EIVM News

III INTERNATIONAL SUMMER SCHOOL OF MATHEMATICS

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Curiosity in this camp has no limit!

In spite of having lots of activities at every hour, the thirst for knowledge of everybody never ends. It doesn't matter whether we are visiting *"El Alcázar"*, we are having lunch or we have free time. Mathematicians' eyes can't stop seeing the golden ratio in the pictures on the walls, the symmetry of mosaics, the fourth dimension and anything that reminds them about something mathematical.

As a monitor I have to say that being with each student is a pleasure. They always have some interesting things to say or ask. It was surprising when in *"El Alcázar"* some of them asked me about derivatives and integrals and, after a few minutes of my explanation, a lot of people were walking all around me. Later, when we were having lunch, another student asked me about how a four spatial dimensions world would be and I recommended him "Flatland", which is a really good book if you want to imagine the fourth dimension. It is written by Edwin A. Abbott and I also recommend it to everybody who is interested in this topic. After that, I told them what I know about this and I think a lot of people liked it. Since that day, everybody tells me that I have a sect!! They say that in a figurative sense, of course, but they are wrong. I just explained what I knew about some questions asked by students.

All of them have very creative minds and they always talk about something interesting, so I can't help but get into their conversations.

A funny fact is that they love **THE GAME** of "Mafia". During the first several **GAMES** I was the narrator, everybody was sitting down in a circle, they obeyed everything I said (SECT!!), they trusted so much in their leader that they didn't need to keep their eyes open…

To sum up, I have spent a great time with everybody in this camp and I think all the students and monitors have spent a nice time too, which was our goal.

by David Martínez

OUR GROUPLEADERS

Being as I am sitting down in the break of the worldcup final and being as it is close to us the end of this incredible experience, I wouldn't like to go back home without congratulating everyone that have made this gathering possible.

First of all, to the organizers, that have make a huge effort to carry off with all, wich is not easy at all. We all have to show gratitude to them.

In second place, to my staff partners that have gave me a lot of good moments. I'd like to mention also here big Albert, who has come here as a professor and has work very hard and got very involved with all to the max.

Finally to all the students here that have participate and in some way they have made me feel as a part of a big family that I hope will live on.

To all of you. Have a good trip on your lives. At the end, is the only thing you'll have.

MATHEMATICAL BATTLES

1. You are divided into two teams. You are given approximately two hours to work on the problems as a team.
2. Each team selects a captain who serves as spokesperson for the team and also participates in the captain's contest.
3. The battle begins with a short question to be answered on the spot. The vinner decides whether to begin with the right to challenge or to pass this right to the other team.
4. At each stage of the battle, the team with the right to challenge chooses a problem from those that have yet to be presented and challenges the opposing team to present a solution.
5. When challenged, the opposing team may choose to accept the challenge, in which case they present a solution. They may also opt to return the challenge, in which case the original team must attempt to present a solution.
6. The team presenting a solution nominates one member to provide an explanation. This person has up to fifteen minutes to present as complete a solution to the problem as they are able. Drawing and writing equations is included in those minutes. The presenter may brie y discuss the problem with their team before stepping to the board, but they may not consult with their team while describing their solution.
7. The other team then nominates one member to respond to the solution just presented. This person has up to three minutes to point out any flaws or omissions or even supply an alternate solution. The respondent can discuss their rebuttal brie y with their team but may not consult their team while speaking.
8. After the presentation and rebuttal, the judges may pose questions to one or both of the speakers.
9. The judges then award the points available among the three parties involved: the presenting team, the rebutting team and the judges.
10. Anyway, there are many exceptions in this activity!

Ruled surfaces building workshop

The most outstanding part of the workshop has been the construction of the hyperboloid and the hyperbolic paraboloid using barbecue sticks, strews, and other everyday materials. They are really easy to build and the resulting shapes are very attractive.

But in the introduction, we have defined strictly what a ruled surface is, and we have commented the procedure to create them. After the building, we have discussed some of the features that make this family of surfaces so fascinating: their resistance, the conics obtained by sections with plains, even their equations as quadratic surfaces, and its relationship with the multiplication table.
Manipulative work, specific applets and software as GeoGebra 3D, bubbles that define minimum surfaces, links to other sessions in the camp… the cocktail had had good acceptation between the participants. But I have to say that I'm especially happy of having engaged the boys and the girls to consider teaching as a good option when they decide their career. In the schools we need enthusiastic teachers, who love Maths. Hopefully some of them will choose this rewarding way in the future.

