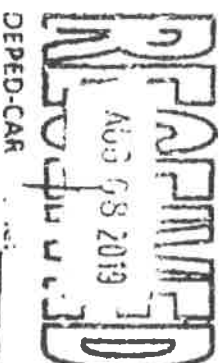




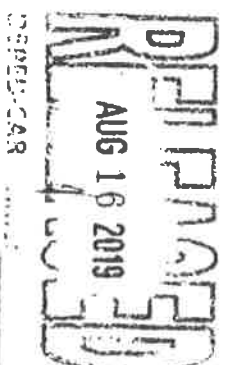
22nd Philippine Mathematical Olympiad



07 August 2019



Dr. May B. Eclar, CESO V
Officer-In-Charge
Office of the Regional Director
Department of Education – Cordillera Administrative Region
DepEd – CAR Complex, Wangal, La Trinidad
2601 Benguet, Philippines



Dear Director Eclar:

Greetings!

The Mathematical Society of the Philippines will once again conduct the **Philippine Mathematical Olympiad (PMO)** this year. PMO is the oldest and most prestigious nationwide mathematics competition among high school students. It is designed to select the best high school students in mathematical problem-solving through a friendly competition.

The PMO aims to: stimulate the improvement of mathematics education in the country by awakening greater interest in and appreciation of mathematics among students and teachers, and gaining insights into the levels of mathematics learning; identify and motivate the mathematically gifted; identify potential participants to the International Mathematical Olympiad; provide a vehicle for the professional growth of teachers; and encourage involvement of public and private sectors in the concerted promotion and development of mathematics education.

The 22nd PMO shall be carried out in three stages:

1. **Qualifying Stage 12 October 2019 (Sat), 1:00 pm – 4:00 pm:** The Qualifying Stage is a multiple choice type of exam which will be administered at the **University of the Philippines Baguio (UPB)**.
2. **Area Stage 16 November 2019 (Sat), 1:00 pm:** The Area Stage is a written competition among students in each area who will qualify based on their performance in the Qualifying Stage. It will be conducted at **UPB**.
3. **National Stage 18 January 2020 (Sat):** The National Stage is a written and oral competition among the winners of the Area Stage competition. This will be held at **Metro Manila**.

Each school can send as many as thirty (30) deserving students (regardless of year level, Grade 7 - 12). To participate, each student needs to fill out an application form (see attachment). For those residing at CAR or Region I, application forms and a registration fee of P150/student may be sent personally or through courier not later than September 27, 2019 (Friday, 5pm) to the following address:

Department of Mathematics and Computer Science
College of Science
University of the Philippines Baguio
c/o Prof. Anthony M. Pasion
Governor Pack Road, Baguio City 2600
Telefax: (074) 444-3128

The school may also send the confirmed number of participants to 0956-276-7286 or to ampasion@up.edu.ph.

In line with this, we humbly ask for endorsement from your good office. We also humbly ask to disseminate the information to all your division's schools (public or private) once endorsed.

We look forward to your positive response regarding our request. Thank you for your usual support.

Respectfully yours,



Anthony M. Pasion
PMO Regional Coordinator, CAR-Region I
Assistant Professor of Mathematics, UP Baguio



May Anne C. Tirado, Ph.D.
Director, Philippine Mathematical Olympiad



Emmanuel A. Cabral, Ph.D.
President, Mathematical Society of the Philippines



PHILIPPINE MATHEMATICAL OLYMPIAD



Brought to you by

Dear Sir/Ms'am,

The Mathematical Society of the Philippines (MSP) invites your school to send your best students to participate in the **22nd Philippine Mathematical Olympiad (PMO)** – the country's oldest and most prestigious nationwide math competition among secondary school students.

The 22nd PMO is designed to select the country's best students in mathematical problem-solving. It is mainly among individual students and is to be done through three levels of competition: (1) Qualifying Stage, (2) Area Stage (Luzon, Visayas, Mindanao, and NCR), and (3) National Stage.

To participate, kindly ask each student to fill out a copy of the attached application form. Please send the accomplished application forms to the PMO coordinator of your region by **September 27, 2019**. Each participating student will be charged **Php 150.00** upon registration.

