FUNDAPROMAT

Activity Archive 2020

Panamanian Foundation for the Promotion of Mathematics

FUNDAPROMAT

The Panamanian Foundation for the Promotion of Mathematics (FUNDAPROMAT) seeks to change the world's perception so that one and all can experience mathematics as accessible, relevant and inherently joyous.

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Join our math outreach activities, which are free and open to the general public!

Visit our Calendar of Events at fundapromat.org/en/events

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MARCH - APRIL 2020

26 11:00 AM - 12:00 PM		**First JRMF Webinar** The first JRMF Webinar took place on Thursday, March 26th, 2020 from 11 am until 12 pm. This virtual event was given by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). On this first Webinar, participants explored the fun math activity called "Tower of Hanoi" which is used in Festivals all around the world. This mathematical game consists of three rods and a number of disks of different sizes, which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, with the smallest disk at the top. The objective of the game is to move the entire stack of disks to another rod, obeying certain simple rules. 
27 1:00 PM - 2:00 PM		**First Rubik's Cube Webinar** The first Rubik's Cube Webinar took place on Friday, March 27th, 2020 from 1 pm until 2 pm. This virtual event was given by the professional speedcuber Sydney Weaver, who is only 22 years old and has won multiple Rubik's Cube international competitions. On this first Webinar, Sydney Weaver explained the history of the Rubik's Cube and some of the mathematics behind the cube. She also solved the cube in real time. 
2 9:00 AM - 11:00 AM		**Webinar on the Virology and Diagnostics of the Coronavirus** On Thursday, April 2nd, 2020 the Webinar on the Virology and Diagnostics of the Coronavirus took place from 9 am until 11 am. This virtual event was given by Dr. Sandra Lopez-Verges, who is a researcher of the Gorgas Commemorative Institute of Health Studies. This Webinar was free and open to the general public. More than 185 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC). 
2 11:00 AM - 12:00 PM		**Second JRMF Webinar** The second JRMF Webinar took place on Thursday, April 2nd, 2020 from 11 am until 12 pm. This virtual event was given by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). On this second Webinar, participants explored the fun math activity called "Light Bulbs" which is used in Festivals all around the world. This math game starts with 1,000 light bulbs that are off and are numbered from 1 to 1,000 in a long hallway. Every light bulb has a pull string. If the light bulb is on, pulling the string turns it off, and if the light bulb is off, pulling the string turns it on. At the end of the hallway, there are 1,000 people numbered from 1 to 1,000. When a person walks down the hallway, the person will pull the string of every light bulb numbered with a multiple of the number of the person. The puzzle consists of figuring out which light bulbs will be on and which light bulbs will be off after a certain number of people have walked down the hallway. 

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APRIL 2020

6

1:00 PM - 2:00 PM

Second Rubik's Cube Webinar

The second Rubik's Cube Webinar took place on Monday, April 6th, 2020 from 1 pm until 2 pm. This virtual event was given by the professional speedcuber Sydney Weaver, who is only 22 years old and has won multiple Rubik's Cube international competitions.

On this second Webinar, Sydney Weaver described in detail the mathematics behind the Rubik's Cube, including concepts such as commutators, conjugates, cycles and permutations of the cube. She also solved the cube in real time.

7

10:00 AM - 11:30 AM

First Virtual Origami Class

The first Virtual Origami Class took place on Tuesday, April 7th, 2020 from 10 am until 11:30 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public.

On this class, participants learned how to fold a hat-based box with divider, created by Laura Kruskal, using three sheets of 8.5 x 11 paper. This origami design is appropriate for 8-year-olds and above.

8

9:00 AM - 10:30 AM

Webinar on the Infectious Dynamics, Management and Prevention of COVID-19

On Wednesday, April 8th, 2020 the Webinar on the Infectious Dynamics, Management and Prevention of COVID-19 took place from 9 am until 10:30 am. This virtual event was given by Dr. Xavier Saez-Llorens, infectologist and advisor to the Ministry of Health of Panama (MINSA). This Webinar was free and open to the general public.

More than 225 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC).

9

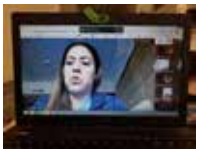
11:00 AM - 12:00 PM

Third JRMF Webinar

The third JRMF Webinar took place on Thursday, April 9th, 2020 from 11 am until 12 pm. This virtual event was given by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF).

On this third Webinar, participants explored the fun math activity called "Frogs and Toads" which is used in Festivals all around the world. This math game starts with seven rocks in a line. The three rocks on the left have one frog on top of each of them and the three rocks on the right have one toad on top of each of them, leaving one empty rock in the middle. The puzzle consists of figuring out the minimum number of movements necessary to move the frogs to the right and the toads to the left, following certain rules.

APRIL 2020

15 9:00 AM - 11:00 AM		**Webinar on the Implications of being COVID-19 Positive** On Wednesday, April 15th, 2020 the Webinar on the Implications of being COVID-19 Positive took place from 9 am until 11 am. This virtual event was given by Dr. Lillian Tang, intensive care physician. This Webinar was free and open to the general public. More than 135 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC). 
16 11:00 AM - 12:00 PM		**Fourth JRMF Webinar** The fourth JRMF Webinar took place on Thursday, April 16th, 2020 from 11 am until 12 pm. This virtual event was given by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). On this fourth Webinar, participants explored the fun math activity called "Wolves and Sheep" which is used in Festivals all around the world. This interactive activity consists of figuring out how to place wolves and sheep in a grid so that all the sheep are safe from the wolves. The rules of the game are simple: a wolf can eat a sheep at any distance vertically, horizontally or diagonally. 
17 11:00 AM - 12:00 PM		**Webinar on Math and Magic Card Tricks** The Webinar on Math and Magic Card Tricks took place on Friday, April 17th, 2020 from 11 am until 12 pm, with Professor Bernardo Recaman Santos from Colombia as our invited speaker. This virtual event was free and open to the general public. On this event, participants learned how to perform a magic card trick that uses 13 cards of the same suit (A 2 3 4 5 6 7 8 9 10 J Q K). For this magic trick to work, we use mathematics to order the cards previously in a special way. The invited speaker also explained that once we learn the pattern to perform this trick with the 13 cards of the same suit, we can generalize it to any number of cards. 
20 1:00 PM - 2:00 PM		**Third Rubik's Cube Webinar** The third Rubik's Cube Webinar took place on Monday, April 20th, 2020 from 1 pm until 2 pm. This virtual event was given by the professional speedcuber Sydney Weaver, who is only 22 years old and has won multiple Rubik's Cube international competitions. On this third Webinar, Sydney Weaver shared exciting facts and trivia about the Rubik's Cube, such as how it took Erno Rubik a month to first solve his own invention. Also, the speaker recommended the best books to learn the notation used to solve the cube. 

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21 7:00 PM - 9:00 PM		**First Virtual MathsJam in Panama** The first Virtual MathsJam in Panama took place on Tuesday, April 21st, 2020 from 7 pm until 9 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment. This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants found several solutions to different math puzzles using their creativity and imagination. 
22 9:00 AM - 10:00 AM		**Webinar on How Math is used in the Battle against COVID-19** On Wednesday, April 22nd, 2020 the Webinar on How Math is used in the Battle against COVID-19 took place from 9 am until 10 am. This virtual event was given by Dr. Eduardo Saenz de Cabezon, Professor in the Department of Mathematics and Computation of the University of La Rioja in Spain. This Webinar was free and open to the general public. More than 145 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC). 
23 11:00 AM - 12:00 PM		**Fifth JRMF Webinar** The fifth JRMF Webinar took place on Thursday, April 23rd, 2020 from 11 am until 12 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). On this occasion, participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults. On this fifth Webinar, participants explored the fun math activity called "Skyscrapers" which is used in Festivals all around the world. A skyscraper is a tall building with many floors. This interactive activity consists of figuring out how to place skyscrapers in a grid so that certain simple conditions are met. 
24 10:00 AM - 11:30 AM		**First Virtual Encounter with Outstanding Mathematicians** The first Virtual Encounter with Outstanding Mathematicians took place on Friday, April 24th, 2020 from 10 am until 11:30 am. with Dr. Minerva Cordero, Professor of Mathematics at the University of Texas at Arlington, was our invited speaker. This virtual event was free and open to the general public. On this first Encounter, Dr. Minerva Cordero shared anecdotes of her personal life starting from her experiences growing up in Puerto Rico and later being a graduate student in the United States. She also talked about her professional journey as a female mathematician and presented on "Instagram, Facebook, Snapchat and Mathematics?" The speaker explained how math is related to the compression of images in social media, to the production of animated images in movies, to the construction of images in medical equipment, and other examples. 

APRIL - MAY 2020

28

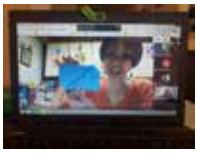
10:00 AM - 11:00 AM

Second Virtual Origami Class

The second Virtual Origami Class took place on Tuesday, April 28th, 2020 from 10 am until 11 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public.

Using three sheets of 8.5 x 11 paper, participants learned how to fold a traditional origami hat, which many tried on their stuffed animals and pets, and a traditional origami letter, in which secret messages can be sent. These origami designs are appropriate for 8-year-olds and above.





29

9:00 AM - 10:30 AM

Webinar on Mental Health and COVID-19

On Wednesday, April 29th, 2020 the Webinar on Mental Health and COVID-19 took place from 9 am until 10:30 am. This virtual event was given by Dr. Juana Herrera, psychiatrist. The speaker presented the topic from the point of view of the patient who is COVID-19 positive to the perspective of the Panamanian population that is quarantined. This Webinar was free and open to the general public.

More than 125 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC).

30

11:00 AM - 12:00 PM

Sixth JRMF Webinar

The sixth JRMF Webinar took place on Thursday, April 30th, 2020 from 11 am until 12 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in the breakout session for adults.

On this sixth Webinar, participants explored the fun math activity called "Coin Solitaire," which was renamed "Dot Solitaire" and is used in Festivals all around the world. The game begins with a line of colored dots, some blue and some yellow. This interactive activity consists of removing all the colored dots following some simple rules.

1

10:00 AM - 11:00 AM

Webinar on Math and Games of Ingenuity

The Webinar on Math and Games of Ingenuity took place on Friday, May 1st, 2020 from 10 am until 11 am, with Rodolfo Kurchan from Argentina as our invited speaker. This virtual event was free and open to the general public.

On this event, participants were amazed when Rodolfo Kurchan wrote down seven numbers of eight digits each, some chosen by the speaker and others by the audience, and when added, the answer consisted of the digits of pi. The speaker also presented a cryptosum using the word "Panama" and a puzzle on finding a geometric figure whose area and perimeter are the same. During the virtual event, the speaker explained the math secrets behind all the games of ingenuity that he presented.

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4

10:00 AM - 11:00 AM

Webinar on Math Puzzles

The Webinar on Math Puzzles took place on Monday, May 4th, 2020 from 10 am until 11 am, with Dr. Cindy Weitzman, Director of We Puzzle Together, as our invited speaker. This virtual event was free and aimed at getting 10 to 15 year-old kids excited about mathematics.

On this event, participants solved various math puzzles using basic arithmetic, logic and geometry.

5

1:00 PM - 2:00 PM

Fourth Rubik's Cube Webinar

The fourth Rubik's Cube Webinar took place on Tuesday, May 5th, 2020 from 1 pm until 2 pm. This virtual event was given by the professional speedcuber Sydney Weaver, who is only 22 years old and has won multiple Rubik's Cube international competitions.

On this fourth Webinar, Sydney Weaver taught 8 to 15 year-old kids the basic steps on how to solve the Rubik's Cube starting from scratch.

6

9:00 AM - 11:30 AM

Webinar on Vaccines for COVID-19, Technology at the Service of Public Health

On Wednesday, May 6th, 2020 the Webinar on Vaccines for COVID-19, Technology at the Service of Public Health, took place from 9 am until 11:30 am. This virtual event was given by Dr. Eduardo Ortega-Barría, pediatric infectologist and advisor to the Ministry of Health of Panama (MINSA). This Webinar was free and open to the general public.

More than 115 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC).

7

11:00 AM - 12:30 PM

Seventh JRMF Webinar

The seventh JRMF Webinar took place on Thursday, May 7th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in the breakout session for adults.

On this seventh Webinar, participants explored the fun math activity called "Color Triangles" which is used in Festivals all around the world. The game begins with a line of colored dots, some blue, some yellow and some red. This interactive activity consists of predicting the color of the bottom dot of the triangle that forms when adding colored dots under the initial sequence following some simple rules.

MAY 2020

7 1:00 PM - 2:00 PM		**Fifth Rubik's Cube Webinar** The fifth Rubik's Cube Webinar took place on Thursday, May 7th, 2020 from 1 pm until 2 pm. This virtual event was given by the professional speedcuber Sydney Weaver, who is only 22 years old and has won multiple Rubik's Cube international competitions. On this fifth Webinar, Sydney Weaver taught adults and teenagers aged 15 and up the basic steps on how to solve the Rubik's Cube from beginning to end. 
8 10:00 AM - 11:00 AM		**Second Virtual Encounter with Outstanding Mathematicians** The second Virtual Encounter with Outstanding Mathematicians took place on Friday, May 8th, 2020 from 10 am until 11 am. with Dr. Yiby Morales, Professor of Mathematics at the National University of Colombia, was our invited speaker. This virtual event was free and open to the general public. On this second Encounter, Dr. Yiby Morales shared anecdotes of her personal life starting from her school experiences and obtaining her PhD in Mathematics last year. She also presented on "Symmetry: Crystals, Music and More." The speaker explained the notion of symmetry and how we can find this concept in crystals, in music, in chemistry and in other examples. Moreover, she briefly described her current research in abstract algebra. 
11 10:00 AM - 11:30 AM		**Webinar on Math and Magic** The Webinar on Math and Magic took place on Monday, May 11th, 2020 from 10 am until 11:30 am, with the mathemagician Tiago Hirth from Portugal as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker sparked the participants' curiosity by starting with a puzzle that uses toothpicks. Participants were then amazed by the magic tricks performed by Tiago Hirth using playing cards, dice, ropes and rubber bands. The mathemagician explained the math secrets behind the toothpick puzzle, the magic card trick and the rubber band trick. 
12 10:00 AM - 11:00 AM		**Celebration of the International Day for Women in Mathematics** The International Day for Women in Mathematics was celebrated on Tuesday, May 12th, 2020 from 10 am until 11 am with a virtual event commemorating women in mathematics. This day was chosen for being the birthdate of Maryam Mirzakhani, who was the first woman to be honored with the Fields Medal, which is the most prestigious award given by the international mathematics community, equivalent to a Nobel Prize in Mathematics. This virtual event was free and open to the general public. with Dr. Alicia Prieto Langarica, Professor of Mathematics at Youngstown State University in the United States, was our invited speaker. On this event, Dr. Alicia Prieto Langarica shared anecdotes of her personal life and her professional experience as a female mathematician. The invited speaker also presented on "Influential Women in Mathematics," in which she emphasized the importance of having female mentors and creating a support system among women to help each other achieve their maximum potential. 

