Rules of the

7th International Chemistry Tournament

Part 1. General Considerations

1. The International Chemistry Tournament (IChTo or Tournament) is a team competition that consists of solving open-ended scientific problems, presenting the solutions to these problems, and defending them in scientific debates.
2. The aims of IChTo are the popularisation of chemistry, teamwork training, and the development of presentation skills.
3. The working language of IChTo is English, and speaking to others respectfully and with manners is mandatory.
4. Each participating country can register up to 2 teams to take part in the competition. However, the host country can register up to 3 teams.
5. Teams are composed of 4 to 6 students representing the same country. Such students must be enrolled in a high school at the moment of the inscription or must not have graduated from high school more than four months before the intended date of the competition. Students who have graduated over four months prior or have more than three months enrolled in a university can not participate in the competition. The organising committee reserves the right to request proof of studies.
6. If the number of the registered teams exceeds 20, the Organising Committee may arrange additional rounds of selection.
7. The 7th International Chemistry Tournament will be held in Guadalajara, Mexico, between the 25th and 30th of August 2024.

Part 2. Definitions

1. Basic definitions:

1.1. Section – The entirety of three or four teams, Jury members, and a Moderator participating in the Tournament together in the same room.

1.2. Stage – The sequence of challenges in a Section, where each team takes turns as Reporter, Opponent, Reviewer, and potentially Observer.

1.3. Round – The period of time starting with the challenge of the Reporter team to present a problem, ending with the announcement of the Grades to the Reporter, the Opponent, and the Reviewer, followed by an informal verbal evaluation by the Jury.

1.4. Grade – A mark given by the Jury.

1.5. Technical Points (TPs) – Points serving for more accurate evaluation of the participants.

1.6. Rating Points (RPs) – A final score, which is the result of the conversion of

TPs, taking into account the relative positions of the teams in their Sections.

1.7. Semi-final Stages – Stages used for the selection of the finalist teams.

1.8. Final Stage – The last Stage, which decides the winning team of IChTo.

2. - Moderator – A person who:

2.1. Announces every Round in a Section;

2.2. Moderates discussions during all Stages;

2.3. Has the right to decline questions of the Jury and participants in case it is deemed disrespectful or not related to the problem and the discussed solution;

2.4. Announces the marks given by the Jury at the end of a Round.

3. Reporter – A participant who presents a solution to the given problem.

4. Opponent – A participant who finds weaknesses and gaps in the solution presented by the Reporter and criticises the ideas, pointing out possible inaccuracies and errors in the understanding of the problem and the solution.

5. Reviewer – A participant who presents a short evaluation of both the Reporter and the Opponent, furthermore, draws a conclusion of the debate.

6. Observer – A team that may only participate in the general discussion.

7. Captain – A participant who represents their team, challenges other teams, calls for a time out and performs other actions on behalf of their team.

8. Jury – Professionals who ask questions from the participants and evaluate the Reporter, the Opponent, and the Reviewer.

8.1 - There must be three or more Jury members in each Section, and none of them can be involved in any way with the training process of any of the participating teams of that Section.

8.2 - A jury member is required to have at least a bachelor's degree (or higher) in chemistry or a related field. In addition, former IChTo / IChO / IMChO participants can also be jury members before acquiring their degrees, as long as they are studying chemistry or a related field.

9. Team leader – A teacher who coaches a team, leads the delegation associated with the team, and provides professional and personal support to the students.

10. Delegation – A group comprised of a team of students and the teacher(s) accompanying them. A delegation may include more than one teacher other than the team leader, provided that all of them paid the registration fee.

Part 3. Grouping of Teams

1. The Tournament is held in 4 Semi-final Stages and 1 Final Stage.

2. Before the first Stage, a team contest (Draw) is held. The participating teams are assigned a number from the first to the last, according to their results in the draw.

