

# MATHIRA 2017 REFLECTIONS

CARL JOSHUA QUINES

February 27, 2017



Figure 1: A picture at the photobooth.

Yes, I *know* this report is late. The latest I've been in making reports, two weeks late. Because of that, this will probably be a really lazy report and be un-fun to read. Besides, I have an excuse, the UP MMC released their (eight hundred seventy) pictures late, and I needed to sift through the pictures for the report.

## 1 OVERVIEW

This year is the 29th year of Mathirang Mathibay. The theme this year was Infinite Ascent, a (*totally original*) pun on the proof method of infinite descent (*that I've never heard before*).

Any (high!) school can send up to two teams of three participants with an optional alternate. There is an elimination round in the morning and an oral round in the afternoon, of which the most accurate description is a cutting board – two teams are eliminated each tier of the oral round, making it exciting indeed.

I'll just explain the mechanics as I go. I'm going to be briefer in this note because my laptop was broken when I first wrote this reflection, so yeah.

*Indeed, last year an elementary student joined, so they added a high school student clause.*

## 2 PRE-COMPETITION

This will be the third year, I think, I'll be joining Mathira. Two years before, if I recall, the finals was held at UP Arki, and last year it was held at UP NISMED. This year we return to NISMED for the oral round. Indeed, I distinguish Mathira years by the venue of the oral round, because that's easier to recall.

During PMO orals, one of the members of UP MMC (that I forget the name of, sorry! I'll look it up!) asked us if we were joining Mathira. Me and Kyle were there, and Kyle asked when Mathira would be, and he replied that it would be on February 13. I said it was quaint they made it the day before Valentine's.

We only received the letter for Mathira the week before the actual competition. We did not touch the letter until February 9, Thursday, when Jireh (Gumaro) told me that we should join Mathira. At this point I was alarmed that Mathira was about to happen in four days, and we haven't even registered yet. To this, Jireh asked sir (Kim) Frondoza for the letter, which he had, and he drafted the team.

We were nearly rickrolled by ma'am (Marilyn) Soriano when she said we might not be able to join, because of funds and late registration and whatever reason, but Jireh insisted. Ma'am Soriano suggested that the team be composed of me, Vincent (DC), and Vincent (Carabbay), and that it was disappointing we did not have enough money to send two teams. However, Jireh insisted further that he wanted to join, so he did.

*Valenzuela City School of Mathematics and Science (VCSMS), Team A:*

- Carl Joshua Quines (me), grade 11.
- Jireh Emmanuel Gumaro (Jireh), grade 10.
- Vincent Dela Cruz (Vincent), grade 8.
- *Alternate:* Allen Ross Mercado (Allen), grade 9.

At first I said I might not be able to come, because I might renew my passport on the day of the contest. That was why Allen was the alternate, and he would join in the event I would be unable to come. However, it came to being that I would renew my passport on Tuesday, so I informed ma'am Soriano and sir Frondoza, and they told me to come on Monday at... 5:30 AM and 6:00 AM, respectively. Wait, what?

Eventually ma'am Soriano informed me that we would be accompanied by sir (Romeo) Miclat, and that he would be at the school by 6:00 AM. That settled the discrepancy.

I asked lots of people beforehand if they were going to Mathira. This includes, but is not limited to, Shaq (Que), Kyle (Dulay), Albert (Patupat), Luke (Bernardo), Manuel (Kahayon) and Dion (Ong). The first four said they would be going, and the last two said they would not.

*I just did this to get all the last names out.*

### 3 MORNING

I am at school by 5:50 AM. Better early than late. Vincent and Jireh are not there yet, neither is sir Miclat. I make small talk with my classmates, as the flag ceremony would begin at 6:15 AM.

Vincent arrives at 5:55 AM. Sir Miclat and his companion, who would be driving, arrives at 6:00 AM, and he asks where Jireh is. Vincent and I say we haven't seen him, but eventually Jireh arrives running in the school at 6:05 AM, late.

We tell him he's five minutes late so he has to take the middle seat in the car. Yes, no window seat for you Jireh, feel really bad about that. That's what you get for being late. He makes petty excuses about the traffic, but since we live near each other he has no excuse.

