

Dear Students and Parents,

Math Academy 1 • 2020

Math Academy is very different than other courses you are taking or have taken in the past. In addition to the normal differences, it is significantly different with respect to distance learning. This is because of three fundamental aspects of the type of students who takes math academy:

- They are self-directed learners who take learning into their own hands and take ownership of it.
- They have growth mindsets and are not discouraged by setbacks and difficulties.
- They have integrity, and it is important to them to live up to their own morals.

Because of these factors, last spring we were able to carry on the course with almost no changes from in-person instruction. The same is likely to be the case this year as well. This will make the course even more substantially different from other courses than in a normal year. Most students would find this level of rigor and expectation to be overwhelming their freshman year, but the type of student who takes Math Academy does well with it and in fact relishes the high level of engagement and rigor compared to other courses. This has been the case consistently over the years, and the feedback from last year's students followed this trend more or less universally, particularly throughout distance learning.

Each spring at SVHS, we do a careful analysis of Math Academy applicants, using both quantitative and qualitative factors. This process has been very successful over the years, but it is not perfect, especially with so many unknowns this year. If you find the pace and rigor of Math Academy to not be a good learning environment for you, or if it is negatively impacting your other classes, it is not a problem to make the switch to Math 2 at any point this month.

On the following pages is the Math Academy syllabus from last year for reference. Although there will be a few adjustments this year in light of distance learning, we will do what we can to faithfully follow the true course as much as feasible.

I'm looking forward to the light at the end of this tunnel, and I'll do whatever I can to shine a light inside until we get there.

Kindly,

Erik Wyner

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General Information

Course Overview: The topics covered in Math Academy 1 include a mix from Geometry, Algebra 2, Precalculus, and Statistics courses, but they are taught more rigorously, in more depth, and at a faster pace. The concepts and methods form a mathematical foundation that is essential in nearly all college math courses. They are also used extensively in other disciplines such as science and finance.

Units of Study: The course covers polynomials, functions, quadratics, right triangles, circles, probability, research methods, spreadsheets, and hypothesis testing.

Calculator: A graphing calculator is required for this course and will be used for most or all future math classes (high school and college) as well. New TI-84 Plus CE calculators are available for around \$140 at local stores or on Amazon. New or used Texas Instruments graphing calculators below the TI-84 Plus CE may not look as nice, but their functionality and syntax are essentially the same, making them perfectly fine for the course yet considerably cheaper. Other brands such as Casio, or more advanced models such as the TI-89, are significantly different and should not be used for this course unless you are willing to frequently consult the manual. Please contact me if acquiring a graphing calculator in the first few weeks of school may present a financial hardship for your family.

Assignments

Work done in class (~25%)

- **Classwork:** A set of problems aligned with each section of notes is done together as a class. In addition, a few points are given periodically for things such as class preparation and in-class practice problems.
- **Reviews:** Reviews are done in self-selected groups of four. Each group gets four different versions of the review that are very similar except for being different levels of difficulty, allowing each student to choose one that is at the level that would most help him or her prepare for the test. Reviews also serve as study guides, and students often take it upon themselves later to print one or more of the other versions at home to practice.
- **Team Quizzes:** Students prepare for each final in teams. This allows for the dual purposes of providing for students struggling on specific concepts to have tutors for these concepts and enabling strong students to solidify their understandings through explaining the concepts to others.

Work done at home (~30%)

- **Online Quizzes:** Each section has a four-question multiple-choice quiz, based directly on the online notes, to be taken before class. Online quizzes can be resubmitted until a perfect score is achieved.
- **Homework:** There are usually one or two problems sets per week. The primary purpose of the assignments is not to practice skills, but rather to be aware where weak points in conceptual or procedural understanding may lie. Each problem is individually selected, and there is almost no redundancy within assignments. Students should not be concerned if there are a small number of problems they are unsure of in an assignment, but should seek help from classmates or others before the due date if there are many problems they do not understand. Homework is graded on completeness of work shown and on corrections made in class, but not on accuracy.
- **Projects:** There is a project for each chapter. Projects range from abstract mathematics to mathematical application and data collection and analysis. Students can choose to work alone or in small groups. In the spring, students in teams design, carry out, and write up an undergraduate-level social-science research project.
- **Study Guide:** An example of each topic covered in class throughout the semester is included in the study guide. Full solutions and explanations of these are in the online notes.

Quizzes and Tests (~45%)

- **Quizzes:** To help students stay on top of the material, there is a mini-quiz after each section, usually the following day. The material is reviewed explicitly beforehand.
- **Chapter Tests:** Tests cover both conceptual and procedural aspects of the content.
- **Final:** Each final covers the whole semester and is worth two chapter tests.

Course Level

Math Academy 1 is offered as a rigorous option for freshmen intending on taking Math Academy 2 as a sophomore and IB Math HL as a junior and senior. Math Academy covers more content than traditional math courses, but the more significant differences are the additional rigor, pace, and challenge. In particular, in Math Academy:

- Topics are studied in more depth and with more rigor.
- There are projects to explore concepts and applications.
- Students are expected to be unimintimidated by self-directed learning.
- There is a greater emphasis on applying concepts as opposed to focusing on procedures.
- Students are assumed to be fully fluent in algebraic manipulation, fractions, decimals, and other elementary and middle school topics.

Math Academy is a great opportunity for students who have been well prepared for its rigors. However, students who are pushed into an honors level prematurely, whether by parents, peer pressure, or personal expectations, may have a miserable experience that can result in a lasting dislike of math.

Things to make life easier

Online Materials: Almost all aspects of the course are available at ewyner.com, including class notes, the textbook, and most other course materials.

Use of Resources: Notes, book, and all electronic devices may be used on all assignments except some tests.

Extensions: Students may request a new due date on any assignment for any reason, so long as the request is made in person before the original due date and the requested due date is before the date of the test.

Late work: Students can turn in late work any time they are ready, up until the day before the test, and it will be marked down only minimally (or not at all if it has an extension). To regain missed points for legitimate excused absences, students can choose to either attach a readmit slip to each assignment when turning it in or to have a total of 20 points added at the end of the semester.

Free C: Students may request a "Free C" on any nontest assignment, in person and prior to the due date, once per grading period. When the assignment is due, it can be turned in normally, or the Free C form can be submitted in its place for a score of 70%.

Score Increases: Quizzes can be retaken for one point lower than full credit. There are no test retakes, but test scores may be increased through test explanations, in which students carefully explain how to do problems they had originally done incorrectly, as if they were teaching someone else. Quiz retakes and test explanations can be turned in any day before the day of the next test.

Study Sessions: At any point, a group of 4 to 12 students can request a formal teacher-led study session, given availability.

Signatures

We have read and understood this course information sheet. In particular, we are aware that students who are not highly proficient in algebraic manipulation or who are not comfortable with self-directed learning will have a better experience taking a traditional math course instead of Math Academy 1.

Parent

Name: _____

Signature: _____

Student

Name: _____

Signature: _____