PMO 2018 REFLECTIONS

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1 INTRODUCTION

1.1 *Summary*

What a time to be alive! Competition math in the Philippines has never been more exciting than now. The Philippines has won its first two gold medals in the IMO as recently as two years ago. And on top of that, this year's Philippine Mathematical Olympiad is the 20th, certainly a round number. This year is the first year, as well, that the PMO will have sponsors: HARI and Manulife. We are on the verge of a new era bla bla bla...

...sure. I'm trying to make this year's reflections shorter, which is why I'm delaying writing about things until way after they've occurred. Last year's report was 58 pages long, and the report the year before was only 23 pages long. The length here is 19 pages, because I kinda didn't want to write something long.

Reports on my website `https://cjquines.com/math`.

1.2 *Format*

Description mostly copy and pasted from last year, changes emphasized:

The Philippine Mathematical Olympiad (PMO) is the oldest and most prestigious mathematics competition in the Philippines. This year, 2018, marks the 20th year of its conduct since its beginning in 1984.

The PMO is open for entry to all Philippine high school students. There are three stages in the competition, the qualifying stage, the area stage and the national stage.

The qualifying stage is a *three*-hour written examination consisting of twenty-five multiple-choice questions followed by five short-answer problems. The top fifty scorers of each area (Luzon, Visayas, Mindanao and NCR) proceed to the area stage, a three-hour written examination consisting of fifteen short-answer problems and three open-ended problems which require solutions. Finally, the top twenty scorers from the whole country in the area stage proceed to the national stage.

For those wondering why this is only the 20th year of the PMO even though it started in 1984, the PMO was conducted every two years until quite recently.

The national stage consists of a closed-door written phase and an oral phase which is open to the public. The written phase is a four-and-a-half-hour examination consisting of four problems requiring a full written solution, worth eight points each. The oral phase consists of thirty questions being read to the participants, fifteen fifteen-second two-point easy questions, ten *forty-five-second* three-point medium questions, and five *ninety-second* six-point hard questions. Note that the times are changed from last year.

The ranks from both written phase and oral phase are combined, 70% coming from the written phase and 30% coming from the oral phase, to form the final ranking. The top three contestants in the national stage are awarded trophies, medals, and prize money, as well as some prizes from sponsors. The top three contestants from each area also receive medals, and some prizes from sponsors.

The twenty contestants who qualified for the national stage are then trained over the summer in the Mathematical Olympiad Summer Camp (MOSC), a two-month intensive training program to select the six-member Philippine team for the International Mathematical Olympiad (IMO).

For comparison, last year 4533 students participated in the qualifying round, and the year before that 4622.

This year, 4678 high school students participated in the qualifying round, with 208 making it to the area stage. Of these 208 students, 21 made it to the national stage.

2 QUALIFYING STAGE

2.1 *Preparation*

Again, PRIME *is in a separate report on my website* `https://cjquines.com/prime`.

I led PRIME full-blown again, a program to train the kids specifically for the PMO quals. Again we were constantly interrupted by school things.

Will not make this long as PRIME has its own report. Allen was the only person who didn't show up in the last session, so we were kinda worried he wouldn't go the next day, rip. Apparently he was sick.

We were informed the exam would be from 1 to 5 PM, which included giving of instructions, so it was likely the exam was now three hours. The news was received to much surprise among the math community. To be fair, I did anticipate this since Sean told me about something something sir Eden, but well, that was confirmation.

2.2 *Morning*

The PMO quals was held in UP rather than Ateneo this year, which is a change from the last few years. October 28, 2017, the last Saturday of the month, as was the usual schedule.

We didn't need to go to early, unlike last year. So we came to school at about 9 AM or so, and Allen was late, as usual. Mr. (Kim) Frondozo had to fetch him on his motorcycle. We were riding with Aubrey's companions. In the morning, DC and I talk about OMO, and he gets a copy from me and tells me he'll pass it on to his teammates.