Vincent remarks that he's been at UP for three days in a row now. Saturday for a statistics contest, Sunday for MOSC, (which is another story entirely, which I will tell in a different time) and that day for Mathira. He shares a question from the statistics contest, which was in full Filipino, very unusual in the Philippines.

*Math is almost never done in Filipino here, quite unlike other countries which do math in their native language.*

We leave the school. The trip was uneventful, save for the fact that we get lost looking for UPIM, despite me and Vincent and Jireh being there, combined, literally hundreds of times.

We make it to IM and register. I encounter Andres (Gonzales) along the way and say hi. I also encounter Kyle, and we discuss many things indeed. We discussed Mathira, the people who were there, the competition and the NOI on the weekend.

We were asked to take a picture with our coach, holding up a whiteboard with the name of our school, in front of a UP MMC tarpaulin. I attempt to make a joke by writing our school name as "Valenzuela City School of Science and Makati". This was quickly rectified. Vincent makes an additional attempt to make a joke by holding the whiteboard upside-down, which was also quickly rectified.

*This is a reference to the MMC last year, which messed up our school name so many times.*

Also, Clyde (Ang) and Shaq joined the discussion. And so did (Nathanael) Balete-sempai. As well as Matthew (Isidro), and eventually some other people as well. More enumeration of people: Jayson (Catindig), Elijamin (Claveria), I also said hi to Genesis (Tan) and Aeram (Albo), and who else were there... Jinger (Chong) and Stefan (Ong), and we waved at each other,



Figure 2: Talking with people, whoops.

also Sedrick (Keh), waving, Steven (Wang) and I said hi, I pointed Vincent to look at Josiah (Balete), his best friend in math, sir (Kurt) Ang also said hi to me. I think that's everyone.

We (me, Kyle, Clyde, Shaq, Balete-sempai) remarked at the absence of Luke and Albert, even though they said they would be joining. We talked about forming three MOSC teams, and then just split the prize money between us. Cartel! We're that evil.

Kyle was still solving the problem from MOSC that Sunday, and Clyde and Shaq both discussed it while I stood by smiling and nodding. I didn't get that problem, and a lot of people didn't. Shaq observes that Kyle was using scratch paper from the previous MOSC. There was also a lot of talking with other people, which I can't recall much right now.

Anyway, the flag ceremony started and everyone was asked to go outside and assemble in the grounds. We lined up by room number, and we were at room number 303. Kyle could not recall his room number at first, and I said I remember it was 305. He couldn't remember so he stuck in our line for a while until he could find his teammates.

Oh, and apparently in our room were the St. Jude and Letran teams. For the St. Jude team were Jinger, Stefan and Steven (Reyes), and for Letran was Andres, and two people I don't know, sorry!

The national anthem was sung, and a small speech was given by a faculty adviser of UP MMC. It was a cute speech, mentioning how the next day was Valentine's, the day of hearts, and how in math, sometimes we can't





Figure 3: The 303 guy doesn't like showing his face. Of remark: Matthew on the upper right.



Figure 4: Singing the national anthem.

think with our heads or get the answer with pen and paper, so we should listen to our hearts. If only that really worked.

#### 4 ELIMINATIONS

We make it to our assigned room and place our things, get out our snacks. I grab my compass and ruler, and Vincent is amused by this, and I shoot him a look, saying “just in case”. The mechanics were read, we were given last chances to relieve ourselves, because once the contest begun no one would be allowed out of the room.

I will explain the mechanics briefly. There are 15 questions in the elimination round, and the  $x$ th question has a time limit for  $x$  minutes, making it two hours in total. Question  $x$  is worth  $x$  points if answered within the time. The answers can be submitted late, however the number of points the question is worth decays quadratically after the time limit for that question ends. A team can attempt to answer the question as many times as they want with no penalty.

Apparently Vincent asked the proctor if we were allowed to submit our answer before the question was read. This was because we had the very excellent plan of trying to answer 69 for each of the questions first. This was met to amusement from the contestants, and a stark “no” from the proctor.



Figure 5: Whoops, blurred. Also, 303 guy covers his face again.



Figure 6: Vincent is looking at you. He is staring at your soul.

