

Pleasanton Math Circle Syllabus

AMADOR VALLEY MATH TEAM

2016-2017

1 What is PMC?

At Pleasanton Math Circle, we aspire to challenge preexisting mathematical thoughts or teach new, fascinating ideas to middle school and high school students. Rather than focusing on lectures of mathematical topics, we will encourage interaction on novel mathematical topics that anyone, regardless of mathematical background, can understand! To cover the costs of Pleasanton Math Circle, we ask for a optional \$10 donation, that will help cover printing and amterial fees throughout the year. If you have and friends, even outside of Pleasanton, that are interested in mathematics, we kindly ask to spread the word so that Pleasanton Math Circle can be fun and interactive!

2 2016-2017 Schedule

October 6th, 2016 - First Meeting/Game Theory

What is PMC? What do we teach? Why should you come? We answer all of these questions and many more. We will then explore an interesting game found on the 2016 Canada/USA Mathcamp Qualifying Quiz.

October 20th, 2016 - Guarding a Millitary Base

The President of the US asked you to place the least number of security cameras in the new classified millitary base. How do you do it?

November 3rd, 2016 - Unfair Servings of Cake

Jeffery is in an odd situation where he has to give cake to his n Jiraffes in a very specific manner. Come an help Jeffery figure out how he can do it so everyone is happy!

November 17th, 2016 - Probability: Bert's Box

You have a bigger chance of getting gold than you thought!

December 1st, 2016 - The Dog and Flea Paradox

A dog is attached to a pole by a leash and a flea is in pursuit. Can the dog escape?

January 12th, 2017 - Random Card Shuffling

Do you have what it takes to truly shuffle a deck randomly? On second thought, what is randomness?

January 26th, 2017 - Bears in Space

You are stuck in a circular arena with a bear that travels as fast as you. Can you evade the bear forever? What if you're in an n -dimensional arena with n bears? Then what happens?

February 9th, 2017 - Computer Algorithms

Learn the algorithms that real-world computer scientists use through mathematics!

February 23rd, 2017 - The Prime Family

Everyone knows about prime numbers. But do you know twin primes, cousin primes, or sexy primes?

March 9th, 2017 - Donuts and Coffee Cups

When are donuts and coffee cups the same?

March 23rd, 2017 - Paradoxes: Potatoes, Birthdays, and Envelopes

What happens when you dehydrate potatoes? What is the probability that two people in this room will have the same birthday? What do you do when people offer you money in envelopes?

April 13th, 2017 - Help Elmo Color

Elmo wants you to help color his coloring book. But Elmo likes coloring in very specific ways. Help Elmo!

April 27th, 2017 - Math Party!

A lot of interesting math - and even more food.