First Stage

Grouping of teams is **based on the order obtained after the Draw**. The teams are divided as follows:

	Number of teams				
	7	**8**	**9**	**10**	**11**
1st Section	1, 3, 5, 7	1, 3, 5, 7	1, 4, 7	1, 4, 7, 10	1, 4, 7, 10
2nd Section	2, 4, 6	2, 4, 6, 8	2, 5, 8	2, 5, 8	2, 5, 8, 11
3rd Section	-	-	3, 6, 9	3, 6, 9	3, 6, 9

	Number of teams				
	12	**13**	**14**	**15**	**16**
1st Section	1, 5, 9	1, 5, 9, 13	1, 5, 9, 13	1, 5, 9, 13	1, 5, 9, 13
2nd Section	2, 6, 10	2, 6, 10	2, 6, 10, 14	2, 6, 10, 14	2, 6, 10, 14
3rd Section	3, 7, 11	3, 7, 11	3, 7, 11	3, 7, 11, 15	3, 7, 11, 15
4th Section	4, 8, 12	4, 8, 12	4, 8, 12	4, 8, 12	4, 8, 12, 16

If the number of teams is different, the distribution of teams takes place in a similar manner.

Second Stage

Grouping of teams is **based on the RPs they have achieved in the first Stage**. If teams have equal RPs, the order between them will be determined by their respective TPs. If teams have the same TPs, the ordering is done according to the sum of TPs earned by them as Reporter.

The teams are divided as follows:

	Number of teams				
	7	**8**	**9**	**10**	**11**
1st Section	1, 3, 5, 7	1, 3, 5, 7	1, 4, 7	1, 4, 7, 10	1, 4, 7, 10
2nd Section	2, 4, 6	2, 4, 6, 8	2, 5, 8	2, 5, 8	2, 5, 8, 11
3rd Section	-	-	3, 6, 9	3, 6, 9	3, 6, 9

	Number of teams				
	12	**13**	**14**	**15**	**16**
1st Section	1, 5, 9	1, 5, 9, 13	1, 5, 9, 13	1, 5, 9, 13	1, 5, 9, 13
2nd Section	2, 6, 10	2, 6, 10	2, 6, 10, 14	2, 6, 10, 14	2, 6, 10, 14
3rd Section	3, 7, 11	3, 7, 11	3, 7, 11	3, 7, 11, 15	3, 7, 11, 15
4th Section	4, 8, 12	4, 8, 12	4, 8, 12	4, 8, 12	4, 8, 12, 16

Third Stage

Grouping of teams is **based on the RPs they have achieved in the first Stage**. If teams have equal RPs, the order between them will be determined by their respective TPs. If teams have the same TPs, the ordering is done according to the sum of TPs earned by them as Reporter.

The teams are divided as follows:

	Number of teams				
	7	**8**	**9**	**10**	**11**
1st Section	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3	1, 2, 3, 4	1, 2, 3, 4
2nd Section	5, 6, 7	5, 6, 7, 8	4, 5, 6	5, 6, 7	5, 6, 7, 8
3rd Section	-	-	7, 8, 9	8, 9, 10	9, 10, 11

	Number of teams				
	12	**13**	**14**	**15**	**16**
1st Section	1, 2, 3	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
2nd Section	4, 5, 6	5, 6, 7	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8
3rd Section	7, 8, 9	8, 9, 10	9, 10, 11	9, 10, 11, 12	9, 10, 11, 12
4th Section	10, 11, 12	11, 12, 13	12, 13, 14	13, 14, 15	13, 14, 15, 16

Fourth Stage

Grouping of teams is **based on the sum of the RPs they have obtained in the first three Stages**. If teams have equal RPs, the order between them will be determined by their respective TPs. If teams have the same TPs, the ordering is done according to the sum of TPs earned by them as Reporter.

The teams are divided as follows:

	Number of teams				
	7	**8**	**9**	**10**	**11**
1st Section	1, 3, 5, 7	1, 3, 5, 7	1, 4, 7	1, 4, 7, 10	1, 4, 7, 10
2nd Section	2, 4, 6	2, 4, 6, 8	2, 5, 8	2, 5, 8	2, 5, 8, 11
3rd Section	-	-	3, 6, 9	3, 6, 9	3, 6, 9

	Number of teams				
	12	**13**	**14**	**15**	**16**
1st Section	1, 5, 9	1, 5, 9, 13	1, 5, 9, 13	1, 5, 9, 13	1, 5, 9, 13
2nd Section	2, 6, 10	2, 6, 10	2, 6, 10, 14	2, 6, 10, 14	2, 6, 10, 14
3rd Section	3, 7, 11	3, 7, 11	3, 7, 11	3, 7, 11, 15	3, 7, 11, 15
4th Section	4, 8, 12	4, 8, 12	4, 8, 12	4, 8, 12	4, 8, 12, 16

Part 4. Rules of the Semi-final Stages

1. In the first Round of each Section the teams must decide the order in which they will select their roles for the Section. The highest-ranking team decides first, followed by other teams in descending order of rank. After the order is established, the teams will choose their roles for the first Round in that order.

