

2.3. Report Processing Fee

The COC charges a report process fee of \$50.00 CAD per submitted report. This fee is used to provide financial compensation to our professional external graders.

2.4. Report Submission Form

The reports will be submitted through a Google Form. In the form, every student will declare their contribution to a particular problem. One form submission is required for every report. Each team can submit one report per CaYPT Problem.

A report may include contribution from students of different teams. This is to account for the extensive collaboration between teams from the same school. Each student will receive credit from one report of a particular problem. For calculation details see **Section 3**.

2.5. Contributors

All contributors must be included in the form. This also include students who are not participating in the individual selection stage. The contribution of each collaborator must be clearly stated.

Contribution declaration will be confirmed with all contributors after the report submission stage.

Contribution Category (18 in total):

- A. Reference Searching
- B. Reproduction of the Phenomenon
- C. Design of Preliminary Experiment (e.g. constant measurement)
- D. Theoretical Derivation for Preliminary Experiment
- E. Construction of Preliminary Experiment
- F. Preliminary Experiment Data Collection
- G. Preliminary Experiment Data Analysis
- H. Analytical Derivation of Theoretical Model
- I. Computational/Numerical Solution of Theoretical Model
- J. Design of Main Experiment
- K. Construction of Main Experiment
- L. Calibration/Testing of Instrumentation
- M. Main Experiment Data Collection
- N. Development of Data Analysis Techniques (i.e. data processing algorithm and protocol)
- O. Main Experiment Data Analysis
- P. Presentation Slide Making

Q. Graphs in Presentation

R. Media and Animation in Presentation (e.g. photo/video editing, 3D rendering etc.)

All 18 Contribution Categories are weighted equally.

For each of the Contribution Categories, if there is one contributor, write his/her name.

If instead there are multiple contributors, please follow the following format:

Name 1 (70/100), Name 2 (20/100), Name 3 (10/100). Where (–/100) indicates the **Relative Contribution** of each contributor.

Students should reach a consensus with their collaborators regarding the Relative Contributions. Each student should keep a record of their Relative Contribution to each problem and should verify after the ranking breakdown is made public.

In case of a dispute, an investigation will be initiated by the CaYPT Committee. If a student is found to have intentionally misreported another student's Relative Contributions, disciplinary actions will be taken. Such an offence will result in one's disqualification from the current individual selection process and may result in one's permanent disqualification from future CaYPT competitions.

2.6. Report Grading and Feedback

The submitted reports are graded by three graders: an External Grader (EG), a Junior Internal Grader (JIG) and a Senior Internal Grader (SIG).

Grader qualification requirements are as follows:

1. The External Grader (EG) must be a juror who has judged in the current year of CaYPT for at least two half days.
2. The Junior Internal Grader (JIG) must be a member of the COC who has previously qualified for IYPT/OYPT/O-IYPT and is currently pursuing studies in physics, engineering or related disciplines.
3. The Senior Internal Grader (SIG) must be a member of the COC who has previously judged in IYPT/OYPT/O-IYPT.

Graders are obligated to grade reports based on the CaYPT individual selection Report Rubric. Each grader will give a score based on the rubric which is recorded as the Unnormalized Report Scores (urs).

The relative weights of the graders are distributed as follows: External Grader (35%), Junior Internal Grader (20%), Senior Internal Grader (45%).

Section 3. shows detailed formulae for the score calculation.

2.7. Academic Integrity

Academic integrity is an important matter and should be taken seriously. Possible academic integrity offences include plagiarism and falsification.

Plagiarism may include but is not limited to:

- A. Inadequate citations
- B. Submitting reports made in whole or in part by someone else as your own
- C. Use of AI-based tools to generate the whole (or part of the) report
- D. Buying or selling any part of the report

Falsification may include but is not limited to:

- A. Fabricating data
- B. Altering data to match expectations

Sanctions for committing an academic integrity offence may include one or multiple of the following:

- A. Disqualification from the current individual selection process
- B. Limited disqualification from future CaYPT competitions
- C. Permanent disqualification from future CaYPT competitions
- D. Letter to team leader about the incident
- E. Letter to school about the incident

All sanctions related to academic integrity will be determined by a disciplinary committee consisting of four CaYPT Committee members and one independent advisor with a degree in physics.

