

MATHEMATICS DEPARTMENTAL CURRICULUM PROFILE

PROGRAM DESCRIPTION

The Board of Education has established that a student attending Lyons-Decatur Northeast High School will complete at least three (3) years of high school mathematics classes in order to earn their high school diploma. The mathematics program at Lyons-Decatur Northeast High School allows the opportunity for the student to complete four years of high school mathematics and prepare them university/college studies. A college prep track of Algebra I, Geometry, Algebra II, and Advanced Math allows the student to gain the major concepts to achieve in the university/college setting. For those students who choose not to go the college prep route, elective classes in Applied Math, Business Math, and Consumer Math are offered in helping them achieve enough mathematical skills to be able to function in today's society.

PHILOSOPHY

The philosophy of the mathematics department is that every student has the tools to be a successful mathematician. We believe that mathematics is an integral concept needed to function in today's society. To this challenge, the mathematics department will help the students refine their computational, problem solving, logical and critical thinking skills. In the end, we feel that the students will become self confident and independent mathematicians.

OBJECTIVES IN THE MATHEMATICS PROGRAM

- Communicate that mathematics is fun
- Detect and fill gaps in students' prior math knowledge
- Develop a variety of problem-solving strategies
- Develop basic computational skills
- Enable students to prove basic results
- Encourage a broader interest in mathematics
- Develop the students' understanding of technology
- Develop interests in the careers of mathematics
- Increase students' mathematical knowledge
- Teach :
 - Fundamental concepts
 - Calculator and computer skills
 - Logical reasoning
 - Mathematical writing
 - Problem solving
 - Working collaboratively

Mathematics Course Descriptions

Algebra I

Length: Full Year

Grade Levels: 9-10

Description: The course covers Algebra as far as quadratic equations. It uses statistics and geometry as settings for work with linear expressions and sentences. Probability provides a context for algebraic fractions, functions and set ideas. There is much work with graphing. Applications motivate all topics, and include exponential growth and compound interest.

Geometry

Length: Full Year

Grade Levels: 10-12

Description: Euclidean geometry is the core around which a number of major themes of this course are organized. Naturally, one of these themes is the study of the major results of Euclidean geometry- the relationship among lengths and angle measures and areas and volumes in figures of all kinds, including particularly polygons and circles. Since even before Euclid, it has been known that these results are logically tied to each other, and the second theme is the study of the mathematical system that relates these geometric results. A third theme, the use of algebra, is manifested in three main ways: work with the algebraic manipulation required in dealing with geometric formulas; the use of coordinates and coordinate geometry in describing and deducing properties of figures; and the use of transformations to deal with congruence, similarity, and symmetry. The fourth theme, the study of Geometries other than Euclidean geometry, does not play a major role, but is necessary so that students understand that there are limitations to some of the results that they obtain.

Algebra II

Length: Full Year

Grade Levels: 11-12

Description: Advanced Algebra is designed for a second-year course in Algebra. It has a wider scope including substantial amounts of geometry integrated with the algebra. Reading and problem solving is emphasized throughout the book. Students can and should be expected to read this book. There is a reality orientation towards the selection of content and the methods taught the student in working out the problems. Algebra is rich in applications and problem solving. Real-life situations motivate algebraic ideas and provide the setting for practice of algebra skills. Scientific calculators are recommended. Computer activities are used to enhance algebraic concepts, and students are taught how to use a calculator or computer to graph and analyze functions.

Advanced Math

Length: Full Year

Grade Levels: 12

Description: Functions, Statistics, and Trigonometry builds on the algebra and geometry students have previously studied to examine functions, statistics, and trigonometry in a unified way to help students prepare for everyday life and future courses in Mathematics. Spreadsheets, graphing, and CAS technology are employed to enable students to explore and investigate, and to deal with complicated functions and data.

Math 7

Length: Full Year

Grade Level: 7

Description: Students will discover algebraic thinking and embedded and distributed across the course in small increments, as part of every stand, not a strand, not as a separate unit of instruction or topic. The distributed approach in the textbook lends itself better to providing this kind of natural integration. Although Saxon Math uses a distributed approach, all the expected algebraic topics are covered in the course. Patterns, relations, and functions are presented early in the student text and are reviewed and practiced throughout the year. Order of operations is applied to whole numbers, integers, and rational numbers, and exponents. Students build on their understanding of variable and expressions and extend them to equations and inequalities. Students also analyze patterns and functions leading to the graphing on the coordinate plane.

