

Algebra  
Algebra II w/ Trigonometry  
AP Calculus AB  
AP Calculus BC  
AP Statistics  
Calculus III  
College Algebra  
Geometry  
Linear Algebra  
Pre-Calculus  
Pre-Calculus  
Career Internship Program

# *Mathematics*



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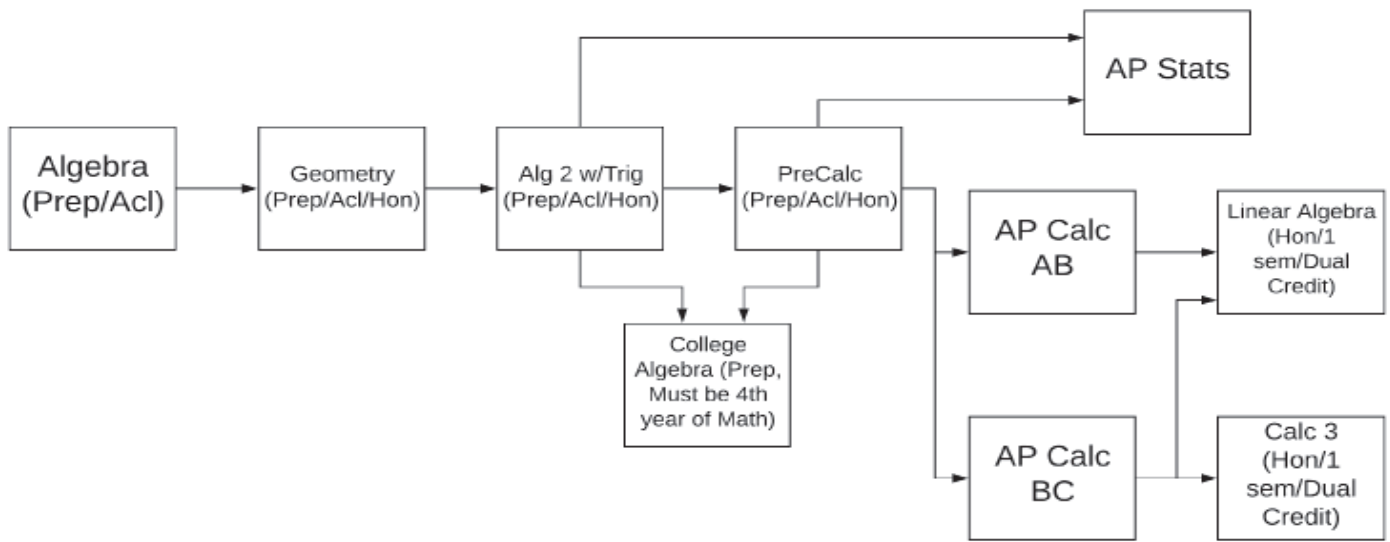
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## Mathematics Department Philosophy

The mathematics curriculum has been developed to help students value mathematics, become confident in their abilities to do mathematics, become mathematical problem solvers, and to communicate and reason mathematically. Students, as a result of the high school mathematics experiences, should be able to model problems with the appropriate operations and equations, apply a variety of approaches and techniques to solve problems, understand the underlying mathematical features of problems, see the applicability of mathematical ideas to common and complex problems, use logical reasoning to present an argument, and employ technology to explore mathematical ideas and solve problems.



Students who successfully completed Algebra (Accel) in Grade 7th or 8th grade will receive one unit of high school credit on a pass/fail basis. The high school credit will be awarded after successful completion of one year of mathematics while enrolled in high school.

# Mathematics Department Standards

*The LTHS Mathematics Department has adopted the following eight principles in conjunction with both the Illinois State Standards and the Common Core State Standards. These principles and standards guide academic programs, courses and challenge students. Additionally, specific academic course standards have also been developed. These are distributed to students at the beginning of each semester or annual course.*

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## LTHS Mathematics Principles

### Common Core State Standards for Mathematical Practice

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|----------------------|---|
| <b>Standard I</b>    | <b>Make sense of problems and persevere in solving them.</b>            |
| <b>Standard II</b>   | <b>Reason abstractly and quantitatively.</b>                            |
| <b>Standard III</b>  | <b>Construct viable arguments and critique the reasoning of others.</b> |
| <b>Standard IV</b>   | <b>Model with mathematics.</b>  |
| <b>Standard V</b>    | <b>Use appropriate tools strategically.</b>                             |
| <b>Standard VI</b>   | <b>Attend to precision.</b>   |
| <b>Standard VII</b>  | <b>Look for and make use of structure.</b>                              |
| <b>Standard VIII</b> | <b>Look for and express regularity in repeated reasoning.</b>           |

## Requirements

While a minimum of three years of high school mathematics is required for graduation, many students take four years of mathematics. The state of Illinois requires each student to take an Algebra and a Geometry course for two of the three required credits. It is suggested that students who desire to attend college study requirements specific to their school of interest. Most state universities in Illinois require three years of mathematics through Advanced Algebra for unconditional admission. Pre-Calculus may also be required.

