

*Fresno Math Circle Program:
Much More Than Just a Math Circle*

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*In Memory of Adnan H. Sabuwala,
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AMS/MAA Joint Mathematics Meetings
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Fresno Math Circle Program includes:

- Traditional math circle
- Competition preparation and participation
- Teacher preparation
- Community service opportunities for high school students
- School presentations
- Regional AMS Special Session in Fresno in May 2020

Traditional Math Circle

- Groups of grades 3-4, 5-6, 7-8, 9-12 / 4-5, 6-7, 8-9, 10-12
- Bi-weekly meetings 1.5-2 hours long
 - ▶ Homework discussion (grades 5+)
 - ▶ Intro to new topic (grades 5+)
 - ▶ Problem solving and class discussion (all grades)
 - ▶ Game/puzzles/activity, last 20-30 min (grades 3-8)
 - ★ Play strategy games
 - ★ Kids come up with ideas, (partial) strategies
 - ★ Discuss/teach full strategies in grades 5-8
 - ★ Learn relevant mathematics
- Mostly non-competitive environment

Competitions

Host the following competitions:

- Local Problem Solving Competition for HS Students (November)
- AMC 8 (November)
- AMC 10/12 (January)
- Math Kangaroo (March)
- Local Math Field Day (April)
- Local Integration Bee (April)

Hold practice sessions for all of these, open to any interested students.

Math Circle and competitions supply participants for each other.

Teacher preparation

University students assist with and run many sessions.

- Paid Math Circle Helpers
- Volunteers from classes required for credential students:
 - ▶ Problem Solving
 - ▶ Capstone Mathematics for Teachers (Service Learning)

Experience with the program benefits university students.

Build collaborations with future teachers.

Community service opportunities

After 5 years of running the Math Circle, we have a few very strong participants with up to 5 years of experience.

New idea: allow stronger high school Math Circle participants to help with groups of grades 3-9.

School presentations

Math Circle demonstrations/recruitment, so far by faculty:

- Collections of “heads, legs, and tails” problems (elementary)
 - ▶ There are some cats and some ducks in a yard. Together they have 10 heads and 26 legs. How many cats and how many ducks are there?
- Encoding/decoding (elementary)
 - ▶ Secret message writing with Caesar cipher, etc.
- Magic tricks (middle/high)
 - ▶ And the mathematics behind them
- Problems on selected topics (middle/high)

New: will train and send university students to local schools with Math Circle demonstrations.

Sectional AMS Special Session in Fresno in May 2020

Spring Western Sectional Meeting

May 2-3, 2020 (Saturday - Sunday)

California State University, Fresno,
Fresno, CA

AMS Special Session

on Math Circle Games and Puzzles that Teach Deep Mathematics

Organizers:

Maria Nogin, mnogin@csufresno.edu

Agnes Tuska, agnest@csufresno.edu

Deadline for abstract submissions: March 3, 2020

Thank you!

Fresno Math Circle <http://www.fresnomathcircle.org>