2. After the first Round the teams change their roles according to the following scheme:

For a Section of 4 teams:

Round number	**Team's role**			
1	Opponent	Observer	Reviewer	Reporter
2	Observer	Reviewer	Reporter	Opponent
3	Reviewer	Reporter	Opponent	Observer
4	Reporter	Opponent	Observer	Reviewer

For a Section of 3 teams:

Round number	**Team's role**		
1	Opponent	Reviewer	Reporter
2	Reviewer	Reporter	Opponent
3	Reporter	Opponent	Reviewer

3. The standard course of a Round follows the scheme below:

Part of the Round	Maximum time (minutes)
The Captain of the Opponent team announces the number of the problem that they intend to challenge the Reporter team with.	1
The Reporter team accepts or declines the challenge.	1
Repeating the challenge if necessary (see Part 3 Point 4).	2
Announcement of the Reporter's name.	1
Announcement of the Opponent's name.	1
Report (strictly monologue).	8
Preparation of the Opponent (during this part, the Reporter is not allowed to communicate with their team).	1
Opposition (strictly monologue).	5
Reporter's response (strictly monologue).	4
Academic discussion between the Reporter and the Opponent.	5
Announcement of the Reviewer's name.	1
Review (strictly monologue).	3
Jury's questions.	5
General discussion between the active participants and the audience.	5
Evaluation by the Jury (writing down the Grades).	2
Announcement of Grades.	2
Short verbal evaluation of each participant's performance and areas of improvement, carried out by the Head of the Jury (for educational purposes)	5
Spare time (may be added by the Moderator)	3
TOTAL	55

4. Procedure for accepting or declining a challenge:

4.1. After the Reporter team is challenged with a problem, the Captain of the Reporter team decides to accept or reject the challenge. In case of accepting the challenge, the Captain of the Reporter team must announce the name of the Reporter. In case of rejecting it, the Captain of the Reporter team announces whether the refusal is 'strategic' or 'tactical'. A tactical refusal applies only to the current Round, while a strategic refusal applies to the rest of the competition as well. If the Captain does not indicate that the refusal is

strategic, the refusal is considered to be tactical.

4.2. Teams can only ask for one strategic refusal per stage.

4.3. A team can reject three challenges in a Round without any repercussions. If the Reporter team refuses to accept the next challenge after the third rejection in the Round, the total number of TPs for the Reporter in the given Round is multiplied by a penalty factor according to the following table:

Number of rejections	**4**	**5**	**6**	**7**	**8 or more**
Factor	0.8	0.7	0.6	0.5	0.4

5. The Opponent team cannot challenge the Reporter team with the following problems:

5.1. Which the Reporter team already rejected in the current Stage;

5.2. Which the Reporter team rejected in previous Stages (strategic refusal only)

5.3. Which was already reported in the current Stage;

5.4. Which the Reporter team has reported in previous Stages;

5.5. Which the Opponent team has opposed in previous Stages.

If it turns out that the Opponent team cannot challenge the Reporter team due to the regulations of Part 4 Points 5.1 to 5.5, then Part 4 Points 5.4 to 5.5 are temporarily lifted for that Round.

6. Each participant may take the role of Reporter, Opponent, and Reviewer only once for each role during the Semi-finals. If a participant breaks this rule, the total number of TPs for additional roles is multiplied by a factor of 0.5 as a penalty.

7. Team Captains (including the Observer team) may announce a 60-second-long time-out, which is limited to one per stage and per team, and it must be requested strictly before the Jury's questions. A time-out can only be announced in the intervals between the different parts of the Round, or during the academic discussion between the Reporter and the Opponent. A time-out can only be announced by the captain of the Team whose member is an active participant in the given part of the Round. During the time-out, the Reporter, the Opponent, and the Reviewer are allowed to communicate with their teammates. Time-out applies to all teams in the Section.

8. During the Stages of the Tournament, participants are not allowed to use electronic devices apart from calculators. Teams are allowed to use one laptop or tablet per team to show their presentations. Using the Internet is strictly prohibited on each electronic device.

