

Organizing a Middle School Math Camp led by Scholars & Interns

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Middle Grades Summer Camp 2013 - 2015

- Sponsored by CINSAM and PRIME
- 12 Noyce scholars and 8 interns participated
- 46 middle schoolers attended camp

The mission of middle school math camp is to create a fun environment where students experience math in a way that allows them to think outside the box, to make connections with what they know, to be challenged & engaged, to grow as mathematicians, and to spark a lasting interest in math.

Three-week Experience

- Two weeks of intensive camp preparation
 - 4 hours per day
 - Groups were formed consisting of a mix of scholars and interns
 - Each group was responsible for one day of camp
 - Scholars and interns were asked to reflect on their progress and to provide constructive feedback to others
- One week of camp implementation

How did preparation evolve?

Year 1

- Ideas for each day of camp were provided
- A detailed lesson plan linked to Common Core State Standards
- Handouts for the campers
- A trial run with peer critique and revision

Year 2

- **No ideas were provided**
- **Develop a mission statement for camp**
- A detailed lesson plan linked to Common Core State Standards
- Handouts for the campers
- **Specific duties for each member of the group implementing the lesson**
- A trial run with peer critique and revision

Year 3 Preparation

- **Multiple ideas for the day of camp which were pitched to the entire group for feedback**
- Develop a mission statement for camp
- A detailed lesson plan linked to Common Core State Standards
- **A lesson outline to be used by the other camp leaders during implementation**
- Handouts for the campers
- Specific duties for each member of the group implementing the lesson
- **Specific duties for all other camp leaders**
- **Two trial runs with peer critique and revision**

Preparation Expectations

For the first two weeks, you will be doing a lot of planning. Take this planning seriously. There is no such thing as over-planning. When you think you are finished planning, there is more planning to do. We are here to help you, but it is your responsibility to plan the activities for the middle grades students.

“When planning, it did take a good amount of time to identify the main mathematical goals. Once we realized the goals, we were able to focus in on what was important and planning went much smoother.”

“The most challenging part of the day [preparing] was trying to understand the ‘Yawning is Contagious’ activity before the campers arrived. I was worried that if I didn’t understand the activity well, I wouldn’t know the right questions to ask the campers to help them understand the activity with they were having trouble.”

“During our pilot, the way our lesson plan was set up was kind of iffy, but having that pilot day was exactly what we needed. Everybody gave us ways to fix it and make it even better. I felt like every group had a lot of support and that’s what helped us rock it out when the kids came!”

“I felt like my group prepared adequately during the two weeks of preparation until our pilot because I felt like we had solid plans. When our pilot took place it seemed that our plans fell out the window and looked like we hadn’t planned at all.”

“I am not super confident in doing or teaching statistical modeling. So I have enjoyed learning more about the topic in general as well as piecing together the pieces that connects to other math topics to create a balanced lesson. ... I have really appreciated the organization of the planning process.”



Camp Expectations

When working with the middle grades students, remember to keep them engaged! You will not only do this through the activities that you plan, but also through your interaction with the students. You should be genuine and caring as you work with each of them. You are there for them.

"I saw [a camper] grow out of his shell as a younger camper, and become more comfortable in the camp environment. I just think we left out a vital part of the purpose of this camp – community."

"I found it really awesome when I would work with a student and they finally got the "ah-ha" moment then to have them turn around and explain it to another student. It was really cool to see them not just give the other student the answer but to guide the student using similar questions that I had just asked them."

"The most rewarding experience was watching all of those brilliant minds persevere and work all the way through each problem! I loved that none of them felt that they could not tackle a problem..."



Additional Reflections

"If this experience were offered next year, I would do it again in a heartbeat!! ...I love the hands on teaching experience, I love working with my fellow math majors..."

"I felt I had a worthy mathematical goal of the exploration of pi and the exposure to different geometries, but I got worksheet happy. I think my day exposed something that I truly need to work on in the classroom, which is how to bring out some good mathematics without so many worksheets."

"I was able to understand better how we, as future teachers, can lead students to the right answer by asking the right questions."

"I ... like watching people in their essence, whatever it may be, but especially with teaching. My experiences with observing teachers primarily consists of the traditional teacher up in front of the board lecturing and then the students have the remaining time to do their homework."



The Case of the Stolen Calculators

Through the investigation of a “campus crime,” campers developed a conceptual understanding of a circle and an ellipse along with rigorous definitions.



Fractal Antennas

This mathematical idea has advanced cell phone technology allowing cell phones to become smaller while still preserving signal strength.

What happens to the volume of the fractal as the number of stages increases?



What happens to the surface area of the fractal as the number of stages increases?



Thank you

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