and basic grammar are also incorporated. Content-area information is woven into the process of English acquisition to support students in their other core classes.
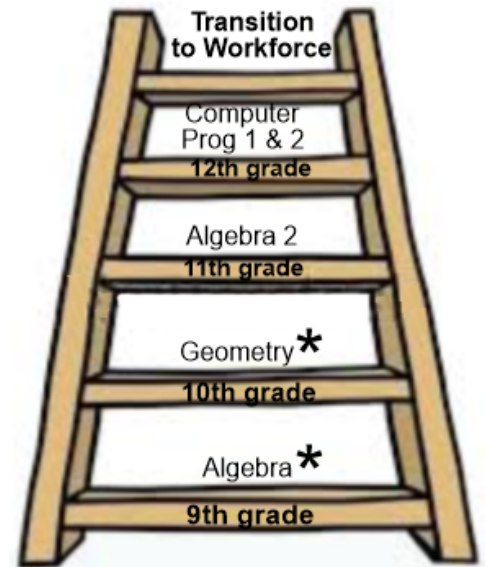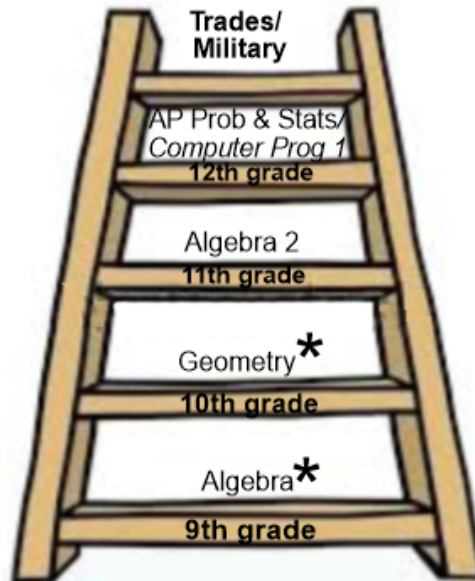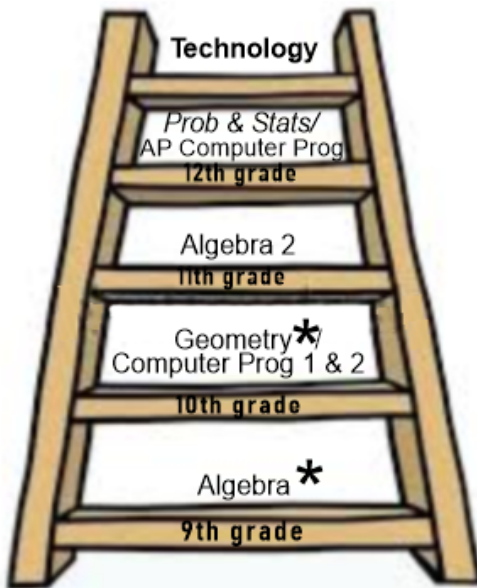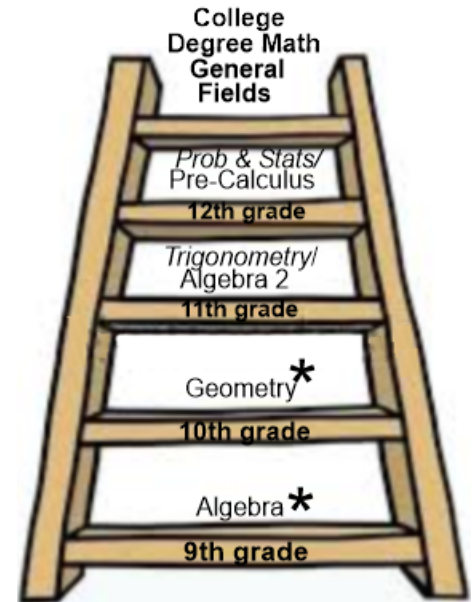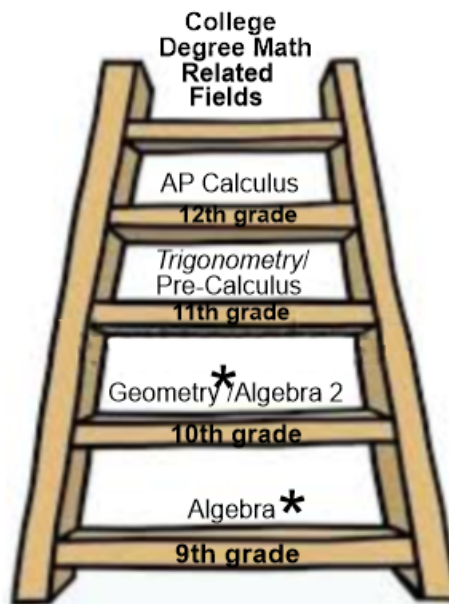
MATHEMATICS

