

# SVHS Math Academy Application 2024

## How to Apply

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### 1. Complete the following sections:

Section 1: About You

Section 2: Challenge Problem

### 2. Follow these directions:\*

Do each section on its own piece of paper. If you use more than one piece of paper for one section, use a staple.

Type the About You section.

Paper clip the two sections together, but do not staple the sections together.

Write your ID number at the top of each section.

Do not write your name on any page.

\* It is important to follow these directions because they make your application anonymous and easy to process, and also because the ability to follow written directions is an indicator that you are able to handle the self-directed learning that takes place in Math Academy.

### 3. Turn in your application to SVHS no later than noon on Friday, May 17.

## Section 1: About You

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Most high school students, of any grade, would find Math Academy to be too rigorous and overwhelming, but for many students who take it, it is the most enjoyable class, despite (or because of) the challenge. Students recommended for Math Academy would easily get an A in Math 1 or Math 2 but not necessarily in Math Academy. The following questions will help give you, your family, and your teachers some insight into how well Math Academy might fit your learning style and interests. Please answer the following questions in about one paragraph each. Type your answers using complete sentences, and proofread your answers.

1. Share your experience with math during middle school, including your grades and interest in math. Based on this, what would you do if Math Academy turned out more challenging than you expected, you received a poor grade on a test, or you did not receive an A in the class?
2. In most classes, work done at home serves to review what was done in class. In Math Academy, students are more self-directed, and some material is learned at home, such as through homework problems based on concepts not directly covered in class. How do you feel about using resources (textbook, notes, friends, online sources, etc.) to work on problems that are based on, but different than, what you have experienced in class?
3. Most math classes involve learning ways to do specific things, but Math Academy is also about learning general concepts and then applying them in new situations. How would you feel about test questions that are based on reasoning about concepts learned in class rather than being similar to actual examples seen before?

## Section 2: Challenge Problem

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Your little brother has three stuffed animals: a dog, a tiger, and bear. Every morning he lines them up in front of his room. There are six different orders he can do: DTB, DBT, TDB, TBD, BDT, BTD.

### The Problems

1. For his birthday he gets another dog. He starts with them in the order TDDB, but there are 11 other possible orders. List all 12 orders.
2. Your uncle gives him a third dog. How many possible orders are there now?
3. He buys another bear, so now he has a tiger, three dogs, and two bears. How many possible orders are there now?
4. After his next birthday, he ends up with a total of three dogs, two tigers, five bears, and a cow. How many possible orders are there now?

### The Task

Your job is to explain your reasoning as you solve the problems. You do not need to explain methods you tried that turned out not to be helpful, but you are welcome to include these if you feel it will help explain why the correct methods work. Typed and handwritten responses are both fine.

### The Criteria

We are looking to see if you seem to understand what you are doing and your explanations would make sense to others reading them. We are also looking to see if you have a reasonable approach in general, but there is no one specific correct way to do the problems or any expectation that applicants will correctly answer every question.

### The Rules

You are encouraged to use resources, such as other people or online sources, with three restrictions:

1. Do not look at another student's work.
2. If someone helps you, they may not write anything.
3. Cite any source of help, whether it is an online source, a textbook, a person, etc.