OMO *is the Online Math Open.* DC*'s teammates were Bryce (Sanchez) and Josiah (Balete).*

We were accompanied by Ms. (Marilyn) Soriano and Mr. Frondozo, along with DC's mom and brother. There were nine of us this year, since the math department has a larger budget. The representatives of the Valenzuela City School of Mathematics and Science (VCSMS), from most senior:

1. Me, grade 12. I'm returning to PMO for the fourth time, after qualifying to nationals twice.
2. Jireh Emmanuel Gumaro (Jireh), grade 11, also his fourth time to join the PMO.
3. Ryan Christopher Santos (Ryan), grade 11, joining for the first time.
4. John Patrick Bas (Bas), grade 11, joining for the first time too.
5. Allen Ross Mercado (Allen), grade 10, joining for the second time.
6. Mark Vincent Carabbay (Carabbay), grade 10, joining for the fourth time too.
7. Vincent Dela Cruz (DC), grade 9, returning for the third time after qualifying to nationals last year.
8. Mary June Aubrey San Jose (Aubrey), grade 8, joining for the first time.
9. Ralph Daniel Valdres (Ralph), grade 8, also joining for the first time.

Like in GMATIC, the discussion was again LOL or DOTA or whichever MOBA they were talking about. We pick up food along the way for lunch. The traffic was quite bad so we reach the Institute of Mathematics (IM) at about noon.

Report on my website, `https://cjquines.com/files/gmatic2017.pdf`.

2.3 *Noon*

After arriving at IM we eat lunch in the car, since everywhere else was cramped. Allen, Carabbay, Ryan, Bas, Jireh, and Ralph are *still* talking about LOL. I break off with them early, since we already spent a lot of time together anyway, and I wanted to meet other contestants.

And of course, I bump into a lot of people.

I see Dion (Ong) with his usual companions in the lobby. I also spot some St. Jude (Catholic School) people: Steven (Reyes), Stefan (Ong), Jinger (Chong). I tell Steven we were in the same room, and neither Steven nor Stefan believed me. They thought I would be roommates with Shaq (Que) because they were sorted alphabetically by surname.

I ask Dion if he saw Andres (Gonzales), since they were usually close to each other. He says he has not. I then see him in the distance, briefly, before he disappeared.

All of a sudden Luke (Bernardo) approaches me from behind and fists me, and he talks to me about SATs again. Luke and I met the previous Saturday because of the UP College Admission Test (UPCAT). We both took the UPCAT the previous Saturday morning, met afterwards, ate, and went home together. It was fun.

I suddenly realize I can't distinguish between Steven Reyes and Steven Wang. Whoops, rely on context.

He's with Steven (Wang). I then leave both of them to try to find some other people, in particular, the people from Philippine Science HS (Pisay).

I went up and tried to do so, but it was quite unsucessful. I see Elijamin (Claveria) in the distance, and we wave. Then I turned back, and saw Luke along with Kyle (Dulay), who were both talking. I joined them and talked about lots of things too, and I forget, which is probably good.

2.4 *Exam*

Time was approaching, so I walked to the IM Annex alone, where my room was. I make it to my room and spot Steven on the back, so I passive–aggresively sat next to him. The air conditioning was not that cold, which was good. Steven and I talked, and it seemed he only knew me in the room as well.

I walk out of the room and tried to look for the other Steven, who was the only other person I knew on the floor, sans people from VCSMS. He points out that Shaq would also be on our floor, so we go to his room together. We don't see him, so we go back to our rooms.

At about half past one, the proctor comes in and tells us we have a few minutes to go to the restroom before the giving of instructions would start.

Steven and I walk out and try to look for Shaq again. We go to his room and do not see him, then we go to the restroom.

Walking back, we see Shaq outside, and he asks us whether we were looking for him earlier. Apparently we didn't see him since he was sitting in the front and wearing a hoodie. He was still wearing a hoodie, and invited me to wear mine as well. We talk about memes, of course.

We walk back to the room and the giving of instructions started, which was the usual: attendance, answer sheets, exams, whatever. I realize I did not bring my pen, and Steven lends me one. The exam had a cover page now, with logos of the sponsors: Manulife, HARI. The three-hour exam started after a bit.

On the exam itself: the fact it was three hours was justified due to increased difficulty somewhat. The exam is still quite heavily algebra-biased, followed by geometry and trigonometry, and discrete math last. Again, this is justified due to the fact the curriculum itself is algebra-biased, which is beyond the control of the MSP, who set the test.

Part III of the exam was far more difficult compared to the rest. The relative difficulty of the last question of part II and the entirety of part III to the rest of the exam was unsettling. I can understand as it's difficult to estimate the difficulty of questions, after trying to set a test myself and completely failing.

I spend two hours solving, and the remaining question in part III was an inequality. I did try to solve, but I'm not smaaaaart enough. The exam ended after an hour, at 5 PM, and time was called.

