged. In the case of a conflict, a Captain's Contest takes place. Captains have 1 minute to answer a short question. The Captain who wins gets his or her way.

Challenge.

Time to Challenge. Teams take turns challenging. Suppose Team A is to challenge Team B. The Captain of Team A calls out the problem they wish to challenge. Team B can either "accept" or "decline" the challenge.

Challenge: Accepted. In this case, Team B presents a Speaker and Team A presents an Opponent. The Speaker has up to 10 minutes to present his or her team's solution. During the presentation, the Opponent is allowed to ask only clarifying questions. However, after 5 minutes, the Opponent has the right to demand the "exact answer" to the problem and the idea of the solution. When the Speaker finishes, this stage ends. After this, the Speaker is not allowed to introduce any new material.

Rebuttal: Questions. After the Speaker's presentation, the Opponent may ask more questions. The Speaker is allowed to think for 1 minute before answering them. After this, the Opponent comments on the presentation.

Rebuttal: Evaluation. First, the Opponent evaluates the progress (whether he or she thinks that the solution is correct, wrong or has some flaws). If the Opponent completely agrees with the Speaker's presentation, he or she gets 0 points. The Jury may award the Speaker with up to 12 points. If the solution is incorrect, the Jury may still give the Speaker a few points for some ideas or artistic skills.

Rebuttal: List of Flaws. If the Opponent disagrees with the solution, then he or she lists the gaps and flaws in the Speaker's presentation. However, the Jury has the right to terminate this stage if they decide that the Opponent's qualms are irrelevant.

Rebuttal: Essential Error. If the Opponent proves the solution is essentially wrong, he or she is awarded 6 points and the opportunity to present his or her solution. In this case, the Opponent may earn up to 6 additional points (as a Speaker); however, the Former Speaker (who now acts as an Opponent) may earn some points as well. If the Speaker's solution is not proved to be essentially wrong, then the Opponent may not present his or her solution (even if it is much simpler). Opponent gets some points even if the flaws and gaps he or she discovered are not fatal.

Challenge: Declined. In this case, "the tables are turned". This means that Team B assigns an opponent and Team A assigns a Speaker. However, in this case, Team B may not present its own solution (doesn't get the Essential Error stage because they already refused to do so).

Additional Rules.

Bluff. If the Jury decides that Team A bluffed (Team A had challenged a problem they did not know how to solve), Team A must challenge Team B again.

Out of Solutions. At the moment when one team (say Team A) has exhausted their list of solved problems, they may announce "Out of Solutions". Team B presents solutions of the remaining problems in the order of their choice. Team A can earn points only as Opponents but cannot present their own solutions (because they claimed that they did not have them). At any time, Team B may end the Battle by saying that they are "Out of Solutions" as well.

Timeouts. During the game, each team is allowed to take at most six 30 second Timeouts. During a Timeout, the team confers to help their member (Opposing team can do the same). The Team which issued the Timeout may end it before the 30 seconds finish as well.

Substitutions. The Captain may change his or her Speaker or Opponent anytime. However, this costs 2 Timeouts. Each player may be a Speaker or Opponent no more than two times.

Some Advice.

Game Strategy. Usually neither team can solve all of the problems. Normally, each team solves a part of the problem set (otherwise the game becomes tedious). Therefore, having a game strategy is important. It is a good idea to discuss the strategy in advance. Putting effort into planning team work during the problem solving time is also helpful.

Solving Questions. Division of duties is very useful: each team-member can attempt to solve a few problems according to his or her preferences and knowledge.

What to Challenge. It is good to decide in advance which problems to challenge (and in what order) and which to accept or decline if challenged. Sometimes bluffing is reasonable but it can backfire.

Friendly Terms. The Battle is supposed to end on friendly terms.