The round started at 9:30 AM with the first question given out. It asked to express  $\sum_{\text{cyc}} M^2(1 - S^2)(1 - A^2)$  as a monomial given  $M + S + A = MSA$ . At this point, one would be inclined to ask why the variable names are weird, and the correct response to this is that  $MSA$ , a company that makes math books, is a sponsor of the competition.

The first question's time was up when the second question was given, a stupid arithmetic question. Find the number of integers from  $10^{143}$  to  $10^{5254}$  whose digit sum is 2. It is a tedious calculation, indeed. We managed to solve the first question during this time, and we still couldn't get the arithmetic for this question right when the third question was given.

Soon enough we were buried in questions. It was six questions in, and we still haven't solved questions two or five or six. Question seven was given, and it was an FE, so we solved it quickly. Still no progress in the older questions, so I decided to start bashing six, an algebra question. Question eight was a question I thought was poorly worded, we got question six at this time.

Two, five, eight, still unsolved. It was not worth it anymore to solve questions two or five, because they have decayed really badly. Soon enough question fourteen was given. We managed to solve questions twelve and thirteen, very near the time limits, so that was good. Question fourteen was a horrifying find the shaded area problem. We checked and checked and rechecked our answers but couldn't find the error.

Soon enough, the round ended, and we were unable to solve questions fourteen and fifteen. The proctor assigned to us revealed the answer to question fourteen, and we made a very simple mistake:  $5 \div 3 = 2$ .

## 5 LUNCH

We go down and discuss problems with others. There is a lot of discussion that ensued, particularly about the difficulty of the problems, which was higher this year. Multiple remarks were made about how the problems have a computational focus this year.

I was discussing the problems to Balete-sempai, and we were talking about how contrived everything was. This took us several minutes, and in the meantime sir Miclat, Vincent and Jireh, said that they would be downstairs in the canteen ordering lunch.

While Balete-sempai and I were discussing the problems, our proctor from the elimination stage came down and talked to me. She congratulated us for our performance. I was flattered at the remark, and said thanks. It looks like she wanted to give specifics, but that's not allowed.

Also, I briefly attempted to complain about problem eight. I went to the room of complaints and tried to present my case. It turns out complaining is not a trivial process, and involves the original problem author, who was not in the building I think, the contestant explaining the proper solution and answer, and the organizers not talking, as they can't discuss the solution. How delightful. I decided to drop complaining about the problem.

I go down to eat lunch, finding out that they've already finished eating. I finish eating lunch, and we go to NISMED. We initially thought we were going to walk, but sir Miclat corrected us by pointing to the car. Indeed.

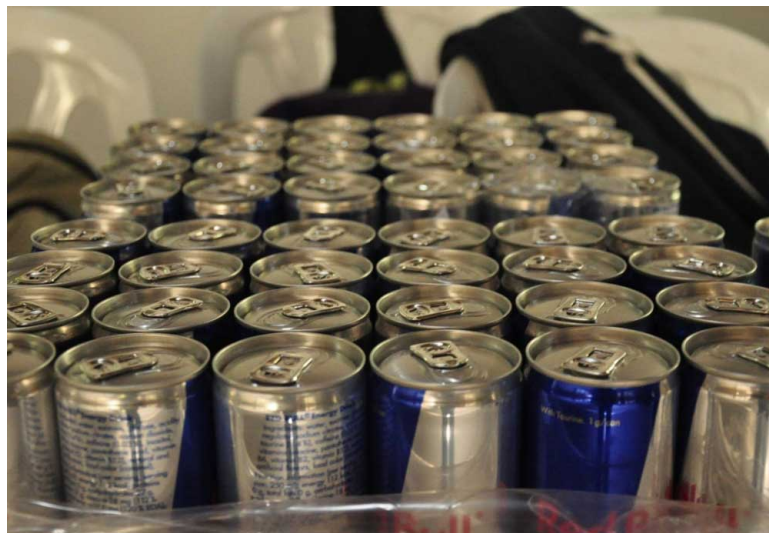


Figure 7: Can't they sponsor every math contest?



We went inside NISMED. It turns out that since Red Bull was a sponsor, they gave out Red Bull! This was a truly delightful event. They asked for our stub, and sir Miclat provided them. However, our excitement was let down when they only gave one Red Bull for the single stub. They probably expected us to share the single can. In either case, we go inside the auditorium.

