

Meet the Teachers



DEPARTMENT OF MATHEMATICS

—MEET THE TEACHERS—

Dedicated educators. Passionate mathematicians.

Need to contact a math teacher? Click the teacher's name to send them an email.

Need to see a syllabus? Click the course name to view.



Brandon Ahl

HS Math Teacher

Courses Taught

- ☒ [Integrated Algebra/Geometry](#)
- ☒ [AP Calculus AB](#)



Tim Brzezinski

MS+HS Math Teacher

Courses Taught

- ☒ Math Enrichment (Grades 6 and 7)
- ☒ [Integrated Algebra/Geometry](#)
- ☒ [Geometry](#)



Allen Futrell

HS Math Teacher

Courses Taught

- ☒ Algebra 2
- ☒ Statistics



Chloe Kozlowski

HS Math Teacher

Courses Taught

- ☒ Integrated Algebra/Geometry
- ☒ Statistics



Kevin Kuna

MS Math Teacher

Courses Taught

- ☒ 6th Grade Math
 - ☒ Advanced 6th Grade Math
-



William McKinney

*6-12 Mathematics Department Chair
HS Math Teacher*

Courses Taught

- ☒ [AP Calculus AB](#)
- ☒ [AP Statistics](#)



Christable Nyaberi

MS Math Teacher

Courses Taught

- ☒ 8th Grade Math
- ☒ Algebra 1



Kaitlyn O'Connell

Yale Teaching Fellow

Courses Taught

- ☒ Integrated Algebra/Geometry
-



Becks Olthoff

*9-12 Mathematics Department Co-Chair
HS Math Teacher*

Courses Taught

- ☒ [Precalculus](#)
- ☒ [AP Calculus BC](#)

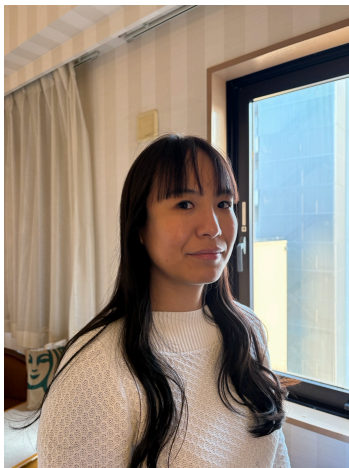


Pax Ryan

Yale Teaching Fellow

Courses Taught

- ☒ Precalculus



Chika Wie

MS Math Teacher

Courses Taught

- ☒ 7th Grade Math
- ☒ Accelerated 7/8th Grade Math
- ☒ 8th Grade Math



Vision Statement



DEPARTMENT OF MATHEMATICS

—VISION STATEMENT—

Every student. Every pathway. Every opportunity.

We believe that all students, regardless of identity, are capable of learning and doing mathematics at a high level. The math department aims to create a supportive learning environment that fosters self-efficacy, productive struggle, meaningful discourse, and critical thinking through active, student-centered discovery learning. We will continue to build this learning environment through systemic changes that will result in more sustainable and equitable mathematics education.



Pathways (Effective SY 28-29)



