

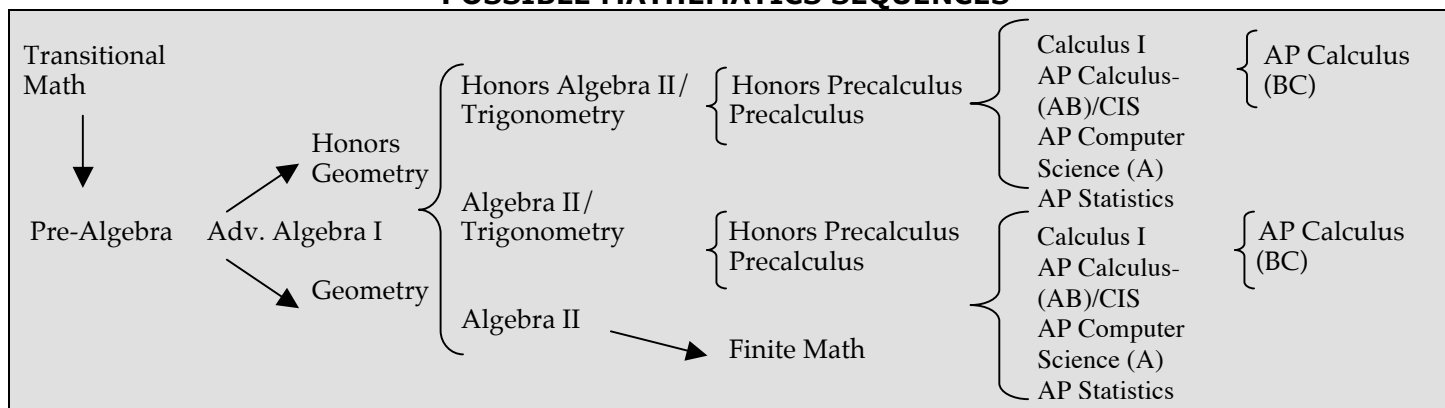
MATHEMATICS

GRADUATION REQUIREMENT: 3 years			
Freshmen	Sophomores	Juniors	Seniors
Instructor Approval	Instructor Approval	Instructor Approval	Instructor Approval
Adv. Algebra I or Geometry Or Honors Geometry or Honors Algebra II/ Trigonometry	Adv. Algebra I or Geometry or Honors Geometry or Algebra II/ Trigonometry or Honors Algebra II/ Trigonometry or Precalculus or Honors Precalculus	Algebra II or Algebra II/ Trigonometry or Honors Algebra II/ Trigonometry or Finite Math or Precalculus or Honors Precalculus or Calculus I or AP Calculus - (AB)/CIS or AP Computer Science (A) or AP Statistics	Algebra II or Algebra II/ Trigonometry or Finite Math or Precalculus or Honors Precalculus or Calculus I or AP Calculus - (AB)/CIS or AP Calculus (BC) or AP Computer Science (A) or AP Statistics

The mathematics program at Saint Thomas Academy is designed to challenge students with an enriched curriculum and to make appropriate courses available to all students. It is our objective that the students will:

- Become proficient at basic arithmetic, algebra, and analytical thinking skills.
- Develop the ability to solve both routine and non-routine problems using a variety of strategies.
- Become familiar with the use of mathematical tools, such as compasses, protractors, calculators, and mathematical computer software.

POSSIBLE MATHEMATICS SEQUENCES



ADVANCED ALGEBRA I 1 year
Grade Level: 9-10 Weight: 1.0
Prerequisite: Instructor approval

Adv. Algebra I deals with the structure of the real number system, the use of algebraic symbols; a study of first and second degree equations and graphs; systems of first degree equations, as well as factoring; square roots, and the quadratic formula. Some uses of a graphing calculator are explored.

GEOMETRY 1 year
Grade Level: 9-10 Weight: 1.0
Prerequisite: Instructor approval

This course first establishes the tools of geometry – methods of reasoning, the coordinate plane, and types of measurement. Subsequently, it focuses on properties and applications of lines, triangles, quadrilaterals, similarity, right triangle trigonometry, circles, and transformations.

HONORS GEOMETRY 1 year
Grade Level: 9-10 Weight: 1.1
Prerequisite: 9th Grade: Selection based on Instructor approval and entrance exam composite score. 10th Grade: Selection based on Instructor approval & grade of B+ or better in advanced Algebra I.

This course covers all of the topics in the regular geometry course. This program will move at a quicker pace and will incorporate enrichment activities to study the topic more in depth.

ALGEBRA II 1 year
Grade Level: 11-12 Weight: 1.0
Prerequisite: Instructor approval

Algebra II reviews the topics taught in Adv. Algebra I. Also included is the study of radicals, polynomials, second degree equations, exponential functions, trigonometry, and data analysis (statistics).