In partnership with



For more information, please see attached brochure or visit our website: pmo.ph

The qualifying stage of the 22nd PMO will be on **October 12, 2019** at 12NN. The assigned testing center for your region is also stated in the brochure. However, if you prefer to take the first stage in a different testing center, please inform your regional coordinator and the coordinator of the testing center where you intend to take it, not later than **September 27, 2019**.

For further inquiries, you may e-mail us at pmo@math.upd.edu.ph.

Thank you very much.

Tel. Nos.
(632) 928 0439
(632) 927 2686

Telefax
(632) 920 1009

Respectfully yours,


May Arne C. Tirado, Ph.D.
Director, PMO


Emmanuel A. Cabral, Ph.D.
President, MSP



PHILIPPINE MATHEMATICAL OLYMPIAD

APPLICATION FORM

Brought to you by:



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HARI
FOUNDATION

Tel. Nos.

(632) 928 0439

(632) 927 2686

Telefax

(632) 920 1009

CONTESTANT INFORMATION

Last Name		
First Name		
Middle Name	Suffix	
Year Level	Birthday	
Contact No. *	Sex	
E-mail Add. *		

SCHOOL INFORMATION

Name	
Address	
Tel. No.	
Principal	

COACH'S INFORMATION

Name	
Contact No. *	
E-mail Add. *	

**Important Note: Please provide the student and coach's contact number and email address (if available) as contest reminders and details will be disseminated via SMS and e-mail.*

Other Reminders

1. All application forms must be submitted to the PMO Regional Coordinator assigned to your area on or before September 27, 2019. If physical submission is not possible, you may submit clear scanned copies of the form through email or through fax. Please refer to the brochure for your regional coordinator's email and fax number.
2. A registration fee of 150 PHP will be charged upon the submission of the application form.
3. Please visit the official PMO website, <https://pmo.ph>, and Facebook page, <https://www.facebook.com/PhilippineMathematicalOlympiad>, for updates and other announcements.

This part is to be filled in by the School Principal or Registrar.

The applicant's Final Grade in Mathematics for the School Year 2018-2019 was _____

School Principal
(signature over printed name)

Regional Coordinators

Region 1 & CAR ANTHONY M. PASION
University of the Philippines Baguio
Governor Pack Road, 2600 Baguio City
Tel No.: (074) 444 3128
Mobile No.: 0966 276 7286
email: ampasion@up.edu.ph

Region 2 CRIZALDY P. BINARAO
Cagayan State University
Tuguegarao City 3500
Tel No: (078) 304 0802.
Mobile No.: 0917 117 7465
Email: cpb_cs@yahoo.com

Region 3 EDUARD C. TAGANAP
Central Luzon State University
Munoz City, Nueva Ecija 3120
Mobile No.: 0922 717 9978
Email: eduardtaganap@gmail.com

Region 4A SHARON P. LUBAG
De La Salle University - Dasmariñas
DBB-B, Dasmariñas, Cavite 4115
Tel No.: (046) 481 1900 to 1930 local 3087
Mobile No: 0917 849 9703
Email: splubag@dlsud.edu.ph

Region 4B EMMALYN T. VENTURILLO
Western Philippines University
Aborlan, Palawan 5302
Mobile No.: 0939 9551055
Email: mmventurillo@gmail.com

Region 5 GLENDA G. QUINTO
Ateneo de Naga University
Ateneo Ave., Naga City 4400
Tel No: (054) 861 2368 loc 2042
Mobile No.: 0918 641 0224
Email: gquinto@gbox.adnu.edu.ph

Region 6 FERDINAND MONOSO
Central Philippine University
Jaro, Iloilo City 5000
Mobile: 0917 302 5122
Email: fmonoso@yahoo.com

Region 7 LORNA S. ALMOCERA
University of the Philippines, Cebu
Lahug, Cebu City 6000
Tel. No.: (032) 233 8203
Mobile No.: 0917 327 6390
Email: lsalmocera@yahoo.com

Region 8 ORESTE ORTEGA
Leyte Normal University,
Paterno St., Tacloban City
Tel. No.: (053) 321 5628, Fax: (053) 325 6122
Mobile: 0928 405 7565
Email: oresteortega@lnu.edu.ph