DEPARTMENT OF MATHEMATICS

—COURSE PATHWAYS & PLANNING GUIDE—

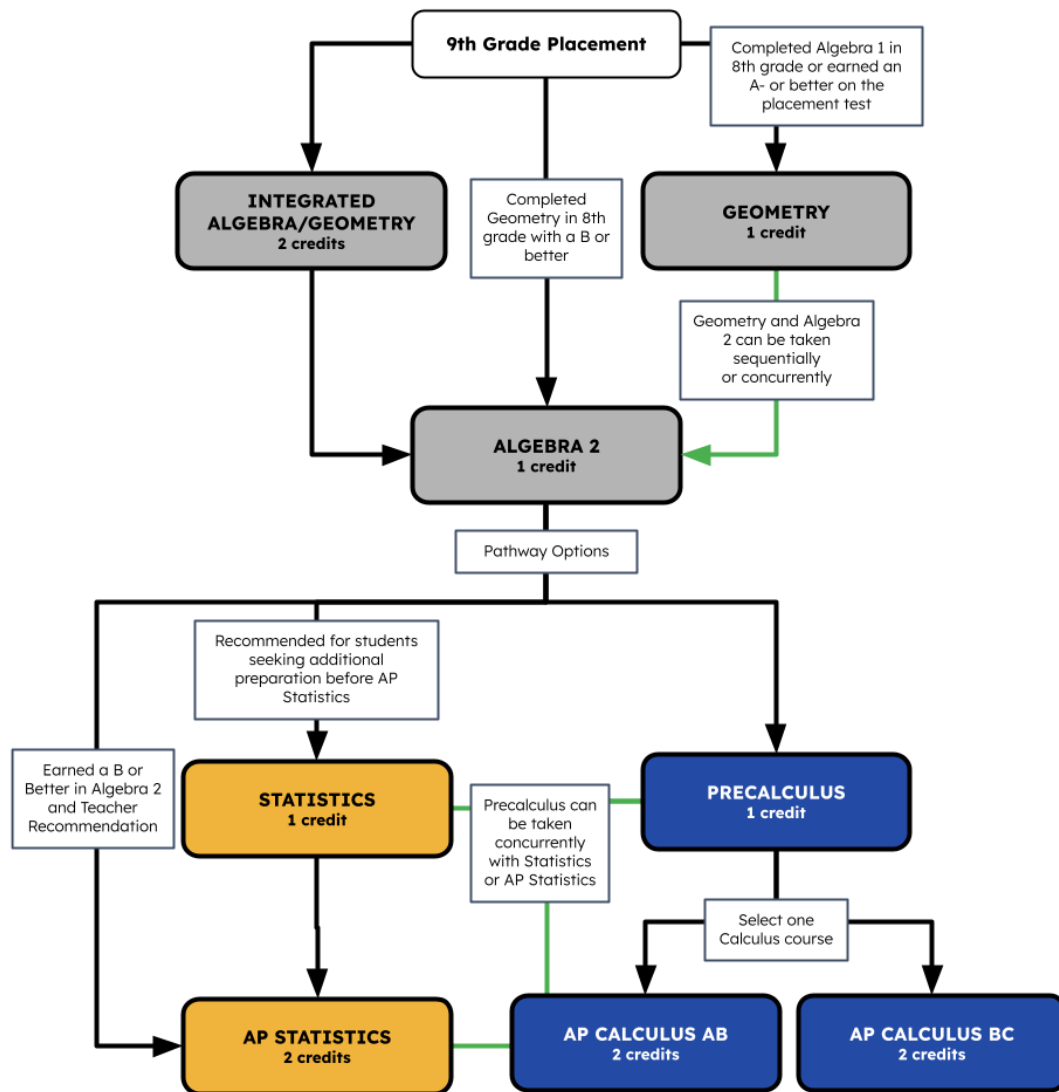
Helping every student build a mathematics pathway aligned with their future goals



GRADUATION REQUIREMENTS

- ☒ Complete a minimum of four mathematics credits
- ☒ At least one course must include statistics or calculus

The diagram below illustrates the mathematics pathways available at ESUMS.



Every ESUMS student can reach AP Statistics, AP Calculus, or both through appropriate course planning.

CHOOSE A PATH BASED ON YOUR COLLEGE GOALS

Students should select courses based on their interests, future college plans, and teacher recommendations. If you plan to attend college, we encourage you to enroll in a mathematics course each year of high school. Many colleges recommend or prefer four years of mathematics, especially for students interested in STEM, business, or other quantitative fields.

STATISTICS PATHWAY

Recommended for students planning to major in:

- Psychology
- Sociology
- Political Science
- Education
- Business
- Finance
- Accounting
- Public Health
- Communications



Develops statistical reasoning, data analysis, and quantitative literacy used across the social sciences, business, and many professional fields.

STATISTICS + CALCULUS PATHWAY

Recommended for students planning to major in:

- Data Science
- Medicine (Pre-Med)
- Biostatistics
- Actuarial Science
- Economics
- Operations Research
- Artificial Intelligence
- Biomedical Engineering
- Environmental Science



Students pursuing research-oriented or highly quantitative fields are encouraged to complete both pathways.

