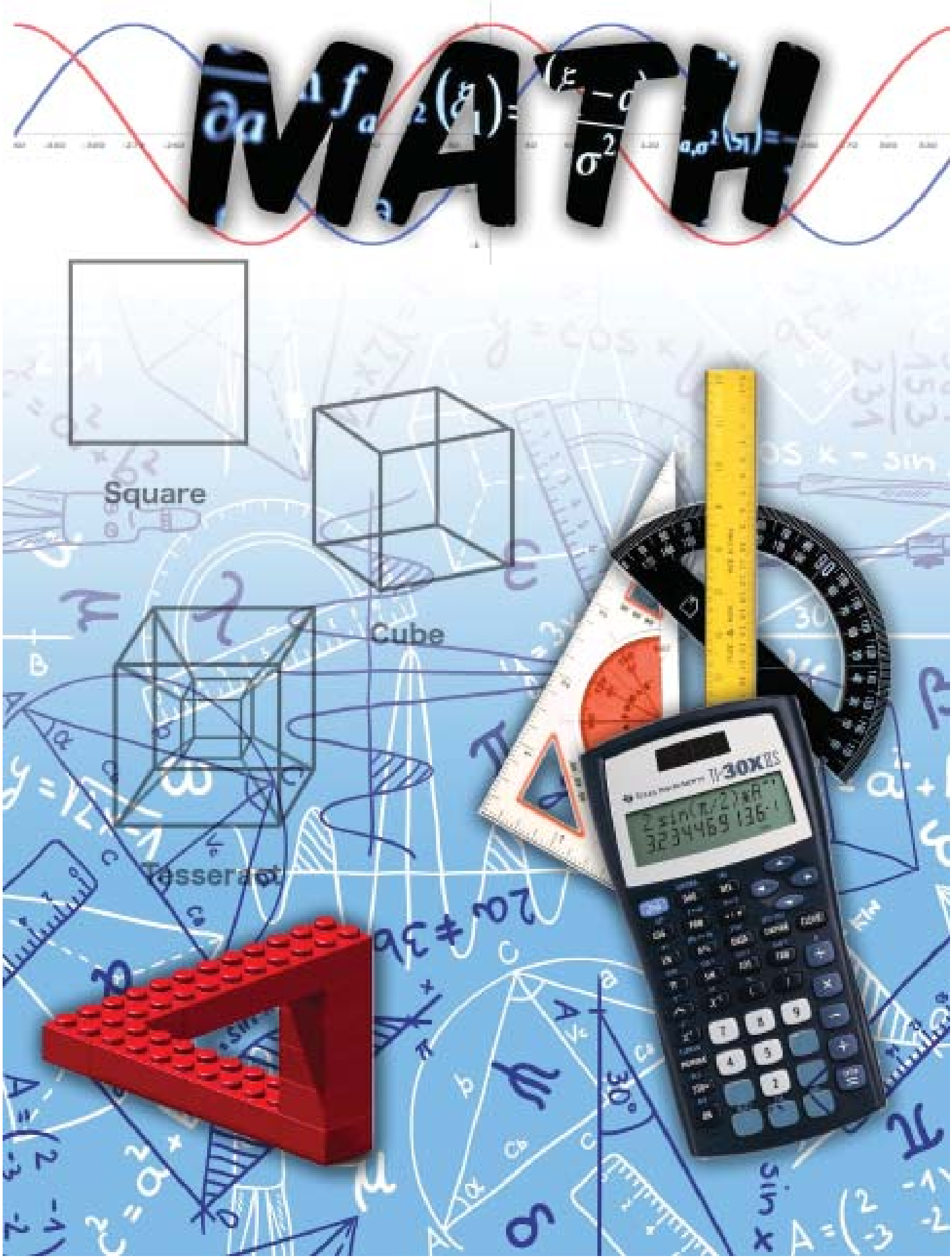
MATH
Square
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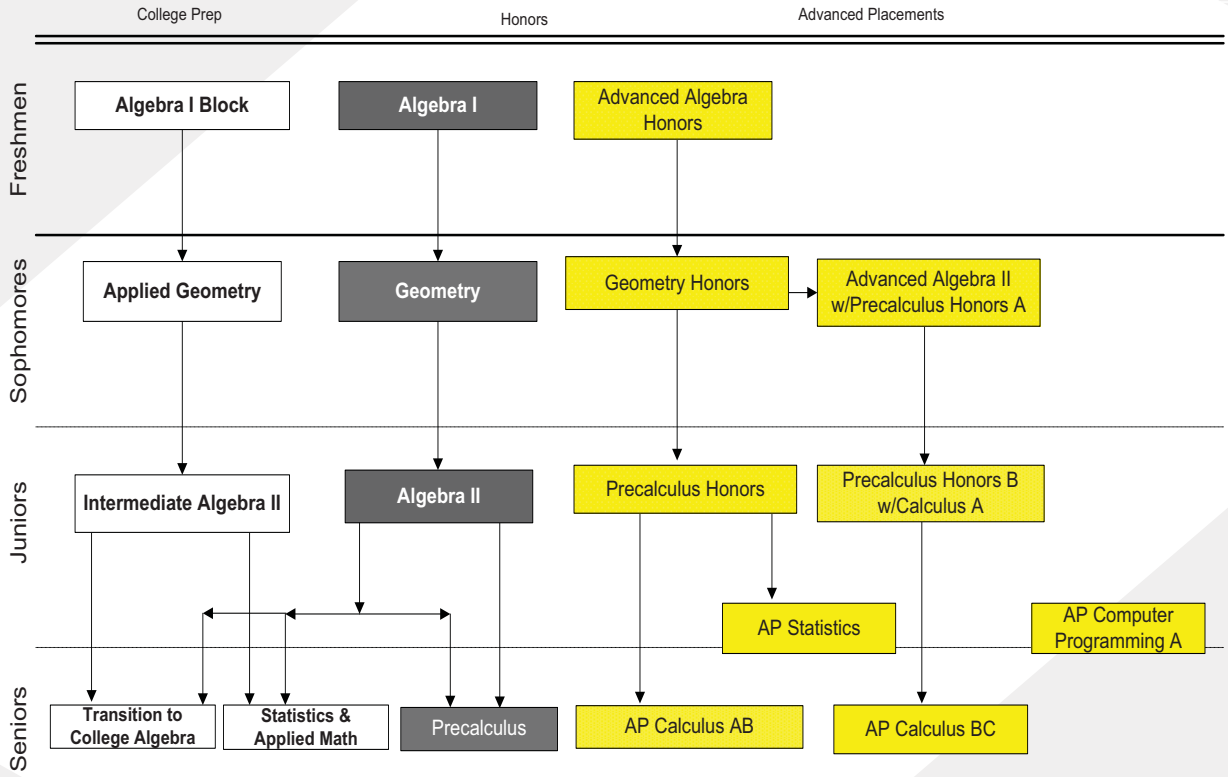
Math 2023-2024



