

# Official Regulations of the Canadian Young Physicists' Tournament

2023 Edition

Adapted from the Official Regulations of the IYPT

## I. Canadian Young Physicists' Tournament

The Canadian Young Physicists' Tournament (CaYPT) is a competition among teams of secondary school students in their ability to solve complicated scientific problems, to present solutions to these problems in a convincing form and to defend them in scientific discussions, called Physics Matches (PM). The CaYPT awards outstanding teams and selects outstanding students to represent Canada in the International Young Physicists' Tournament (IYPT). The CaYPT will be held on two consecutive Saturdays in February and March.

## II. The Problems of the CaYPT

The problems of the CaYPT are selected from the 17 IYPT problems finalized by the International Organizing Committee (IOC). 10 of the IYPT problems are used in the CaYPT. The CaYPT problems are selected by the Problem Selection Committee comprising of members of the CaYPT Organizing Committee and experienced CaYPT team leaders.

The problems are divided into two groups of five problems. Group 1 and Group 2. The grouping is determined by the Problem Selection Committee. Group 1 will be used in the first CaYPT day and Group 2 will be used in the second CaYPT day. The list of CaYPT selection round problems are made public no later than 2 weeks after the beginning of the school year.

## III. The Participants of the CaYPT

### III.1. The Membership of the Teams

A CaYPT team is composed of three to five secondary school students. Secondary school graduates can participate in the CaYPT in the year of their graduation. The participation of university students is not permitted.

The composition of the team cannot be changed during the tournament. Each team may include at most two members who participated in the previous year's IYPT or OYPT(O-IYPT).

There is no limit on the number of IYPT participants from earlier IYPTs (including O-IYPT/OYPT) in each team. Each team is headed by a Team Captain who is the official representative of the team during the CaYPT.

### **III.2. Team Leaders**

The team is accompanied by one or two Team Leaders. Team Leaders should be over the age of 18. They are responsible for the safety and conduct of their accompanying team. It is advised for team leaders to have backgrounds in physics, engineering, or physics education. It is mandatory for qualified team leaders to work as jurors (see section IV). Experienced Team Leaders Jurors are invited to join the Problem Selection Committee.

## **IV. The Jury**

### **IV.1. Composition**

The Jury is nominated and organized by the COC. The Jury is composed of team leaders, independent jurors and past IYPT participants. The Jury consists of at least three members, if possible, from different schools/ teams. Team Leaders, may be included in the Jury. The Team Leaders cannot be members of the Jury in the Physics Match(PM) where their teams participate and should not, if possible, grade the same team more than once.

### **IV.2. Requirements**

Team Leader Jurors should be a current or past high school physics teacher. Independent Jurors should have completed at least 2 years of study towards a physics degree or have a degree in engineering. Past IYPT participant jurors should have completed at least 2 years of study towards a physics degree or 3 years of study towards an engineering degree.

### **IV.3. Juror Rights and Responsibilities**

Jurors are responsible for the evaluation of teams during the PMs.

Jurors are responsible for:

- a) Declare all affiliations with competing teams and all relevant conflict of interests
- b) Attend the juror orientation meeting on competition day or watch juror training videos produced by the COC
- c) Grade according to the scoresheet
- d) Explain partial grades if his/ her score is the highest or lowest in the room

Jurors have the right to:

- a) Ask any question related to the problem during the question stage without justification

- b) With the agreement of the chair, extend the questioning stage or grading stage as necessary
- c) Not comment on his/her grading decision after the PM is completed when asked by team members and team leaders

#### IV.4. Chairperson

One of the most experienced jurors takes the role of the chairperson of the PM room. The chairperson's responsibilities are outlined in the CaYPT Chairperson Responsibility document. The chairperson of each PM room is nominated by the COC and approved by the Director of the COC.

### V. The Agenda of the CaYPT

The date of the CaYPT is determined by the COC and is announced no later than the CaYPT problems are released.

All teams participate in five Selective PMs. Selective PMs are conducted according to a fixed schedule as detailed in the attachment to these Regulations. Numbers are ascribed to teams by draw. Two teams participate in a Selective PM. Three teams participate in the Final PM. During a PM, the members of a team may only communicate with each other. At the beginning of a PM, the Jury and the teams are introduced. The PM is carried out in two (or three) Stages. In each Stage, a team plays one of the two (or three) roles: Reporter, Opponent, (Reviewer). In the subsequent Stages of the PM, the teams change their roles according to the schemes:

#### Two Team PM:

Team	Stage	
	1	2
1	Rep	Opp
2	Opp	Rep

#### Three Team PM:

Team	Stage		
	1	2	3
1	Rep	Rev	Opp
2	Opp	Rep	Rev
3	Rev	Opp	Rep

### VI. The Stage Regulations

In a two team PM, all phases that the reviewer participates in are omitted. Total time for a two team PM is 46 minutes. The official language of the CaYPT is English.