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13

9:00 AM - 11:00 AM

Webinar on Alternative Treatments for COVID-19 Undergoing Research

On Wednesday, May 13th, 2020 the Webinar on Alternative Treatments for COVID-19 Undergoing Research, took place from 9 am until 11 am. This virtual event was given by Dr. Mairim Solís, who is a researcher of the Gorgas Commemorative Institute of Health Studies. This Webinar was free and open to the general public.

More than 95 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC).

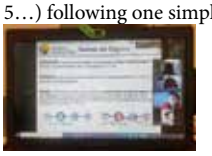
14

11:00 AM - 12:30 PM

Eighth JRMF Webinar

The eighth JRMF Webinar took place on Thursday, May 14th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in the breakout session for adults.

On this eighth Webinar, participants explored the fun math activity called "Digit Sums" which is used in Festivals all around the world. The game begins with some circles connected by straight lines creating different shapes. Some of the circles have fixed numbers while others are empty. This interactive activity consists of filling out each empty circle with a cardinal number (1, 2, 3, 4, 5…) following one simple rule that involves the sum of digits.



14

1:00 PM - 2:00 PM

Sixth Rubik's Cube Webinar

The sixth Rubik's Cube Webinar took place on Thursday, May 14th, 2020 from 1 pm until 2 pm. This virtual event was given by the professional speedcuber Sydney Weaver, who is only 22 years old and has won multiple Rubik's Cube international competitions.

On this sixth Webinar, Sydney Weaver explained the history of the Rubik's Cube and briefly described the mathematics behind the cube. Moreover, the invited speaker shared general information on the competitions organized by the World Cube Association (WCA).

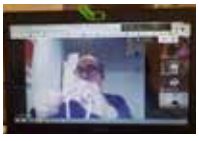
15

10:00 AM - 11:30 AM

Webinar on Math and Probability Games

The Webinar on Math and Probability Games took place on Friday, May 15th, 2020 from 10 am until 11:30 am, with Fernando Blasco from Spain as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker sparked the participants' curiosity by starting with a game that uses 6 ropes. Fernando Blasco then explained the well-known birthday paradox and described a variation of the Monty Hall Problem using 3 special playing cards, the first one with blue on both sides, the second one with red on both sides and the third one with blue on one side and red on the other. The invited speaker explained the math secrets behind the probability games that he presented.



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18 10:00 AM - 11:30 AM		**Third Virtual Origami Class** The third Virtual Origami Class took place on Monday, May 18th, 2020 from 10 am until 11:30 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public. Participants began the class by cutting two sheets of 8.5 x 11 paper into 4 equal parts. The 8 pieces were then folded in the same way and then connected to form starburst, an origami model created by Emily Sue Kwan in 2002. This origami design is appropriate for 8-year-olds and above.   
19 7:00 PM - 9:00 PM		**Second Virtual MathsJam in Panama** The second Virtual MathsJam in Panama took place on Tuesday, May 19th, 2020 from 7 pm until 9 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment. This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants found several ways to solve different math puzzles using their creativity and imagination. 
20 9:00 AM - 10:30 AM		**Webinar on the Social, Economic and Political Impact of COVID-19** On Wednesday, May 20th, 2020 the Webinar on the Social, Economic and Political Impact of COVID-19 took place from 9 am until 10:30 am. This virtual event was given by Dr. Harry Brown, political expert and Director of the International Center of Political and Social Studies (CIEPS AIP). This Webinar was free and open to the general public. More than 75 people joined the Webinar, which was co-organized by the Panama Pod of 500 Women Scientists and the Panamanian Association for the Advancement of Science (APANAC). This virtual event was our last weekly Webinar on COVID-19. 
21 11:00 AM - 1:00 PM		**Ninth JRMF Webinar** The ninth JRMF Webinar took place on Thursday, May 21st, 2020 from 11 am until 1 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in the breakout session for adults. On this ninth Webinar, participants explored the fun math activity called “Squareland” which is used in Festivals all around the world. This interactive activity consists of dividing a square into a certain number of smaller squares and exploring interesting questions like for example if you can find a number of squares for which it is impossible to divide a square. 

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21

1:00 PM - 2:00 PM

Seventh Rubik's Cube Webinar

The seventh Rubik's Cube Webinar took place on Thursday, May 21st, 2020 from 1 pm until 2 pm. This virtual event was given by the professional speedcuber Sydney Weaver, who is only 22 years old and has won multiple Rubik's Cube international competitions.

On this seventh Webinar, Sydney Weaver explained in detail the math behind the Rubik's Cube including concepts like commutators, conjugates, cycles and permutations of the cube. Moreover, the invited speaker showed some algorithms to solve this math puzzle by using the website https://alg.cubing.net, created by the professional speedcuber Lucas Garron.

22

10:00 AM - 11:30 AM

Third Virtual Encounter with Outstanding Mathematicians

The third Virtual Encounter with Outstanding Mathematicians took place on Friday, May 22nd, 2020 from 10 am until 11:30 am. with Dr. Adriana Salerno, Professor of Mathematics at Bates College in the United States, was our invited speaker. This virtual event was free and open to the general public.

On this third Encounter, Dr. Adriana Salerno shared anecdotes of her personal life starting from her experiences as a child when she loved to solve puzzles and later on when she discovered the beauty of cryptography. The speaker also presented on "The Mathematics of Secrets," in which she explained the importance of security when making transactions on the Internet, when sending emails and when sending messages via WhatsApp. She also described how mathematicians research different ways to code and encrypt, in a secure and efficient way, and highlighted that most companies nowadays use a combination of symmetric and asymmetric encryption.

25

7:00 PM - 8:00 PM

Eighth Rubik's Cube Webinar

The eighth Rubik's Cube Webinar took place on Monday, May 25th, 2020 from 7 pm until 8 pm. This virtual event was given by the Panamanian speedcuber Luis Bosch, who won the Rubik's Cube competition in Panama in 2018.

On this eighth Webinar, Luis Bosch briefly explained the history of the Rubik's Cube and presented a general scheme on how to solve this math puzzle. Moreover, the invited speaker made suggestions on the best brands of cubes to buy and shared information on the cubing community in Panama.

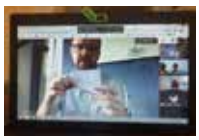
26

10:00 AM - 11:30 AM

Fourth Virtual Origami Class

The fourth Virtual Origami Class took place on Tuesday, May 26th, 2020 from 10 am until 11:30 am, with the origami artist Matthew Green as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by learning how to cut a sheet of 8.5 x 11 paper into a square. Then the invited speaker taught the participants how to fold a series of traditional origami models consisting of a house, a piano (or a sofa), a fox puppet and a hat. These origami designs are appropriate for 8-year-olds and above.




MAY - JUNE 2020

FUNDAPROMAT

28 11:00 AM - 1:00 PM		**Tenth JRMF Webinar** The tenth JRMF Webinar took place on Thursday, May 28th, 2020 from 11 am until 1 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for adults. On this tenth Webinar, participants explored the fun math activity called "Nuggets for Sale" which is used in Festivals all around the world. In this interactive activity, we pretend we are working in Nuggetville selling chicken nuggets in packages of two different sizes, depending on the season of the year. The game consists of figuring out what number of chicken nuggets between 1 and 100 can you sell using only these packages. 
29 10:00 AM - 11:00 AM		**Webinar on Math and Attempted Attacks on Intuition** The Webinar on Math and Attempted Attacks on Intuition took place on Friday, May 29th, 2020 from 10 am until 11 am, with Adrian Paenza from Argentina as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker described certain situations in daily life in which our intuition tells us something but the numbers indicate something completely different. Adrian Paenza also shared the importance of the socialization of knowledge, explained that mathematics is a collective construction, and emphasized the fact that women are not only welcome in mathematics but they are also needed. 
1 10:00 AM - 11:30 AM		**Webinar on Latin Music and Math** The Webinar on Latin Music and Math took place on Monday, June 1st, 2020 from 10 am until 11:30 am, with Federico Ardila, Professor of Mathematics at San Francisco State University, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker started by sharing some Panamanian songs full of rhythm and tropical flavor. Federico Ardila described the polyrhythm of latin music using various musical instruments and then explained the polyrhythm of mathematics with simple examples from combinatorics, algebra and geometry. 
2 10:00 AM - 11:30 AM		**Fifth Virtual Origami Class** The fifth Virtual Origami Class took place on Tuesday, June 2nd, 2020 from 10 am until 11:30 am, with the origami artist Leyla Torres as our invited speaker. This virtual event was free and open to the general public. Participants began the class by learning how to cut a sheet of 8.5 x 11 paper into a square. Then the invited speaker taught the participants how to fold a paper heart, model designed by Ildiko Vass. Leyla Torres proceeded to show how to connect various paper hearts to create a beautiful decoration. This origami design is appropriate for 8-year-olds and above.   

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4

11:00 AM - 1:00 PM

Eleventh JRMF Webinar

The eleventh JRMF Webinar took place on Thursday, June 4th, 2020 from 11 am until 1 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for adults.

On this eleventh Webinar, participants explored the fun math activity called "Sum Free Ladybugs" which is used in Festivals all around the world. In this interactive activity, every ladybug has a different number of dots on their back wings. The game begins with two empty leaves, one to the left and the other to the right. The activity is based on placing the ladybugs

4

1:00 PM - 2:00 PM

First Webinar of Cubed: The Rubik's Cube Camp

The first Webinar of Cubed: The Rubik's Cube Camp took place on Thursday, June 4th, 2020 from 1 pm until 2 pm. This virtual event was co-organized by the Mathematical Association of America (MAA) and was given by the professional speedcuber Sydney Weaver.

On this first Webinar of Cubed: The Rubik's Cube Camp, participants learned about the history of the Rubik's Cube and the basic algorithms to solve this math puzzle. The invited speaker also showed her incredible talent by solving the Rubik's Cube in seconds.

5

10:00 AM - 11:30 AM

Fourth Virtual Encounter with Outstanding Mathematicians

The fourth Virtual Encounter with Outstanding Mathematicians took place on Friday, June 5th, 2020 from 10 am until 11:30 am. with Dr. Julia Plavnik, Professor of Mathematics at Indiana University Bloomington, was our invited speaker. This virtual event was free and open to the general public.

On this fourth Encounter, Dr. Julia Plavnik shared anecdotes of her personal life growing up in Argentina and her professional journey as a female mathematician living in the United States, including the reason she decided to study mathematics. The speaker also presented on "The Game of SET," in which she described the history of this family card game, explained the rules of the game and emphasized the mathematics behind the game of SET. For example, during her presentation, Dr. Julia Plavnik answered what is the minimum number of cards that are necessary to ensure that there is a SET, among other mathematical questions.

8

10:00 AM - 11:30 AM

Webinar on Chess: Strategy for Life

The Webinar on Chess: Strategy for Life took place on Monday, June 8th, 2020 from 10 am until 11:30 am, with Cesar Mathews, instructor of the International Chess Federation (FIDE) and General Secretary of the Panamanian Chess Federation (FAP), as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker described the history of chess, explained the rules of the game and presented on chess and mathematics, chess as an educational tool in the classroom, the importance of women in chess, chess and technology, chess as an inclusive game and chess to prevent Alzheimer.

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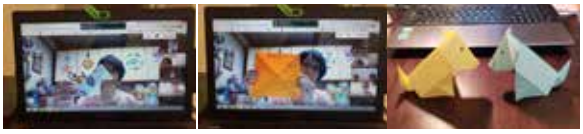
9 10:00 AM - 11:00 AM		**Sixth Virtual Origami Class** The sixth Virtual Origami Class took place on Tuesday, June 9th, 2020 from 10 am until 11 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public. Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. Deanna Kwan then taught how to fold a sitting dog, an origami model created by Shoko Aoyagi. This origami design is appropriate for 8-year-olds and above. 
11 11:00 AM - 1:00 PM		**Twelfth JRMF Webinar** The twelfth JRMF Webinar took place on Thursday, June 11th, 2020 from 11 am until 1 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for adults. On this twelfth Webinar, participants explored the fun math activity called "Tiling Challenge" which is used in Festivals all around the world. In this interactive activity, we explored if we can cover grids of different sizes (for example, 2 x 2, 3 x 3, 4 x 4, 5 x 5…) with 2 x 1 domino tiles in such a way that all the squares of the grid are covered and none of the domino tiles lays outside of the original grid. Then we considered different cases when we blocked one square of the original grid. 
12 10:00 AM - 11:30 AM		**Webinar on Illusionism and Math** The Webinar on Illusionism and Math took place on Friday, June 12th, 2020 from 10 am until 11:30 am, with the mathemagician Aurelio Sanchez from Spain, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker presented magic tricks used by illusionists that are based on basic math concepts. Aurelio Sanchez started with the thought reader, which is an algebraic illusion, then presented the enchanted mansion, which is based on the concept of parity, and finally explored one of the works of art of M. C. Escher, which is a geometric illusion. 
15 10:00 AM - 11:00 AM		**Webinar on Mathemagic and Mental Calculation** The Webinar on Mathemagic and Mental Calculation took place on Monday, June 15th, 2020 from 10 am until 11 am, with the mathemagician Andres Rieznik from Argentina, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker presented three magic tricks and then explained the math behind these tricks. Among the tricks that he presented, Andres Rieznik squared numbers faster than a calculator and then shared the math secrets behind this fascinating mental calculation. 

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16

10:00 AM - 11:30 AM

Seventh Virtual Origami Class

The seventh Virtual Origami Class took place on Tuesday, June 16th, 2020 from 10 am until 11:30 am, with the origami artist Matthew Green as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting two sheets of 8.5 x 11 paper into squares. Matthew Green then taught how to fold a traditional paper box. This origami design is appropriate for 8-year-olds and above.

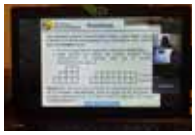
18

11:00 AM - 1:00 PM

Thirteenth JRMF Webinar

The thirteenth JRMF Webinar took place on Thursday, June 18th, 2020 from 11 am until 1 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this thirteenth Webinar, participants explored the fun math activity called "Staircases" which is used in Festivals all around the world. In this interactive activity, we refer to a staircase as having at least two rows of squares and each row below the top row must have exactly one more square than the row above it. The game is based on finding the number of squares in any staircase.



18

1:00 PM - 2:00 PM

Second Webinar of Cubed: The Rubik's Cube Camp

The second Webinar of Cubed: The Rubik's Cube Camp took place on Thursday, June 18th, 2020 from 1 pm until 2 pm. This virtual event was co-organized by the Mathematical Association of America (MAA) and was given by the professional speedcuber Sydney Weaver.

On this second Webinar of Cubed: The Rubik's Cube Camp, participants continued learning about the history of the Rubik's Cube and the basic algorithms to solve this math puzzle. The invited speaker also showed her incredible talent by solving the Rubik's Cube in seconds.