3. Ranking Calculation

3.1. Definition of Parameters

Unnormalized Report Scores (urs): The raw scores given to a report submission based on CaYPT Individual Selection Report Rubric. $[0,10]$

Number of Submitted Reports (N_i): The number of report submissions received for the particular problem i .

Minimum Unnormalized Score Cutoff (MUSC): The minimum Report Score (rs) a problem need to received to be considered for subsequent calculations. $[0,10]$

Report Score (rs): Best report on a problem gets 10. Other reports graded relative to the best report. This is referred to as normalization. One Report Score given per report submitted. $[0,10]$

Relative Contribution (rc): Contribution of a student in a Contribution Category for one CaYPT problem. $[0,100]$

Contribution Coefficient (c): Sum of a student's Relative Contributions (rc) for one CaYPT Problem normalized. $[0,1]$

Student Score (s): Product of Contribution Coefficient and Report Score for each CaYPT Problem summed overall problems. $[0,100]$

3.2. Formulae

Report Scores (rs):

For each grader (EG, JIG, SIG) will give every report an Unnormalized Report Score (urs). These are denoted as urs_{EG} , urs_{JIG} , urs_{SIG} respectively. The urs for each grader is normalized with respect to the highest-scoring report identified by each grader to generate the report's rs_{EG} , rs_{JIG} , rs_{SIG} respectively.

Finally, the Report Score (rs) is calculated by a weighted average of the rs_{EG} , rs_{JIG} , rs_{SIG} .

$$rs = 0.35(rs_{EG}) + 0.20(rs_{JIG}) + 0.45(rs_{SIG}) \quad (1)$$

Minimum Unnormalized Score Cutoff (MUSC):

For CaYPT Problems the MUSC is a constant of 2. This means that if a report receives a urs less than 2 from any of the graders, it will not be considered for subsequent calculations.

Contribution Coefficient(c):

$$c = \frac{1}{1800} \sum_{n=1}^{18} rc_n \quad (2)$$

where rc_n represents the Relative Contribution (rc) of a student in the $n = 18$ Contribution Categories.

Student Score (s):

$$s = \sum_i \max\{(rs_i)(c_i)\} \quad (3)$$

If a student contributed to multiple submissions of the same report the maximum of the product of the rs and c for the report is used in the calculation. This means that a student can only receive credit once for one problem. The summation over the index i indicates summation over all the problems that the student contributed to.

In case of a tie, the student who contributed to more rarer problems is ranked on top. The Rariness of a problem is determined by the number of report submissions received (N_i). To compute the Rariness of a student's set of problems, the Rariness of a student's contributed problems is averaged.

3.3. Calculated Example

JC is a student of CaYPT 202X. He did CaYPT 202X Problem A and J. He is in a school with two teams, Team Alpha and Team Beta. He is part of Team Alpha and he helped Team Beta with their version of the Problem A report.

The relative contributions are as follows:

Problem A (Team Alpha):

$$c_{A_\alpha} = \frac{1}{1800} \sum_{n=1}^{18} rc_n = \frac{1200}{1800} \quad (4)$$

Problem A (Team Beta):

$$c_{A_\beta} = \frac{1}{1800} \sum_{n=1}^{18} rc_n = \frac{900}{1800} \quad (5)$$

Problem J (Team Alpha):

$$c_J = \frac{1}{1800} \sum_{n=1}^{18} rc_n = \frac{1500}{1800} \quad (6)$$

After all the reports are graded here are the grades JC received for his submissions exactly as stated on the rubric:

Parameters	Problem A_α	Problem A_β	Problem J_α
EG's urs for JC's submission	5.5	4	1.5
EG's top urs	8	8	7.5
JIG's urs for JC's submission	6	4	2.5
JIG's top urs	9	9	7.5
SIG's urs for JC's submission	5	4	2
SIG's top urs	7.5	7.5	8.5

First, let's perform the normalization process:

rs for grader(normalized)	Problem A_α	Problem A_β	Problem J_α
EG	6.875	5.000	2.000
JIG	6.667	4.444	3.333
SIG	6.667	5.333	2.353

For example EG's rs for Problem A_α is determined by:

$$\frac{(\text{EG's urs for JC's submission for Problem } A_\alpha)}{(\text{EG's top urs for Problem } A_\alpha)} \times 10 = \frac{5.5}{8} \times 10 = 6.875 \quad (7)$$

Note that since the EG gave JC's submission of Problem J_α a urs of 1.5, and this urs is lower than the MUSC of 2. JC's submission for Problem J_α will not contribute to his Student Score (s). For later steps, the rightmost column of the previous table is dropped.