Math 8

Length: Full Year

Grade Level: 8

Description: Students will discover algebraic thinking and embedded and distributed across the course in small increments, as part of every stand, not a strand, not as a separate unit of instruction or topic. The distributed approach in the textbook lends itself better to providing this kind of natural integration. Although Saxon Math uses a distributed approach, all the expected algebraic topics are covered in the course. Patterns, relations, and functions are presented early in the student text and are reviewed and practiced throughout the year. Order of operations is applied to whole numbers, integers, and rational numbers, and exponents. Additional topics preparing students for 9th grade Algebra are word problem operations, measuring perimeter and area, solving systems of equations, using unit multipliers to convert measures, graphing inequalities, using Pythagorean Theorem, calculating volume, solving rate problems with proportions and equations.

Applied Math

Length: Full Year

Grade Level: 10-12

Description: This course applies a straightforward review of basic math competencies that will appeal to students who feel anxious about taking another math course. The class begins with a basic skill assessment to determine the most appropriate starting point with an eye towards making the most progress preparing students to be successful in future mathematics courses. There is a comprehensive review of the basic math functions and progresses to fractions and decimals. The basics are then applied to common business applications, including bank records, purchasing and pricing merchandise, payroll, taxes, consumer credit, and interest (simple and compound). An abundance of practice exercises, tips, and self-assessments will build student skill and confidence. The emphasis is on preparing students to advance in their mathematics curriculum and as such, additional resources will be drawn from a second textbook with the goal of shoring up required skills, removing doubt and building confident mathematical skills.

Math Concepts

Length: Full Year

Grade Level: 9-12

Description: Math Concepts builds a basic mathematical foundation for students with a step-by-step approach. Students are at the center of this text, with problems, examples, and applications designed to maximize student interest, understanding, and relevance. Math Concepts includes four major strands: mastering arithmetic operations, introducing algebraic concepts, teaching estimation and problem-solving strategies, and applying mathematics and the use of algebra in real-life situations.

Business Math

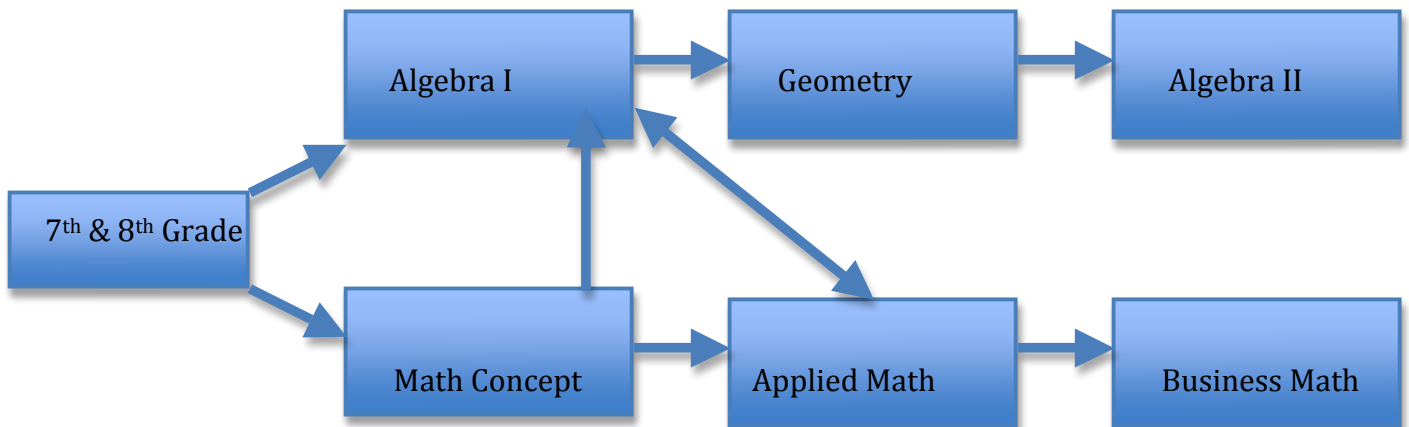
Length: Full Year

Grade Level: 9-12

Description: Business Math covers all the skills students need to manage their personal finances and excel at their first jobs and in everyday life. Business Math is a three-part program that takes students from basic math concepts to sophisticated financial strategies. Basic math skills review the fundamental math operations that the book builds on. From there, Personal Finance, where they learn money management skills. In addition to mathematics, the class teaches workplace essentials such as reading and language arts, as well as foundation skills such as critical thinking and problem solving. The lessons, workshops, features, and activities in Business Math comprise a well-rounded program that will help prepare all students for success in work and life.

COURSE SEQUENCE

LDNE MATH TRACKS



ELECTIVES AFTER ALGEBRA II

Advanced Math

Calculus (DC)