19

10:00 AM - 11:30 AM

Fifth Virtual Encounter with Outstanding Mathematicians

The fifth Virtual Encounter with Outstanding Mathematicians took place on Friday, June 19th, 2020 from 10 am until 11:30 am. with Dr. with Dr. Marta Macho-Stadler, Professor of Mathematics at the University of the Basque Country in Spain, This virtual event was free and open to the general public.

On this fifth Encounter, Dr. Marta Macho-Stadler shared anecdotes of her personal life and her professional journey as a female mathematician, including the reason she got interested in studying topology. The speaker also presented on "Math Without Numbers," in which she described the problem of the Konisberg bridges, the theorem of the four colors and knot theory. Dr. Marta Macho-Stadler also explained what a Mobius band is and how we can construct it from a strip of paper. The speaker ended her presentation with multiple examples of the Mobius band in architecture, in fashion, in jewelry, in furniture, in gastronomy, in medicine, and many more.

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23 7:00 PM - 9:00 PM		**Third Virtual MathsJam in Panama** The third Virtual MathsJam in Panama took place on Tuesday, June 23rd, 2020 from 7 pm until 9 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment. This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants found several ways to solve different math puzzles using their creativity and imagination.  
24 10:00 AM - 11:30 AM		**Meet the Panamanian Mathematical Olympiad Foundation** The Webinar titled Meet the Panamanian Mathematical Olympiad Foundation took place on Wednesday, June 24th, 2020 from 10 am until 11:30 am, with Naicolette Agudo, olympic coach of the Panamanian Mathematical Olympiad Foundation, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker shared the origin of the Panamanian Mathematical Olympiad and the efforts of the Panamanian Mathematical Olympiad Foundation. Naicolette Agudo also presented the international competitions in which Panama participates and described the profile of an olympic student, as well as the benefits of participating in the Olympic Youth Training Program of the Panamanian Mathematical Olympiad Foundation. 
25 11:00 AM - 12:30 PM		**Fourteenth JRMF Webinar** The fourteenth JRMF Webinar took place on Thursday, June 25th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults. On this fourteenth Webinar, participants explored the fun math activity called "Jigsaw Squares" which is used in Festivals all around the world. This interactive activity is based on finding the side length of smaller squares that are inside of a larger square. The game gets a bit more complicated when the images are not drawn to scale and the squares look like rectangles even though they are still squares. 
26 10:00 AM - 11:30 AM		**Webinar on Magic Squares of Numbers** The Webinar on Magic Squares of Numbers took place on Friday, June 26th, 2020 from 10 am until 11:30 am, with Dr. Andres Navas, Professor in the Math and Computer Science Department of the University of Santiago, Chile, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker presented the origin of magic squares throughout history, showed multiple examples of magic squares of numbers and explained the math secrets behind completing them. Dr. Andres Navas also shared a magic square for the date of the event and noted that it would make a fabulous birthday present. 

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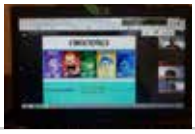
29

10:00 AM - 11:30 AM

Webinar on Math and Emotions

The Webinar on Math and Emotions took place on Monday, June 29th, 2020 from 10 am until 11:30 am, with the mathemagician Sergio Belmonte from Spain as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker presented how basic math concepts produce positive emotions through a personal story on the Golbach Conjecture, a surprise referring to pi, various examples of beauty related to phi, and two puzzles with paper balls. In particular, Sergio Belmonte invited the participants to visit the website http://mypiday.com where you can find your birthdate among the digits of pi.



30

10:00 AM - 12:00 PM

Eighth Virtual Origami Class

The eighth Virtual Origami Class took place on Tuesday, June 30th, 2020 from 10 am until 12 pm, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting two sheets of 8.5 x 11 paper into squares. Deanna Kwan then taught how to fold a two-piece spinner, an origami model created by Kathy Stevick. This origami design is appropriate for 8-year-olds and above.




2

1:00 PM - 2:00 PM

Third Webinar of Cubed: The Rubik's Cube Camp

The third Webinar of Cubed: The Rubik's Cube Camp took place on Thursday, July 2nd, 2020 from 1 pm until 2 pm. This virtual event was co-organized by the Mathematical Association of America (MAA) and was given by the professional speedcuber Sydney Weaver.

On this third Webinar of Cubed: The Rubik's Cube Camp, participants continued learning about the history of the Rubik's Cube and the basic algorithms to solve this math puzzle. The invited speaker also shared recommendations on how to solve the 3 x 3 Rubik's Cube efficiently and showed her incredible talent by solving the 4 x 4 Rubik's Cube and the Megaminx.

3

10:00 AM - 11:30 AM

Sixth Virtual Encounter with Outstanding Mathematicians

The sixth Virtual Encounter with Outstanding Mathematicians took place on Friday, July 3rd, 2020 from 10 am until 11:30 am. with Dr. Matilde Lalin, Professor of Mathematics at the University of Montreal in Canada, was our invited speaker. This virtual event was free and open to the general public.

On this sixth Encounter, Dr. Matilde Lalin shared anecdotes of her personal life and her professional journey as a female mathematician, growing up with science in Argentina, then obtaining her PhD in the United States, later doing several Postdocs in the United States, France, Germany and Canada, and staying in Canada. The speaker also presented on "Ellipses, Elliptic Curves and One Million Dollars," in which she compared circles and ellipses, gave examples of ellipses and elliptic curves, and described applications of elliptic curves in cryptography, in the solution of Fermat's theorem proved by Andrew Wiles in 1995, and the Birch and Swinnerton-Dyer Conjecture. Dr. Matilde Lalin pointed out that in the year 2000, this last problem was included among the seven millenium problems of the Clay Mathematics Institute, whose solution has a prize of one million dollars.

JULY 2020

FUNDAPROMAT

6 10:00 AM - 11:30 AM		**Webinar on Scrabble: Vocabulary and Math** The Webinar on Scrabble: Vocabulary and Math took place on Monday, July 6th, 2020 from 10 am until 11:30 am, with Ruben Falconett, President of the Panamanian Scrabble Association, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker presented the history of scrabble, described the rules of the game, explained the connection between scrabble, vocabulary and mathematics, and shared some strategies on how to win the game. Ruben Falconett also told us about the important role that Panama played in the history of scrabble. 
7 10:00 AM - 11:30 AM		**Ninth Virtual Origami Class** The ninth Virtual Origami Class took place on Tuesday, July 7th, 2020 from 10 am until 11:30 am, with the origami artist Noelia Avila as our invited speaker. This virtual event was free and open to the general public. Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. with the origami artist Noelia Avila as our invited speaker. This origami design is appropriate for 8-year-olds and above.   
9 2:00 PM - 3:00 PM		**Webinar on the Divine Proportion in Nature and in our Wallet** The Webinar on the Divine Proportion in Nature and in our Wallet took place on Thursday, July 9th, 2020 from 2 pm until 3 pm, with Laura Gomez, Director of the Math Research Group at the Sergio Arboleda University in Colombia, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker presented on ratios and proportions, explained what the golden number is, and shared examples of the divine proportion in nature, in our wallet, in art, in architecture and many more. 
10 10:00 AM - 11:00 AM		**Webinar on Medicine and Math** The Webinar on Medicine and Math took place on Friday, July 10th, 2020 from 10 am until 11 am, with Dr. Luis Sordo Vieira, Professor in the Department of Medicine of the University of Florida, as our invited speaker. This virtual event was free and open to the general public. On this event, the invited speaker described how mathematical models are used in areas of medicine like oncology, inmunology, psychiatry and epidemiology. Dr. Luis Sordo Vieira also shared how math is applied in the battle against cancer, diabetes, Alzheimer, compulsive accumulation disorder, and other diseases. 

JULY 2020

11

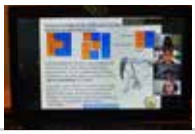
11:00 AM - 12:30 PM

Fifteenth JRMF Webinar

The fifteenth JRMF Webinar took place on Saturday, July 11th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this fifteenth Webinar, participants explored the math activity called "Gerrymandering" which is used in Festivals all around the world. This interactive activity starts with a 6 x 6 matrix with some blue squares and some orange squares, where the color of the square represents one vote in favor of that color. The game consists of creating districts made up of 5 squares so that orange wins, following certain simple conditions, even though blue has more votes than orange.





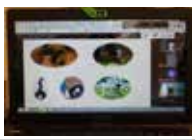
13

10:00 AM - 11:30 AM

Webinar on Is Everything that Rotates Round?

The Webinar on Is Everything that Rotates Round? took place on Monday, July 13th, 2020 from 10 am until 11:30 am, with Dr. Eduardo Mancera, Vice President of the Interamerican Committee on Math Education, as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker described shapes of constant width and shared multiple applications of these shapes in everyday life, including in art, in cartography, in architecture, in vehicle engines, among others. Dr. Eduardo Mancera also sparked the participants' curiosity with objects that rotate even though they have non-traditional shapes.



14

10:00 AM - 12:00 PM

Tenth Virtual Origami Class

The tenth Virtual Origami Class took place on Tuesday, July 14th, 2020 from 10 am until 12 pm, with the origami artist Gerardo Gacharna as our invited speaker. This virtual event was free and open to the general public.

Gerardo Gacharna taught how to fold a paper box, an origami model created by the invited speaker himself. The participants only needed two sheets of 8.5 x 11 paper, one for the box and the other one for the lid of the box. This origami design is appropriate for 8-year-olds and above.


16

1:00 PM - 2:00 PM

Fourth Webinar of Cubed: The Rubik's Cube Camp

The fourth Webinar of Cubed: The Rubik's Cube Camp took place on Thursday, July 16th, 2020 from 1 pm until 2 pm. This virtual event was co-organized by the Mathematical Association of America (MAA) and was given by the professional speedcuber Sydney Weaver.

On this fourth and last Webinar of Cubed: The Rubik's Cube Camp, participants learned about the math behind this puzzle, including how to calculate the number of possible configurations of the cube. The invited speaker also shared two intellectual challenges during the virtual event, as well as curious facts about the cube. For example, Sydney Weaver commented on celebrities who know how to solve the 3 x 3 Rubik's Cube.

JULY 2020

FUNDAPROMAT

17

10:00 AM - 12:00 PM

Seventh Virtual Encounter with Outstanding Mathematicians

The seventh Virtual Encounter with Outstanding Mathematicians took place on Friday, July 17th, 2020 from 10 am until 12 pm. with Dr. \Maria De-Arteaga, Professor at McCombs School of Business at the University of Texas at Austin, was our invited speaker. This virtual event was free and open to the general public.

On this seventh Encounter, Dr. Maria De-Arteaga shared anecdotes of her personal life and her professional journey as a female mathematician, studying in Colombia, Spain, Switzerland and in the United States. The speaker also presented on "Artificial Intelligence, Math and Inequality," in which she described the risks and the opportunities of artificial intelligence to help decision making and the biases and discrimination in artificial intelligence. Dr. Maria De-Arteaga explained how artificial intelligence and machine learning are tools for sustainable development, governed by the principles of sustainable societies. The speaker also emphasized that technology does not change society but rather amplifies the change created by humans.

18

11:00 AM - 12:30 PM

Sixteenth JRMF Webinar

The sixteenth JRMF Webinar took place on Saturday, July 18th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this sixteenth Webinar, participants explored the math activity called "Farming Fiasco" which is used in Festivals all around the world. In this interactive activity, you justbought your first farm but the map of the farm got wet in a rainstorm and now you cannot read some important measurements that you need to cultivate the land. In some rectangles of the map, you are missing a side length and other times you are missing an area. The game consists of finding the missing measurement in the map using the given information.

20

10:00 AM - 12:00 PM

Webinar on Archeology and Math

The Webinar on Archeology and Math took place on Monday, July 20th, 2020 from 10 am until 12 pm, with Dr. Julia Mayo, Panamanian archeologist, Director of the Archeological Project El Caño and President of the Foundation El Caño, as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker described the archeological discoveries that took place in Panama and invited the audience to visit the Museum El Caño in the province of Cocle. Dr. Julia Mayo also commented that archeology is like travelling in a time machine to discover what happened to a certain population.

21

7:00 PM - 9:00 PM

Fourth Virtual MathsJam in Panama

The fourth Virtual MathsJam in Panama took place on Tuesday, July 21st, 2020 from 7 pm until 9 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment.

This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants solved different math puzzles using their creativity and imagination. In particular, we discussed the solution of a toothpick puzzle, as was promised in the previous MathsJam.



JULY 2020

23

2:00 PM - 3:00 PM

Webinar on the Mathematics of Shadows

The Webinar on the Mathematics of Shadows took place on Thursday, July 23rd, 2020 from 2 pm until 3 pm, with Mario Ponce, Professor of Mathematics in the Pontifical Catholic University of Chile, as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker took us on a journey into the shadows, defying our intuition, where not everything was what it seemed. For example, the shadows that looked like Popeye, Mickey Mouse and Snoopy were in fact from a completely different object. Mario Ponce also commented on how in some cases it is important to trust the shadows, for example when we are dealing with X-rays of the human body.

24

10:00 AM - 11:00 AM

Webinar on Curious Mathematics

The Webinar on Curious Mathematics took place on Friday, July 24th, 2020 from 10 am until 11 am, with Carlos Diez, Dean of the Math and Engineering Faculty of the Konrad Lorenz University Foundation in Colombia, as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker shared various curiosities about mathematics, including why Google is called Google, how the number Pi can be calculated with the rain, and which are some animals that know how to count. Carlos Diez also commented on the Erdos number, the Krapekar constant, the infinite infinities and the most beautiful formula in the world.

25

11:00 AM - 12:30 PM

Seventeenth JRMF Webinar

The seventeenth JRMF Webinar took place on Saturday, July 25th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for adults.

On this seventeenth Webinar, participants explored the math activity called “Mousetrap” which is used in Festivals all around the world. In this interactive activity,there is a mouse in the house that is trying to escape to the fields, represented by green hexagons. The catcher places traps in the hexagons trying to catch the mouse. The game is based on analyzing how the activity changes depending on the rules that we define, for example by allowing the mouse to move more than once per turn, or by allowing the catcher to place more than one trap per turn.



27

10:00 AM - 11:30 AM

Webinar on the Museums of Mathematics in the World

The Webinar on the Museums of Mathematics in the World took place on Monday, July 27th, 2020 from 10 am until 11:30 am, with Dr. Daniel Ramos, Chief Content Officer for IMAGINARY, as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker explained the importance of museums, shared images of various museums of mathematics in the world, and described several interactive activities that you can do in these museums. Dr. Daniel Ramos also commented on IMAGINARY and all the resources that they have available on their website https://imaginary.org for those who are interested in the promotion of mathematics.


JULY 2020

FUNDAPROMAT

28

10:00 AM - 11:30 AM

Eleventh Virtual Origami Class

The eleventh Virtual Origami Class took place on Tuesday, July 28th, 2020 from 10 am until 11:30 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public.