Now we can perform a weighted average of the rs from each grader to determine JC's rs for each problem with the weighting defined in equation 1.

For Problem A_α :

$$rs_{A_\alpha} = 0.35(6.875) + 0.2(6.667) + 0.45(6.667) = 6.740$$

For Problem A_β :

$$rs_{A_\beta} = 0.35(5.000) + 0.2(4.444) + 0.45(5.333) = 5.039$$

Finally, we compute JC's Student Score (s). There are two versions of Problem A. We compute the product of the rs and c and take the max.

$$\text{The Team Alpha version is } \frac{1200}{1800}(6.740) = 4.493$$

$$\text{The Team Beta version is } \frac{900}{1800}(5.039) = 2.520$$

So we take the Team Alpha version for later calculations.

Thus JC's Student Score (s) is just

$$s = 4.493$$

All calculations are exact. Rounding is made for display purposes only.

4. IYPT Team (Candidate) Eligibility

Student Scores (s) are calculated and ranked (an example of which is given in Section 3). The individual selection stage final ranking is determined by a combination of Student Score ranking, the eligibility criteria and diversity criteria detailed in this section.

IYPT Team Candidate is defined as students ranked top of the individual selection stage final ranking. IYPT Team Members is the subset of 5 students within IYPT Team Candidates who are tentatively selected to represent Canada in the IYPT.

4.1. Eligibility Criteria

- A. Each IYPT Team Candidate must be a current student of a Canadian secondary school (or equivalent).
- B. Each IYPT Team Member must either be a Canadian citizen or hold Permanent Resident (PR) status.
- C. Each IYPT Team Candidate must have participated in both days of the most recent CaYPT.
- D. Each IYPT Team Candidate must have been on stage once in the most recent CaYPT (either as Reporter, Opponent, or Reviewer).
- E. Students who have participated in previous CaYPT National Camp or IYPT/OYPT/O-IYPT and are currently in their final year of secondary school study are not considered for IYPT Team Candidate status. Students who fall into this category are encouraged to apply to be an IYPT Team Leader instead.

4.2. Diversity Criteria

- A. No more than 20% of IYPT Team Candidates and IYPT Team Members may have participated in previous CaYPT National Camp or IYPT/OYPT/O-IYPT.
- B. No more than 40% of IYPT Team Candidates and IYPT Team Members may have participated in the most recent CaYPT as a part of the same team.

Only students who meet all of the eligibility criteria will be considered for IYPT Team Candidate status. Diversity criteria listed above are considered in the individual selection final ranking.

5. National Team and Observers

5.1. IYPT Team Member

Top 5 students of the individual selection final ranking are tentatively selected as IYPT Team Members. A Qualification Review will be conducted to officially confirm IYPT Team Canada composition.

5.2. Protocol Modification to IYPT Team Member Status

Modification to IYPT Team Member status may be only be performed after the Qualification Review.

During the Qualification Review, 3 members of the COC may perform an interview on any of the (tentative) IYPT Team Members. The IYPT Team Members' academic ability, commitment to the IYPT program, general conduct and other relevant information will be reviewed. If members of the COC conclude that certain IYPT Team Member(s) is not suitable to be a member of IYPT Team Canada, the COC may make modifications to the IYPT Team composition. One or more IYPT Team Candidate(s) (who are not previously IYPT Team Members) may be selected to be part of IYPT Team Canada.

5.3. IYPT Observer

IYPT Team Candidates may be invited to join the team as Observers. Observers do not actively compete, but they are free to watch any Physics Fights of the IYPT. This is an excellent learning opportunity for younger students. Students who participate in the IYPT as Observers are responsible for paying the Visitor participation fee to IYPT.

6. IYPT Participation

Team Members, Observers, Team Leader and Team Leader Juror form the Canadian delegation for IYPT. Each participant is responsible for their own cost of travel and the cost of participation.

The decision for Canada to participate in a year's IYPT will be made in May of that year.

If opportunities permit, camp participants who are not participating in the IYPT may be eligible to participate in an online version of an IYPT-styled tournament.

COC reserves all rights to make final decisions regarding IYPT Team composition and IYPT participation.

7. Status of the IYPT Team Canada Selection Process

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

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