CALCULUS PATHWAY

Recommended for students planning to major in:

- Engineering
- Computer Science
- Mathematics
- Physics
- Chemistry
- Architecture
- Astronomy



Develops the mathematical foundation used throughout engineering, the physical sciences, mathematics, and many technology disciplines

Not sure which pathway is right for you? Speak with your mathematics teacher or school counselor to develop a four-year mathematics plan that aligns with your interests, college goals, and career aspirations.



Course Descriptions



DEPARTMENT OF MATHEMATICS

—COURSE CATALOG—

Explore our mathematics courses, descriptions, prerequisites, and course codes.

***Courses in RED are college-level/AP/ECE courses and receive an additional quality point on students' GPAs.**

210. Integrated Algebra/Geometry

Credits: 2.0 credits

Credit Type: Math

Recommended Year: 9

Instructor(s): Ahl, Brzezinski, Kozlowski

Course Description

This course meets daily during the Fall semester and introduces students to algebraic reasoning through the use of mathematical modeling. For the first half of the year, students will explore linearity through real-world problems represented graphically, numerically, analytically, and verbally.

218. Geometry

Credits: 1.0 credit

Credit Type: Math

Recommended Year: 9

Prerequisites: 8th Grade Algebra 1 (B or higher)

Co-Requisite: Algebra 2 can be taken concurrently. Highly recommended if students hope to take AP Calculus BC in senior year.

Instructor(s): Brzezinski

Course Description

This course introduces students to Euclidean geometry, similarity, and trigonometric ratios while

reinforcing algebraic reasoning skills through the exploration of points, lines, and planes. Students will learn to construct and analyze two- and three-dimensional shapes in space, including triangles, quadrilaterals, circles, prisms, cylinders, cones, and spheres.

227. Algebra 2

Credits: 1.0 credit

Credit Type: Math

Recommended Year: 9, 10

Prerequisites: Integrated Algebra/Geometry for Mathematical Modeling or Algebra 1

Co-Requisite: Geometry can be taken concurrently. Highly recommended if students hope to take AP Calculus BC in senior year.

Instructor(s): Futrell

Course Description

This course reinforces algebraic reasoning through the exploration of linear, absolute value and quadratic functions, higher-degree polynomials, radical functions, composite functions, and inverse functions. Students will also explore real-world problems represented graphically, numerically, analytically, and verbally. This course is a prerequisite for Pre-Calculus Honors and Explorations in Data Science.

237. Pre-Calculus Honors

Credits: 1.0 credit

Credit Type: Math

Recommended Year: 10, 11

Prerequisites: Algebra 2

Instructor(s): Olthoff

Course Description

This course reinforces algebraic reasoning through the exploration of rational, exponential, logarithmic, and trigonometric functions. Students will also explore real-world problems represented graphically, numerically, analytically, and verbally. This course prepares students to take Calculus or AP Calculus AB.

239. AP Calculus AB*

Credits: 1.5 credits

Credit Type: Math, STEM

Recommended Year: 11, 12

Prerequisites: Pre-Calculus (B or higher) and Teacher Recommendation

Co-Requisite: AP Calculus AB Lab (fall) and Study Hall (spring)

Instructor(s): Ahl, McKinney

Course Description

This course is equivalent to a college-level calculus 1 course. Students cultivate their understanding of differential and integral calculus through engaging with real-world problems represented graphically, numerically, analytically, and verbally and using definitions and theorems to build arguments and justify conclusions as they explore concepts like change, limits, derivatives, and integrals.

260. AP Calculus BC*

Credits: 1.0 credit

Credit Type: Math, STEM

Recommended Year: 12

Prerequisites: AP Calculus AB (B or higher) and Teacher Recommendation or a 3+ on the AP Exam

Instructor(s): Olthoff

Course Description

This course is equivalent to a college-level calculus 2 course. Students cultivate their understanding of differential and integral calculus through engaging with real-world problems represented graphically, numerically, analytically, and verbally and using definitions and theorems to build arguments and justify conclusions as they explore concepts like change, limits, derivatives, integrals, polar and parametric functions, and sequences and series.