Deanna Kwan taught how to fold a tulip with stem and leaf. The participants only needed three sheets of 8.5 x 11 paper and scissors for this class, one sheet of paper to fold two flowers and the other two sheets of paper to make the two stems for the two tulips. This origami design is appropriate for 8-year-olds and above.



28

7:00 PM - 8:30 PM

Cubing Puzzle Happy Hour

The Cubing Puzzle Happy Hour took place on Tuesday, July 28th, 2020 from 7 pm until 8:30 pm. This virtual event was free, aimed at adults and teens aged 18 and up, and was given by the professional speedcuber Sydney Weaver.

On this Happy Hour, participants explored the universe of recreational mathematics with cubing puzzles. The speaker presented 3 fun puzzles that the participants solved together as a team.



30

2:00 PM - 3:30 PM

Webinar on Origami and Math

The Webinar on Origami and Math took place on Thursday, July 30th, 2020 from 2 pm until 3:30 pm, with Eulalia Tramuns, Professor in the Department of Mathematical Sciences of the Polytechnic University of Turin in Italy, as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker defined the art of origami, presented the mathematics of an origami model and shared examples of how origami can be used as a math tool. Eulalia Tramuns also performed two simple activities during the virtual event, one with a 4 cm x 20 cm strip of paper and the other with a 15 cm x 15 cm paper square, to show the connection between origami and math.

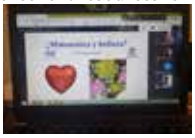
31

10:00 AM - 11:00 AM

Eighth Virtual Encounter with Outstanding Mathematicians

The eighth Virtual Encounter with Outstanding Mathematicians took place on Friday, July 31st, 2020 from 10 am until 11 am. with Dr. Alicia Dickenstein, Professor of Mathematics in the University of Buenos Aires in Argentina, was our invited speaker. This virtual event was free and open to the general public.

On this eighth Encounter, Dr. Alicia Dickenstein shared anecdotes of her personal life and her professional journey as a female mathematician, as well as lessons learned like "everything good that we do will some day come back to us." The speaker also presented on "Math and Beauty?" in which she described various examples of shapes that we all consider beautiful which are created by using math formulas that not all of us consider beautiful. Dr. Alicia Dickenstein also invited the participants to visit the website http://moebius.dm.uba.ar to access "Surfer" that allows you to create surfaces in space and "Britney" that allows you to create iterative fractals, which are excellent resources for the classroom.




AUGUST 2020

1

11:00 AM - 12:30 PM

Eighteenth JRMF Webinar

The eighteenth JRMF Webinar took place on Saturday, August 1st, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this eighteenth Webinar, participants explored the math activity called "Squareland Arquitect" which is used in Festivals all around the world. In this interactive activity, we imagine we are architects in a world that is obsessed with squares and we want to design a square floor plan using square rooms. The game is based on figuring out if it is possible to create a 7 x 7 square floor with squares of the same size, then with 1 x 1 and 2 x 2 squares, and finally with 2 x 2 and 3 x 3 squares. Afterwards the activity evaluates more general cases.

3

10:00 AM - 11:30 AM

Webinar on Backgammon and Math

The Webinar on Backgammon and Math took place on Monday, August 3rd, 2020 from 10 am until 11:30 am, with Roberto Litzenberger, International Backgammon Master from the United States, as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker briefly described the history of backgammon, explained the rules of the game with many examples, shared some strategies on how to win the game, and connected backgammon with mathematics. Roberto Litzenberger also defined gammon and backgammon and taught how to use the doubling cube to win more points in the game using concepts of probability.

4

10:00 AM - 11:30 AM

Twelfth Virtual Origami Class

The twelfth Virtual Origami Class took place on Tuesday, August 4th, 2020 from 10 am until 11:30 am, with the origami artist Stella Ricotti as our invited speaker. This virtual event was free and open to the general public.

Stella Ricotti taught how to fold a tangram with seven geometric paper shapes only using four sheets of 8.5 x 11 paper and scissors. Before the class, participants cut the four sheets of paper to make two big 8.5 x 8.5 squares, three 8.5 x 4.25 rectangles and two small 4.25 x 4.25 squares. With the two big paper squares we folded the two big triangles of the tangram. With the three paper rectangles we folded a medium-sized triangle, a parallelogram and a square of the tangram. With the two small paper squares we folded the two small triangles of the tangram. This origami design is appropriate for 8-year-olds and above.



6

2:00 PM - 3:30 PM

Webinar on the Evolution of the Number One

The Webinar on the Evolution of the Number One took place on Thursday, August 6th, 2020 from 2 pm until 3:30 pm, with Alejandro Garciadiego, Professor of Mathematics in the National Autonomous University of Mexico (UNAM), as our invited speaker. This virtual event was free and open to the general public.

On this event, the invited speaker took us on a journey through the history of mathematics, visiting the babilonic, egyptian and greek cultures, and highlighting Plato, Aristotle and Euclid. Alejandro Garciadiego emphasized that it was Simon Stevin on his book "Arithmetic" who in 1585 changed the essence of the unity to convert it into a number in order to be able to divide it and create fractions.

AUGUST 2020

FUNDAPROMAT

7 10:00 AM - 11:30 AM		**Webinar on the Mathematics of a Soccer Ball** The Webinar on the Mathematics of a Soccer Ball took place on Friday, August 7th, 2020 from 10 am until 11:30 am, with Dr. Manuel Rivera, Professor of Mathematics at Purdue University in the United States, as our invited speaker. This virtual event was free and open to the general public. En el evento, el expositor comparó la geometría plana con la geometría esférica para poder explicar la geometría en la superficie de un balón de fútbol. On this event, the invited speaker compared plane geometry with spherical geometry in order to explain the geometry on the surface of a soccer ball. Dr. Manuel Rivera proved Euler's Formula that states that for any convex polyhedron, V – E + F = 2, where V is the number of vertices, E is the number of edges and F is the number of faces. The speaker invited everyone to get their soccer ball, count the number of vertices, of edges and of faces, and check that Euler's Formula holds. 
8 11:00 AM - 12:30 PM		**Nineteenth JRMF Webinar** The nineteenth JRMF Webinar took place on Saturday, August 8th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Teaching of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for kids. On this nineteenth Webinar, participants explored the math activity called "Trail Mix" which is used in Festivals all around the world. In this interactive 2-player activity, there are 4 nuts and 4 raisins. Players take turns taking either one nut, one raisin, or one of each. The winner is the one who takes the last piece of food. The activity is based on analyzing if there is a winning strategy and then evaluating how the game changes if we start with different numbers of nuts and of raisins. 
10 10:00 AM - 11:30 AM		**Webinar on the Mathematics in the Mayan Culture** The Webinar on the Mathematics in the Mayan Culture took place on Monday, August 10th, 2020 from 10 am until 11:30 am, with Dr. Francisco Alarcon, Professor of Mathematics in Indiana University of Pennsylvania, as our invited speaker. This virtual event was free and open to the general public. The invited speaker started the virtual event with a fun game using the Kahoot app. Dr. Francisco Alarcon then shared interesting aspects about the mayan culture, described the mayan calendars, explained the mayan number system and gave various examples of a possible algorithm to do sums and subtractions with mayan numbers.. 
11 10:00 AM - 11:00 AM		**Thirteenth Virtual Origami Class** The thirteenth Virtual Origami Class took place on Tuesday, August 11th, 2020 from 10 am until 11 am, with the origami artist Noelia Avila as our invited speaker. This virtual event was free and open to the general public. Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. Noelia Avila then taught how to fold a sailboat, which is the logo of OrigamiUSA, an organization in the United States devoted to the art of paperfolding. This origami design is appropriate for 8-year-olds and above.  

AUGUST 2020

13

2:00 PM - 3:30 PM

Webinar on A Journey to the Fourth Dimension

The Webinar on A Journey to the Fourth Dimension took place on Thursday, August 13th, 2020 from 2 pm until 3:30 pm, with Moira Chas, Professor of Mathematics in Stony Brook University in the United States, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event considering what it would be like to live in a two-dimensional world. Moira Chas presented the platonic solids, talked about Euclid's Elements, described examples of symmetry and then took us on a visit to Flatland, a story of many dimensions.

14

10:00 AM - 11:00 AM

Ninth Virtual Encounter with Outstanding Mathematicians

The ninth Virtual Encounter with Outstanding Mathematicians took place on Friday, August 14th, 2020 from 10 am until 11 am. with Dr. Laura Pezzatti, Instructor at the University of Buenos Aires in Argentina, was our invited speaker. This virtual event was free and open to the general public.

On this ninth Encounter, Dr. Laura Pezzatti shared anecdotes of her personal life and her professional journey as a female mathematician, and then invited the participants to describe math in one word. The speaker also presented on "Mathemagic and Patterns" in which she described three magic tricks. Dr. Laura Pezzatti explained the math secrets behind the two first tricks and left the third trick on the Krapekar operation without giving any explanations in order to spark the curiosity of the participants.



15

11:00 AM - 12:30 PM

Twentieth JRMF Webinar

The twentieth JRMF Webinar took place on Saturday, August 15th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this twentieth Webinar, participants explored the math activity called "Chameleon Island" which is used in Festivals all around the world. In this interactive activity, we are in Chameleon Island where the chameleons are of one of three colors: red, blue or yellow. When two chameleons meet, they both change color according to the following rules: two different-colored chameleons will both change to the third color, and two same-colored chameleons will change one to the second color and the other to the third color. The game is based on figuring out if different combinations of blue, red and yellow chameleons can all change to the same color.

17

10:00 AM - 11:00 AM

Webinar on the Mathematics of Invisibility

The Webinar on the Mathematics of Invisibility took place on Monday, August 17th, 2020 from 10 am until 11 am, with Gunther Uhlmann, Professor of Mathematics at the University of Washington in the United States, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by showing clips of movies with invisibility examples like The Invisible Man, the Invisible Woman in Fantastic Four, the Invisible Romulan Spacecraft in Star Trek, and the Invisibility Cloak of Harry Potter. Gunther Uhlmann explained the limitations of invisibility using mirrors, so he focused on describing invisibility using transformation optics, which is the perfect camouflage. Moreover, the speaker presented some applications such as invisibility and solar panels, invisibility to sound, invisibility for tsunamis, invisibility for earthquakes, wormholes, and more.

AUGUST 2020

FUNDAPROMAT

18

7:00 PM - 9:00 PM

Fifth Virtual MathsJam in Panama

The fifth Virtual MathsJam in Panama took place on Tuesday, August 18th, 2020 from 7 pm until 9 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment.

This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants solved different math challenges using their creativity and imagination. In particular, we discussed the solution of a puzzle that was presented by one of our international participants in the previous MathsJam.

19

7:00 PM - 8:30 PM

Webinar on Robotics and Mathematics

The Webinar on Robotics and Mathematics took place on Wednesday, August 19th, 2020 from 7 pm until 8:30 pm, with Victoria Serrano, member of IEEE Panama Section, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event with an interactive game using the app Kahoot. Victoria Serrano then presented the basic parts of a robot, shared where the mechanical pieces come from, explained what sensors and motors to use, and showed examples of how to program the Lego Mindstorms EV3 microcontroller and the Arduino microcontroller. This virtual event was co-organized with IEEE Panama Section.

20

2:00 PM - 3:00 PM

Webinar on Sushi and Mathematics

The Webinar on Sushi and Mathematics took place on Thursday, August 20th, 2020 from 2 pm until 3 pm, with Chef Felipe Chong, former President of the Chinese Panamanian Association of Professionals (APROCHIPA), as our invited speaker. This virtual event was free and open to the general public.

The invited speaker described the origins of sushi, the distinct ingredients of this dish and the different types of sushi. Chef Felipe Chong then explained that it is important to understand the concept of ratios and proportions when preparing and marinating the rice that we will use to make sushi. The speaker also shared other examples, such as how to prepare vinaigrette and pound cake. This virtual event was co-organized with the Chinese Panamanian Association of Professionals (APROCHIPA).

21

10:00 AM - 11:30 AM

Webinar on the Meaning of the Numbers and Mental Speed

The Webinar on the Meaning of the Numbers and Mental Speed took place on Friday, August 21st, 2020 from 10 am until 11:30 am, with Arturo Mendoza, World Champion in Mathematical Calculation, as our invited speaker. This virtual event was free and open to the general public.

On our 100th virtual event, the invited speaker described the meaning of the numbers and then explained the technique of cross multiplication with numbers of 2, 3 and even 4 digits. Arturo Mendoza surprised the audience with his mental speed and also correctly identified the day of the week in which several of our participants were born, by only knowing their date of birth.

AUGUST 2020

22

11:00 AM - 12:30 PM

Twenty-First JRMF Webinar

The twenty-first JRMF Webinar took place on Saturday, August 22nd, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for kids.

On this twenty-first Webinar, participants explored the interesting math activity called "Pool Testing" which is used in Festivals all around the world. In this interactive activity, we pretend we are doctors and we have several patients, one of which we know is sick. To save time and money, we can do pool testing, which means that if we combine samples from several patients and test them all at once, we can determine who is sick without having to test every patient individually. The puzzle is based on finding what is the minimum number of tests that the doctors have to perform in order to guarantee that we will always find the sick patient. In this activity, we assume that there are no false positive or false negative results.

24

10:00 AM - 11:00 AM

Webinar on Math with Paper and Scissors

The Webinar on Math with Paper and Scissors took place on Monday, August 24th, 2020 from 10 am until 11 am, with Jesus A. De Loera, Professor of Mathematics at the University of California, Davis, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker described the shapes that can be obtained by folding and cutting a sheet of paper. Jesus A. De Loera taught us how to create a regular triangle and a regular hexagon using only one sheet of 8.5 x 11 paper and a pair of scissors. The speaker also explained the nets of regular polyhedra and emphasized how in mathematics there are still lots of unanswered questions.

25

10:00 AM - 11:30 AM

Fourteenth Virtual Origami Class

The fourteenth Virtual Origami Class took place on Tuesday, August 25th, 2020 from 10 am until 11:30 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting three sheets of 8.5 x 11 paper to create six squares. Deanna Kwan then taught how to fold a variation of the hexahedron of Molly Kahn, described how to convert the design into an ornament and explained the difference between a hexahedron and a cube. This origami design is appropriate for 8-year-olds and above.



25

7:00 PM - 8:30 PM

Second Cubing Puzzle Happy Hour

The second Cubing Puzzle Happy Hour took place on Tuesday, August 25th, 2020 from 7 pm until 8:30 pm. This virtual event was free, aimed at adults and teens aged 18 and up, and was given by the professional speedcuber Sydney Weaver.

On this Happy Hour, participants explored the universe of recreational mathematics with cubing puzzles. The speaker presented several fun puzzles that the participants solved together as a team.