9. Participants are allowed to use mechanical watches, quartz watches, and stopwatches to measure time, however, they are not allowed to use smartwatches and phones. A clock well visible to every participant should be present in each Section.

10. The only file that the Reporter is allowed to use during their presentation is their slide show presentation, in the form of a single file. The Reporter is not allowed to open other files or windows that are not part of their presentation.

11. Only Organisers are allowed to record the Stages.

12. In the general discussion, any participating student, non-participating student, jury member, moderator or anyone in the audience of the Section can ask a question to any active participant. The Moderator can refuse questions that are deemed disrespectful or not related to the problem.

13. Team leaders are strictly prohibited from communicating with their teams during the Rounds. Such cases are penalised with 30% of the team's TPs for that Round.

Part 5. The Rules of the Final Stage

1. After the fourth Stage, the three teams with the highest sum of RP take part in the Final Stage. If teams have equal RPs, the order between them will be determined by their respective TPs. If teams have the same TPs, the ordering is done according to the number of TPs earned by them as Reporter.

2. The order of choosing columns will be based on the order set by Part 5/1. Hence, the highest ranking team will decide first, followed by other teams in descending order.

2. Unlike in the Semi-final Stages, in the Final Stage, teams themselves choose which problem they intend to report.

3. In the Final Stage, it is not allowed to report the same problem more than once.

4. One participant may only take one active role in the Final Stage.

5. A participant might take the same active role in the Final Stage that they had taken before in the Semi-final Stages.

Part 6. The Rules of Grading

1. The possible Grades are 2, 3-, 3, 3+, 4-, 4, 4+, 5-, 5 and 5+. The highest Grade is 5+, the lowest is 2.

2. The Jury members must write down the Grades before their announcement. It is not possible to change the grades after their announcement.

3. The Reporter is graded separately for scientific and presentational parts.

4. Reference points for grading:

Reporter – Scientific part:

Grade	Solution model	Correctness and completeness	Originality
5	The reporter delimited and interpreted the problem accurately without oversimplifying, and followed a methodological framework suited to the problem.	The reporter gave a viable solution for the intended use and covered all the required points specified by the problem description.	The report contains novel ideas, procedures, or demonstrations, builds on existing ideas from the literature, or applies a creative approach to solve the problem.
4	2 out of 3 criteria fulfilled		
3	1 out of 3 criteria fulfilled		
2	The reporter misinterpreted or oversimplified the problem, and the methodological framework reflected such misjudgments.	The proposed solution is not feasible and does not cover one or more of the required points specified by the problem description.	The report lacks originality, and is just a retelling of already existing scientific work.

Reporter – Presentational part:

Grade	Understandability of the solution	Quality of the presentation	Debate skills
5	The reporter organised their solution in a clear and understandable way, with appropriate speech and presentational style.	The presentation was legible, well-organised, and presented in a good-looking form.	The reporter conveyed their arguments in a convincing manner, and demonstrated strong oratory skills.
4	2 out of 3 criteria fulfilled		
3	1 out of 3 criteria fulfilled		
2	The reporter was difficult to comprehend due to poor structure and/or unintelligible speech.	The presentation failed to convey the ideas of the report due to poor data presentation and/or illegible slides.	The reporter was not convincing at all, and could not defend their solution against the opponent and jury.

Opponent:

Grade	Scientific nature	Correctness	Debate skills
5	The opponent was mainly concerned with scientific questions, and demonstrated good scientific knowledge.	The points made by the opponent were predominantly correct, relevant, and justified.	The opposition was well-structured, convincing and demonstrated strong oratory skills.
4	2 out of 3 criteria fulfilled		
3	1 out of 3 criteria fulfilled		
2	The opponent failed to make sound scientific arguments, and lacked the necessary knowledge to do so.	The points made by the opponent were incorrect, irrelevant, and lacked proper justification.	The opposition was not convincing at all, and failed to capture the attention of the audience.

Reviewer:

Grade	Report reviewing	Opposition reviewing	Conclusion
5	The reviewer evaluated the performance of the report correctly, finding the key strengths and weaknesses of it.	The reviewer evaluated the performance of the opponent correctly, finding the key strengths and weaknesses of it.	The conclusion made by the reviewer was clear, concise, and meaningful, thus providing a correct summary of the round.
4	2 out of 3 criteria fulfilled		
3	1 out of 3 criteria fulfilled		
2	The reviewer could not evaluate the report accurately, or failed to evaluate several aspects of it.	The reviewer could not evaluate the opposition accurately, or failed to evaluate several aspects of it.	The conclusion was missing, too general, or provided a completely incorrect summary of the round.

