

Old Turnpike School and Voorhees High School

**Understanding the Mathematics and
Science Curriculum
Grades 8 through High School**



December 2024

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These slides will provide parents/guardians with:



- the important concepts students should understand by the end of Grade 8 in math and science
- the sequence of mathematics and science classes through high school
- how to support important math and science skills in order to prepare for college entrance exams and future learning

Common Core State Standards led to the New Jersey Student Learning Mathematics Standards

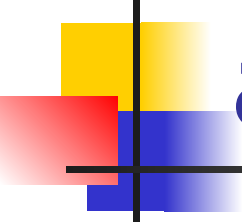
- **Focus**
- **Coherence**
- **Deep Understanding**
- **Fluency**
- **Application**





Next Generation Science Standards K-12

- **Science and Engineering Practices:** skills and behaviors that scientists and engineers use to investigate the natural world and design solutions to problems. Examples- carrying out investigations, analyzing and interpreting data.
- **Crosscutting Concepts:** overarching themes that span across all scientific disciplines. Examples-patterns, cause and effect.
- **Disciplinary Core Ideas:** key concepts and principles within each scientific discipline (life science, physical science, Earth and space science) that students are expected to learn. Content foundation for science education.
- **Real-World Application:** NGSS emphasizes the application of science and engineering concepts to real-world problems and phenomena, making science more relevant and engaging for students.
- **Performance-based Assessments:** that allow students to demonstrate their understanding through hands-on investigations, experiments, and projects.




A Vision for Math and Science at Tewksbury Schools

- Lively intellectual **curiosity** and **enjoyment** about the **hands-on** study of mathematics and science
- **Flexibility** and **confidence** to answer **challenging** questions using **multiple approaches**
- **Collaboration** to solve problems and **communicate** different ways of thinking
- Deep understanding of **math and science foundations** in order to **connect** to other disciplines and the world around us
- Growth of **reasoning** skills leading to the meaningful study of concepts across **all strands** of mathematics and science
- Use of appropriate **technology** and other resources to help confront **new problems** and ideas
- **Passion** to **make sense**, to **question**, and to **think critically** about the world of mathematics, science, and beyond



Priorities in NJ Student Learning Standards- Math



Grade	Priorities
K-2	Addition and Subtraction, measuring with whole number quantities
3-5	Multiplication and division of whole numbers and fractions
6-7	Ratio and proportional reasoning; early work with equations and expressions; functions with rational numbers
8	Linear algebra
9-12	Formal Algebra, Geometry, Algebra 2, and Beyond



Fluency Chart

Grade Required Fluency

- 6 Multi-digit division and Operations with Multi-digit decimal numbers
- 7 Solve Linear Equations in Algebra
- 8 Solving More Complex Equations, Functions, Geometry concepts



Grade 6 Math

- Multiply and Divide Decimals
- Multiply and Divide Fractions
- Ratios and Rates
- Fractions, Decimals, and Percents
- Algebraic Expressions
- Equations
- Geometry



Grade 7 Math

- Expressions and Patterns
- Integers
- Rational Numbers
- Equations and Inequalities
- Proportions and Proportional Thinking
- Percent
- Polygons
- Volume and Surface Area
- Probability and Statistical Displays



Grade 8 Math

Early Algebra Skills

- Rational Numbers
- Units of Measure
- Real Numbers and Monomials
- Volume
- Expressions
- Equations
- Linear Functions and Systems of Equations
- Geometry and Transformations
- Data Analysis and Statistics
- Geometric Probability



Grade 7 Math Honors

(Early Algebra Skills: Covers topics taught in both Grade 7 Math and Grade 8 Math courses)

- Expressions and Patterns
- Integers and Rational Numbers
- Equations and Inequalities
- Proportions and Proportional Thinking
- Percent
- Polygons
- Units of Measure, Volume, and Surface Area
- Probability, Data Analysis, Statistics, and Data Displays
- Real Numbers and Monomials
- Linear Functions and Systems of Equations
- Geometry and Transformations
- Geometric Probability



Grade 8 Algebra

Traditional High School Algebra Course

- Relationship Between Quantities and Reasoning
- Inequalities
- Functions
- Linear and Exponential Functions
- Systems of Equations and Inequalities
- Radical Expressions and Equations
- Polynomials and Factoring
- Quadratic Equations
- Rational Expressions and Equations
- Statistics