AUGUST 2020

FUNDAPROMAT

26

7:00 PM - 8:00 PM

Webinar on Potpourri of Math Applications in Engineering

The Webinar on Potpourri of Math Applications in Engineering took place on Wednesday, August 26th, 2020 from 7 pm until 8 pm, with Diego Giscombe, member of IEEE Panama Section, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker presented examples of statistics and matrices that can be applied both in engineering and in our daily lives. Diego Giscombe also briefly described how Instagram processes images, how Facebook analyzes data and how Zola's algorithm from the movie "Captain America: The Winter Soldier" works. This virtual event was co-organized with IEEE Panama Section.

27

2:00 PM - 3:00 PM

Webinar on a Math Adventure in the Jungle

The Webinar on a Math Adventure in the Jungle took place on Thursday, August 27th, 2020 from 2 pm until 3 pm, with Dr. Maribel Bueno, Professor of Mathematics at the University of California, Santa Barbara, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker took us on an adventure in the jungle and on the way we discovered interesting math challenges. To solve these challenges, we had to be creative and to think logically. Dr. Maribel Bueno described several challenges, for example, when we had to cross a bridge in the middle of the jungle, when dad was bitten by a snake and he had to take the antidote, when a tribe asked us to solve the puzzle of the nine holy sticks, among others.

28

10:00 AM - 11:30 AM

Tenth Virtual Encounter with Outstanding Mathematicians

The tenth Virtual Encounter with Outstanding Mathematicians took place on Friday, August 28th, 2020 from 10 am until 11:30 am. with Dr. Erika Roldan, Marie Curie Fellow at the Technical University of Munich in Germany and at the Federal Polytechnical School of Lausanne in Switzerland, was our invited speaker. This virtual event was free and open to the general public.

On this tenth Encounter, Dr. Erika Roldan shared anecdotes of her personal life and her professional journey, including her experience playing soccer in the Club of the Chivas and then falling in love with the math idea: "There exist infinities that are bigger than others." The speaker also presented on "Creating a Bunch of Holes" in which she described what polyominoes are and how to count them. Dr. Erika Roldan also explained how to create polyominoes with holes, which resulted in aesthetically beautiful math designs.



29

11:00 AM - 12:30 PM

Twenty-Second JRMF Webinar

The twenty-second JRMF Webinar took place on Saturday, August 29th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this twenty-second Webinar, participants explored the interesting math activity called "Uncut Spaghetti" which is used in Festivals all around the world. In this interactive activity, we have a plate in the shape of a grid with numbers and a strand of spaghetti. The game is based on placing the uncut spaghetti on the grid following three simple rules. If the spaghetti covers the entire plate, then the square where we started is good. If the spaghetti does not cover the entire plate, then the square where we started is bad. The activity consists of predicting which squares are good and which are bad on grids of different dimensions, and then testing our predictions.


AUGUST - SEPTEMBER 2020

31

10:00 AM - 11:30 AM

Webinar on Astronomy and Mathematics

The Webinar on Astronomy and Mathematics took place on Monday, August 31st, 2020 from 10 am until 11:30 am, with Alejandro Cardenas-Avendaño, Cofounder of the astronomy group Astro-K of the Konrad Lorenz University Foundation in Colombia, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker described Tycho Brahe's observations, Kepler's laws and Newton's laws. Alejandro Cardenas-Avendaño then talked about our solar system and mentioned that in 1888 a math competition was organized in honor of King Oscar II. The speaker also presented on the nature of dynamical systems, the chaos theory and the butterfly effect, and demonstrated that lemmings do not have suicidal tendencies. Finally, Alejandro Cardenas-Avendaño emphasized the contributions of the women Emmy Noether, Ellen Fetter and Margaret Hamilton.

1

10:00 AM - 11:00 AM

Fifteenth Virtual Origami Class

The fifteenth Virtual Origami Class took place on Tuesday, September 1st, 2020 from 10 am until 11 am, with the origami artist Matthew Green as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. Matthew Green then taught how to fold a paper bird and described his experience designing new origami models. This origami design is appropriate for 8-year-olds and above.


2

7:00 PM - 8:00 PM

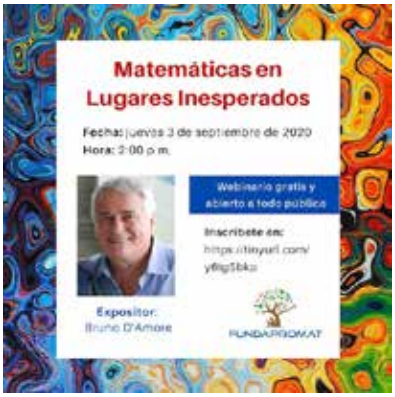
Webinar on Energy and Mathematics

The Webinar on Energy and Mathematics took place on Wednesday, September 2nd, 2020 from 7 pm until 8 pm, with Greizy Barrera, member of IEEE Panama Section, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker shared her personal experiences as a woman in engineering, including the reasons why she chose this career and the positions she has held in IEEE Panama Section. Greizy Barrera explained the different types of renewable energy, focusing in particular in hydraulic energy, and described how mathematics is used to obtain the marginal cost of the system and to estimate the short, medium and long-term generation of energy. This virtual event was co-organized with IEEE Panama Section.

3

2:00 PM - 3:00 PM



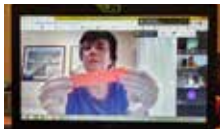
Webinar on Mathematics in Unexpected Places

The Webinar on Mathematics in Unexpected Places took place on Thursday, September 3rd, 2020 from 2 pm until 3 pm, with Dr. Bruno D'Amore from Italy, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by stating that mathematics is everywhere and has a thousand colors. Dr. Bruno D'Amore presented the mathematics in "Crucifixion, corpus hypercubus" by Salvador Dali, in "Melencolia" by Albrecht Durer, in "Gulliver's Travels" by Jonathan Swift, and in the legend of Carthage, the great enemy of Rome which is located in what is today the Gulf of Tunis. The speaker also invited the participants to read his book in Spanish called "Matemática en todo," in which you can find many more examples of mathematics in unexpected places.

SEPTEMBER 2020

FUNDAPROMAT

4 10:00 AM - 11:00 AM		**Webinar on Mathemagic** The Webinar on Mathemagic took place on Friday, September 4th, 2020 from 10 am until 11 am, with the mathemagician Sergio Belmonte from Spain, as our invited speaker. This virtual event was free and open to the general public. The invited speaker started the virtual event by explaining the connections between magic and mathematics. Sergio Belmonte then performed two magic tricks: the Bermuda Triangle, which uses a few chickpeas, and Tune/Synchrony, which uses 10 playing cards from a standard deck. The speaker also explained the math secrets behind these two magic tricks and invited the participants to visit his website http://www.magiaymatematicas.com. 
5 11:00 AM - 12:30 PM		**Twenty-Third JRMF Webinar** The twenty-third JRMF Webinar took place on Saturday, September 5th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults. On this twenty-third Webinar, participants explored the interesting math activity called "Super Tic Tac Toe" which is used in Festivals all around the world. In this interactive activity, we explored a variation of the game Tic Tac Toe. In this variation of the traditional game, there are small tic-tac-toe boards inside each of the 9 spaces of the large tic-tac-toe board. The player who makes a 3-in-a-row in the large board, following certain simple rules that determine the relation between the smaller boards and the large board, will win the game. 
7 10:00 AM - 11:30 AM		**Webinar on Math Games that Make Us Think** The Webinar on Math Games that Make Us Think took place on Monday, September 7th, 2020 from 10 am until 11:30 am, with Puri Montesinos, member of the Emma Castelnuovo Society of Math Professors of Madrid (SMPM), as our invited speaker. This virtual event was free and open to the general public. The invited speaker started the virtual event with a simple game that is based on ordering the numbers from 1 to 16 and uses 2 strips of paper that are 3 cm wide. Puri Montesinos then taught us how to play Calcudice, which uses 4 dice, one board and tokens of 2 colors. Finally, the speaker described the game called Math Vocabulary, in which you have to define a mathematical concept without using certain specific words. For example, can you define "multiplication" without using "factor," "operation" and "number"? 
8 10:00 AM - 11:30 AM		**Sixteenth Virtual Origami Class** The sixteenth Virtual Origami Class took place on Tuesday, September 8th, 2020 from 10 am until 11:30 am, with the origami artist Sergio Sanchez as our invited speaker. T This virtual event was free and open to the general public. Participants began the class by cutting two sheets of 8.5 x 11 paper to form 8 squares. Sergio Sanchez then taught how to fold a transforming ninja star, design created by Robert Neale. This origami design is appropriate for 8-year-olds and above.   

SEPTEMBER 2020

9

7:00 PM - 8:00 PM

Webinar on the Mathematics of Ships

The Webinar on the Mathematics of Ships took place on Wednesday, September 9th, 2020 from 7 pm until 8 pm, with Julio Garcia, member of IEEE Panama Section, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker did two experiments: one on surface tension and the other on floatability. Julio Garcia also explained Archimedes' Principle, reviewed a few formulas to calculate volume and described how submarines work. Finally, the speaker invited the participants to make their own ship with clay or whichever material they would prefer. This virtual event was co-organized with IEEE Panama Section.

10

2:00 PM - 3:30 PM

Webinar on Kepler, Bees and the Rhombic Dodecahedron

The Webinar on Kepler, Bees and the Rhombic Dodecahedron took place on Thursday, September 10th, 2020 from 2 pm until 3:30 pm, with Roberto Cardil from Spain, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by explaining what the rhombic dodecahedron is and how the German mathematician Johannes Kepler discovered this polyhedron by watching the base of the cells of the bees. Roberto Cardil then described how the rhombic dodecahedron is related to the packing of spheres and where we can find this polyhedron in nature and in art. The speaker also showed several spectacular geometric figures that he made using different materials including paper, cardboard, magnets, and others. Finally, Roberto Cardil invited the participants to visit his website http://www.matematicasvisuales.com.

11

10:00 AM - 11:00 AM

Eleventh Virtual Encounter with Outstanding Mathematicians

The eleventh Virtual Encounter with Outstanding Mathematicians took place on Friday, September 11th, 2020 from 10 am until 11 am. with Dr. Malena Español, Professor of Mathematics at the Arizona State University, was our invited speaker. This virtual event was free and open to the general public.

On this eleventh Encounter, Dr. Malena Español shared anecdotes of her personal life and her professional journey as a female mathematician, including her experience travelling to many different countries thanks to mathematics. The speaker also presented on "The Mathematics of Colors" in which she described the primary, secondary and tertiary colors and then introduced the concept of fractions by defining recipes to create tertiary colors from primary colors. Dr. Malena Español then presented the primary colors of the light, which are those used in monitors, televisions and movie projectors. The speaker also taught us how digital images are produced and emphasized the work of the female mathematician Ingrid Daubechies.

12

11:00 AM - 12:30 PM

Twenty-Fourth JRMF Webinar

The twenty-fourth JRMF Webinar took place on Saturday, September 12th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for adults.

On this twenty-fourth Webinar, participants explored the interesting math activity called "9 Dots" which is used in Festivals all around the world. In this interactive activity, we start with 9 dots in a straight line. In this game for 2 people, the players take turns crossing out dots. When it is their turn, each player has to decide to cross out one dot or two consecutive dots. The winner is the player who crosses out the last dot. The activity is based on finding the winning strategy for this game and then analyzing variations of the game.

SEPTEMBER 2020

FUNDAPROMAT

14

10:00 AM - 11:00 AM

Webinar on The Dance of Fractions

The Webinar on The Dance of Fractions took place on Monday, September 14th, 2020 from 10 am until 11 am, with Dr. Eduardo Mancera, Vice President of the Interamerican Committee on Math Education, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by explaining several reasons why students have difficulties learning about fractions and recommended different ways to introduce this concept to make it easier to understand. Dr. Eduardo Mancera also emphasized that when a symbol can have more than one meaning, this naturally results in confusion, which is why it is important to clarify which concept we are referring to when we show a mathematical representation.

15

10:00 AM - 11:00 AM

Seventeenth Virtual Origami Class

The seventeenth Virtual Origami Class took place on Tuesday, September 15th, 2020 from 10 am until 11 am, with the origami artist Noelia Avila as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. Noelia Avila then taught how to fold a swan. This origami design is appropriate for 8-year-olds and above.

17

2:00 PM - 3:00 PM

Webinar on Anecdotes of Mathematicians Throughout Time

The Webinar on Anecdotes of Mathematicians Throughout Time took place on Thursday, September 17th, 2020 from 2 pm until 3 pm, with Carlos Diez, Dean of the Math and Engineering Faculty of the Konrad Lorenz University Foundation in Colombia, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker shared personal stories of many mathematicians who are recognized throughout history for their contributions. Some of the mathematicians that Carlos Diez mentioned were René Descartes, Sophie Germain, Carl Friedrich Gauss, Évariste Galois, Florence Nightingale, Jules Henri Poincaré, David Hilbert, Maryam Mirzakhani, and many more.

18

10:00 AM - 11:00 AM

Webinar on Do Whales and Pineapples Know Math?

The Webinar on Do Whales and Pineapples Know Math? took place on Thursday, September 18th, 2020 from 10:00 am until 11:00 am, with Pedro Morales-Almazan, Professor of Mathematics at the University of California, Santa Cruz, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker presented on the speed of sound and connected the communication by sonar of whales and dolphins with hyperbolic geometry. Pedro Morales-Almazan also introduced the concept of tesselations and the Fibonacci numbers when seeing the pineapple peel. Finally, the speaker related differential equations with the spots on jaguars, zebras, tigers and other animals.

SEPTEMBER 2020

19

11:00 AM - 12:30 PM

Twenty-Fifth JRMF Webinar

The twenty-fifth JRMF Webinar took place on Saturday, September 19th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in the breakout session for kids.

On this twenty-fifth Webinar, participants explored the interesting math activity called "Tower of Hanoi and Beyond" which is used in Festivals all around the world. This interactive activity consists of three rods and a number of disks of different sizes, which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, with the smallest disk at the top. The objective of the game is to move the entire stack of disks to another rod, obeying certain simple rules. Those who already knew the math behind the Tower of Hanoi explored different variations of the game.

21

10:00 AM - 11:30 AM

Webinar on Math Paradoxes

The Webinar on Math Paradoxes took place on Monday, September 21st, 2020 from 10 am until 11:30 am, with Enrique Treviño, Professor of Mathematics at Lake Forest College in Illinois, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker gave an introduction to probability and described two variations of the birthday paradox. The first one assumes there are 40 people in a room and we want to know the probability that 2 people have the same birthday. The second one assumes there are 100 people in a room and we want to know the probability that one of them has the same birthday as me. Enrique Treviño also explained Saint Petersburg's paradox and several variations.

22

7:00 PM - 9:30 PM

Sixth Virtual MathsJam in Panama

The sixth Virtual MathsJam in Panama took place on Tuesday, September 22nd, 2020 from 7 pm until 9:30 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment.

This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants solved different math challenges using their creativity and imagination. In particular, we discussed the solution of a puzzle that was presented in the previous MathsJam.



