

## *Profile for College Admissions* 2021-2022

### **The School**

Proof School is a full-curriculum, independent day school for young people in grades 6–12 with an active curiosity and passion for mathematics. The school started in 2015, and was founded on the premise that kids who love math would thrive in a tight-knit community where they are surrounded by people who share that love.

Our small community is a core feature of the school. Whole-school meetings start each day, classes are highly collaborative, and students are extraordinarily well known by faculty and peers alike. Students work, eat, and play together, with our oldest students often looking out for our youngest students.

### **Academics**

We emphasize analytical thinking, communication, and collaboration across the curriculum. Students devote their mornings to the humanities, arts, and sciences. Each afternoon, students explore problem solving and proof writing in a range of mathematical subjects. All classes stress depth and investigation over speed and acceleration.

### **Need-Blind Admissions**

Proof School is need-blind and fully meets demonstrated financial need, with financial assistance covering up to 99% of tuition.

### **Faculty**

Proof School's faculty members fuel the operation of the school, from teaching and curricular design to school leadership and operations. The vast majority of our staff are classroom teachers, including the three members of the school leadership team. Our faculty members bring an unusual blend of advanced academic expertise; relevant and varied teaching experience; and the ability to engage bright, eager students. Faculty searches each year are at the national level. Our 23 faculty members collectively hold 16 doctoral degrees and 13 master's degrees.

### **Students**

Our students relish the opportunity to spend two hours on math in school every day. They are persistent with challenges, find the world delightful, and are demonstrably eager to engage across the curriculum, from art and laboratory sciences to history and literature. They are especially curious and kind, and they genuinely enjoy collaborating with others.

Our student body is multicultural and collectively speaks twenty different languages. Most students commute 1–3 hours per day to attend school. To date, 19 students have moved to the Bay Area to attend Proof School. They are well versed in going great distances to seek out opportunities.

**Head of School**  
*Sam Vandervelde*

**Director of School Programs & Admissions**  
*Kathy Lin*

**Dean of Humanities**  
*Zachary Sifuentes*

[ 121 ]  
students

[ 6-12 ]  
grades

[ 23 ]  
seniors

[ 23 ]  
teachers

[ 29 ]  
adv. degrees

[ 12 ]  
avg. class size

*Our mission is to offer a transformative liberal arts education to young people with an active curiosity and a passion for mathematics, equipping them to reason, communicate, and positively impact their world.*

### **Our Mission in Practice**

We believe that in order for students to become resilient, resourceful, and responsible individuals, they must be given the chance to wrestle with meaningful problems, guided towards effective collaboration, allowed to structure their own plans for completing long-term projects, and mentored in the art of communicating complicated ideas. Our pedagogy across the curriculum engages each of these essential goals.

The school's pedagogical approach emphasizes collaborative learning and communication skills at every grade level and across all disciplines. Students work together to solve problems in math; discuss ethics and write increasingly sophisticated papers in literature; and design, carry out, and present on experiments in laboratory sciences.

We expect students to engage enthusiastically with a full range of core subjects and electives, with admission to the school dependent on such a disposition. During their time at Proof School, students build considerable stamina for diving deeply into areas of study; they struggle with and solve hard problems and difficult questions, and iteratively improve their work as they develop independence and ownership over all that they do. Both inside and outside the classroom, we emphasize that students be kind and proactively contribute to their community.

### **School Schedule**

The school year consists of five academic “blocks,” with a week of experiential learning between each block. Students take one math course per block that meets each afternoon for two hours, allowing them to progress through several courses each year. They also take four year-long morning courses in the humanities, arts, and sciences, which meet twice weekly for 80 minutes per session. Devoting each day to three long class periods provides time for lab work, in-depth writing, seminar discussions, collaborative work, and one-on-one interactions with teachers. The school schedule also allows for substantial discovery learning in and out of the classroom.