MATHEMATICS

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The mathematics program is designed for the diversified needs and abilities of our students. Courses are available for those needing mathematics for everyday use, broad cultural purposes, employment, research, or advanced scholarship. The major objectives of any mathematics course are to develop students' abilities to make sense of problems and persevere in solving them, reason abstractly and quantitatively, construct viable arguments and critique the reasoning of others, and model with mathematics.

PRE-ALGEBRA

MAT 0119, 0129, 0139
MAT 0117, 0127, 0137
Elective: Grades 9, 10, 11, 12 One Credit
Prerequisite: IEP Determination
Grade Weight: College Prep

Fundamental to student success in PreAlgebra is the students' ability to apply foundational mathematical concepts by building conceptual understanding, connect concepts and skills, and finally apply and practice each skill. To foster mathematical student success, topics should be taught with coherence. Specifically, topics are discussed as connected ideas, rather than individual concepts. Key to students' understanding of mathematical concepts is that they realize that problems are complex and there are multiple ways to approach a problem, using the foundation skills acquired in this particular class. Through the investigation of multiple representations of mathematical models and interpretations of data from real-life situations, students will strengthen conceptual understandings in mathematics. The ultimate goal is for students to become confident problem solvers by engaging in rigorous mathematical thinking, persevering through complex tasks, and attending to precision. By meeting these goals, students will build a strong foundation that will support their future mathematical studies.

ALGEBRA I BLOCK

MAT 101, 102, 103
Elective: Grade 9 Two Credits
Prerequisite: None One Math Credit
Grade Weight: College Prep One Elective Credit

This course covers Algebra I topics during two class periods in one year. Study skills, organization, and fundamental mathematical concepts will provide students with additional support.

ALGEBRA I

MAT 111, 112, 113
MAT 111CT, 112CT, 113CT
MAT 1117, 1127, 1137
MAT 1119, 1129, 1139
Elective: Grade 9 One Credit
Prerequisite: None
Grade Weight: College Prep

Algebra I is designed to develop skills in using variables, linear equation solving, graphing on the Cartesian Plane, solving linear systems, and exploring the properties of exponents. Additional goals include developing skill in working with quadratics and other polynomial functions.