Since I've gone in deep with these ruled surfaces, I see them everywhere. From the paper bins of the Maths Faculty to the Pringle chips. This evening I've seen that the pergolas of the Chapina Bridge in Seville are hyperbolic paraboloids. Is this obsessive? By Alberto Herrero.
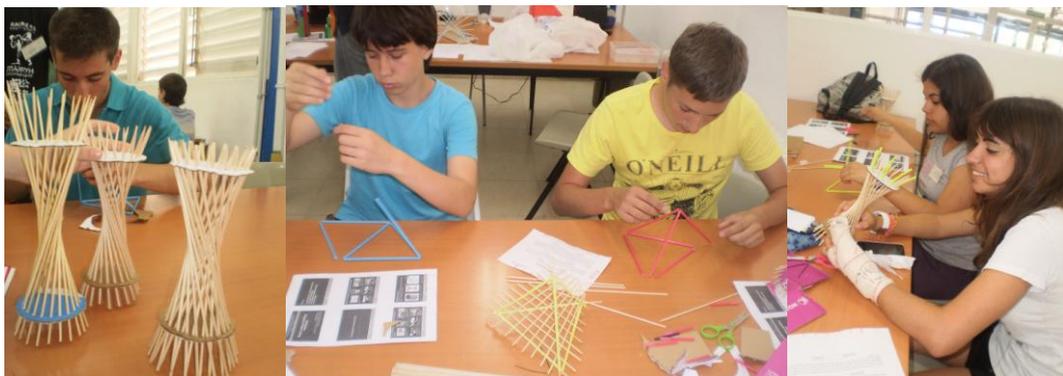
First of all we were amazed by a beautiful spanish nature: mountains, fields, palms etc. In the canteen menu was a bit unusual for us - there was no compo, porridge, mashed potato, but chicken nuggets, fanta and burgers were enough tasty. In the rooms of the hotel there are all the modern conveniences - in Russian camps a personal shower for two guys is a real dream.

Now about sport and other activities. Some types of sport are really interesting (for example, swimming pool is fantastic!!11one!), but all the people have different opinions about the same, so if somebody don't want to play one of games, monitors involve them in a play. During all the day there was a lot of ways and reasons to communicate with Spanish people - talking process brings us pleasure and let us know some facts about the Spain.

In the end of our article we would like to say, that spanish people are very sociable and friendly. We like very much the atmosphere of this camp! :-)

by Pavel Tsibrii & Kirill Antonov

One of the best things in the Colegio Mayor Hernando Colon is the food. The services on the kitchen and in the living room are also nice. There is a lot of variety and all the food that is served is very tasty and delicious. I can also say that is a really good choice to can drink soda at the lunch that we can have energy for the sport activities that we have been doing almost every day.

I would prefer that in the breakfast there would have been more things, like eggs, bacon, Iberian ham, or even some special dishes from Russia. It would have been also very good if they could have given us the snack at five o' clock and not at the time in which we have been eaten, because we always ate it when having lunch!

To put it in a nutshell, i would repeat the next year. By Pol de Lapparent.

THE TREASURE HUNT

As every day the monitors organized an activity for the students. It consisted of different activities. After each activity we obtained a password to discover the next clue and do another activity. Some of them were very funny like the one in which we had to put our heads into the water and then into the flour and try to catch balloons. After do this, everyone had the face cover with flour and it was really funny to watch other people. Another activity consisted of learning a Russian song and sing it all together taht was so difficult but we had a lot of fun while we were learning. We had more proofs like those but my favourite one was the proof in which we had to do "the croqueta" in the grass. Finally the first team to complete all the activities was the winner and they could throw the others water balloons. It was a fantastic game and we enjoyed a lot!! By Ana Belén Duarte, Almería

LOGOS with GEOGEBRA

Possibly more than once you have come across the logo of a company and thought that its design was based on geometric shapes. Surely you were right. Many logos which are apparently a set of symbols, shapes, colours and letters, are built using rotations, symmetries or translations of basic figures like a triangle or a square.