Region 9 DANTE V. PARTOSA
Ateneo de Zamboanga University
La Purisima St., Zamboanga City
Tel Nos: (062) 991 0871 local 2243 or 2245
Mobile No.: 0917 505 8433
Email: partosadv@adzu.edu.ph

Region 10, 12 & ARMM EMMY CHACON
MSU-Iligan Institute of Technology
Andres Bonifacio Ave., Iligan City 9200
Tel No: (083) 221 4050 loc 4140,
Mobile No.: 0917 417 0816
Email: emmy.chacon@g.msuit.edu.ph

Region 11 JOSEPH T. BELIDA
Ateneo de Davao University
E. Jacinto St., Davao City, 8000
Tel. No. (082) 221-2411 local 8316/8396
Mobile No.: 0923 8074178 / 0926 8673107
E-mail: jobelida@yahoo.com

Region 13 MIRALUNA L. HERRERA
Caraga State University
Ampayon, Butuan City 8600
Tel Nos: (085) 342 0326, Fax: (085) 342 1078
Mobile: 0961 226 5473
Email: miraherrera71@yahoo.com

NCR Mark Lester T. De Lara
University of the Philippines Diliman
Diliman, Quezon City 1101
Mobile No.: 0977 807 6000
Tel. No.: (032) 920 1009

Lean Franz L. Yeo
Ateneo de Manila University
Loyola Heights, Quezon City
Mobile No.: 09173027091
Tel No.: (02) 426 8001 loc 5681-83

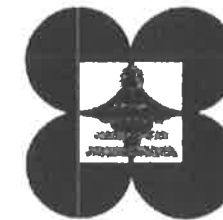
Email: 22ndpmoncr@gmail.com

PMO CORE COMMITTEE

Director: MAY ANNE TIRADO
Secretary: THOMAS HERALD VERGARA
Treasurer: ALIP OROPEZA



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The 22nd Philippine Mathematical Olympiad

What is PMO?

The Philippine Mathematical Olympiad is the oldest and most prestigious nationwide mathematics competition among high school students. The PMO is designed to select the best high school students in mathematical problem-solving through a friendly competition.

Objectives

The PMO aims to:

- stimulate the improvement of mathematics education in the country by awakening greater interest in and appreciation of mathematics among students and teachers and gaining insights into the levels of mathematics learning;
- identify and motivate the mathematically gifted;
- identify potential participants to the International Mathematical Olympiad;
- provide a vehicle for the professional growth of teachers; and
- encourage involvement of public and private sectors in the concerted promotion and development of mathematics education.

General Guidelines and Scheme of Conduct

The 22nd PMO is open to all junior and senior high school students. It shall be carried out in three stages:

1. **Qualifying Stage 12 October 2019 (Sat):** The Qualifying Stage is a multiple choice exam which will be administered in each area (Luzon, Visayas, Mindanao, NCR). There will be one testing site for each region.
2. **Area Stage 16 November 2019 (Sat):** The Area Stage is a written competition among students in each area who will qualify based on their performance in the Qualifying Stage.
3. **National Stage 18 January 2020 (Sat):** The National Stage is a written and oral competition among the winners of the Area Stage competition. This will be held in Metro Manila.

Test development (preparation, analysis and evaluation of questions and problems to be used in the competition) begins in September 2019 and continues throughout the year. For more information, visit our website: pmo.ph OR facebook.com/PhilippineMathematicalOlympiad. For inquiries, email us at pmo@math.upd.edu.ph

Participants' Qualifications

Qualifying Stage

- This competition shall be open to all junior and senior high school students in the country. Each of the participating schools may send a maximum of 30 contestants.
- Any bona fide student of private or public secondary high schools as specified above with a final grade of 88% (or its equivalent) in mathematics in the previous school year may apply.
- Participants will be asked to pay ₱150.00 upon registration to the PMO coordinator of their region.

Area Stage

- The participants with the top fifty scores per area (Luzon, Visayas, Mindanao and NCR) will qualify for the area stage.

National Stage

- The participants from the area stage with the top twenty scores in national ranking will qualify for the national stage.

Format of the PMO Competition

Qualifying Stage

The qualifying stage competition is a 25-item multiple-choice exam consisting of

- fifteen (15) problems worth 2 points each,
 - ten (10) problems worth 3 points each,
- and five problems that will require answers only worth 6 points each

Area Stage

The area stage competition is in the form of a written exam consisting of

- twenty (20) problems that will require answers only and
- three (3) open-ended problems that will require full solutions.