## Placement

The Division Chair evaluates the performance of each incoming student. Placements is based upon the following performance indicators.

- Information from the eighth grade teacher's about the incoming freshman using current math grades and student ability.
- LT will review the results and recommend further changes based on skills and supports.

Parents are then notified of the final placement. Students must achieve specific grade in Algebra Accel for placement into Geometry.

## Incoming Freshmen

Students who are placed beyond Algebra (Accel) will receive credit for Algebra only after s/he has successfully completed Geometry. Please note that credit will not appear on the student's transcript until the end of the second semester of sophomore year. This credit will not apply to the three years of math credit required by the state of Illinois for high school graduation, nor will the level be designated.

Due to the sequential nature of mathematics courses, students who receive F's for first semester grades may have a level change, be dropped to a different course, and/or enter a staggered semester course.

## Calculator Requirements

All Math/Science courses require a graphing calculator. Families should only purchase a graphing calculator if they do not already own one. Please call your student's math teacher if you have any questions.

## Mathematics and Advanced Placement (AP)

A student may enroll in the following mathematics AP courses:

1. AP Calculus AB Students who have successfully completed Trig/Pre-Calculus (Accel or Prep) may enroll in AP Calculus AB. This two-semester course is especially designed for strong students with interest in mathematics and/or science. Completion of this course qualifies students to take the AP Calculus AB Examination.

2. AP Calculus BC Students who have successfully completed (Trig)/Pre-Calculus (Honors or Accel) may enroll in AP Calculus BC. This two-semester course is especially designed for excellent students with high interest in mathematics and/or science. Completion of this course qualifies students to take the AP Calculus BC examination.

3. AP Statistics Students who have successfully completed Algebra II or above may enroll in AP Statistics. This two-semester course is especially designed for students with an interest in an introductory, non-calculus based course in statistics. Many college majors require a statistics course. This course qualifies students to take the AP Statistics examination.

## Algebra (Prep) 131/132

Credit: 1  
Grade Offered: 9, 10  
Prerequisite: None

Level: III  
Annual MA4136  
MA4137

This introductory course in algebra intensively studies the language of algebra. Students begin their study of the real number system and its properties. The course is designed to convey an understanding of the meaning and use of variables, formulas, equations and inequalities, exponents, functions, graphs, and an introduction to probability and statistics. The fundamental processes with algebraic expressions are taught, including simple cases of factoring and work with algebraic fractions. The significance of problems and of problem solving is emphasized throughout the course. Material covered in this course will not only provide students with a foundation of algebra to be applied in future courses, but will also prepare students for college level course work.

## Algebra (Prep) 132/131 (staggered)

Credit: 1/2  
Grade Offered: 9, 10  
Prerequisite: Failure of 1st semester Algebra (Prep) or Accel)

Level: III  
Fall MA4936  
Spring MA4937

## Algebra (Accel) 141/142

Credit: 1  
Grade Offered: 9  
Prerequisite: None

Level: IV  
Annual MA4146  
MA4147

In Algebra (Accel), the language of algebra is studied intensely. Students begin their study of the real number system and its properties. The course is designed to convey an understanding of the meaning and use of variables, formulas, equations and inequalities, exponents, functions, and graphs. Several real life applications are used to enhance these concepts. The significance of word problems and of strategic problem solving is emphasized throughout the course. Algebra (Accel) moves at a quicker pace than Algebra (Prep) and requires proficiencies with and without the calculator.

# Did You Know?

**The National Science Foundation estimates that 80% of the jobs created in the next decade will require some form of math and science skills.**

***Real advice about actuary jobs:***

**As with many other financial jobs, communication skills are almost as important as mathematical savvy. “Students planning an actuarial career can choose a school that offers an actuarial science major, or take appropriate courses in calculus, probability, statistics, accounting, economics, and finance to be prepared to learn actuarial techniques and applications.”**

American Council on Education, Sept. 2008

- **Independent Study** Under specific conditions as outlined on p. 25 of the **Guide**, students may make application for Independent Study. In all cases, students must secure parent, teacher, counselor, divisional, and building administration approval. Independent Study may not be taken as an 8th semester/annual course.