Ladders for Mathematics Course Selections Based on Long-Term Student Plans

These ladders show the recommended math courses that will help a student climb toward their post-high school plans.

Italicized courses are semester long.

An * indicates a course that is required for Greenfield High School graduation. All students must take 3 years of math courses.

College Degree Math Related Fields

- AP Calculus — 12th grade
- *Trigonometry/ Pre-Calculus* — 11th grade
- *Geometry*/*Algebra 2* — 10th grade
- Algebra * — 9th grade

College Degree Math General Fields

- *Prob & Stats/ Pre-Calculus* — 12th grade
- *Trigonometry/ Algebra 2* — 11th grade
- Geometry * — 10th grade
- Algebra * — 9th grade

Technology

- *Prob & Stats/ AP Computer Prog* — 12th grade
- Algebra 2 — 11th grade
- Geometry */ Computer Prog 1 & 2 — 10th grade
- Algebra * — 9th grade

Trades/ Military

- *AP Prob & Stats/ Computer Prog 1* — 12th grade
- Algebra 2 — 11th grade
- Geometry * — 10th grade
- Algebra * — 9th grade

Transition to Workforce

- Computer Prog 1 & 2 — 12th grade
- Algebra 2 — 11th grade
- Geometry * — 10th grade
- Algebra * — 9th grade

MATHEMATICS

All Honors Courses require higher level thinking and problem solving ability.

Calculators are expected in all classes. Regular calculators (Example TI-30 X IIS) are required for Algebra 1, Math Extensions, and Geometry. Graphic calculators (Example TI-83, TI-84, NOT a TI-89) are used in all other classes and must be provided by the student. The School District of Greenfield cannot provide calculators for all students in all math classes. Please see your individual math teacher if you are financially unable to have a calculator for class.

4221   ALGEBRA 1   1 Credit
4222   ●9 ○10 ○11 ○12

The fundamental purpose of this course is to formalize and extend the mathematics that students learned in middle school. The units of study are: Relationships between quantities and reasoning with equations; Linear and exponential relationships; Descriptive statistics; Expressions and equations; Quadratic functions and modeling. Students will also be expected to use their problem solving skills to work with real world situations.

4331   GEOMETRY   1 Credit
4332   Prerequisites: Successful completion of Algebra 1   ●9 ●10 ○11 ○12

Students will study measurement, properties, and relationships of points, lines, angles, surfaces, and solids. Students will cover the following big ideas in Geometry based on the Common Core State Standards are; constructions, rigid transformations, proofs, congruence, similarity, right triangle trigonometry, circles, solids and coordinate geometry.

4411   ALGEBRA 2   1 Credit
4412   Prerequisites: Successful completion of Algebra and Geometry   ●9 ●10 ●11 ●12

Students will build on their work with linear, quadratic, and exponential functions, and students will extend their repertoire of functions to include polynomial, rational, and logarithmic functions. Students will work closely with functions, and continue to expand their abilities to model situations and to solve equations, including equations with complex numbers and using logarithms. There are 6 units of study covered in Algebra 2 based on the Common Core State Standards for Mathematics: Sequences and Functions, Polynomial and Rational Functions, Complex Numbers and Rational Exponents, Exponential Functions and Equations, Transformations of Functions, and Statistical Inferences.

4570   TRIGONOMETRY   .5 Credit
     Recommended Prerequisites: C or better in Geometry, B or better in Algebra 1   ●9 ●10 ●11 ●12
     (May be taken concurrently with Algebra 2 during the 2nd semester)

Students will study how the six trigonometric functions: sine, cosine, tangent, cosecant, secant and cotangent, relate to each other. The student will analyze the relationship of the unit circle to the graphs of trigonometric functions. There is an emphasis on verification of trigonometric identities using reasoning and proof. Students will learn how to solve oblique triangles in the real world using trigonometric formulas (Law of Sine, Law of Cosine, Area formulas).