<b>The Performance Order in a Stage of a PM:</b>	<b>Reserved Time in Minutes:</b>
The Opponent challenges the Reporter for the problem	1
The Reporter accepts or rejects the challenge	1
Preparation of the Reporter	5
Presentation of the report	12
Questions of the Opponent to the Reporter and answers of the Reporter	2
Preparation of the Opponent	3
The Opponent takes the floor	max 4
Discussion between the Reporter and the Opponent	10 + remaining from part above
The Opponent summarises the discussion	1
Questions of the Reviewer to the Reporter and the Opponent and answers to the questions	3
Preparation of the Reviewer	2
The Reviewer takes the floor	4
Concluding remarks of the Reporter	2
Questions of the Jury	5

## VII. The Team Performance in the Stages

The Reporter presents the essence of the solution to the problem, bringing the attention of the audience to the main physical ideas and conclusions. The Opponent puts questions to the Reporter and criticises the report, pointing to inaccuracies and errors in the understanding of the problem and in the solution. The Opponent analyses the advantages and drawbacks of both the solution and the presentation of the Reporter. The discussion of the Opponent should not become a presentation of his/her own solution. In the discussion, the solution presented by the Reporter is discussed. The Reviewer presents a short evaluation of the presentations of Reporter and Opponent. During one PM only one member of a team takes the floor as Reporter, Opponent or Reviewer; other members of the team are allowed to make brief remarks or to help with the presentation technically. No member of a team may take the floor more than twice during one Selective PM or, as Reporter, more than three times in total during all Selective PMs. During the Final PM any team member can take the floor only once. The COC must inform about the devices available for presentations not later than two months before the CaYPT.

## VIII. The Rules of Problem-challenge and Rejection

**VIII.1. All problems presented in the same PM must be different.**

### VIII.2. Selective PM

The Opponent may challenge the Reporter on any problem with the exception for a problem that:

- a) was rejected by the Reporter earlier;
- b) was presented by the Reporter earlier;
- c) was opposed by the Opponent earlier;
- d) was presented by the Opponent earlier.

If there are less than 2 problems left to challenge, the bans d), c), b), a) are successively removed, in this order.

During the Selective PMs, the Reporter may reject the challenge of 2 different problems in total without penalty. Only one rejection is allowed from each group. For every subsequent rejection, the coefficient of the Reporter (see section X) is decreased by 0.2. This reduction continues to apply during the following selective PMs. The maximal number of different problems a team is allowed to reject during the whole competition is 5.

## **IX. The Grading**

After each stage, the Jury grades the teams, taking into account all presentations of the members of the team, questions and answers to the questions, and participation in the discussion. Each Jury member shows integer grade from 1 to 10. The arithmetic mean of the highest and the lowest grades is counted as one mark which is then added to the remaining grade. This sum is then used to calculate the mean grade for the team. The mean grade are multiplied by various coefficients: 3.0 or less (see section VIII) for the Reporter, 2.0 for the Opponent, 1.0 for the Reviewer and then transformed into points.

## **X. The Resulting Parameters**

### **X.1. For a Team in the PM**

The Sum of Points (SP) is the sum of mean grade, multiplied by the corresponding coefficients and rounded to one decimal. Grades are rounded after every Stage. All subsequent calculations are performed using the SP of Stages.

### **X.2. For a Team in the Tournament**

The Total Sum of Points (TSP) equals the sum of SP of the team in all Selective PMs. The number of fights won (FW) is the number of Selective PMs, in which a team received the highest SP from all two or three teams participating in the same PMs.

## **XI. The Final Physics Match**

The three teams with the highest TSP by the end of the selection PMs are invited to the final PM. The score of the final PM determines the final team ranking of the finalist teams. In the final PM, the teams are allowed to select any of the CaYPT problems that they have not reported in the selective PMs. The order of choices is given by the TSP of the selection PMs. In case of a tie, a draw will decide the order problem selection. In the final PM, each member of a team can only take the stage a maximum of one time. The final PM will be video recorded and/or livestreamed by members of the COC. The audience is asked to minimize video recording and photography. Family members of the participants are prohibited from entering the final PM room.

## XII. The Final Team Ranking of the CaYPT

Students in the top half (rounded up) of participating teams receive medals. The students of the team in the top 15% are awarded 1st place certificates and gold medals. The students of the team from the top 15% to 30% are awarded 2nd place certificates and silver medals. The students of the team from the top 30% to 50% are awarded 3rd place certificates and bronze medals. All participating students receive certificates of participation.

Medals are determined by the following method:

**Percentile Ranking** = Team Placement / Number of Participating Teams

If **Percentile Ranking**  $\leq$  15%, the team receives gold medals.

Else if  $15\% < \text{Percentile Ranking} \leq 30\%$ , the team receives silver medals.

Else if  $30\% < \text{Percentile Ranking} \leq 50\%$ , the team receives bronze medals.

All other teams receive only certificates of participation

All cutoffs are exact.

## XIII. Individual Awards

Individuals Awards are given to outstanding students competing in the CaYPT. Individual Awards are independent of team ranking and are decided by jury nomination.

The list of Individual Awards include:

- a) Outstanding Theory  $\times 1$
- b) Outstanding Experiment  $\times 1$
- c) Leadership  $\times 1$

## XIV. Individual Selection and Qualification for Team Canada

Teams receiving medals can nominate all team members to participate in the individual selection round. Additional students can be nominated by request of the Jury. The nomination are submitted to the COC by team leaders and team leading teachers.

## XV. The Status of the Regulations of the CaYPT

The regulations are established by the COC and may be changed only by the COC.

*Accepted on Aug 08, 2022*