### Algebra II w/Trigonometry (Prep) 231/232

Credit: 1	Level: III
Grade Offered: 10	Annual MA6236 MA6237
11, 12	Annual MA6231 MA6232
Prerequisite: Geometry (Prep)	

This course focuses on reviewing and extending the main topics of Algebra. It contains an emphasis on both an algebraic and graphic approach to learning concepts. It includes the following topics: systems of equations, matrices, quadratic functions, polynomials, exponents, logarithms, complex numbers, conic sections, sequences and series, right triangle trigonometry, radian and degree measure, law of sines, and law of cosines. The method of presentation is designed to meet the needs of students who desire a strong four year mathematical foundation for future study of mathematics and science or preparation for post-high school entrance requirements.

### Algebra II w/Trigonometry (Hon) 251/252

Credit: 1	Level: V
Grade Offered: 9, 10	Annual MA8256 MA8257
11	Annual MA8251 MA8252
Prerequisite: Geometry (Accel) or Geometry (Honors)	

This course presents the topics contained in Algebra II w/Trigonometry (Prep) and also includes the topics of polynomial functions, matrix equations, logarithmic functions, sequences, series, elementary probability, conic sections, and rational functions. Problem solving with the graphing calculator is a major emphasis in this course.

### Algebra II w/Trigonometry (Accel) 241/242

Credit: 1	Level: IV
Grade Offered: 9, 10	Annual MA7246 MA7247
11	Annual MA7241 MA7242
Prerequisite: Geometry (Accel)	

This course presents a more in depth treatment of the topics listed for Algebra II w/Trigonometry (Prep) and also includes the topics of polynomial functions, matrices, logarithmic functions, sequences, series and probability. In addition, Algebra II w/Trigonometry (Accel) will introduce many concepts necessary for Trig Pre-Calculus (Accel) such as the unit circle, trigonometric functions, law of sines, law of cosines, and radian measure.











# Mathematics Classes

When choosing Annual Courses, you will need the first and second semester codes.

## Freshman Courses

### Annual

MA4136/7	Algebra Prep 131/132
MA4146/7	Algebra Accel 141/142
MA7146/7	Geometry Accel 141/142
MA8166/7	Geometry Honors 151/152

### Spring Only

MA4937	Algebra Prep 131 (Staggered)
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## Sophomore Courses

### Annual

MA4146/7	Algebra Accel 141/142
MA4136/7	Algebra Prep 131/132
MA6236/7	Algebra II w/Trig Prep 231/232
MA7246/7	Algebra II w/Trig Accel 241/242
MA8256/7	Algebra II w/Trig Honors 251/252
MA5136/7	Geometry Prep 131/132
MA7146/7	Geometry Accel 141/142
MA8166/7	Geometry Honors 151/152
MA8356/7	Pre-Calculus Honors 351/352
MA7341/2	Pre-Calc Accel 341/342

## Staggered Semester

### Fall only

MA4936	Algebra Prep 132 (Staggered)
MA6146	Geometry Prep 132 (Staggered)

### Spring only

MA4937	Algebra Prep 131 (Staggered)
MA6147	Geometry Prep 131 (Staggered)

## Junior and Senior Courses

### Annual

MA4136/7	Algebra Prep
MA6231/2	Algebra II w/Trig Prep 231/232
MA7241/2	Algebra II w/Trig Accel 241/242
MA9551/2	AP Calculus AB
MA9651/2	AP Calculus BC
MA6321/2	College Algebra
MA6331/2	Pre-Calculus Prep 331/332
MA8351/2	Pre-Calculus Honors 351/352
MA7341/2	Pre-Calculus Accel 341/342
MA9451/2	AP Statistics
MA6321/2	College Algebra (Senior only)

### Fall or Spring

MA5551/2	Career Internship
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## Staggered Semester

### Fall only

MA9951	Linear Algebra
MA6241	Algebra II w/Trig Prep 222 (Staggered)
MA6141	Geometry Prep 132 (Staggered)

### Spring only

MA9852	Calculus III
MA6242	Algebra II w/Trig Prep 221 (Staggered)
MA6142	Geometry Prep 131 (Staggered)