240. Statistics Honors

Credits: 1.0 credit

Credit Type: Math, STEM

Recommended Year: 11, 12

Prerequisites: Algebra 2

Instructor(s): Futrell, Kozlowski

Course Description

This course will introduce students to the main ideas in an introduction to statistics course. The course is structured into bite-sized lessons with many integrated activities to get students “doing statistics” from the start. This program helps students understand the “why” and “how” of statistics. Topics include analyzing one-variable data, modeling one-variable quantitative data, analyzing two-variable data, collecting data, probability, and introduction to inference tests.

241. AP Statistics*

Credits: 2.0 credits

Credit Type: Math, STEM

Recommended Year: 11, 12

Prerequisite: Algebra 2 (B or higher) and teacher recommendation

Co-Requisite: AP Statistics Lab (fall) and Study Hall (spring)

Instructor(s): McKinney

Course Description

AP Statistics is an introductory college-level statistics course that introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students cultivate their understanding of statistics using technology, investigations, problem solving, and writing as they explore concepts like variation and distribution; patterns and uncertainty; and data-based predictions, decisions, and conclusions.

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SAT Guidance



DEPARTMENT OF MATHEMATICS

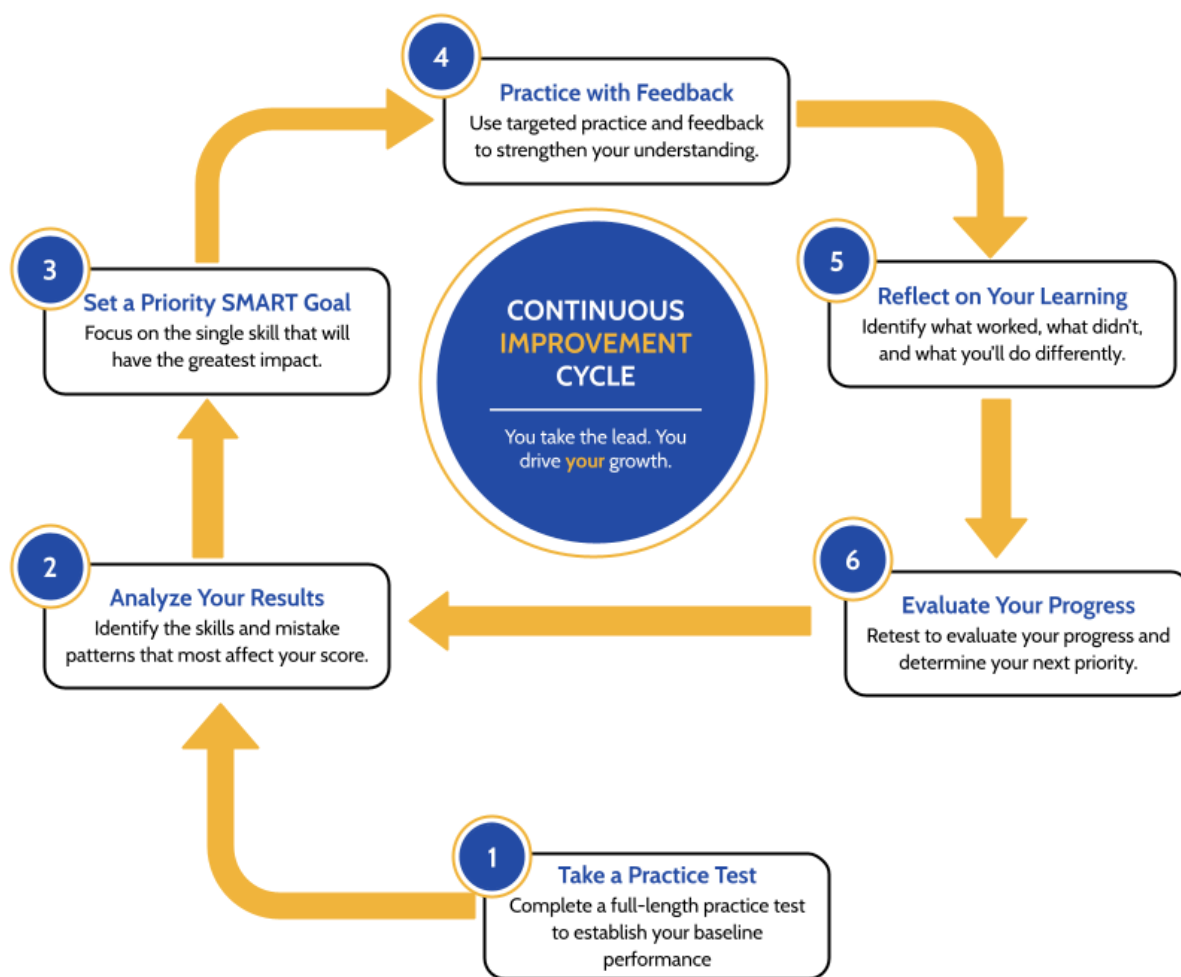
–SAT Mathematics–

Prepare with purpose. Improve with practice.

Why Prepare?

- ☒ Higher SAT scores can strengthen college applications
- ☒ Strong math skills help in college placement.
- ☒ Small, consistent study sessions can lead to meaningful score gains.

Most students improve not by taking dozens of practice tests, but by studying consistently, reviewing their mistakes, and focusing on their weakest skills.



When Will I Take the SAT?

Students in 10th and 11th grade will take the PSAT and the SAT in school (at no cost) in the given months.

PSAT	SAT
October	March

Students that would like to take the SAT additional times may register online using their CollegeBoard accounts. Additional tests are offered on Saturday mornings in the following months. Test waivers may be available. Speak with your school counselor for more information about test registration and waivers.