2.5 *Afternoon*

Of course Steven talked to me after the exam, and of course we compared answers. This was easier due to the fact we were allowed to keep everything this year, unlike last. I slipped in the first part III question, whoops. We meet with Shaq outside and discuss as well.

It seems like my score is settled at -12. I go to the restroom and see the other Steven. We went down and we saw some other people as well, and of course they all compared answers. I tried not to compare my answers much as it's not good for morale.

Luke and I went outside, and he invites me to go home with him. I told him I'd consider this, since we would probably have food with the rest of VCSMS, and he was commuting, we weren't. This kind of put going home with him at a disadvantage to going home with schoolmates.

I see Nikki (Dizon), a former schoolmate. I told DC beforehand that he would be roommates with Nikki. Nikki informs me DC gave him candy, but not much after that. We talk about VCSMS and catch up.

I walked with Luke again and he sees Tayan (Gelera), and they hug each other. We both say Tayan put on some weight, and he tries to justify. We talk about a lot of things, college, school, whatever. Tayan then leaves.

Then Agnes (Robang) walks by, and Luke says hi. Agnes asks if Luke was going to apply to the Massachusetts Institute of Technology (MIT), and Luke was like, "no way, that's out of my league." I was going to encourage Luke to apply to MIT, but after that, well.

I had to decline Luke's offer to go with him, but promise him I'd go home with him in Sipnayan. We go home, and the traffic is bad, which makes for good stories to each other. These ended up being primarily about LOL, though DC and I did manage to talk about OMO and ITMO.

2.6 *Evening*

I did not go immediately home. Since we didn't eat much, I took out Jireh, Ryan, Bas, Allen, and Carabbay to a coffee shop and bought them tea, and we drank. We talked about relationships and our lovelives (in some cases, lack thereof). It was fun.

Then I went home. My parents got angry for reasons I won't explain, and kicked me out of home. The next morning I left. It was not fun.

Then Sipnayan happened, which is described in a different report. I did not keep my promise to Luke. Some time after this the results to the OMO were released, and my team was able to place in the leaderboard, and apparently, so was DC's. Then the list of the people who made areas was released on November 18, 2017.

Through some Christmas miracle, for the first time in the history of VCSMS, three students from the school made areas! Truly, things are looking up. It was with great joy that I, DC, and Ryan all made the list. Then areas happened on November 25, 2017.

3 AREA STAGE

3.1 *Morning*

Our call time was 10 AM, since registration would start on 1 PM. We reasoned we would be there by noon. This would turn out to be extremely optimistic.

I go to school early, at about 8 AM. I then spot DC at the lobby, along with a bunch of other students. I briefly wondered why, and then I realized. There were MTAP Saturday sessions that day. I spend the time waiting at the mathematics faculty, which was open that morning.

Ryan asks me whether wearing a uniform was needed, and I replied no. I wasn't wearing a uniform myself, and I told Ryan this. He said okay. DC, however, was wearing a uniform, probably because wearing a uniform is needed for the MTAP Saturday sessions.

Ryan arrives, and he is wearing a uniform. We leave a little past 10 AM because Ms. Soriano, who would be accompanying us, was busy managing the sessions. She offers us breakfast at the school canteen, but we were all filled because we all ate breakfast.

The traffic is absolutely horrible, alleviated only by the fact we were sitting, and not standing in the bus. We arrive there some time before noon, and after some indecision about where to eat, we eat lunch at Jollibee. DC suggested Pizza Hut, which Ms. Soriano declined because they didn't have rice.

This turns out to be a bad decision, because for lunch, we each had a sorry excuse for a chicken leg. It left me only partially satiated. This will backfire soon enough.

3.2 *Noon*

We leave and take a jeep to UPD, arriving a little past 1 PM. Surprisingly, the place is already well-populated, with well past half the contestants already there.

Then the usual talking happened, with the usual people. I won't list all the details or all the people (lest I occupy another two or three pages), but it was somewhat about college and mildly related stuff.

I manage to build up enough courage to talk to Dylan (Dalida), the only seventh grader to qualify to NCR's area stage. His team won second in Sipnayan JHS, and we talked about that. We had a brief conversation, and I wished him luck.