Each criterion is explained in greater detail in the Appendix.

5. The grades can be modified with the signs "+" and "-", in order to evaluate participants at a higher resolution. The sign "-" indicates that a performance was below a certain standard, but still close to achieving a particular grade. For instance, a "5-" means that a performance was closer to a 5 than to a 4, but was lacking in certain aspects, e.g. because one of the criteria was not entirely fulfilled. In contrast, the sign "+" indicates that a performance was above a standard (but perhaps by not too much). This way, a "4+" means that the performance was close to a 4, but exceeded it in certain aspects. Because there are three different criteria contributing to each grade, and all three of them may be fulfilled to a different extent, jury members can fine-tune their grading with the plus/minus system. Finally, the grade "5+" is awarded by the Jury only for exceptionally great performances.

6. It is compulsory for the Jury to explain Grades 2 and 5+ if awarded. In addition, any active participant or team Captain can ask the Jury to explain any other Grade.

7. After each Round, Grades are recalculated to TPs according to the following scheme:

Grade	2	3-	3	3+	4-	4	4+	5-	5	5+
TPs	2	5	9	14	20	27	34	42	51	60

8. After each Round, the recalculated TPs are averaged across all Jury members in the Section and then rounded to two decimal places. Next, TPs awarded for the reporter's scientific and presentational part are added together. Finally, TPs for the Reporter and the Opponent are multiplied by a factor of 2. Thus, the maximum number of TPs that can be awarded to the Reporter is 240, to the Opponent it is 120, and to the Reviewer it is 60.

9. After the end of the Stage, the TPs awarded for the Report, Opposition, and the Review are summed up for each team. Next, RPs of the teams are calculated according to the following scheme:

TPs	Rank of the team in the Section after the Stage				
	1st place	2nd, 3rd, or 4th, if within 10 TPs of 1st place	2nd place, if not within 10 TPs of 1st place	3rd, or 4th, if within 10 TPs of 2nd place	3rd, or 4th, if not within 10 TPs of 2nd place
300.00 - 420.00	6	6	5	5	4
230.00 - 299.99	5	5	4	4	3
130.00 - 229.99	4	4	3	3	2
60.00 - 129.99	3	3	2	2	1
0.00 - 59.99	2	2	1	1	0

Note: If the TP difference between two teams is exactly 10.00, that is still considered to be within 10 TP, therefore gaining +1 RP to the team with a lower ranking.

Part 7. Determination of The Winner and Laureates

1. The teams having the highest sum of RPs are awarded diplomas of winner and laureates of 1st, 2nd, and 3rd class.

2. Diploma of 1st place is only given to one team having the most TPs in the Final Stage. If 2 or 3 teams have the same TPs then the final order is determined based on the potential TP differences in the following order: TPs for the Report in the Final Stage, TPs for the Opposition in the Final Stage, TPs in Semi-final Stages, TPs for Reports in Semi-final Stages, TPs for Oppositions in Semi-final Stages, the team's rank in the Draw.

3. Second and third places are similarly determined by the Final Stage as it is written in Part 7 Point 2. The ranks of the teams (from fourth to the last) are determined by the sum of RPs. If teams have the same RPs then the final order is determined based on the potential TP differences in the following order: TPs in Semi-final Stages, TPs for Reports, TPs for Oppositions, and the team's rank in the Draw.

4. The maximum number of laureates cannot exceed 45% of the teams (rounded to the nearest integer) but should not be less than 3.

5. Individual participants can be awarded personal diplomas based on their total achieved TPs. Individual participants can also be awarded special prizes.

Part 8. Final Statements

1. Any questions and suggestions should be sent to info@ichto.org or torneomexicanodequimica@sems.udg.mx

2. The organising committee can change any part of these rules before August 25th, 2024. After that day, some changes may still apply but only with the agreement of the majority of the team leaders.

3. The result of the Tournament must be published on the official site of the Tournament – ichto.org – no longer than 3 days after the Tournament.