24

2:00 PM - 3:30 PM

Webinar on Sudoku and Math

The Webinar on Sudoku and Math took place on Thursday, September 24th, 2020 from 2 pm until 3:30 pm, with Dr. Alexander Diaz-Lopez, Professor of Mathematics at the University of Villanova in Pennsylvania, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by briefly sharing the history of sudoku and then explaining the rules of this popular game. Dr. Alexander Diaz-Lopez focused on answering three interesting questions about sudoku that are related to mathematics: How many sudokus are there? What makes a sudoku easy or difficult? What is the minimum number of clues a sudoku must have to guarantee that it has a unique solution?

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FUNDAPROMAT

25

10:00 AM - 11:30 AM

Twelfth Virtual Encounter with Outstanding Mathematicians

The twelfth Virtual Encounter with Outstanding Mathematicians took place on Friday, September 25th, 2020 from 10 am until 11:30 am. with Dr. Samaria Montenegro, Professor of Mathematics at the University of Costa Rica, was our invited speaker. This virtual event was free and open to the general public.

On this twelfth Encounter, Dr. Samaria Montenegro shared anecdotes of her personal life and her professional journey as a female mathematician. The speaker also presented on "Logical Enigmas" in which she gave an introduction to mathematical logic with examples that made us think. For example, if Pinocchio says "I am lying," does his nose grow or not? Dr. Samaria Montenegro also described the enigma of the 2 aliens, one who always says the truth and the other one who always lies. Finally, the speaker explained the enigma of the island of the blue eyes with 100 inhabitants.

26

11:00 AM - 12:30 PM

Twenty-Sixth JRMF Webinar

The twenty-sixth JRMF Webinar took place on Saturday, September 26th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this twenty-sixth Webinar, participants explored the interesting math activity called "Light Bulbs" which is used in Festivals all around the world. This math game starts with 10 light bulbs that are off and are numbered from 1 to 10 in a long hallway. Every light bulb has a pull string. If the light bulb is on, pulling the string turns it off, and if the light bulb is off, pulling the string turns it on. At the end of the hallway, there are 10 people numbered from 1 to 10. When a person walks down the hallway, the person will pull the string of every light bulb numbered with a multiple of the number of the person. The puzzle consists of figuring out which light bulbs will be on and which light bulbs will be off after a certain number of people have walked down the hallway.


28

10:00 AM - 11:30 AM

Webinar on the Math Secrets of the Aboriginal Peoples

The Webinar on the Math Secrets of the Aboriginal Peoples took place on Monday, September 28th, 2020 from 10 am until 11:30 am, with Dr. Mariela Carvacho, Professor of Mathematics at the Metropolitan University of Education Sciences in Chile, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker focused her presentation on the mathematics of the mapuches and the diaguitas. Dr. Mariela Carvacho explained about translation, reflection, skewed reflection and rotation, which are the isometries in the plane. Using GeoGebra, the speaker also showed how the designs of the mapuches and the diaguitas contain many interesting mathematical properties worth exploring.

29

10:00 AM - 12:00 PM

Eighteenth Virtual Origami Class

The eighteenth Virtual Origami Class took place on Tuesday, September 29th, 2020 from 10 am until 12 pm, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting four sheets of 8.5 x 11 paper to form four squares. Deanna Kwan then taught how to fold a puzzle elephant, design created by Robert Foord. This origami design is appropriate for 8-year-olds and above.



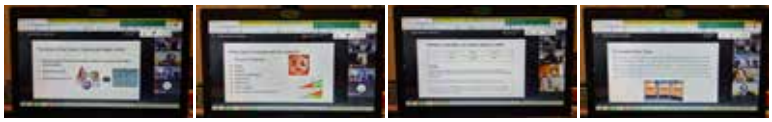
29

7:00 PM - 8:30 PM

Third Cubing Puzzle Happy Hour

The third Cubing Puzzle Happy Hour took place on Tuesday, September 29th, 2020 from 7 pm until 8:30 pm. This virtual event was free, aimed at adults and teens aged 18 and up, and was given by the professional speedcuber Sydney Weaver. The purpose of this virtual event is to connect speedcubers with math enthusiasts.

On this Happy Hour, participants explored the universe of recreational mathematics with cubing puzzles. The speaker presented several fun puzzles that the participants solved together as a team.



1

2:00 PM - 3:00 PM

Webinar on Rec_nstruc_ion of Inf_rmat_on Us_ng Mat_emati_s

The Webinar on Rec_nstruc_ion of Inf_rmat_on Us_ng Mat_emati_s took place on Thursday, October 1st, 2020 from 2 pm until 3 pm, with Tony Varilly–Alvarado, Professor of Mathematics at Rice University in the United States, as our invited speaker. This virtual event was free and open to the general public. This virtual event was free and open to the general public.

The invited speaker began the virtual event by explaining the objectives of code theory through the example of "redundency," which by fixing only one letter becomes the word "redundancy." By creating a code with 4 words of 6 letters, which can be 0s or 1s, Tony Varilly-Alvarado described how to deal with a situation in which we receive a message that contains erroneous data or missing data. The speaker also presented two applications of this concept: the compact discs and how Facebook stores our photos.

2

10:00 AM - 11:00 AM

Webinar on Soccer and Math

The Webinar on Soccer and Math took place on Friday, October 2nd, 2020 from 10 am until 11 am, with Dr. Marilina Carena, Professor at the National University of Litoral and Researcher at the National Council of Scientific and Technical Research of Argentina, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker presented several concrete examples of connections between soccer and mathematics, that can be found in her book in Spanish called "La Pelota Siempre al 10, Problemas de Fútbol Resueltos con Matemática." Dr. Marilina Carena shared how math is used in the quality testing of soccer balls, for example, in the absorption of water and sphericity, and to calculate the entry prices of a game. The speaker also mentioned that statistics is used to compare teams and geometry is used to analyze the soccer field.

3

11:00 AM - 12:30 PM

Twenty-Seventh JRMF Webinar

The twenty-seventh JRMF Webinar took place on Saturday, October 3rd, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for adults.

On this twenty-seventh Webinar, participants explored the interesting math activity called "Adding Digits" which is used in Festivals all around the world. The game begins with some circles connected by straight lines creating different shapes. Some of the circles have fixed numbers while others are empty. This interactive activity consists of filling out each empty circle with a positive whole number (1, 2, 3, 4, 5…) following one simple rule that involves the sum of digits.

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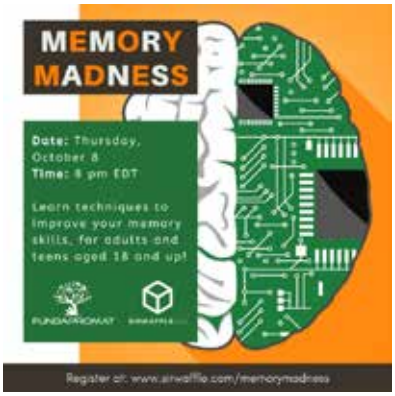
6 10:00 AM - 11:30 AM		**Nineteenth Virtual Origami Class** The nineteenth Virtual Origami Class took place on Tuesday, October 6th, 2020 from 10 am until 11:30 am, with the origami artist Doris Orozco as our invited speaker. This virtual event was free and open to the general public. Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. Doris Orozco then taught how to fold a cricket, design created by Kunihiko Kasahara, starting from a triangle. This origami design is appropriate for 8-year-olds and above.  
7 7:00 PM - 8:00 PM		**Ninth Rubik's Cube Webinar** The ninth Rubik's Cube Webinar took place on Wednesday, October 7th, 2020 from 7 pm until 8 pm, with the speedcuber Juan Gonzalez from Panama as our invited speaker. This virtual event was free and open to the general public. On this ninth Webinar, the speaker described the pieces of the Rubik's Cube and defined the notation that speedcubers use. Juan Gonzalez then explained step by step the algorithms that make up the beginners method and shared some recommendations on how to improve the time of resolution of this math puzzle. 
8 2:00 PM - 3:00 PM		**Webinar on the Mathematics in the Panama Canal** The Webinar on the Mathematics in the Panama Canal took place on Thursday, October 8th, 2020 from 2 pm until 3 pm, with Ilya de Marotta, Sub-administrator of the Panama Canal, as our invited speaker. This virtual event was free and open to the general public. The invited speaker gave an overview of how mathematics is used in the Panama Canal in finance, engineering, navigation, meteorology, electricity, marketing, reforestation, audiovisual production, operation of chutes, health and security. The Ing. Ilya de Marotta also explained how the current situation of the pandemic has impacted the Panama Canal. 
8 7:00 PM - 8:00 PM		**First Memory Madness** The first Memory Madness took place on Thursday, October 8th, 2020 from 7 pm until 8 pm. This virtual event was free, aimed at adults and teens aged 18 and up, and was given by the professional speedcuber Sydney Weaver. On this virtual event, the invited speaker explained the different types of memory: short term memory, long term memory, muscle memory and brute force memory. Sydney Weaver then shared several techniques to improve our abilities to memorize lists of words and numbers. The speaker stated that these memory techniques can also be used when you want to learn how to solve the Rubik's Cube blindfolded. 

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9

10:00 AM - 11:00 AM

Thirteenth Virtual Encounter with Outstanding Mathematicians

The thirteenth Virtual Encounter with Outstanding Mathematicians took place on Friday, October 9th, 2020 from 10 am until 11 am. with Dr. Romina M. Arroyo, Professor of Mathematics at the National University of Cordoba in Argentina, was our invited speaker. This virtual event was free and open to the general public.

On this thirteenth Encounter, Dr. Romina M. Arroyo shared anecdotes of her personal life and her professional journey as a female mathematician. The speaker also presented on "How Can You Save Gasoline Using Mathematics?" in which she described a hypothetical situation in which Andrea wants to visit Gabriel but wants to consume the least amount of gasoline possible. Then she stated a different situation in which Andrea wants to deliver a gift to each one of her friends so she wants to pass exactly once by each of their houses. Dr. Romina M. Arroyo also mentioned what is the minimum number of colors that you would need to color a planisphere map, which means that it can be represented on the plane.

10

11:00 AM - 12:30 PM

Twenty-Eighth JRMF Webinar

The twenty-eighth JRMF Webinar took place on Saturday, October 10th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator in one of the breakout sessions for adults.

On this twenty-eighth Webinar, participants explored the interesting math activity called "Grape Codes" which is used in Festivals all around the world. The game starts with 6 cups labelled 1, 2, 4, 8, 16 and 32. Two grapes in the cup labelled 8, for example, represent the number 2 x 8 = 16. The activity is based on finding grape codes for different numbers using these 6 cups. The number of grapes that can be placed in every cup is later limited to one grape or no grape, introducing the concept of the binary code.

13

10:00 AM - 11:00 AM

Twentieth Virtual Origami Class

The twentieth Virtual Origami Class took place on Tuesday, October 13th, 2020 from 10 am until 11 am, with the origami artist Matthew Green as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. Matthew Green then taught how to fold a water bomb, which is a traditional model. This origami design is appropriate for 8-year-olds and above.


14

7:00 PM - 8:30 PM

Webinar on the Mathematics in the Works of Art of M.C. Escher

The Webinar on the Mathematics in the Works of Art of M.C. Escher took place on Wednesday, October 14th, 2020 from 7 pm until 8:30 pm, with Dr. Maria Mercedes Franco, Professor of Mathematics at Queensborough Community College –The City University of New York, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker shared the story of the Dutch artist M.C. Escher and described several characteristics that you can find in his works of art, including reflections, bidimensionality and tridimensionality, impossible spaces, finite and infinite, tessellations, transformations and isometries. M.C. Escher is known for his representations of imaginary worlds, impossible figures and paradoxical designs with extraordinary patterns. To learn more about the works of art of M.C. Escher, visit https://mcescher.com/.

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FUNDAPROMAT

15

2:00 PM - 3:00 PM

Webinar on Let's Talk About HUMONGOUS Numbers

The Webinar on Let's Talk About HUMONGOUS Numbers took place on Thursday, October 15th, 2020 from 2 pm until 3 pm, with Dr. Rita Jimenez, Researcher at the National Autonomous University of Mexico (UNAM), as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by asking how many ways can we accommodate N letters without repeating them. Then Dr. Rita Jimenez then defined the factorial of a number and analyzed how fast this function grows by comparing it to other known functions like the exponential function, the polynomial function and the logarithmic function. The speaker also explained how we can estimate the factorial of a number using Stirling's formula.

16

10:00 AM - 11:30 AM

Webinar on the Mathematics in Our Nails

The Webinar on the Mathematics in Our Nails took place on Friday, October 16th, 2020 from 10 am until 11:30 am, with Erika Hurtado, podiatrist with 14 years of experience in non-invasive treatments and owner of the Happy Feet Specialized Center in Panama, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by defining what is a nail, what is podiatry and what are non-invasive treatments. Erika Hurtado then explained how math is used to solve in a non-traumatic way cases of nails with excess thickness, ingrown nails and nails that have been hurt. The speaker also gave recommendations on how to take care of our nails and on personal hygiene.

17

11:00 AM - 12:30 PM

Twenty-Ninth JRMF Webinar

The twenty-ninth JRMF Webinar took place on Saturday, October 17th, 2020 from 11 am until 12:30 pm. This virtual event was organized by Dr. Hector Rosario, Director of Outreach and Festivals of the Julia Robinson Mathematics Festival (JRMF). Participants were divided in several breakout sessions, depending on whether they were kids or adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the co-moderator in one of the breakout sessions for adults.

On this twenty-ninth Webinar, participants explored the interesting math activity called "Trip to Squareland" which is used in Festivals all around the world. This interactive activity consists of dividing a square into a certain number of smaller squares and exploring interesting questions like for example if you can find a number of squares for which it is impossible to divide a square.


20

7:00 PM - 9:00 PM

Seventh Virtual MathsJam in Panama

The seventh Virtual MathsJam in Panama took place on Tuesday, October 20th, 2020 from 7 pm until 9 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment.

This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants solved different math challenges using their creativity and imagination. In particular, we discussed the solution of a puzzle that was presented in the previous MathsJam, which asks you to place some symbols to complete a challenge that involves four ones and one five.



OCTOBER 2020

21

7:00 PM - 8:30 PM

Webinar on A Trip Through the History of Infinity

The Webinar on A Trip Through the History of Infinity took place on Wednesday, October 21th, 2020 from 7 pm until 8:30 pm, with Dr. Esptiben Rojas, professor and researcher in the Department of Mathematics at the University of Magallanes in Chile, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by pointing out that humans have been thinking about infinity for more than 5,000 years and we have been asking ourselves if space and time are finite or infinite. On our trip, we learned about the Greeks Anaximander, Zeno of Elea, Plato, Aristotle, Euclid and Archimedes. Dr. Esptiben Rojas also talked about Galileo Galilei, Pascal, Fermat and Jhon Wallis, who was the first person to use the symbol of an 8 lying down to denote infinity. Since on our trip through the history of infinity we only reached the 1600s, we will be organizing the sequel of this interesting presentation.