Sometime during all the talking, I get hungry. Behold, my (lack of) lunch is beginning to backfire. I mentioned I would go look for food, and then people reminded me that the canteen was closed. In my frustration at my hunger, I said I would break into the canteen if I had to, and if there was no food, I would eat the canteen doors. *Chekhov's stomach.*

Through some Christmas miracle, Ms. Soriano had an apple. After a few minutes I walk back in the rooms, and everyone is surprised I managed to acquire food. Some of them asked how I broke in the canteen.

It was soon announced that the exam would begin in a few minutes, and we were given time to return to our seats. Areas was split over two rooms, and the discussion was in the room I wasn't assigned to. So I went to my assigned room and then stuff began.

3.3 *Exam*

The exam itself was relatively uneventful. There were the usual instructions, and then the exam began. I started with part II of the exam, after the horrible incident with areas last year.

For some strange, odd reason, I recognize II.2 on sight. I felt like I've seen the exact same question before, very recently in fact, within the week. I could've sworn I read it in some book, or that some friend told me about it. And I could remember the solution, because I couldn't solve the problem myself, so I read the solution or said friend told me how to: consider the inradius, it decreases by 1. Through some Christmas miracle, I've already solved one of the problems.

There are a lot of Christmas miracles.

Then II.3 was pretty straightfoward. It reminded me of Zeckendorf's Theorem, and after some thinking, I thought about using the identity about the sum of the first Fibonacci numbers to justify the fact that only a few sums are actually possible. This worked in my head after writing down the Fibonacci numbers until 2000 or so, so I moved.

It was II.1 that stumped me for a solid thirty minutes or so. The form of the cubic was similar to a perfect cube, so I tried a bunch of manipulations involving the cube of a binomial at first. So for the quadratic, I completed the square and got that $r^2 \geqslant r$. Then I tried a bunch of inequalities to relate the coefficients, and none worked.

Then finally, I think about the fact that the roots are all real, and *non-negative*. That already gave a few bounds, because that meant the sum of the roots was at least zero, and so on. So I wrote down what we got with Vieta's. Somehow I was thinking about inequalities and got the wild idea to use AM-GM on the roots, giving $r \geqslant r^2$, which was the crux of the problem.

Then I derp for fifteen minutes and do not realize that both of these imply $r = r^2$. After realizing this, I start the write-ups for all three problems, which took a few minutes to work out the details.

By the time I finish writing up an hour has elapsed, so I started attacking the short-answer. Most of the problems I could solve without much thought; some notable ones were the cyclic pentagon and the recurrence with a floor function, which made me take longer than average. The other questions

took longer than average because they were so bashy – the test relied heavily on arithmetic.

Around an hour has elapsed and I'm halfway through short-answer, when all of a sudden I get hungry. The poor excuse of a chicken leg backfires yet again, returning with a vengeance. This messes up my arithmetic and I end up making a lot of sillies; the worse of these was getting 9073, which was correct, and writing 9037 on the answer sheet.

This became a meme on Philippine Meme Olympiad. What a meme.

Overall comments, of course, was that the exam heavily relied on arithmetic, as most of my write-ups for the problems would show. Consider, for example, the forced inclusions of 2017 in the number theory problems, which made the numbers obscenely large. Surely it would be possible to choose smaller numbers that tested the same concepts.

Another comment is that the exam feels wrongly balanced, in terms of the number of points awarded for short-answer and the part with solutions. I suppose I said the same comment last year, and I still believe somethng similar.

3.4 *Evening*

Anyway the exam ended and of course, discussion began. We arrived at consensus answers. It became quickly apparent that I had sillied nearly half the items in part I. It seems that most people I knew solved one or two problems in part II. Claims were made, and cutoff predictions were thrown in the air.

As we were going home, Luke asks me to accompany him. I try asking Ms. Soriano, but she begs me to go home with the school. He looked dismayed. As were walking out of the mathematics building, I asked Ms. Soriano, and it turns out we would be taking the same route home as Luke would anyway, so hooray.

We line up for the jeep, and then beside us was Aeram, which was a pleasant surprise. It turns out he lives in Novaliches. I remark that this was closer to VCSMS than QueSci, his former school, and he agrees, though he couldn't have enrolled in VCSMS because he was technically a QC resident.

We, of course, discuss the problems, mostly using Luke's Messenger. we hear claims from Sean. We arrive at SM North, and after some decision, decide to eat at Mang Inasal's, in which we still discuss the problems, throw cutoff predictions, and use Luke's Messenger to gather claims from everyone, including Albert.

Then we went home, and Luke and Aeram and us parted ways. Then I got off my stop and said goodbye to Ms. Soriano, DC, and Ryan, since I was the first to get off.