ADVANCED ALGEBRA HONORS

MAT 191, 192, 193
Elective: Grade 9 One Credit
Prerequisite: None
Grade Weight: Honors

This is the first course in an advanced paced curriculum that can lead to either AP Calculus or AP Statistics by senior year. This course covers Systems of Equations and Inequalities, Arithmetic and Geometric Sequences, Features of Functions while focusing on Linear, Exponential and Quadratic Functions as well as Modeling Data.

APPLIED GEOMETRY

MAT 201, 202, 203
MAT 201CT, 202CT, 203CT
MAT 2017, 2027, 2037
MAT 2019, 2029, 2039
Elective: Grades 10, 11, 12 One Credit
Prerequisite: Algebra I Block, IEP Determination
Grade Weight: College Prep

This course develops visualization skills while building a knowledge of the relationships between geometric elements. Furthermore, this course develops deductive reasoning and provides for the integration of plane and solid concepts with an integrated review of algebra content and will focus on applying geometric concepts to real life scenarios.

GEOMETRY

MAT 221, 222, 223
MAT 221CT, 222CT, 223CT
Elective: Grades 10, 11, 12 One Credit
Prerequisite: Algebra I or Algebra I Block
Grade Weight: College Prep

This course develops visualization skills while building a knowledge of the relationships between geometric elements. Furthermore, this course develops deductive reasoning and provides for the integration of plane and solid concepts with an integrated review of algebra content.

GEOMETRY HONORS

MAT 231, 232, 233
Elective: Grade 10 One Credit
Prerequisite: Advanced Algebra Honors
Grade Weight: Honors

This course covers topics parallel to Geometry while at an increased level of depth, rigor, and pacing. This is a course of study that will develop powers of visualization while building a knowledge of the relationships between geometric elements. Furthermore, it is a tool to develop deductive reasoning and will provide for the integration of plane and solid concepts with an effective use of algebra.

INTERMEDIATE ALGEBRA II

MAT 351, 352, 353
MAT 351CT, 352CT, 353CT
MAT 3519, 3529, 3539
MAT 3517, 3527, 3537
Elective: Grades 11, 12 One Credit
Prerequisite: Geometry or Applied Geometry (Geometry Basic)
Grade Weight: College Prep

Intermediate Algebra develops all of the algebraic concepts from Algebra I and Geometry in greater depth, yet is less rigorous than Algebra II. Emphasis is placed on basic operations associated with the real number system, linear functions, quadratics, matrices, probability, statistics, and right triangle trigonometry.

ALGEBRA II

MAT 311, 312, 313
MAT 311CT, 312CT, 313CT
Elective: Grades 11, 12 One Credit
Prerequisite: Geometry or Applied Geometry (Geometry Basic)
Grade Weight: College Prep

This course develops the algebraic concepts from Algebra I in greater depth. Emphasis is placed on basic operations associated with the real number system, polynomials and their various operations, graphs of linear equations, equalities and inequalities, matrices, quadratic functions, probability, and statistics. This course also develops the properties and concepts essential to Trigonometry.

ADVANCED ALGEBRA II w/PRECALULUS HONORS A

MAT 241, 242, 243
Elective: Grade 11 One Credit
Prerequisite: Geometry Honors
Grade Weight: Honors

This course covers topics parallel to Algebra II, while at an increased level of depth, rigor, and pacing. Emphasis is placed on basic operations associated with the real number system, polynomials and their various operations, graphs of linear equations, equalities and inequalities, matrices, quadratic functions, exponents and exponential functions. This course also develops the properties and concepts essential to Trigonometry. Juniors in this course as seniors may elect to take Precalculus Honors B with Calculus A to further their study of mathematics and better prepare for a first year College Calculus course. This course is also part of that pathway to AP Calculus BC for students who enter high school ready for Geometry Honors as Freshman.

PRECALCULUS HONORS

MAT 341, 342, 343
Elective: Grade 11 One Credit
Prerequisite: Advanced Algebra Honors and Geometry Honors
Grade Weight: Honors

This course provides an intense study of the topics fundamental to calculus. Emphasis is placed on functions and their graphs with special attention to polynomial, rational, exponential, logarithmic, and trigonometric functions. Upon completion, students should be able to solve practical problems and use appropriate models for analysis and prediction. This course is part of an accelerated course sequence designed to prepare students that enter high school ready for Advanced Algebra Honors for AP Calculus AB during their senior year.