Test Date	Registration Date
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October 3, 2026	September 18, 2026
November 7, 2026	October 23, 2026
December 5, 2026	November 20, 2026
March 6, 2027	February 19, 2027
May 1, 2027	April 16, 2027
June 5, 2027	May 21, 2027



WHEN SHOULD I START PREPARING?

The earlier you start, the more opportunities you have to improve—
but **meaningful growth is possible at every stage.**

*Start where you are.
Grow from there.*

GOOD NEWS! You don't need to study *every day* to improve.
Most students make meaningful gains through *consistent practice*
over several weeks, especially when they review mistakes and focus on one skill at a time.



3–6 MONTHS

BUILD YOUR FOUNDATION

- ✓ Take your first practice test
- ✓ Learn and review missing concepts
- ✓ Study **2–3** hours per week
- ✓ Practice consistently

★ **Goal:** Build understanding and confidence.



6–8 WEEKS

BUILD MOMENTUM

- ✓ Practice **3–4** days per week
- ✓ Review every mistake
- ✓ Retake a full-length test every **2–3** weeks
- ✓ Study **3–5** hours per week

★ **Goal:** Develop strong habits and see steady improvement.



2–4 WEEKS

SHARPEN YOUR SKILLS

- ✓ Focus on your weakest skills
- ✓ Practice pacing and timing
- ✓ Take another full-length test
- ✓ Study **4–6** hours per week

★ **Goal:** Strengthen weak areas and build test-day stamina.



LAST WEEK

STAY CONFIDENT

- ✓ Do light review
- ✓ Don't try to learn new things
- ✓ Get plenty of sleep
- ✓ Trust your preparation!

★ **Goal:** Enter test day rested and confident.



REMEMBER:

CONSISTENCY MATTERS MORE THAN INTENSITY.

Four one-hour study sessions each week are usually *more effective* than one four-hour cram session.



A LITTLE EACH DAY LEADS TO BIG GAINS.
Small steps today.
Big results tomorrow.



☆ *Every step forward counts.* | **PRACTICE SMART. REFLECT DEEPLY. IMPROVE CONTINUOUSLY.** ☆

Where to Find and How to Take an Official Practice Test

Click [here](#) for step-by-step instructions on how to access and take an Official SAT Practice Test using BlueBook (**Step 1**).

BlueBook is the **official** SAT testing platform and includes a Desmos Graphing Calculator for you to use.

You can take an **unofficial** SAT Practice Test by typing the following prompt into Gemini.