22

2:00 PM - 3:00 PM

Webinar on Fractals

The Webinar on Fractals took place on Thursday, October 22nd, 2020 from 2 pm until 3 pm, with Antonio Montalban, Professor of Mathematics at the University of California, Berkeley, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker defined a fractal and described examples of fractals, like the Koch Snowflake, the Sierpinski Triangle and the Mandelbrot Set. Antonio Montalban presented three examples of fractals in nature: the Barnsley fern, the Romanesco broccoli and the coast of Great Britain. The speaker also explained how to calculate the dimension of several fractals and emphasized that this dimension in some cases can be a fraction.

23

10:00 AM - 11:00 AM

Fourteenth Virtual Encounter with Outstanding Mathematicians

The fourteenth Virtual Encounter with Outstanding Mathematicians took place on Friday, October 23rd, 2020 from 10 am until 11 am. with Dr. Selenne Bañuelos, Professor of Mathematics at the California State University Channel Islands, was our invited speaker. This virtual event was free and open to the general public.

On this fourteenth Encounter, Dr. Selenne Bañuelos shared anecdotes of her personal life and her professional journey as a female mathematician, pointing out that the movie called Stand and Deliver impacted her. This 1988 film tells the story of the Bolivian professor of mathematics Jaime Escalante. The speaker also presented on "Modeling, Not Only the Clothes" in which she described the mathematical modeling of sleep and of the disease caused by the Zika virus. In particular, Dr. Selenne Bañuelos explained the effect of temperature on sleep.


26

10:00 AM - 11:30 AM

Virtual Celebration of Mind in Panama

The Virtual Celebration of Mind in Panama took place on Monday, October 26th, 2020 from 10 am until 11:30 am, with Dr. Ricardo Teixeira, Professor of Mathematics at the University of Houston – Victoria in the United States, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by sharing stories about Martin Gardner's life, who is known as being the best friend of mathematics. Dr. Ricardo Teixeira presented several mathemagic tricks that appear in Martin Gardner's books, including a magic trick using playing cards, a trick that involves parity and a trick with cyclic numbers. This virtual event was co-organized with the Gathering 4 Gardner (G4G) Foundation.

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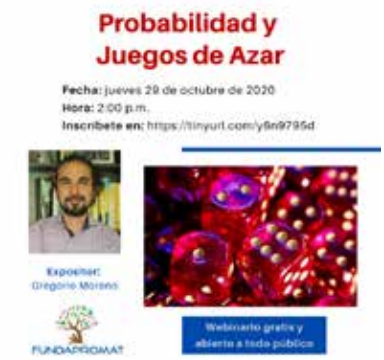
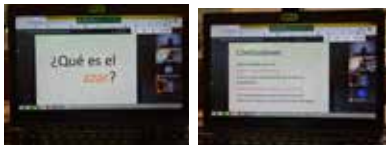
FUNDAPROMAT

27 10:00 AM - 11:00 AM		**Twenty-First Virtual Origami Class** The twenty-first Virtual Origami Class took place on Tuesday, October 27th, 2020 from 10 am until 11 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public. Participants began the class by cutting three sheets of 8.5 x 11 paper to form two big 8.5 x 8.5 squares and four small 4.25 x 4.25 squares. Deanna Kwan then taught how to fold two kitties, design created by Gay Merrill Gross, which uses the two big squares and two of the small squares. This origami design is appropriate for 8-year-olds and above. 
27 7:00 PM - 8:00 PM		**Fourth Cubing Puzzle Happy Hour** The fourth Cubing Puzzle Happy Hour took place on Tuesday, October 27th, 2020 from 7 pm until 8 pm. This virtual event was free, aimed at adults and teens aged 18 and up, and was given by the professional speedcuber Sydney Weaver. The purpose of this virtual event is to connect speedcubers with math enthusiasts. On this Happy Hour, participants explored the universe of recreational mathematics with cubing puzzles. The speaker presented several fun puzzles that the participants solved together as a team. 
28 7:00 PM - 8:30 PM		**Webinar on Physics and Math** The Webinar on Physics and Math took place on Wednesday, October 28th, 2020 from 7 pm until 8:30 pm, with Dr. Carlos Luna Criado, Professor in the Department of Physical and Mathematical Sciences at the Autonomous University of Nuevo Leon in Mexico, as our invited speaker. This virtual event was free and open to the general public. The invited speaker presented the connections between physics and mathematics and talked about Aristotle, Galileo Galilei, Plato, Claudius Ptolemy, Nicolaus Copernicus, Tycho Brahe, Johannes Kepler, Isaac Newton and Katherine Johnson. 
29 2:00 PM - 3:00 PM		**Webinar on Probability and Games of Chance** The Webinar on Probability and Games of Chance took place on Thursday, October 29th, 2020 from 2 pm until 3 pm, with Dr. Gregorio Moreno, Professor of Mathematics at the Pontifical Catholic University of Chile, as our invited speaker. This virtual event was free and open to the general public. The invited speaker explained that chance can be found in dice, the wheel of fortune, the lottery, casino games, financial markets, DNA and many more examples. Dr. Gregorio Moreno emphasized that even though understanding the theory of probability does not eliminate the uncertainty, the probability is a type of information. The speaker also described a losing strategy and a winning strategy for games of chance. 

NOVEMBER 2020

6

10:00 AM - 11:30 AM

Fifteenth Virtual Encounter with Outstanding Mathematicians

The fifteenth Virtual Encounter with Outstanding Mathematicians took place on Friday, November 6th, 2020 from 10 am until 11:30 am. with Dr. Clara Grima, Professor of Mathematics at the University of Seville in Spain, was our invited speaker. This virtual event was free and open to the general public.

On this fifteenth Encounter, Dr. Clara Grima shared anecdotes of her personal life and her professional journey as a female mathematician, pointing out how her two small kids inspired her to do math popularization. The speaker also presented on "Biology and Math" in which she described how scutoids were discovered by an interdisciplinary team of mathematicians and biologists who looked at the salivary glands of the fruit fly and took into consideration Voronoi diagrams.


10

10:00 AM - 11:30 AM

Twenty-Second Virtual Origami Class

The twenty-second Virtual Origami Class took place on Tuesday, November 10th, 2020 from 10 am until 11:30 am, with the origami artist David Medina as our invited speaker. This virtual event was free and open to the general public.

In this class, David Medina taught how to fold four collapsible prisms: a triangular prism, a quadrangular prism, a pentagonal prism and a hexagonal prism. Each one of these collapsible prisms use an 8.5 x 11 sheet of paper and scissors. This model has many uses (decoration, pencil-case, flower vase…) and many variants (connected, with a twist, with a pocket, with more sides…) and can also be used to introduce polygons in a math class. These origami designs are appropriate for 8-year-olds and above.

11

7:00 PM - 8:30 PM

Webinar on Math Puzzles for Everyone

The Webinar on Math Puzzles for Everyone took place on Wednesday, November 11th, 2020 from 7 pm until 8:30 pm, with Marianela Zumbado, Professor of the Ministry of Public Education of Costa Rica and member of the Reform of Mathematics Education Project in Costa Rica, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker shared several fun puzzles, including how to extract a square, a triangle and a pentagon from a sheet of paper with only one cut. Marianela Zumbado also presented a puzzle with ice creams of different flavors, another puzzle with colored triangles, circles and squares, and another about white and gray tilings. The speaker ended with a puzzle on completing a cube.

12

2:00 PM - 3:00 PM

Webinar on Curiosities of the Number e

The Webinar on Curiosities of the Number e took place on Thursday, November 12th, 2020 from 2 pm until 3 pm, with Dr. Gustavo Piñeiro, instructor of math professors in the City of Buenos Aires in Argentina, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker shared the history of the famous number e, including how Jacob Bernoulli, John Napier, Jobst Burgi and Gottfried Leibniz are involved in the discovery of this number and how Leonhard Euler was the first person to use the letter e to denote it. Dr. Gustavo Piñeiro also described several applications of the number e in finance, the catenary, the parachute, the least common multiple and a problem on probability with envelopes and letters. Finally, the speaker highlighted Euler's formula and commented on Stigler's law.

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FUNDAPROMAT

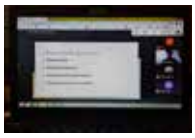
12

8:00 PM - 9:00 PM

Second Memory Madness

The second Memory Madness took place on Thursday, November 12th, 2020 from 8 pm until 9 pm. This virtual event was free, aimed at adults and teens aged 18 and up, and was given by the professional speedcuber Sydney Weaver.

On this virtual event, the invited speaker explained phonetic memory, which is a short term memory method, and shared a technique on how to memorize playing cards. Sydney Weaver then described how to exercise your memory correctly and taught how to decide which of the 4 methods we have learned so far from both Memory Madness we should use in each case.



13

10:00 AM - 11:00 AM

Webinar on Math and Art Galleries

The Webinar on Math and Art Galleries took place on Friday, November 13th, 2020 from 10 am until 11 am, with Alfonso Ruiz, Director of the Bourbaki Mathematics School in Mexico, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by defining the art gallery problem, which seeks to determine the minimum number of guards that an art gallery needs to hire such that they will suffice to guard the works of art so that no one will steal them. Alfonso Ruiz explained how we can interpret art galleries as polygons and presented Vasek Chvatal's Theorem. The speaker also described how this problem is connected to the P vs NP problem worth a million dollars.

17

7:00 PM - 10:00 PM

Eighth Virtual MathsJam in Panama

The eighth Virtual MathsJam in Panama took place on Tuesday, November 17th, 2020 from 7 pm until 10 pm. The MathsJam is a monthly opportunity for math enthusiasts who are 18 years and older to share some quality time with like-minded individuals while solving math puzzles and intellectual challenges in a collaborative environment.

This virtual event was free and only for adults. Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, acted as the moderator. In this event, participants solved different math challenges using their creativity and imagination. In particular, we discussed the solution of a puzzle that was presented in the previous MathsJam, which involves a curious sequence of numbers.

18

7:00 PM - 8:00 PM

Webinar on the Mystery of the Lost Angles Manuscript

The Webinar on the Mystery of the Lost Angles Manuscript took place on Wednesday, November 18th, 2020 from 7 pm until 8 pm, with Leonardo Martinez, Professor of Mathematics at the National Autonomous University of Mexico (UNAM), This virtual event was free and open to the general public.

The invited speaker started the virtual event by telling the story of a lost manuscript that involved Descartes and Leibniz. Leonardo Martinez presented on the sum of the internal angles and the sum of the external angles of a flat polygon and then moved on to talk about polyhedra. The speaker also defined the concept of the defect at a vertex of a polyhedron and ended by connecting these ideas with the geometry in the sphere and the Gauss-Bonet Theorem.

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19

2:00 PM - 3:00 PM

Webinar on How to Use Math to Detect Errors?

The Webinar on How to Use Math to Detect Errors? took place on Thursday, November 19th, 2020 from 2 pm until 3 pm, with Gabriela Jeronimo, Professor at the University of Buenos Aires and Researcher at the National Council for Scientific and Technical Research of Argentina, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by explaining the types of errors that we are referring to and described the origin of self-correcting codes. Gabriela Jeronimo presented with examples that the parity control code detects an error but does not help to correct it. The speaker also pointed out that the repetition code corrects an error but you need to send the triple amount of information, whereas the 2D parity control code corrects an error and saves redundancy.

20

10:00 AM - 11:00 AM

Sixteenth Virtual Encounter with Outstanding Mathematicians

The sixteenth Virtual Encounter with Outstanding Mathematicians took place on Friday, November 20th, 2020 from 10 am until 11 am. with Dr. Teresita Teran, Professor of Statistics at the National University of Rosario in Argentina, was our invited speaker. This virtual event was free and open to the general public.

On this sixteenth Encounter, Dr. Teresita Teran shared anecdotes of her personal life and her professional journey as a female mathematician, pointing out how when she was young, she wanted to be a dancer. The speaker also presented on "How can we Interpret the Data of the Pandemic with Statistics?" in which she highlighted the importance of verifying where the information given comes from so that we can make sure that the sources are reliable and the importance of analyzing if the graph makes sense. For example, having two scales in one same graph generates confusion.

20

7:00 PM - 8:30 PM

First Math Jamboree

The first Math Jamboree took place on Friday, November 20th, 2020 from 7 pm until 8:30 pm. A Jamboree is a joyful and loud celebration or party. The Math Jamboree is a weekly opportunity for the entire family to enjoy exploring the beauty and richness of mathematics by sharing their ideas on the recreational activities that we present during the virtual event.

In this first Math Jamboree, participants were separated into groups depending on whether they are kids or adults and explored the interactive activity called "Pizza Delivery" in an environment of collaboration and a lot of fun. This virtual event was free and open to the general public. We thank Ramon Martinez for the original idea for this activity.

24

10:00 AM - 11:00 AM

Twenty-Third Virtual Origami Class

The twenty-third Virtual Origami Class took place on Tuesday, November 24th, 2020 from 10 am until 11 am, with the origami artist Deanna Kwan as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting four sheets of 8.5 x 11 paper to form eight squares. Deanna Kwan then taught how to fold a mosaic wreath, design created by Julie Bodewein. This origami design is appropriate for 8-year-olds and above.

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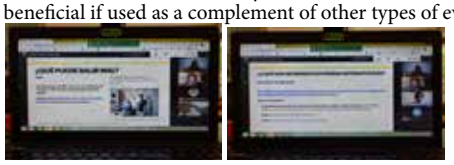
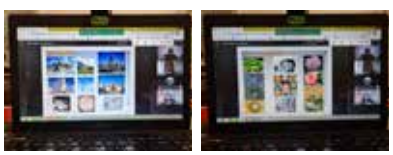
24 6:00 PM - 7:30 PM		**Fifth Cubing Puzzle Happy Hour** The fifth Cubing Puzzle Happy Hour took place on Tuesday, November 24th, 2020 from 6 pm until 7:30 pm. This virtual event was free, aimed at adults and teens aged 18 and up, and was given by the professional speedcuber Sydney Weaver. The purpose of this virtual event is to connect speedcubers with math enthusiasts. On this Happy Hour, participants explored the universe of recreational mathematics with cubing puzzles. The speaker presented several fun puzzles that the participants solved together as a team. 
25 7:00 PM - 8:00 PM		**Webinar on Games of IMAGINARY Uruguay** The Webinar on Games of IMAGINARY Uruguay took place on Wednesday, November 25th, 2020 from 7 pm until 8 pm, with Dr. Marcelo Fiori, Professor at the Department of Engineering of the University of the Republic in Uruguay, as our invited speaker. Uruguay. This virtual event was free and open to the general public. The invited speaker presented on IMAGINARY and on his experience with IMAGINARY Uruguay, which was a traveling exhibition of mathematics that toured his entire country. Dr. Marcelo Fiori shared some of the fun games and activities of this exhibition, including what happens when you cut a Mobius band in half or in thirds and how do you create an equilateral triangle, a square, a star and a scalene triangle with one single straight cut. The speaker also described a magic trick based on the binary system and an activity that combines chess with domino. To watch the documentary on IMAGINARY Uruguay, you can visit the website img.uy/docu. 
26 2:00 PM - 3:00 PM		**Webinar on Can We Trust Automated Tests?** The Webinar on Can We Trust Automated Tests? took place on Thursday, November 26th, 2020 from 2 pm until 3 pm, with Dr. Natalia Garcia-Colin, Professor of Mathematics at the National Autonomous University of Mexico (UNAM),as our invited speaker. This virtual event was free and open to the general public. The invited speaker started the virtual event by explaining what she means by automated tests and by sharing a brief history of standardized evaluation. Dr. Natalia Garcia-Colin then presented on how you can automate the evaluation of a free text and described examples of what could go wrong. The speaker also emphasized that being good at taking standardized tests is only an indication of a student's ability to solve this kind of tests and pointed out that automation can be beneficial if used as a complement of other types of evaluations. 
27 10:00 AM - 11:30 AM		**Webinar on Photography and Mathematics in GeoGebra** The Webinar on Photography and Mathematics in GeoGebra took place on Friday, November 27th, 2020 from 10 am until 11:30 am, with Karina Rizzo, Creator of the FotoGebra Competition and Professor of Mathematics at High School Education and Teacher Training Institutes in Argentina, as our invited speaker. This virtual event was free and open to the general public. The invited speaker started the virtual event by explaining that a way to show that mathematics is everywhere is through photographs. Karina Rizzo introduced the FotoGebra Competition, whose objective is to unite photography and mathematics in such a way that from a photograph, we can develop math content in GeoGebra, and described the categories of the competition, who can participate and who make up the selection committee of the competition. The speaker also shared examples of works from previous competitions and presented several basic tools on how to use GeoGebra. For more information about this competition, you may visit the website fotogebra.org. 