PRECALCULUS HONORS B w/CALCULUS A

MAT 411, 412, 413
Elective: Grade 11, 12 One Credit
Prerequisite: Advanced Algebra Honors II w/Precalculus Honors A
Grade Weight: Honors

This course begins with an in-depth study of trigonometric functions and their graphs, polar coordinates and then transitions to limits before a full semester of calculus. For seniors in this course, it is a second in a sequence that provides students with an opportunity to experience Calculus in high school. For juniors, this course is a part of that pathway to AP Calculus BC for students who enter high school ready for Geometry Honors as Freshman.

STATISTICS & APPLIED MATH

MAT 331, 332, 333
Elective: Grade 12 One Credit
Prerequisite: Int. Algebra II or Algebra II
Grade Weight: College Prep

This class is designed to prepare and transition students directly into college and career pathways requiring general education college level math competencies in quantitative literacy and statistics. The competencies within each domain should include, but are not limited to: numeracy (operation sense, estimation, measurement, quantitative reasoning, basic statistics, and mathematical summaries), application based algebraic topics, and functions and modeling. Upon completion students should be able to: demonstrate proficiency and understanding in basic numeracy competencies in whole numbers, integers, fractions, and decimals, use estimation and explain/justify estimates, apply quantitative reasoning to solve problems involving quantities or rates, use mathematical summaries of data such as mean, median, and mode, use and apply algebraic reasoning as one of multiple problem-solving tools, and use functions and modeling processes. This course to be delivered through authentic application, problem based instruction designed to build mathematical conceptual understanding and critical thinking skills.

PRECALCULUS

MAT 361, 362, 363
Elective: Grades 11, 12 One Credit
Prerequisite: Algebra II
Grade Weight: College Prep
This course emphasizes algebraic techniques with polynomials, fractional expressions, exponents and exponential functions, linear and quadratic equations, trigonometry, and analytic geometry. Students who intend to take Advanced Placement Calculus as seniors are required to take Precalculus Honors as juniors. However, exceptions can be made per approval of the mathematics department chair.

AP STATISTICS ☼

MAT 371, 372, 373
Elective: Grades 10 (dept. approval only), 11,12 One Credit
Prerequisite: Algebra II or Geometry Honors
Grade Weight: Advanced Placement
This course examines how probability and statistics help us make sense of our world. The course deals with graphical and numerical techniques to study patterns in data; characteristics of data such as shape, location, and variability; differences between association and causation; and data collection. See the Advanced Placement Testing Policy on page 14.

AP CALCULUS AB ☼

MAT 441, 442, 443
Elective: Grade 12 One Credit
Prerequisite: Precalculus Honors
Grade Weight: Advanced Placement
This course deals with functions, limits, derivatives, chain rule, continuity, maximum, minimum, sketching graphs, integrals, and natural logarithms. See the Advanced Placement Testing Policy on page 14.

AP CALCULUS BC ☼

MAT 551, 552, 553
Elective: Grade 12 One Credit
Prerequisite: Precalculus Honors
Grade Weight: Advanced Placement
This course continues the study of calculus including functions, limits, derivatives, chain rule, continuity, maximum, minimum, sketching graphs, integrals, natural logarithms, parametric equations, polar coordinates, vector-valued functions, infinite sequences and series. See the Advanced Placement Testing Policy on Page 14.

AP COMPUTER SCIENCE A ☼

MAT 431, 432, 433
Elective: Grades 11, 12 One Credit
Prerequisite: Algebra II
Grade Weight: Advanced Placement
This course is comparable to an introductory college course for computer science majors. Topics include large program design, algorithms, and data structures. The current programming language is JAVA. See the Advanced Placement Exam Policy on Page 14. If this course has low enrollment, the course may be offered online.

TRANSITION TO COLLEGE ALGEBRA

MAT 421, 422, 423
Elective: Grades 11, 12 OneCredit
Prerequisite: Intermediate Algebra II or Algebra II
Grade Weight: College Prep
This class is designed to prepare students for college and career pathways in areas such as: Science, Technology, Engineering, and Math or STEM which require advanced algebraic skills or calculus. This course will enable students to transition directly into credit bearing college-level algebra courses at any Illinois community college and participating four year universities. Students will engage in deepening conceptual understanding using algebra and mathematical applications of algebra and functions and how functions naturally arise using authentic modeling situations. The function families (linear, polynomial, rational, radical, and exponential) will be emphasized. Additionally, the course shall emphasize the eight mathematical practices, particularly modeling within the setting of authentic and contextualized applications.