### **Extracurriculars**

With students commuting 1–3 hours each day, we build extracurriculars into the school day. Wednesday mornings and every seventh week of school are devoted to flex time, when students take ungraded mini-courses, dive into extended projects, participate in schoolwide “bursts” in math or art, and participate in a rotation of recreational clubs. Instead of offering traditional extracurriculars, we help students learn to seek out and create their own opportunities, and design and carry out independent projects that are personally meaningful to them. In this way, students learn how to develop their interests, take initiative, and work collaboratively with the school to bring their ideas to fruition.

### **Evaluation Criteria**

We evaluate students on achievement (academic accomplishment) and disposition (effort, engagement, and citizenship).

### **Rank & GPA**

Proof School does not rank students and does not calculate weighted GPAs.

### **Evaluation Scale**

The school evaluates students on a scale of 1–5.

- 5** Fully meeting Proof School's high expectations
- 4** Meeting Proof School's essential expectations
- 3** Progressing towards expectations
- 2** Barely progressing to expectations
- 1** Failing to meet expectations

*Students take a range of core courses that provide a robust liberal arts foundation, with extensive opportunities to take additional coursework in areas of interest, and to define, develop, and pursue their interests.*

**Mathematics**

The school’s mathematics curriculum emphasizes problem-solving, proof writing, and communication. Students develop a foundation across all major fields of mathematics, including not only a calculus sequence that is common to secondary schools but also an extensive curriculum in discrete math, college-level algebra, advanced geometry, analysis, and number theory.

Students progress through an enormous amount of mathematics thoughtfully and thoroughly; it is not uncommon at the upper levels for a student to grapple with a couple of difficult problems for an entire afternoon. Students work closely with one another and come to understand, through experience, the value of collaboration and communication. In many math classes, students prepare and deliver formal presentations of their work or write extended papers. We emphasize articulating one’s reasoning in a clear, concise manner at every level.

Our mathematics program is supplemented by talks and workshops, an annual school-wide AI tournament, a student-run problem of the week challenge, participation in a variety of regional and national math competitions, and two weeks of open-ended student research and presentations. Each year, students share their love of math through two student-led math festivals that are open to the public.

**Humanities, Arts, and Sciences: Core Curriculum**

Proof School offers a liberal arts education, with courses calibrated at the advanced and college levels starting in the 9th grade. The core requirement ensures students take a broad range of courses throughout their high school years. Our classes emphasize deep engagement rather than broad surveys, with deliberate instruction on critical thinking and problem solving, communication and collaboration, and research. Throughout their years, students read data, primary texts, and scholarship, with creative projects prompting research and inquiry. All 9th graders typically take the same courses, which comprise a part of the core requirement.

**Humanities, Arts, and Sciences: Electives**

Electives across the curriculum are developed each year based on faculty expertise, student interest, and school need. Most electives are offered once every two or three years, are calibrated at the college level, and build on core course content or methodologies. Thematic classes in the humanities allow students to take multiple courses in the same subject area, while in the sciences students can take elective classes with more specialized content. We actively advise students on weighing and making choices, with students taking the lead on mapping out a multi-year plan to meet the school’s graduation requirements. Students begin making elective choices by 10th grade, when mixed grade-level classes become the norm.

**Proof School does not offer AP classes, nor do we teach to standardized exams.** Some students choose to study for and take AP exams, with the following score breakdown across all exams over the past four years:

| AP Score   | 1 | 2  | 3  | 4   | 5   |
|------------|---|----|----|-----|-----|
| # of tests | 4 | 14 | 41 | 109 | 249 |

|         |         |          |
|---------|---------|----------|
| [ 746 ] | [ 789 ] | [ 1535 ] |
| Verbal  | Math    | Total    |

**SAT Averages for Proof School Graduates, Classes of 2018–2021**

*Faculty develop new classes each year, based on their area of expertise, student interest, and school need. Introductory courses are taught each year, with advanced electives and specific course themes offered on a rotating basis.*