NOVEMBER - DECEMBER 2020

27

7:00 PM - 8:30 PM

Second Math Jamboree

The second Math Jamboree took place on Friday, November 27th, 2020 from 7 pm until 8:30 pm. A Jamboree is a joyful and loud celebration or party. The Math Jamboree is a weekly opportunity for the entire family to enjoy exploring the beauty and richness of mathematics by sharing their ideas on the recreational activities that we present during the virtual event.

In this second Math Jamboree, participants were separated into groups depending on whether they are kids or adults and explored the interactive activity called "Rock, Paper, Scissors" in an environment of collaboration and a lot of fun. This virtual event was free and open to the general public. We thank Sydney Weaver for designing this activity for FUNDAPROMAT.

1

10:00 AM - 11:00 AM

Twenty-Fourth Virtual Origami Class

The twenty-fourth Virtual Origami Class took place on Tuesday, December 1st, 2020 from 10 am until 11 am, with the origami artist Matthew Green as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting one sheet of 8.5 x 11 paper to form a square. Matthew Green then taught how to fold a rabbit, which is a traditional origami model. This origami design is appropriate for 8-year-olds and above.

2

7:00 PM - 8:00 PM

Webinar on the Geometry of Conflicts

The Webinar on the Geometry of Conflicts took place on Wednesday, December 2nd, 2020 from 7 pm until 8 pm, with Mario Ponce, Head of the Department of Mathematics at the Pontifical Catholic University of Chile, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by describing a conflict that involves how to define the maritime boundaries between two islands or between two countries. Mario Ponce then presented on the conics and explained how we can visualize a parabola, an ellipse and a hyperbola using a flashlight in a dark room. The speaker also shared a situation that involves electrical circuits and another case of airplane routes that are simple to state but whose solution is complex and requires knowing about equidistant sets and other mathematical concepts.

3

2:00 PM - 3:00 PM

Webinar on Can You Invent Randomness?

The Webinar on Can You Invent Randomness? took place on Thursday, December 3rd, 2020 from 2 pm until 3 pm, with Carlos D'Andrea, Professor of Mathematics at the University of Barcelona in Spain, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by using the app Kahoot to interact with the audience by showing them two tables of 100 zeros and ones that are supposedly random but one of them is false and the question is which one of the two tables is correct. Carlos D'Andrea then presented how to calculate probabilities and shared examples on how randomness is connected to detecting fraud. The speaker also mentioned that learning how to predict human reaction is important for artificial intelligence.

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FUNDAPROMAT

4

10:00 AM - 11:30 AM

Seventeenth Virtual Encounter with Outstanding Mathematicians

The seventeenth Virtual Encounter with Outstanding Mathematicians took place on Friday, December 4th, 2020 from 10 am until 11:30 am. Caroline Ainslie, Founder of Bubbly Maths, was our invited speaker. This virtual event was free and open to the general public.

On this seventeenth Encounter, Caroline Ainslie shared anecdotes of her personal life and her professional journey, pointing out how she was never really good at math but she has always loved math and that is why she enjoys sharing her passion for mathematics with others. The speaker also presented on "Math, Soap Bubbles and Balloons," which was truly a show more than a presentation. Caroline Ainslie's enthusiasm made this virtual event a marvelous experience. For more information on Bubbly Maths, visit their website http://www.bubblymaths.co.uk/ and follow the YouTube Channel: Maths Toys.

4

7:00 PM - 8:30 PM

Third Math Jamboree

The third Math Jamboree took place on Friday, December 4th, 2020 from 7 pm until 8:30 pm. A Jamboree is a joyful and loud celebration or party. The Math Jamboree is a weekly opportunity for the entire family to enjoy exploring the beauty and richness of mathematics by sharing their ideas on the recreational activities that we present during the virtual event.

In this third Math Jamboree, participants were separated into groups depending on whether they are kids or adults and explored the interactive activity called "Calcudice" iin an environment of collaboration and a lot of fun. This virtual event was free and open to the general public. We thank Puri Montesinos for showing us this game for the first time in the FUNDAPROMAT virtual event on "Math Games that Make Us Think" and Julieta Parravicini for designing this activity for FUNDAPROMAT.

5

10:00 AM - 12:00 PM

Celebration of Our First Anniversary

FUNDAPROMAT was officially created on December 6th, 2019. As a result of the poll we ran on the preferred day and time of our participants, the Celebration of Our First Anniversary took place on Saturday, December 5th, 2020 from 10 am until 12 pm.

To commemorate this special occasion, we organized a Conversation with Dr. Jeanette Shakalli, Executive Director of FUNDAPROMAT, which incredibly lasted two hours, with a lot of interaction from our participants. During this Celebration, we spoke about the history behind the creation of this private non-profit Foundation, the goals accomplished during this first year and the future plans. Dr. Shakalli also shared anecdotes of her personal and professional experience as a female mathematician and presented recommendations on what to do and what not to do while promoting mathematics, with the purpose of improving math education in Panama and in the world. In particular, Dr. Shakalli highlighted the 12 FUNDAPROMAT volunteers, who come from different Spanish-speaking countries.

8

10:00 AM - 11:30 AM

Twenty-Fifth Virtual Origami Class

The twenty-fifth Virtual Origami Class took place on Tuesday, December 8th, 2020 from 10 am until 11:30 am, with the origami artist David Medina as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting two sheets of 8.5 x 11 paper to form two squares. David Medina then taught how to fold a Santa Claus and a Christmas Hat, which are models from YouTube without attribution. To fold each model, we started with a square. These origami designs are appropriate for 8-year-olds and above.

DECEMBER 2020

9

7:00 PM - 8:30 PM

Webinar on Combinatorial Games and Strategies to Always Be Victorious

The Webinar on Combinatorial Games and Strategies to Always Be Victorious took place on Wednesday, December 9th, 2020 from 7 pm until 8:30 pm, was our invited speaker. Ximena Colipan, Professor of Mathematics at the University of Talca in Chile, This virtual event was free and open to the general public.

The invited speaker presented several fun games like Race to 20, Martin Gardner's CRAM, Carlos D'Andrea's Coin Circle, Jean-Paul Delahaye's Sprout Game, the Queen version of Wythoff's Game, the Chocolate Game, Carlos D'Andrea's Circular Table with Coins, the Game of Hex and Tic-Tac-Toe. Dr. Ximena Colipan shared the winning strategy of some of these games and sparked the curiosity of the participants for them to explore the other games themselves. The speaker also described that a combinatorial game is for two players, there is always a winner, the players play alternately, there are no ties and the game is finite.

10

2:00 PM - 3:30 PM

Webinar on the Mathematics in Artificial Intelligence

The Webinar on the Mathematics in Artificial Intelligence took place on Thursday, December 10th, 2020 from 2 pm until 3:30 pm, with Andreas Matt, Director of IMAGINARY, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker started the virtual event by defining what we understand by intelligence artificial and presented several fun games that you can find in the IMAGINARY website, including Neural Numbers, Gradient Descent, Quick Draw, Simple Networks, and many more. Andreas Matt described the mathematics behind the algorithms used to create these games and pointed out that IMAGINARY will be launching the interactive exhibition "I AM A.I. – Artificial Intelligence Explained" in the year 2021. This virtual event was co-organized with IMAGINARY.

11

10:00 AM - 12:00 PM

Webinar on A Planetary Dance

The Webinar on A Planetary Dance took place on Friday, December 11th, 2020 from 10 am until 12 pm, with Beatriz Londoño, leader of the Science and Technology For Everyone Initiative (SciTechXE), as our invited speaker. This virtual event was free and open to the general public.

The invited speaker explained that we learn about the universe by observing, measuring and applying mathematics and highlighted some great thinkers like Nicolaus Copernicus, Galileo Galilei, Johannes Kepler, Isaac Newton and Albert Einstein. Beatriz Londoño mentioned some scientific laboratories that do experiments and pointed out two scientific communicators: Neil deGrasse Tyson and Jim Al-Khalili. The speaker also presented on what we know about the universe, described what big and far away mean, and stated that the planetary dance in the solar system takes place on ellipses that lie on the same plane.

11

7:00 PM - 9:00 PM

Fourth Math Jamboree

The fourth Math Jamboree took place on Friday, December 11th, 2020 from 7 pm until 9 pm. A Jamboree is a joyful and loud celebration or party. The Math Jamboree is a weekly opportunity for the entire family to enjoy exploring the beauty and richness of mathematics by sharing their ideas on the recreational activities that we present during the virtual event.

In this fourth Math Jamboree, participants were separated into groups depending on whether they are kids or adults and explored the interactive activity called "Summetrical" in an environment of collab-oration and a lot of fun. This virtual event was free and open to the general public. We thank Sydney Weaver for designing this activity for FUNDAPROMAT.

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FUNDAPROMAT

15
10:00 AM - 11:30 AM

Twenty-Sixth Virtual Origami Class

The twenty-sixth Virtual Origami Class took place on Tuesday, December 15th, 2020 from 10 am until 11:30 am, with the origami artist Noelia Avila as our invited speaker. This virtual event was free and open to the general public.

Participants began the class by cutting two sheets of 8.5 x 11 paper to form eight squares. Noelia Avila then taught how to fold a Christmas Wreath, which is a model created by Makoto Yamaguchi. This origami design is appropriate for 8-year-olds and above.

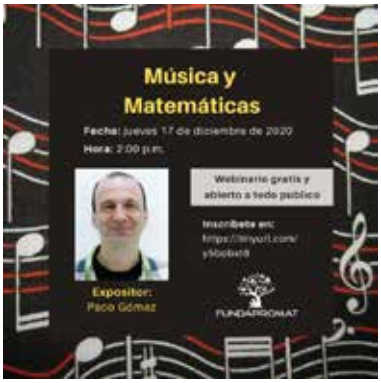

16
7:00 PM - 8:30 PM

Webinar on the Mathematics in Earth Sciences

The Webinar on the Mathematics in Earth Sciences took place on Wednesday, December 16th, 2020 from 7 pm until 8:30 pm, with Mariana Gomez, physicist with a specialization in physicochemistry and representative of the GeoLatinas community, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker presented on 4 female scientists of GeoLatinas and described how they use mathematics in their research projects. Andrea explores underground minerals, Mariana researches if there is groundwater, Isamar studies mangroves and Sara analyzes the eruption of a volcano in the Galapagos Islands. Mariana Gomez also shared about GeoLatinas, which is a community that empowers and inspires latina women in careers in Earth and Planetary Sciences. This virtual event was co-organized with GeoLatinas.

17
2:00 PM - 3:00 PM



Webinar on Music and Math

The Webinar on Music and Math took place on Thursday, December 17th, 2020 from 2 pm until 3 pm, with Dr. Paco Gomez, Professor of Mathematics at the Polytechnic University of Madrid in Spain, as our invited speaker. This virtual event was free and open to the general public.

The invited speaker explained how we can see division as forming groups and what is the greatest common divisor of two numbers and how we can calculate it. Dr. Paco Gomez then described the musical concepts of temporary stretch, pulse and rhythm and defined what he called mathrhythm. The speaker also pointed out that we can analyze music by using mathematics because math studies structures and patterns and music is full of structures and patterns.

18
10:00 AM - 11:30 AM

Eighteenth Virtual Encounter with Outstanding Mathematicians

The eighteenth Virtual Encounter with Outstanding Mathematicians took place on Friday, December 18th, 2020 from 10 am until 11:30 am. was our invited speaker. Dr. Luz de Teresa, Researcher at the National Autonomous University of Mexico (UNAM), This virtual event was free and open to the general public.

On this eighteenth Encounter, Dr. Luz de Teresa shared anecdotes of her personal life and her professional journey as a female mathematician, pointing out that her father was the one who encouraged her to study mathematics when he learned how much she enjoyed math. The speaker also presented on "Math is Everywhere," in which she explained how Google is so fast because of math, how the movement of fluids can be described with math, where we can find patterns in nature, how the spread of rumors and of epidemics can be described with math, how we use math to share photos on our cellphone, how we can make models of competitions between species and explain reality thanks to math, how we can analyze the growth of tumors with and without radiotherapy using math models, and many more examples.

DECEMBER 2020

18 7:00 PM - 9:00 PM		**Fifth Math Jamboree** The fifth Math Jamboree took place on Friday, December 18th, 2020 from 7 pm until 9 pm. A Jamboree is a joyful and loud celebration or party. The Math Jamboree is a weekly opportunity for the entire family to enjoy exploring the beauty and richness of mathematics by sharing their ideas on the recreational activities that we present during the virtual event. In this fifth Math Jamboree, participants were separated into groups depending on whether they are kids or adults and explored the interactive activity called "Taxi Drivers in Distress" in an environment of collaboration and a lot of fun. This virtual event was free and open to the general public. We thank Ramon Martinez for designing this activity for FUNDAPROMAT. 
19 10:00 AM - 11:30 AM		**The End of the Year Mathemagical Show** The End of the Year Mathemagical Show took place on Saturday, December 19th, 2020 from 10 am until 11:30 am. This Webinar was free and open to the general public. In this virtual event for the entire family, the four famous mathemagicians Tiago Hirth, Fernando Blasco, Sergio Belmonte and Aurelio Sanchez performed an extraordinary show in which they connected magic with mathematics through tricks with ropes, rubber bands, playing cards, nuts and more. This Mathemagical Show was FUNDAPROMAT's last virtual event of 2020.