3.5 *Aftermath*

As in last year, results were released on the evening of December 20. Unlike last year, they were released on 6 PM. Area winners from the regions were as expected; NCR winners were quite different. Topping was Andres, followed by Tayan, then me and Steven tied. Surprising compared to last year's results, but not after areas.

Lots of discussion happened. Twelve people returned from last year, which is the second largest in modern PMO, the largest being last year with fourteen. There are no females, an all-time low. Four non-NCR students and three public school students.

The fact that there are no females is actually quite saddening.

I'm quite sad for those who didn't make it back. (Farrell, Clyde, and Sedrick graduated.) Shaq and Matthew are returning, which is nice. There are more younger students this year, I don't know what this means. Anyway, the lists. Area stage winners, from Luzon,

1. Albert John Patupat from De La Salle University Integrated School – STC.
2. Vince Jan Torres from Santa Rosa Science and Technology High School.
3. Emmanuel Osbert Cajayon from Emilio Aguinaldo College.

From Visayas,

1. Makarios Joash Wee from Philippine Christian Gospel School.
2. Jonathan Conrad Yu from Philippine Christian Gospel School.
3. William Joshua King from Bethany Christian School.

From Mindanao,

1. Sean Anderson Ty from Zamboanga Chong Hua High School.
2. Xavier Jefferson Ray Go from Zamboanga Chong Hua High School.
3. Fedrick Lance Lim from Zamboanga Chong Hua High School.
3. Stephen James Ty from Zamboanga Chong Hua High School.

From NCR,

1. Andres Rico Gonzales III from Colegio de San Juan de Letran.

2. Christian Philip Gelera from Philippine Science High School – Main Campus.
3. Carl Joshua Quines from Valenzuela City School of Mathematics and Science.
3. Steven Reyes from Saint Jude Catholic School.

The list of national finalists follows.

1. Immanuel Josiah Balete from St. Stephen's High School.
2. Emmanuel Osbert Cajayon from Emilio Aguinaldo College.
3. Eion Nikolai Chua from International School Manila.
4. Elijamin Wolfgang Claveria from Philippine Science High School – Main Campus.
5. Vincent Dela Cruz from Valenzuela City School of Mathematics and Science.
6. Kyle Patrick Dulay from Philippine Science High School – Main Campus.
7. Lawrence Gabriel Dy from CCF Life Academy.
8. Christian Philip Gelera from Philippine Science High School – Main Campus.
9. Andres Rico Gonzales III from Colegio de San Juan de Letran.
10. Matthew Angelo Isidro from St. Jude Catholic School.
11. Stefan Marcus Ong from St. Jude Catholic School.
12. Albert John Patupat from De La Salle University Integrated School – STC.
13. Shaquille Wyan Que from Grace Christian College.
14. Carl Joshua Quines from Valenzuela City School of Mathematics and Science.
15. Steven Reyes from St. Jude Catholic School.
16. Bryce Ainsley Sanchez from Grace Christian College.
17. Josei Tolentino from Uno High School.

18. Vince Jan Torres from Santa Rosa Science and Technology High School.
19. Sean Anderson Ty from Zamboanga Chong Hua High School.
20. Julian Yu from British School Manila.

Then of course, there was the very unexpected announcement on the PMO page. All of a sudden, Dion was a national finalist! Which was really happy, and Dion was really happy that happened when I talked to him. (Though it did turn 20 national finalists on the 20th PMO on January 20 to 21 national finalists.)

Anyway, there were midterms the week before PMO. On January 19, the day before nationals, EO, Shaq and I were invited with Dr. (Marian) Roque to appear in a segment on PTV4. I met up with Sean afterwards at UPTC, and suddenly sir Paco (Adajar) showed up and we ate dinner. Then came January 20, 2018, the day of nationals.

4 NATIONAL STAGE

4.1 *Morning*

Not much happened in the morning of Saturday, January 20. I went to school, and so did DC, Ms. Soriano, and Ms. Imperial, who would both accompany us. We took a bus to Cubao and then a taxi to Ateneo. We ate breakfast at KFC and arrived at JGSOM ten minutes before the examination was slated.

"Why are you late?" was the greeting that someone I cannot recall sprung up on me. Well, I was usually pretty early, but that day we were one of the last to arrive. Sir Chan Shio was there, and he will serve as our DTL based on the envelope they gave out which had the program.