Eventually the person giving out the Red Bull came in the auditorium and gave the rest of my teammates Red Bull. Hooray! Three Red Bulls for three contestants, as it should be.



Figure 8: Vincent is creeping me out with these pictures.

Several people were there already and more talking ensues. We quickly form a clump in the top-right of the auditorium. There's a lot of discussion. It would be hard to attempt to summarize, but here are the parts I remember:

Balete-sempai was encoding the questions for the eliminations round after collecting them from some source. Clyde and Shaq stare at me weirdly for several seconds, we gave each other a staring match and I lose my self-confidence. Kyle was solving AIME problems, and he also showed me his calculus homework, which was quite amusing – Kyle doing non-competition math!

Luke and Albert eventually come and we discuss the questions from the elimination round. They also discuss some things about MTG which I can't relate with because I've never been to any of the MTG stuff. Kyle, Steven and Shaq join in the elimination round discussion. There is a lot of discussion, and the oral round starts slightly late



Figure 9: Talking talking talking.

## 6 ORALS

A brisk summary of the rules. There are twenty-five teams, twelve tiers, each tier has three questions of varying length and time limits. At the end of each tier, starting tier three, the two lowest-scoring teams will be eliminated. The scoring function is stupidly tedious: the only thing that is important is that later questions are worth much, much more than earlier questions.

The opening ceremonies started, with the usual stuff. A speech was given by (another?) faculty adviser of the UP MMC, which had a more historical perspective and was quite of interest. The judges were then introduced, and the only person I recognized by name was sir (Manuel) Loquias. With apologies to the other judges – although I did recognize some of their faces, I still could not match faces to names.

Then the top twenty-five teams were announced. They were the regular bunch of schools, the schools you'd expect would make it: all Pisay teams, St. Jude, GCC, CKS, Xavier, DLSU, whatever, and us. We were seated downstairs, and the setup was quite crowded, since they were a *lot* of teams and a *lot* of proctors.

Balete-sempai still hasn't posted the questions, but to give an idea of what kind of insanity Mathira is you can look at question 18, a picture of which are attached. Go on, try and solve it in twenty seconds. Go on.

There were several fiascos with contestant numbers throughout the competition. I found this quite amusing, because I recalled the similar



Figure 10: A lot of people.



Figure 11: A looot of people!

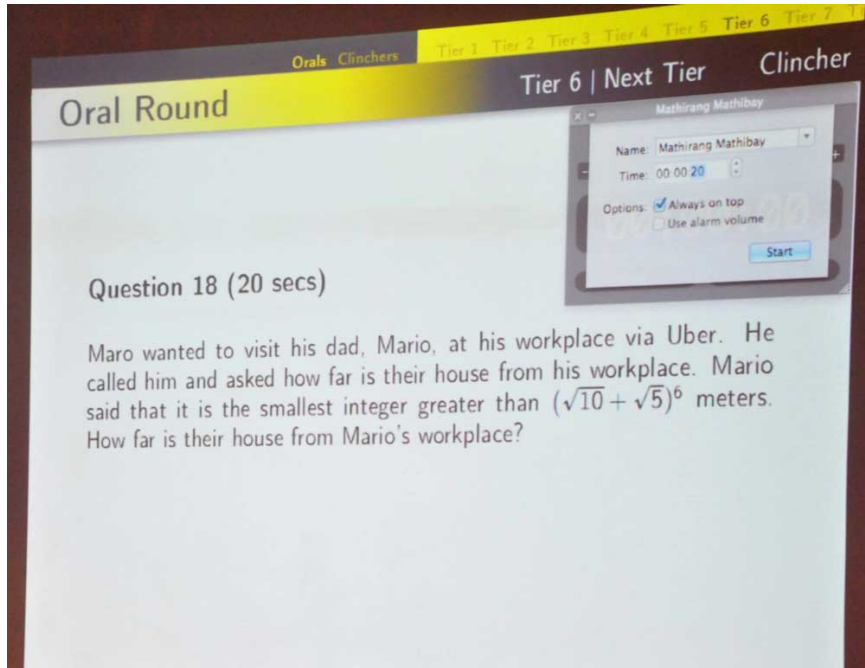


Figure 12: Try *this* problem in twenty seconds.