4611   PRE-CALCULUS   1 Credit
4612   Recommended Prerequisites: B or better in Algebra 2 and "B" or better in Trigonometry   ○9 ●10 ●11 ●12
     (Trig must be completed prior to Pre-Calculus - semester 2)

This course prepares the student for the formal study of calculus by exploring functions in depth. Functions of all types (linear, quadratic, rational, exponential, logarithmic, and trigonometric) are studied with the help of a graphing calculator. Emphasis will be on using graphic representations as a problem solving technique. Today's technology allows the power of visualization to apply a graph to a problem situation in order to help find a solution.

4630   STATISTICS AND PROBABILITY   .5 Credit
     Recommended Prerequisites: Successful completion of Algebra 2   ○9 ●10 ●11 ●12

      Today's world makes extensive use of statistical methods and students should understand the fundamental ideas that are used to make decisions based on these methods. Fields such as math, physical sciences, biology, medicine, etc. now require some knowledge of statistics for their effective pursuit and require courses in statistics and probability. Emphasis in this course will be on the practical rather than the theoretical aspects.

4670   COMPUTER PROGRAMMING 1   .5 Credit
        Prerequisites: Successful completion of Algebra 1   ●9 ●10 ●11 ●12

Students will be able to demonstrate sound techniques for designing, developing, documenting, and debugging well-structured programs using software-engineering principles. Students will illustrate fundamental programming aspects through the Visual Basic programming language. Students will implement basic programming logic including declaring variables, arithmetic, decisions (algorithms), iterative loops, and sub procedures (abstractions).

4680   COMPUTER PROGRAMING 2 C++   .5 Credit
        Prerequisites: Successful completion of Computer Programming 1   ●9 ●10 ●11 ●12

Students will continue to demonstrate sound techniques for designing, developing, documenting, and debugging well-structured programs using software-engineering principles. Students will illustrate fundamental programming aspects through the C++ programming language. Students will build on the programming 1 skills of successfully implement basic programming logic including declaring variables, arithmetic, decisions (algorithms), iterative loops, and learn how to solve problems implementing broader programming concepts including:functions (abstractions), lists (arrays), recursion, and searching and sorting.

4711   ADVANCED PLACEMENT (AP) STATISTICS   1 Credit
4712   Recommended Prerequisites: Successful completion of Algebra 2 OR teacher recommendation ○9 ●10   ●11 ●12

    In AP Statistics, students will learn how to describe, display, interpret and analyze data. There will be a focus on data collection, experimental design, modeling data and making conclusions based on statistical evidence. Students will analyze the structure of data and make use of technology to guide their understanding of statistics. Students will also learn about probability theory, randomness and the effects of random behavior. Specifically, this will lead to significance testing and decision making based on incomplete information and authentic application. The course concludes with a cumulative project that students design and present based on eclectic content learned throughout the year. This course will prepare students for the AP Exam in May.

4721   ADVANCED PLACEMENT (AP) CALCULUS   1 Credit
4722   Prerequisites: Pre-calculus and Trigonometry; OR teacher recommendation   ○9 ●10 ●11 ●12

The students will go in depth in the study of limits, derivatives, and integrals. They will rely heavily on the success of prior coursework in the field of mathematics. All students will need to prove proficiency with and without the graphics calculator. Since this is a college level course, it will culminate with an optional national exam that may earn college credit. This optional test is set by the college board sometime in May.

4741   ADVANCED PLACEMENT (AP) COMPUTER SCIENCE PRINCIPLES   1 Credit
4742   ○9 ●10 ●11 ●12

Prerequisites: Successful completion of Algebra 1 and/or Computer Programming 1; OR teacher recommendation

AP Computer Science Principles introduces you to the foundations of computer science with a focus on how computing powers the world. Along with the fundamentals of computing, the student will learn to analyze data, create technology that has a practical impact, and gain a broader understanding of how computer science impacts people and society. The AP CSP course is organized around seven big ideas, which are essential to studying computer science: Creativity, Abstraction, Data and Information, Algorithms, Programming, The Internet, Global Impact.