



**Math
program**



Daily Math Class



Students have a daily math class for one hour, with Monday-Thursday being curriculum math and Fridays being math circles.

Students are placed into the math level that best fits their knowledge level. We want students to be appropriately challenged in their math class.

Students in a regular leveled math class should fully master at least that level of math curriculum, and be ready for placement in the next math level in the fall. Students are re-evaluated for placement every year before stable math groups begin.

Placement

We evaluate and place students into their appropriate math levels at the beginning of the year based on their completed coursework, MAP testing, classroom observations, and teacher evaluations. Beyond 6th grade math, in addition to the students' mathematical knowledge, we evaluate the students' readiness by focusing on their ability to problem-solve, show their thinking, and their reading and writing readiness.

At higher levels, Helios uses the Art of Problem Solving curriculum, which offers additional depth and complexity to the standard middle/high school math sequence. As a result, students who may have taken a PreAlgebra and above class in a different school will most likely have to repeat the same class at Helios. We have found that only courses from Art of Problem Solving prepare students for success in higher math levels at Helios.

Within a math group, teachers adapt daily activities to the observed learning needs of their students. Math group placement generally does not change during the school year.



Middle School Math Curriculum

Our curriculum uses the Art of Problem Solving for PreAlgebra, Algebra, and Geometry. To be successful in an AoPS class, students need:

- Strong problem-solving skills
- Understanding that math is about more than just procedures and algorithms
- Ability to explain - show their mathematical thinking verbally and in writing
- Good reading and listening comprehension
- Readiness for 30-40 minutes of math homework per night

Art of Problem Solving Math

In contrast to traditional math curricula, AoPS students are exposed to concepts by working through problems, with the method/algorithm presented after the student has grappled with the problem.

Students focus on deep conceptual understanding instead of memorization of procedures and algorithms, learn problem-solving strategies instead of single-use tricks, and learn to think deeply about mathematics, to show their thinking, and to check their work.



Homework Policies

At the AoPS levels, students are expected to complete 30-40 minutes of nightly math homework. This allows them to apply the concepts learned in class, investigate new concepts before coming to class for discussion, and increase their fluency.

What's Next

Some advanced students complete the AoPS Algebra and Geometry sequence while still at Helios. For those students, we have available advanced math classes such as:

- Advanced Algebra
- Analysis

Advanced students may also study topics not found in the typical math sequence, such as:

- Counting and Probability
- Number Theory
- Another math topic a student might want to pursue on their own

EVERY DAY
IS A GOOD
DAY TO
LEARN.



AoPS Math FAQ

Can my child take an AoPS class outside of school and will you count it?

- If your child takes an AoPS class outside of school (either online or through AoPS Academy), we will need an official transcript showing the student has successfully completed the class.

I heard that Art of Problem Solving is a curriculum that is aimed at mathematically advanced students. My child is just regular in math, are you sure this is the right curriculum for them?

- Emphatically yes! While originally written as a curriculum for students intending to participate in math contests and the like, AoPS has been successfully used for classroom math, both at Helios and at other schools. The focus on deep conceptual understanding and problem solving benefits all students!



Overview of Math Circles

Math Circles are complex, open-ended math challenges that students solve as a group.

Students work together to define mathematical questions, notice patterns, and test solutions, often discovering multiple approaches to the same problem. Students are doing the real-world work of mathematicians; beyond writing and solving symbolic math problems, they generalize, prove, and investigate unusual mathematical questions.

While many schools in the Bay Area offer a version of a Math Circle as an enrichment activity, Helios includes it in the regular curriculum.



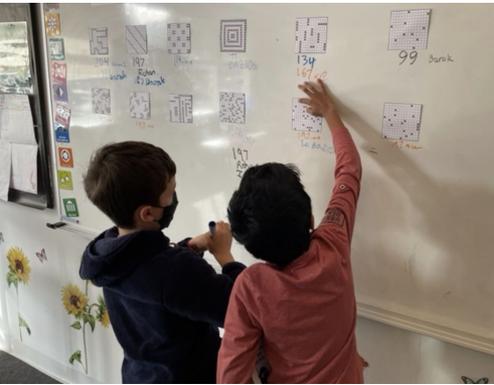
Weekly Math Circle

All students, from kindergarten to advanced math have a math circle on Fridays.

At all levels, students are encouraged to investigate a math problem and then ask their own mathematical questions and “what ifs” related to the problem they solved.

In upper levels, math circle topics often span several weeks, with student groups doing a deep investigation of a problem and presenting their solutions to the class.

We view math circles as an integral part of our math curriculum, not as an enrichment or after-school activity.



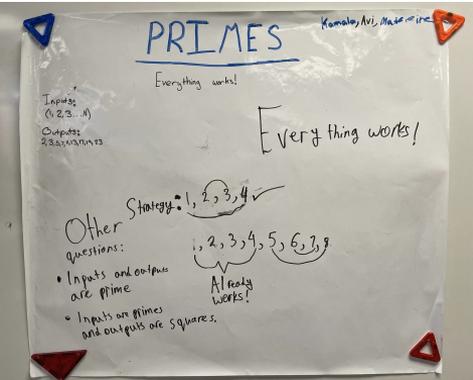
Extra-curricular Math

In addition to our classroom math program, Helios offers some extra-curricular math opportunities in the form of math competitions. Middle school students interested in preparing for competitions can join the Math Team Exploration.

The following math competitions may be administered at Helios throughout the year:

- AMC 8
- Math Kangaroo
- Bay Area Math Olympiad (BAMO)
- MOEMS at the elementary and middle school level

Depending on student interest and availability, Helios sometimes also fields a MATHCOUNTS team.



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