Figure 13: A short intermission.



events that occurred in the PMO nationals, which was also held at NISMED the month before. Indeed, I laughed a lot.

Jireh was holding in his pee sometime during tier five. I told him that if he needed to relieve himself, he should just ask. He said no, he would try to hold it in. This was not good for our performance.

There was a short intermission after tier six, where two members of UP MMC sang "Torete" to the accompaniment of another member. It was probably impromptu, but it was quite well-done and it helped reduce the horrible tension of the competition.

Speaking of the horrible tension, nearly the whole time I was just shaking from the stress of the competition. Knowing you could get eliminated any second is not good for your mental health. During the break after tier six, nearly all of us went to the restroom to relieve ourselves.

There was a question, and I forgot which tier it was in. It was a graph theory question, asking for the minimum number of vertices in a graph that has a certain property. After the answer was revealed, I found it wrong. So I raised our team's dodecahedron and went to the judges' table.



Figure 14: Vincent, deeply contemplating.

Sedrick was looking at us, asking what our answer was. It turns out we had the same answer. I explain kindly to the judges what our team thought the correct answer was and gave a construction. After looking at my example, sir Loquias looked at me and said, "okay, we'll convene."

So I went back to our table and reported what happened. Time passed as the judges were talking about the question. While we were waiting, the quizmasters decided to read off thanks for the sponsors, which we found hilarious, and it was met with laughter from everyone.





Figure 15: I'm a complainant.



Figure 16: Hooray for sponsors!

The judges called me back after convening. They asked, “where’s the complainant?” That made me sound like a person bringing up a case in court. One of the judges showed me how my construction lacked a property, and then I kindly showed that it existed. “Oh. Give us another moment.”

In the end, they decided to accept my correction, and with that, our school shot all the way up from eleventh to second place. Xavier became first place. We were exchanging views, and Jireh said that “*masaya na ako. Pwede na bang tapusin ang contest ngayon?*”

*I’m happy now. Can we stop the contest?*

There were also several other moments where the answer was corrected, even though no one got the correct answer before or after the correction, which was funny. We were eliminated at the end of tier eleven, along with the Pisay team with Elijamin. We accepted our defeat and simply went back to the audience.

The most frustrating part was the questions in tier twelve. While we were watching from above, our team managed to guess the correct answer to two of the three questions – and none of the current contestants got the correct answer. Which was frustrating, because if we were still a part of the contest, we would’ve made it to the finals. Talk about painful.

After that we said our goodbyes. And then we went home.

## 7 EVENING

DLSU was eliminated in tier twelve. We went out of the auditorium together, because they would go home as well. I said goodbye to Luke and Albert and Shannon (Ho) as they got in their car.

On the trip home, Jireh kept bringing up the topic of tier twelve. I told him to get over it, that we performed well this year and that we should be happy with tier eleven. He still has plenty of regrets about the questions.

We eat dinner at SM Valenzuela, at Gilligan’s. Even after the one hour trip, Jireh still can’t take his mind off tier twelve. We eat our dinners and part ways, and I look for a stapler at National Bookstore. Then I couldn’t take my mind off tier twelve...

## 8 CONCLUSIONS

I had a really fun time at Mathira. It was a good experience and I am satisfied with our performance, even though we could’ve performed better. Sometimes the dice play a big role, you know? I try to live in acceptance even though it’s hard.

In retrospect, this report sucks. I didn't put in as many funny parts as I wanted, probably because it's been two weeks since this happened. I can't recall much about what happened, really. The past two weeks have been really busy, with two contests and two research papers to finish, and it's been really stressful.

*Don't tell anyone, but I picked up an extra can after the contest. And I finished Jireh's can.*  
Whoops.

Thanks to UP MMC for smoothly conducting the event. Thanks to the mathematics department of VCSMS for feeding us. Thanks to Red Bull, for being a decent sponsor and actually giving us Red Bull which made my day. Finally, thanks to Stephen and Kenneth for fixing my laptop, because otherwise I wouldn't be able to write this report!