Appendix - Grading criteria

1. Reporter - Scientific part

Solution model

The *solution model* is the approach that the reporter outlines to solve the problem. This criterion evaluates whether the problem description has been interpreted correctly, and how appropriate the methodology is for the solution. The reporter needs to address all aspects of the problem, and avoid reducing it to a simpler version, or solving a substantially different one. Furthermore, the reporter must describe and justify the methodology used to solve the problem, such as experimental strategies and techniques, scientific literature, and quantitative information.

Correctness and completeness

Completeness means that all the information that was outlined in the solution model is actually included. One may know that certain information is necessary, but finding a way to collect it and appropriately present it might be a challenge by itself. Therefore, a complete solution is one that addresses all requirements of the problem and contains sufficient information to justify the solution model.

Correctness refers to the overall quality and feasibility of the solution from both a theoretical and a practical standpoint. For instance, a solution may be well-constructed overall and addresses the key criteria outlined by the problem description, it may also have a number of things it gets wrong. A few examples:

- A reaction does not proceed under the outlined conditions
- The reaction gives different products compared to the ones suggested by the reporter
- Yields are prohibitively low for the particular application
- The limit of detection of an analytical method is insufficient
- The purity of a sample is vastly overestimated

In each case, the key point is that the reporter usually begins their argument from correct premises, but their solution contains theoretical mistakes, or – when implemented in practice – simply does not work as well as expected. This is arguably the most difficult criterion to fulfil.

Originality

A solution is considered original if it contains creative ideas, applies existing knowledge to novel situations, or addresses the requirements through an original approach. The use of scientific literature and experimental data is preferable in this competition, and we do not expect students to carry out entirely novel, publishable experimental work. However, a solution which describes in its entirety the work of someone else cannot be considered original. Several things can contribute to an original solution, such as the combination of multiple different works, tailored to the current solution at hand, designing a tool or apparatus specifically for a problem, and performing calculations, computational simulations or experiments to support a solution.

2. Reporter - Presentational part

Understandability of the solution

Understandability refers to the reporter's ability to clearly communicate their solution. This includes, but is not limited to, the speech of the reporter. The language of the tournament is English, therefore all information said and presented has to be in English. The participant should not be discriminated on the basis of fluency, as long as the speech they deliver is generally audible and understandable, is at a comfortable pace (neither too quick nor too slow), and their vocabulary is sufficient to express the ideas of the solution. However, if shortcomings in any of these hinder understanding, marks should be deducted. Furthermore, *understandability* can also mean that the string of ideas and arguments is constructed in such a way that it makes the interpretation of the solution straightforward. This way, nothing is over- or underexplained, and the speech is well-structured.

If the reporter runs out of time and can't finish their report within the allocated 8 minutes, the solution may also become less understandable. This can be penalised in the presentational part as well as in the scientific part, if the solution was incomplete due to the inefficient use of time.

Quality of presentation

The presentation mainly means the slides used to describe the solution during the 8-minute report. A high-quality presentation summarises the key points of the solution in a clear and succinct manner, and supports it with relevant figures and data. Common mistakes include too much text or data on a single slide, insufficient time spent on a slide which makes understanding difficult, and unintuitive data presentation. Generally, the slides should complement the speech, and they should be organised and intuitively designed to facilitate efficient conveyance of information. Aesthetics can play a role in this, but it is important to remember that an aesthetically designed slideshow is not necessarily an informative one. Finally, the slides should always clearly include references to information from the literature.

Debate skills

The final criterion for the reporter emphasises the necessity of rhetorics and oratory skills. High marks can be awarded to a reporter who is highly convincing and uses sound arguments to support their points. Defending their solution well against questions from the opponent and jury is essential, and in this, strong emphasis is placed on accurately and sufficiently addressing the points raised. Dodging questions or misrepresenting them is undesirable. A good reporter is not disheartened by uncomfortable questions, and can respond in a confident and convincing manner. However, confidence should not be confused with aggression, which is to be avoided.

3. Opponent

Scientific nature

By *scientific nature*, the rule set means that the points raised by the opponent should mainly be concerned with the scientific aspects of the report. Calling attention to issues with the presentational style is completely valid (e.g. pointing out the lack of references on slides, any figures that were difficult to read, or equally, indicating that the speech was difficult to follow), however, this is insufficient and should not form the foundation of any opposition. The opponent's goal is primarily to find scientific mistakes in the report, and to recognise any missing information which would be instrumental to the solution. In addition, an opponent can demonstrate good scientific understanding by recognising the most important scientific issues, and prioritising those in their monologue and the discussion that follows. However, the opponent must not suggest alternative solutions to the problem, and has to focus on the solution presented by the reporter.