I didn't talk to anyone much before the exam itself. I greeted Julian (Yu), as he was a new finalist and that's the polite thing to do. I did talk to Sean and say hi, but there wasn't much to talk about since we talked a lot the night before.

There were some pretty funny happenings before the exam. For example, the timer was initially set to 4 minutes and 30 seconds, LOTM-style. The instructions were gold: "To prove a poodle is not a cat, we show that it is a dog. This is because it is obvious that a dog is not a cat. To do this, we will use barycentric coordinates."

LOTM *is Lord of the Math, the St. Stephen Interschool competition. Known this year for giving five proof-based questions in thirty minutes.*

4.2 *Afternoon*

I will withhold comment on the exam itself due to confidentiality. Anyway, the exam was over and people were discussing, claims were being thrown in the air. I was claiming three problems, along with Vince and Kyle; most people were claiming 2 or 1. Interesting.

We ate lunch at JSEC and it turns out Ms. Soriano has not eaten at JSEC before. So DC and I decided to treat them by buying lunch for them. Then Ms. Soriano thought there were too many onions in the meal.

Those who came before started to arrive: (Joshua) Balete-sempai and sir (Kurt) Ang first. There was the unavoidable discussion of the exam, and the claims, and the difficulty of the problems.

Oral round was at CTC. Talk about memories from MOSC! There was also kuya Russelle (Guadalupe), sir Paco, sir Gari (Chua). The person there who most surprised me with his presence is definitely sir Petri (Espanol), whom we heard retired from competition math.

The oral round was relatively straightforward, with the difficulties actually accurate, and the questions neatly ordered, a nice mix of problems. It was good that they got the contestant number thing sorted out. There were (only) a few questions that I'd seen before, but other than that I have no qualms with the oral round.

For example, I am pretty sure I saw factor $(a+1)(a+2)(a+3)(a+4)-120$ *before.*

Two notable things occured. The first was with E4, where the answer was "3 and 6". Apparently the judges did not want to accept "3 or 6". And when Dr. (Julius) Basilia explained why, it was: "Well, you see, we will be accepting three comma six, because the comma is a list constructor..." (If you construct the list, do you have to call its destructor so you don't get memory leaks?)

The other was the trivia question, which was about IMO history. The question went, "...which East Asian country...". The answer was Mongolia. And everyone was like, "since when was Mongolia in East Asia!?" Some research showed that, apparently, it is. Sigh.

The oral round ended. Then there was a lot of talking, as always. Socialism memes, Ugandan Knuckles, Tide pods, nihilism, TRAIN, IUT. The issue with MMC in QC, about MTG, about joining math contests in DLSU.

Of course I can't remember all the details. When the talking happens, it just happens and it happens, and it feels good, and I remember it feels good, and I want more of that. Eventually we decided to walk to the Rizal Library, where the dinner would be held.

Figure 1: NCR Area Stage winners.

Figure 2: How many things are wrong with this picture?

4.3 *Evening*

At the Rizal Library, people were getting dressed for the dinner. I was wearing a long-sleeved blue-green polo and a green-silver tie. I had to help DC with his tie. Everyone there was pretty well-dressed. *Colors are hard.*

Sean and I place our bags on a random table, since there weren't seat assignments yet. There was a lot of talking, and Stefan's group was playing some video game, which Sean joined. After that we registered, and it turns out there weren't any seat assignments at all.

I went down and saw Albert and Kyle talking. I invited them up, saying that we should get good seats before they're taken, since there aren't seat assignments. We reserve some seats for us to sit next to each other: Shaq, Albert, Kyle, me, Sean, Vince. Tayan, Matthew, and Elijamin also sit in our table, hooray.

There was even more talking before the dinner. One of the memorable things for me was how there was discussion about submitting problems for the PMO, which we'll hopefully be able to do once we graduate. I mean, none of us even know the process of proposing problems, but we'll definitely try.

Dinner came first, and there were two buffet tables with two lines each, good idea. We rush to be the first to queue. Accompaniment was good, especially the Ateneo Blue Repertory. Dr. (Jose Maria) Balmaceda gave a very interesting talk on the history of the PMO, and sir Eden gave the usual talk about the IMO.

There was awarding of area stage winners and the national finalists. There was picture-taking, a lot of picture-taking, and my cheeks hurt from smiling too much, as always. Kyle said that was how he learned to not smile for pictures.