## Mathematics Course Offerings, 2021-2022

### Problem Solving & Discrete Math

|                           |                          |
|---------------------------|--------------------------|
| Combinatorics 1           | Sets and Orders          |
| Graph Theory 1            | Theory of Partitions*    |
| Discrete Probability      | Generating Functions*    |
| Combinatorial Game Theory | Algebraic Combinatorics* |

### Algebra

|                        |                                  |
|------------------------|----------------------------------|
| Algebra 2A, 2B         | Intro to Abstract Algebra A*, B* |
| Coordinates and Curves | Advanced Abstract Algebra*       |
| Linear Algebra A*, B*  | Ideals and Varieties*            |

### Geometry & Topology

|                           |                     |
|---------------------------|---------------------|
| Euclidean Geometry 2, 3   | Linear Topology*    |
| The Symmetries of Things* | Algebraic Topology* |
| Hyperbolic Geometry*      |                     |

### Analysis

|                               |                               |
|-------------------------------|-------------------------------|
| Exponents/Logs/Trig A, B      | Series & Topics in Calculus   |
| Introduction to Calculus A, B | Multivariable Calculus A*, B* |
| Differential Calculus         | Real Analysis*                |
| Integral Calculus             | Stochastic Processes*         |

### Number Theory

|                          |                                    |
|--------------------------|------------------------------------|
| Number Theory 2, 3*      | Quadratic Forms and Number Fields* |
| Number Theory Lab        | Theory of Continued Fractions*     |
| Algebraic Number Theory* | Topics in Number Theory*           |

### Additional Courses

|                        |                       |
|------------------------|-----------------------|
| Statistics A, B        | Axiomatic Set Theory* |
| Mathematical Logic*    | Category Theory*      |
| Topics in Foundations* |                       |

\* Designates a college-level math course

## 9th Grade “Core” Courses for the Class of 2022

|                             |           |
|-----------------------------|-----------|
| Advanced Literature         | Chemistry |
| World History: Human Rights | Latin 1   |

## 10th–12th Grade Course Offerings, 2021-2022

### History

US History: The Constitution

### Literature

|                                  |                                    |
|----------------------------------|------------------------------------|
| Literature: History of English   | Lit Research: Latin Am. Literature |
| Literary Arts: Graphic Narrative |                                    |

### Lab-Based Sciences

|           |                       |
|-----------|-----------------------|
| Physics   | Applied Biotechnology |
| Chemistry |                       |

### Language

Latin 2, 3, 4

### Arts

Studio Art: Design & Making

### Computer Science

|                          |                                   |
|--------------------------|-----------------------------------|
| Computer Science 2, 3    | CS: Game Design & Development     |
| Computer Graphics Studio | Adv. Data Structures & Algorithms |
| Computing Systems Design |                                   |

### Mentored Projects

Project Studio

## College Matriculation, Classes of 2018–2021

Caltech, Carleton (2), Columbia (2), Cornell, CSU Humboldt, Harvard (2), MIT (3), NYU, Northeastern, Purdue, Reed, Rose Hulman, Stanford (4), UPenn, UC Berkeley (3), UCLA, UC Santa Barbara, UC Santa Cruz, UIUC, UChicago, University of Waterloo, USC, and Williams.



### **Response to COVID-19**

Proof School has returned to full-time, in-person instruction for all students for the 2021–2022 academic year.

We moved to remote learning from March 2020 through June 2021. With the support of our flexible and capable students, parents, and teachers, the school was able to transition to a full-fledged, synchronous online program without interruption.

Throughout remote schooling, we maintained a high standard for student achievement, with meaningful and rigorous projects that built critical thinking, reading, and reasoning skills. We likewise maintained high standards for student disposition, with a focus on their engagement, stamina, adaptability, and community citizenship. Students impressed us with their resilience and ability to rise to the occasion, even in extremely trying circumstances.