Prompt 1: Take a Practice SAT Math Test
I want to take a practice SAT math test.

Instructions to begin practice test:

1. Press “Open”.
2. Press “Start”.
3. Leave the settings in their default positions.
4. Press “Start test”.
5. Move between questions using the “Next” button.

Access the Desmos calculator [here](#).

How to Use Gemini as Your Personal SAT Math Tutor

Gemini can help you understand your SAT Math results, identify the skills you need to improve, explain difficult concepts, and create targeted practice. However, Gemini should support your studying—not simply give you answers.

Click [here](#) for step-by-step instructions on how to use Gemini to help you develop your study plan.

Daily Practice

Got 5 minutes a day to study? Try the [official SAT Question of the Day](#).



Try a Sample Question

SELECT A SUBJECT TO CONTINUE



Reading and Writing

Domain: Information and Ideas

Difficulty: Easy



Math

Domain: Geometry and
Trigonometry

Difficulty: Easy

Show Question →

Need Additional Help?

- ☒ Olthoff teaches a free after-school SAT prep class that runs from January-March.
- ☒ Email or talk to a math teacher
- ☒ Talk to your school counselor
- ☒ Meet with a tutor
- ☒ Attend after-school help sessions

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How to Use Gemini



DEPARTMENT OF MATHEMATICS

—HOW TO USE GEMINI AS YOUR PERSONAL SAT MATH TUTOR—

Study Smarter. Improve Faster.

Step 1: Take a Full-Length Official SAT Practice Test

1. Open the **Bluebook** application on your school-issued or personal device.
2. Sign in using the same College Board account you use for the SAT.
3. Select **Practice and Prepare**.
4. Choose **Full-Length Practice**.
5. Select an available SAT practice test.
6. Complete the test under realistic testing conditions:
 - Use the official time limits.
 - Take only the scheduled break.
 - Work in a quiet location.
 - Use only the tools allowed on the actual SAT.
 - Avoid looking up formulas, explanations, or answers while testing.
7. Submit the test when you are finished.

Bluebook's full-length practice tests are timed and adaptive, like the digital SAT. They also provide a score that can be reviewed through College Board's My Practice website.

Step 2: Open Your Score Report

After completing the practice test:

1. Go to the College Board **My Practice** page.
2. Sign in to your College Board account.
3. Select the practice test you completed.
4. Open the test's **Score Details** or practice score report.
5. Locate your Math score and the performance information for each Math content domain.

The four SAT Math content domains are:

- **Algebra**
- **Advanced Math**
- **Problem-Solving and Data Analysis**
- **Geometry and Trigonometry**

The performance bars show your relative strengths and areas for growth. A shorter bar indicates that you may need more practice in that domain.

Step 3: Review Your Individual Questions

Do not rely only on your total score or domain bars. Review the questions you answered incorrectly and any questions you guessed on.

For each question, record:

- The question number
- The content domain or skill
- Whether your answer was correct or incorrect
- The answer you selected
- The correct answer
- Why you think you missed it
- Whether you were confident, unsure, or guessing

Common reasons for missing a question include:

- I did not understand the concept.
- I did not know how to begin.
- I used the wrong strategy.
- I made an algebra or arithmetic error.
- I misread the question.
- I did not understand what the answer represented.
- I did not know how to use Desmos effectively.
- I ran out of time.
- I guessed.

Take screenshots of your Math domain results and the questions you want to study. Make sure the screenshots show the complete question, answer choices, and any relevant graph or diagram.

Step 4: Open Gemini

1. Go to gemini.google.com or open the Gemini application.
2. Sign in with an eligible Google account.
3. Start a new conversation.
4. Select the option to attach files or images.
5. Upload screenshots of your Math score report and domain-performance bars.

Access to Gemini and file uploads may depend on your age, account type, and school's Google Workspace settings. If your school account does not allow Gemini or file uploads, use an eligible personal account only with the permission of your parent or guardian and in accordance with school rules.