National Stage

This competition shall have two phases: the written phase and the oral phase.

- In the written phase of the competition, the contestants will be given 4.5 hours to answer 4 open-ended problems that require full solutions.
- In the oral phase of the competition, 30 problems are to be read to the participants. These problems are to be answered within a specified time for each item. This phase is open to the public.

Selection of Winners

Qualifying Stage

The answer sheets will be checked and scored by a team designated by the PMO Technical Committee. The checkers will be selected so that each one is not related up to a second degree of consanguinity or affinity to any PMO participant. None of them will be teaching in any secondary school in the country. Each paper will be checked and double checked so as to ascertain the correctness of the scores.

Area Stage

The answer sheets will be checked by a board of judges which consists of college/university professors of mathematics who are not related up to a second degree of consanguinity or affinity to any PMO participant, and who are not teaching in high school.

Each correct answer in the first portion will merit 3 points. A complete and correct solution in the open-ended portion will merit 10 points. Partial points may be given in the open-ended portion as decided by the board of judges.

National Stage

Written Phase

The answer sheets will be checked by a board of judges which consists of four college/university professors of mathematics who are not related up to a second degree of consanguinity or affinity to any PMO participant, and who are not teaching in high school.

A complete and correct solution will merit 7 points. Partial points may be given as decided by the board.

Oral Phase

The board of judges shall consist of three members appointed by the PMO Committee.

The thirty problems will be divided as follows:

- fifteen (15) problems worth 2 points each;
- ten (10) problems worth 3 points each;
- five (5) problems worth 6 points each.

The participants will be ranked according to the following basis:

- 70% of the score in the written phase plus;
- 30% of the score from oral phase.

The top three participants and their coaches will be given trophies and cash awards.

The national finalists of the PMO will be invited to the **Mathematical Olympiad Summer Camp (MOSC)** for the **International Mathematical Olympiad (IMO)**. The IMO is the largest and most prestigious annual international mathematics competition among secondary school students. The representatives of the country to the IMO will be selected from the participants of the MOSC.

Awards and Prizes for the PMO

Area Stage			National Stage		
1 st Place	Student Coach School	Medal Certificate Certificate	1 st Place	Student Coach School	₱ 20000 and medal ₱ 5000 and certificate Trophy
2 nd Place	Student Coach School	Medal Certificate Certificate	2 nd Place	Student Coach School	₱ 15000 and medal ₱ 3000 and certificate Trophy
3 rd Place	Student Coach School	Medal Certificate Certificate	3 rd Place	Student Coach School	₱ 10000 and Medal ₱ 2000 and certificate Trophy

Regional Testing Centers

Region 1/CAR	University of the Philippines Baguio City	Region 8	Leyte Normal University, Tacloban City
Region 2	Cagayan State University Carig Campus, Tuguegarao City	Region 9	Carlos Dominguez Hall, Ateneo de Zamboanga University, Zamboanga City
Region 3	Central Luzon State University City of Munoz, Nueva Ecija	Regions 10	CSM Annex Building Mindanao State University – Iligan, Institute of Technology, Iligan City
Region 4A	Daermitias Integrated High School, Cavite Calayan Educational Foundation, Inc.	Region 11	Ateneo de Davao University Davao City
Region 4B	Western Philippines University – Puerto Princesa City Campus Sta. Monica Heights, PPC	Region 12* & ARMM*	CSM Annex Building Mindanao State University – Iligan, Institute of Technology, Iligan City
Region 5	Ateneo de Naga University, Naga City	Region 13	College of Education Building Caraga State University Ampayon, Butuan City
Region 6	Central Philippine University Jaro, Iloilo City	NCR	University of the Philippines—Diliman
Region 7	AS Building, UP Cebu College, Cebu City		

*May take the qualifying exam in the testing center nearest them.

Stage Coordinators / Assistant Directors

Qualifying Stage	Area Stage	National Stage
EZRA AGUILAR Dept. of Mathematics and Physics University of Santo Tomas	APRIL LYNNE SAY-AWEN Math and Stat Department De La Salle University	JONATHAN PIMENTEL Math Department Far Eastern University