ALGEBRA II/TRIGONOMETRY 1 year
Grade Level: 10-12 Weight: 1.0
Prerequisite: Instructor approval; C- or better in Geometry.

Algebra II/Trigonometry includes an in-depth study of the topics taught in Adv. Algebra I and Geometry. Additional topics include quadratic, polynomial, rational, radical, exponential and logarithmic functions. The unit circle is the basis for the trigonometric functions.

**HONORS ALGEBRA II/
TRIGONOMETRY** 1 year
Grade Level: 9-11 Weight: 1.1
Prerequisite: Instructor approval; B or better in Honors Geometry or a final grade of A- in both Adv. Algebra I and Geometry.

Algebra II/Trigonometry is a rigorous in-depth study of functions. A solid foundation in Adv. Algebra is essential. Some areas of study include polynomial, exponential, and logarithmic functions. Rational expressions, data analysis, and probability are also explored.

FINITE MATH 1 year
Grade Level: 11-12 Weight: 1.0
Prerequisite: Algebra II and instructor approval

Finite Math involves a review of linear, quadratic, rational, exponential and logarithmic functions. Finance areas include simple and compound interest, annuities, and amortization. System of equations with matrix applications and linear programming models are introduced to maximize and minimize profit and cost systems. Probability and statistic topics are introduced along with game theory.

PRECALCULUS 1 year
Grade Level: 10-12 Weight: 1.0
Prerequisite: Instructor approval

The purpose of a precalculus course is to prepare students for a successful experience in Calculus. Topics include number systems, polynomial, exponential, and logarithmic functions, sequences, series, and limits. Trigonometry is developed on the basis of the unit circle and circular functions. This is, in turn, applied to trigonometric identities and proofs.

HONORS PRECALCULUS 1 year
Grade Level: 10-12 Weight: 1.1
Prerequisite: Instructor approval; B or better in Honors Algebra II/ Trigonometry or A- or better in Algebra II/ Trigonometry.

Honors Precalculus is a course designed for students who plan to take Calculus AB or BC. Students will complete an in-depth analysis of topics which include functions and their graphs, analytic trigonometry, linear systems and matrices, sequences and series, limits, and the introduction of Calculus.

CALCULUS I 1 year
Grade Level: 11-12 Weight 1.0
Prerequisite: Instructor approval

Calculus I deals with the major topics of differential and integral calculus. Applications include related rates, areas, volumes, rectilinear motion, and graphing with the use of the first and second derivatives.

**ADVANCED PLACEMENT
CALCULUS (AB)/(CIS)** 1 year
Grade Level: 11-12 Weight: 1.2
Prerequisite: Instructor approval

Calculus (AB) deals with the major topics of differential and integral calculus. Applications include related rates, areas, volumes, rectilinear motion, and graphing with the use of the first and second derivatives. All topics that are part of the AB curriculum of the Advanced Placement Program are included. This course is under the supervision of the mathematics department of the University of Minnesota from which four college credits may be earned. **Weight changes to 1.1 if student does not take the AP exam or is not registered for the CIS course.**

**ADVANCED PLACEMENT
CALCULUS (BC)** 1 year
Grade Level: 12 Weight: 1.2
Prerequisite: Instructor approval, Calculus I or AP Calculus (AB)

AP Calculus (BC) deals with the more advanced topics of differential and integral calculus. Applications include related rates, differential approximation, areas, volumes, arc length, and polar coordinates. The course concludes with units on infinite series, including Taylor series and differential equations. All topics that are part of the BC curriculum of the Advanced Placement Program are included. **Weight changes to 1.1 if student does not take the AP exam.**

**ADVANCED PLACEMENT
COMPUTER SCIENCE (A)** 1 year
Grade Level: 11-12 Weight: 1.2
Prerequisite: Instructor approval; Alg 2/Trig and B or better in current math course

Advanced Placement Computer Science (A) is a study of the Java programming language, emphasizing the object-oriented approach. Students will study computer systems, objects and primitive data, programming statements, flow of control, writing and enhancing classes, arrays, inheritance, and recursion. **Weight changes to 1.1 if student does not take the AP exam.**

**ADVANCED PLACEMENT
STATISTICS** 1 year
Grade Level: 11-12 Weight 1.2
Prerequisite: Algebra II/Trigonometry and instructor approval

Statistics is a requirement of a number of college majors including engineering, business, social sciences, and, of course, mathematics.

The statistics course encompasses four major units: exploring and analyzing data, producing data through samples and experiments, understanding probability and simulation models, and drawing conclusions about a population through inference. **Weight changes to 1.1 if student does not take the AP exam.**