Step 5: Ask Gemini to Analyze Your Results

After uploading your score report, copy and paste this prompt:

Prompt 1: Analyze My Math Results

Act as my personal SAT Math tutor. Analyze the SAT Math score report I uploaded. Identify my strongest and weakest content domains: Algebra, Advanced Math, Problem-Solving and Data Analysis, and Geometry and Trigonometry. Explain what the performance bars suggest, but do not claim to know information that is not visible in the report. Rank the domains from highest to lowest priority for studying. For each domain, describe the major SAT skills included in that domain. Then recommend what percentage of my study time I should spend on each area.

Read Gemini's analysis and compare it with your score report. Artificial intelligence can make mistakes, so correct Gemini if it misreads a score, bar, question, symbol, or graph.

Step 6: Give Gemini Your Question-Level Results

Upload screenshots of several questions that you answered incorrectly, guessed on, or found difficult. Then use this prompt:

Prompt 2: Find Patterns in My Mistakes

Analyze the SAT Math questions I uploaded. Do not solve them yet. For each question, identify:

1. The SAT Math content domain
2. The specific skill being tested
3. The likely reason I struggled
4. Whether the problem is mainly conceptual, procedural, strategic, or caused by a careless error
5. The prerequisite knowledge I need

After analyzing the individual questions, identify any patterns across my mistakes. Tell me the three highest-priority skills I should study first and explain why.

You can improve the analysis by telling Gemini what happened while you were solving each problem.

For example: *On Question 12, I understood the equation but did not know how to use the information in the graph.*

Or: I got Question 18 correct, but I guessed between two answers and cannot explain why my answer works.

Step 7: Ask for an Explanation—Not Just an Answer

Use the following prompt for one question at a time:

Prompt 3: Tutor Me Through a Missed Question

Tutor me through this SAT Math question without immediately giving me the answer. First, ask me what I notice and how I might begin. Give me one hint at a time. Let me respond after each hint. If I make an error, explain why my reasoning does not work and ask a question that helps me correct it. After I solve the problem, show me the most efficient SAT method and explain how I could recognize this type of problem in the future.

This creates a tutoring conversation instead of an answer key.

If you are completely stuck, use:

Prompt 4: Explain From the Beginning

I do not understand the concept needed for this question. Teach it from the beginning using clear, student-friendly language. Explain the meaning of each important term and symbol. Use a simple example before returning to the SAT question. Then ask me to explain the concept back to you in my own words before I solve the original problem.

Step 8: Compare Different Solution Methods

Many SAT Math questions can be solved using algebra, reasoning, answer-choice testing, or Desmos.

Use this prompt:

Prompt 5: Compare Solution Strategies

Show me three valid ways to solve this question:

1. A traditional algebraic or geometric method
2. A Desmos method, when appropriate
3. A strategic SAT method, such as testing answer choices, substituting values, or using structure

Explain the advantages and disadvantages of each method. Tell me which method is most efficient under SAT time pressure and which method best helps me understand the mathematics.

Do not assume Desmos is always the best choice. You should understand the mathematics well enough to recognize whether a calculator method is efficient and appropriate.

Step 9: Request Targeted Practice

Once Gemini identifies a skill you need to improve, use:

Prompt 6: Create Targeted Practice

Create a targeted SAT Math practice set on **[insert skill]**. Give me:

- 2 foundational questions
- 3 standard SAT-level questions
- 2 challenging SAT-level questions

Use four answer choices for each question. Do not show the answers or solutions yet. Present one question at a time and wait for my response. After I answer, tell me whether I am correct and ask me to explain my reasoning before giving feedback. Keep track of my accuracy and the types of mistakes I make.

Examples of skills you might insert include:

- Solving linear equations
- Systems of equations
- Linear functions
- Exponential functions
- Quadratic equations
- Equivalent expressions
- Ratios and proportional relationships
- Percent change
- Scatterplots and lines of best fit
- Probability
- Area and volume
- Right-triangle trigonometry
- Circles

AI-generated questions are useful for additional practice, but they are not official College Board questions. Use the [College Board Student Question Bank](#) for authentic SAT questions.

Step 10: Make the Practice Match Your Needs

You can adjust the difficulty and type of practice by adding directions such as:

- Focus on problems that require multiple steps.