At the workshop entitled "Logos with Geogebra", Geogebra has been used to show the participants all the possibilities that this program offers. First, we started creating several logos to start the competition called "Create your own logo" where students designed the logo they would like to be the logo of the III EIVM. It was asked to be a memorable, relevant, unique and original logo, to serve as a reminder to everybody of this rewarding experience during the summer of 2014.
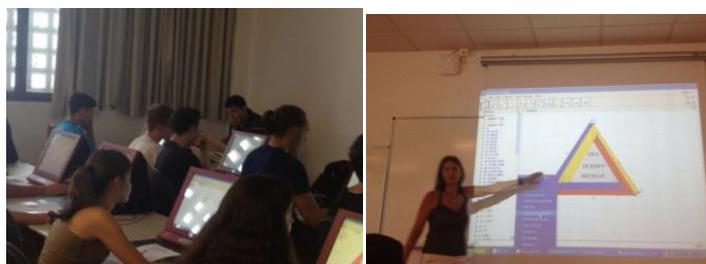
Some logos created by students in the workshop are:
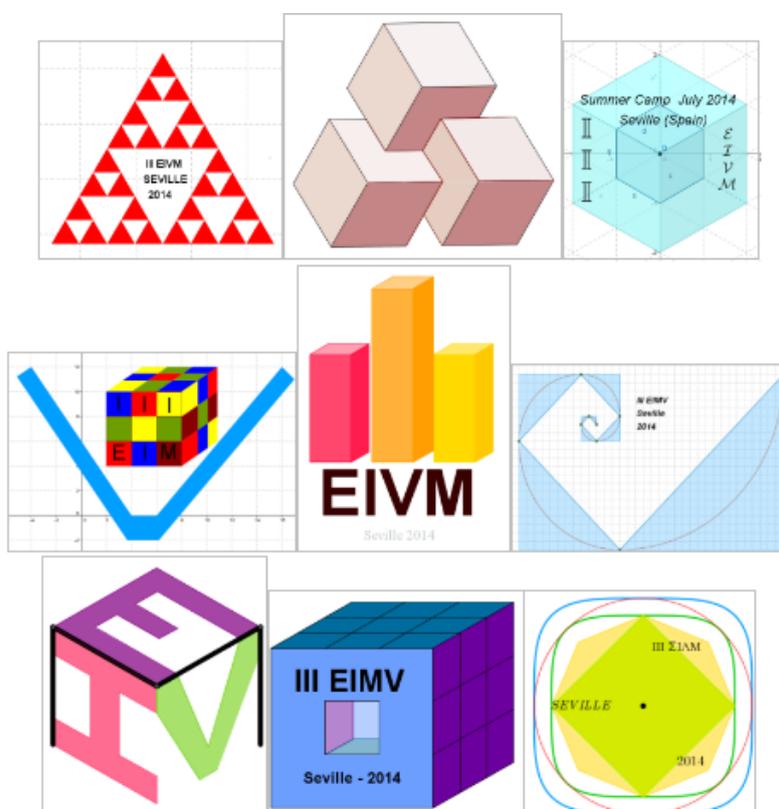
Due to the high quality of the results, it was very difficult to decide which one should be awarded: all the designs got a clear identification with the camp and were almost perfect. Congratulations to all the participants!   by Eva Acosta & Miguel Pino

LANGUAGE TIPS

Here you are some of the expressions our Russian friends have tough us in the afternoon lessons (with the Spanish approximate transcription). Спасибо!

- Hello, how are you?   - Привет. Как дела? *(Puivíet. Kak dilá?)*
- What's your name?   - Как тебя зовут? *(kac mina savút?)*
- Repeat, please.   - Повторите, пожалуйста *(Pavtaríti,, pashálsta)*

CURIOSITY
Googol

Googol is a very large natural number: googol = 10^{100} (a 1 followed by 100 zeros). The term was coined in 1938 by 9-year-old Milton Sirotta, nephew of American mathematician Edward Kasner, and it's useful to talk about the concept of infinite. Although it's greater than the number of atoms of the universe, is as far away of infinite as any number. If googol is extremely big, it's nothing in compares with googolplex = 10^{googol} (a 1 followed by a googol of zeros).

Google enterprise wanted to call the browser "googol", but they misspelled it. Descendants of Milton Sirotta brought to Google for using a registered name. Springfield's theaters of "The Simpsons" are called "Googolplex" as there are infinite rooms [1].

But in other context there are very big numbers with specific name also. An asankhyeya (Sanskrit: 𑀅𑀲𑀗𑁆𑀔𑁆𑀬) is a Hindu/Buddhist name for the number 10^{140}, greater than a googol. These series of numbers have to do with cycles and reincarnations.
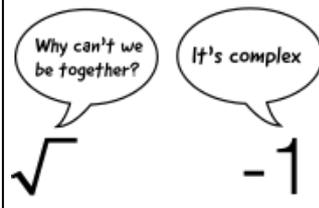
[1] *Some of "The Simpsons" writers are fans of Mathematics. Chapters are plenty of Maths details and winks. Here you can find a thorough study:*
http://homepage.smc.edu/nestler_andrew/SimpsonsMath.htm

HUMOR

Joke 1

- Why does a Mathematics book tell to another one?
- Stop annoying me, I have my own problems!

Joke 2

Why can't we be together?   It's complex

$\sqrt{}$ -1

Joke 3

Find x.

Here it is