Correctness

Correctness mainly refers to whether the particular points that the opponent made are justified and accurate. A good opponent points out the main scientific issues with the solution, asks relevant questions, most of which are scientific in nature, and justifies their relevance. In the rare case of an excellent report, the task of the opponent is to point out missing details of the presentation, asking relevant questions to further the understanding of the solution, and asking about data supporting the reporter's claims.

An opposition can attack several scientific aspects of the solution, but it's not worth much if the points do not make sense. For instance, stating that the chemical reaction proposed by the reporter does not happen quickly enough to fulfil the problem criteria, when it actually does, is certainly scientific in nature, but incorrect. Equally, points raised by the opponent might be addressing scientific aspects, but are mostly irrelevant (e.g. the opponent is concerned about side reactions, but they are not expected to interfere with the solution, or when the opponent asks about the safety, time, and cost of a solution when these are not essential criteria of the problem).

Debate skills

Most of the points made for the reporter's presentational part also apply here, including understandability as well as the oratory aspects. A credible opponent must structure their arguments well, conveying them in an understandable and convincing manner. The opponent has a 1-minute preparation time after the report, and they should use this time wisely to decide which points are most important to raise, how to justify them, and construct their monologue to be as convincing as possible. Understandable, confident speech is highly important, but again, confidence should never be confused with aggressiveness. It can be difficult to raise issues in a polite

manner, but opponents should not be too polite either, and state clearly if they found major mistakes in the solution, or if they think that some of the criteria are not fulfilled at all (in which case this should be the most important part/statement of their opposition monologue). Clearly, the three opposition criteria interact and can overlap with each other in some cases, therefore the opposition marks need to be especially carefully considered.

4. Reviewer

Report reviewing

The reviewer's first task is to accurately evaluate the performance of the reporter. This includes both the report itself, and the subsequent responses to the opponent and jury. In a way, the reviewer supports the work of jury members by finding the aspects in which the reporter excelled, while also highlighting any mistakes and missing information. By no means should a reviewer behave like a second opponent, but where relevant, it's essential to make note of serious shortcomings. There are a number of different approaches to reviewing, but all reviews should strike a fine balance between general remarks (e.g. slides were clear / the solution utilises and builds upon the findings of current scientific literature / the speech was perhaps too quick and not well articulated), and specific points related to the particular solution presented. A review is not simply a list of what was said in the debate, but it must include the own evaluation and value statements of the reviewer. Specific points can be used both to describe the reporter's solution itself and to demonstrate and justify general remarks made earlier with an example. In general, the reviewer should always keep a close eye on the marking criteria outlined for the reporter, and make their own evaluation and conclusions based on them.

Opposition reviewing

During the review of the opposition, the reviewer should explore the variety of questions the opponent posed, and say whether they were justified and correct. In addition, the performance of the opponent also needs to be evaluated on basis of their argumentation and rhetoric. Naturally, the debate phase features both the reporter and opponent, and therefore evaluation of it can contribute to both criteria, but is perhaps structurally more relevant for the review of opposition. Identifying key clash points can be useful, and an opinion on whether the opponent pursued some of the points they made to a sufficient degree is also appreciated.

Conclusion

Finally, the reviewer needs to make a conclusion about the round. This generally should not be much longer than two or maximum three sentences, as the jury is looking for a short summary with good insight. The phrase 'good insight' is highly emphasised here, as many reviewers towards the end of their performance (and indeed their allocated 3 minutes) tend to make quite bland and general conclusions. The conclusion itself needs to contain overall indications of each of the two participants' performance with respect to each other (but not necessarily placing one above the other). It is essential to form a conclusion in order to achieve a high review mark, and reviewers who run out of time before they can start making one should be penalised accordingly. It also needs to be noted that it is not the task of a reviewer to suggest specific grades to the jury in their conclusion.

One other aspect which can contribute to all 3 review criteria (but is discussed here for convenience) is the relative amounts of time allocated to evaluating the reporter, opponent, and the debate. In accordance with the amount of time and marks available to the reporter, they should be the ones to receive the majority of attention in a review. However, the opponent should not be ignored either, and an ample amount of time needs to be left to form the conclusion. The review is a very short and time-sensitive role, and the balance between these objectives can often be disrupted.