- Include realistic contexts and word problems.
- Make the distractor choices reflect common student mistakes.
- Include questions that can be solved efficiently using Desmos.
- Do not tell me which method to use before I attempt the problem.
- If I answer correctly but cannot explain my reasoning, do not count the skill as mastered.
- Increase the difficulty after I answer two questions correctly in a row.
- Decrease the difficulty and reteach the concept if I miss two questions in a row.

Step 11: Ask for Feedback After Each Practice Set

After completing a group of questions, use:

Prompt 7: Analyze My Practice

Analyze my performance on this practice set. Report:

- My number and percentage correct
- The skills I demonstrated successfully
- The mistakes or misconceptions that appeared more than once
- Whether my errors were conceptual, procedural, strategic, or careless
- One skill I should continue practicing
- One specific action I should take during my next study session

Do not describe a skill as mastered based on only one correct answer.

Step 12: Create an Error Log

Use Gemini to help organize what you are learning:

Prompt 8: Create My Error Log

Create an SAT Math error-log entry for each question we reviewed. Use the following categories:

- Content domain
- Specific skill
- What the question was asking
- My original approach
- Why my approach did or did not work
- Correct reasoning
- Most efficient solution method
- Mistake type
- A warning or reminder for my future self
- One follow-up skill to practice

Keep each entry concise enough for me to review before my next practice test.

A useful reminder is specific. Instead of writing “Be more careful,” write something such as: Before solving a percent-change problem, identify which value is the original amount because the denominator must represent the original value.

Step 13: Ask Gemini to Quiz You on Explanations

Being able to explain a method is stronger evidence of understanding than simply choosing the correct answer.

Prompt 9: Check My Understanding

Ask me five short questions that test whether I understand **[insert skill]**. Include questions such as:

- What does this concept mean?
- How can I recognize this type of question?
- What is a common mistake?
- When would Desmos be helpful?
- How can I check whether my answer is reasonable?

Ask one question at a time. Evaluate my explanation for mathematical accuracy and completeness. Ask a follow-up question when my explanation is incomplete.

Step 14: Create a Study Plan

Use your score report, upcoming test date, and available study time.

Prompt 10: Build My Study Plan

Create a realistic SAT Math study plan based on the score report and practice results in this conversation.

My SAT date is: **[date]**

I can study: **[number]** days per week

I can spend approximately: **[number]** minutes per session

Prioritize my weakest and most frequently tested skills without ignoring my stronger areas. Include a combination of:

- Concept review
- Targeted skill practice
- Mixed practice
- Timed practice
- Error-log review
- Full-length Bluebook practice tests

Keep each study session manageable. For every session, state exactly what I should study and what evidence will show that I am ready to move forward.

Step 15: Retake and Repeat the Cycle

After completing several weeks of targeted studying:

1. Take a different full-length Bluebook practice test.
2. Open the new score report in My Practice.
3. Compare the new results with your previous results.
4. Look for changes in:
 - Overall Math score
 - Content-domain performance
 - Accuracy
 - Pacing
 - Confidence
 - Types of mistakes
5. Upload both reports to Gemini.

Then use:

Prompt 11: Measure My Growth

Compare these two SAT Math practice-test reports. Clearly identify which report is earlier and which is more recent. Describe the evidence of growth, the areas that remained stable, and the areas that still need attention. Do not judge growth only by the total score. Also consider domain performance, question-level patterns, pacing, and the types of errors I made. Recommend the next three skills or habits I should prioritize.

Important Reminders

- Do the mathematical thinking yourself.
- Ask for hints before asking for a complete solution.
- Never upload personally identifying information.
- Crop screenshots so they show only the information needed for tutoring.

- Check Gemini's explanations against your class materials, College Board resources, or a teacher.
- Tell Gemini when an explanation is confusing or appears incorrect.
- Keep using official College Board questions in addition to AI-generated practice.
- Track questions that you guessed correctly; a correct guess does not demonstrate mastery.
- Practice without assistance sometimes so you can determine what you can do independently.
- Use Gemini to become a more independent learner—not to avoid productive struggle.

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