Then the most memorable moment of the evening occurred: the announcement of winners. Third was DC. Second was EO. And first was Kyle. It was certainly not expected! Kyle observed afterward that the NCR area stage winners and the national winners were disjoint, for what seems to be the first time in modern PMO.

Dr. Roque gave another speech afterward. Then there was even more picture-taking. There was picture-taking of us who were going to graduate. Sir Carlo (Nerecena) was also there, and he gave me his copy of the 8th PMO program.

Thor (Alvis) was there too, and we talked – that was why I thought one of the photographers was familiar. Thor is a senior high student at Ateneo, and he takes really really good pictures. We go home, and Ms. Soriano had to drag me out of a conversation with sir Chan Shio and sir Paco.

4.4 *Aftermath*

Figure 3: OH MY GOD KYLE IS SMILING

Thor sent me his pictures from that night, and I shared it with the rest of the group. He was really nice – we talked about that night and I said I'll have to find some way to make it up to him.

Like it or else: `fb.me/philmemeoly`.

I posted a meme to the Philippine Meme Olympiad page, with a picture of the PMO winners. It was pointed out that the page posted the results before the PMO page did. The PMO page admins were probably busy after the PMO, which was pretty expected.

5 CLOSING

5.1 *Comments*

It's good that the PMO's shift to more difficult problems is continuing. Some specific comments for qualifying and area stages were above. In general, now that we have harder problems, I still feel that we could probably do with *less* of them while still being able to distinguish: I'm looking at areas.

With regards to nationals, the way written and oral scores are computed is quite unclear. The rules state that raw scores are taken 0.7 and 0.3 of; but other contestants claimed that it was the percentages. This is starting to

matter more now, since competition is tightening; written and oral rounds are very different indeed.

The written round was not "in order" in terms of difficulty, but unlike last year, I don't think this is a bad thing now. There are only four problems, and it is natural for them to not be in order of difficulty at this point. The subject balance for written was also good, though there was less algebra than I expected.

On nationals as a whole, I'm leaning on the oral phase being weighted even *less* than 0.3, if indeed raw scores are used. If raw scores were used, around two difficult oral questions would be weighted the same as one whole written problem. This has the effect of making written and oral phases roughly equally weighted, instead of the $70\% - 30\%$ as intended.

A short personal reflection is warranted; I've already done a longer one somewhere private. I'm more undecided about pursuing competitive math to its end, especially since it is my last year. Recent events have made me lower and lower my estimate of my chance to get into the IMO team. Recent events have also opened up my opportunities to do other things.

But on the other hand, competitive math is still fun. Very fun, especially when I'm with my friends – which is pretty much the only thing that's fun now. Solving problems, doing the math itself, used to be fun, but only because I thought I was good at it, back then. I'm not. I get frustrated when I get things wrong and when I see others perform better than me. And often, that cancels out any happiness I get from being with friends.

5.2 *Acknowledgments*

The test development committee gets all my thumbs up for continuing last year's awesome revamp of PMO difficulty, writing great problems along the way. It's my dream to be one of you guys and propose good problems as well. As Erdos would say, you have read to us from the book.

Logistics went more smoothly this year, which was great! To the proctors, coordinators, markers, staff, you guys are great. UPD and ADMU hosted the rounds well, and there were lots of giveaways from the sponsors, so thanks to all of you guys!

Some specific people: Sir (Thirdie) Perez gets my approval for the PMO aesthetic. The K_{20} for celebrating PMO's twentieth edition is very pretty. Dr. Roque. Sir Louie (Vallejo). Sir Eden for being eternally funny. Sir Chan Shio, Dr. Abara. I'm really sorry I can't mention all of you, please don't kill me.

I want to extend thanks to Thor for taking pictures. You're a really interesting guy and it's nice that you remembered me.

Figure 4: Even Dr. Roque joined in, hehe.

The VCSMS math people, you were the ones who got me on this track in the first place! Ms. Soriano, Mr. Logronio, Ms. Imperial, Mr. De Jesus. And the students, who are good friends, and who push me to become a better teacher: Carabbay, Allen, Jireh, Jasmine, Bas, Aubrey, Ralph, Ryan.

This one goes out to my fellow competitors: thank you for welcoming me in the community. It was PMO that got me in here the first place. I wish I could grow up surrounded by awesome people like you guys.

DC: thank you for surpassing me. I have accomplished my purpose. Accomplish yours.

Figure 5: ♡.