High School Math Standards

- **Number and Quantity**- Real Numbers, Complex Numbers, Matrices
- **Algebra**- expressions, equations, inequalities, connections to functions and modeling
- **Geometry**-Congruence, Triangles and Trig, Circles, Properties, Modeling
- **Functions and Models**- Trigonometric Functions, Exponent/Linear/Quadratic Models
- **Statistics and Probability**- Interpreting Data, Rules of Probability



2024 PSAT Data - Grade 9

District Average Score

- NHHS- 959
- VHS-953
- Former Tewksbury Students-978



Math Courses

Grade 7	Grade 8	Grade 9
Grade 7 Math	Grade 8 Math	Algebra 1 CP
Grade 7 Math Honors	Algebra Honors	Algebra 1 Advanced
		Geometry Advanced
		Geometry Honors

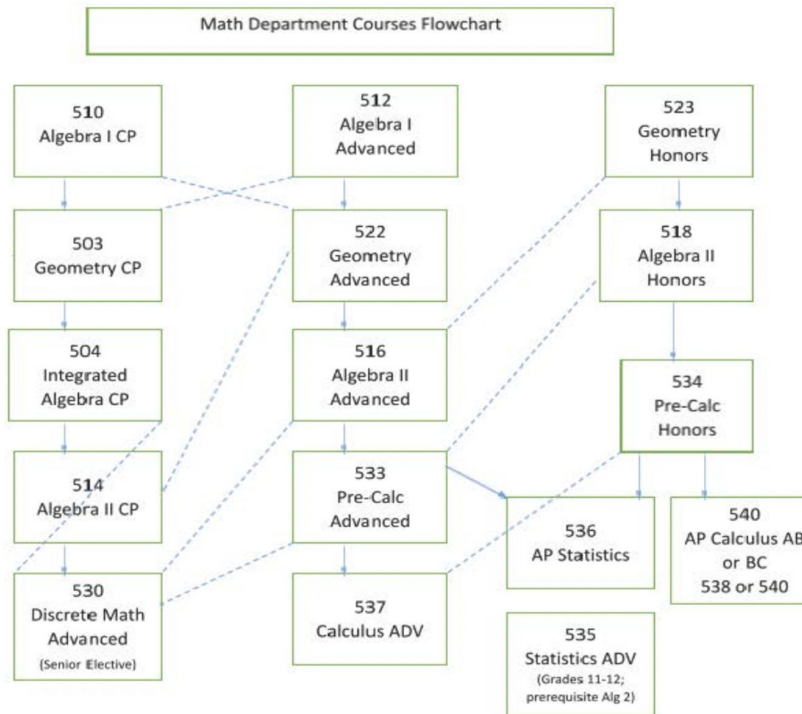


Criteria for Placement

- **Grade 7 Math Honors at Tewksbury:**
MP 1-3 Average, NJSLA score, Markers of Future Success, Recommendation
- **Grade 8 Algebra at Tewksbury:**
MP 1-3 Average, NJSLA score, Markers for Future Success, Recommendation
- **Grade 9 Algebra at Voorhees:** Common Assessment Score, Grade 8 Assessments average, Teacher Recommendation, Markers of Student Success
- **Grade 9 Geometry at Voorhees:** Common Assessment Score, Grade 8 Assessment average, Teacher Recommendation, Markers of Student Success

Voorhees HS Math Courses

***Note: There is no longer Algebra 1A. Additional information on the Freshman Math Courses can be found [here](#).**



Solid arrows represent standard course progression.

Dotted arrows represent alternate paths. These paths might be recommended based on student performance. These would need teacher or departmental approval. These paths may require additional testing or work to be completed.



Grade 6 Science

- Matter, Energy, and Ecosystems
- Factors for success of Living Things
- Force and Motion
- Weather and Climate
- Earth Systems



Grade 7 Science

- Chemical Reactions, Transformation, and Energy
- Photosynthesis: Energy and Matter
- From Cells to Systems to Individual
- Genetics, Inheritance, and Traits
- Space Science



Grade 8 Science

- Natural Selection and Common Ancestry
- Energy, Resources, and Human Activity
- Energy: Kinetic, Potential, and Thermal
- Waves



High School Science Standards

Physical Science:

- Matter and Its Interactions
- Motion and Stability: Forces and Interactions
- Energy
- Waves and Their Applications in Technologies for Information Transfer

Life Science:

- From Molecules to Organisms: Structures and Processes
- Ecosystems: Interactions, Energy, and Dynamics
- Heredity: Inheritance and Variation of Traits
- Biological Evolution: Unity and Diversity

Earth and Space Science:

- Earth's Place in the Universe
- Earth's Systems
- Earth and Human Activity

Engineering Design:

- Engineering Design



High School Course and Placement

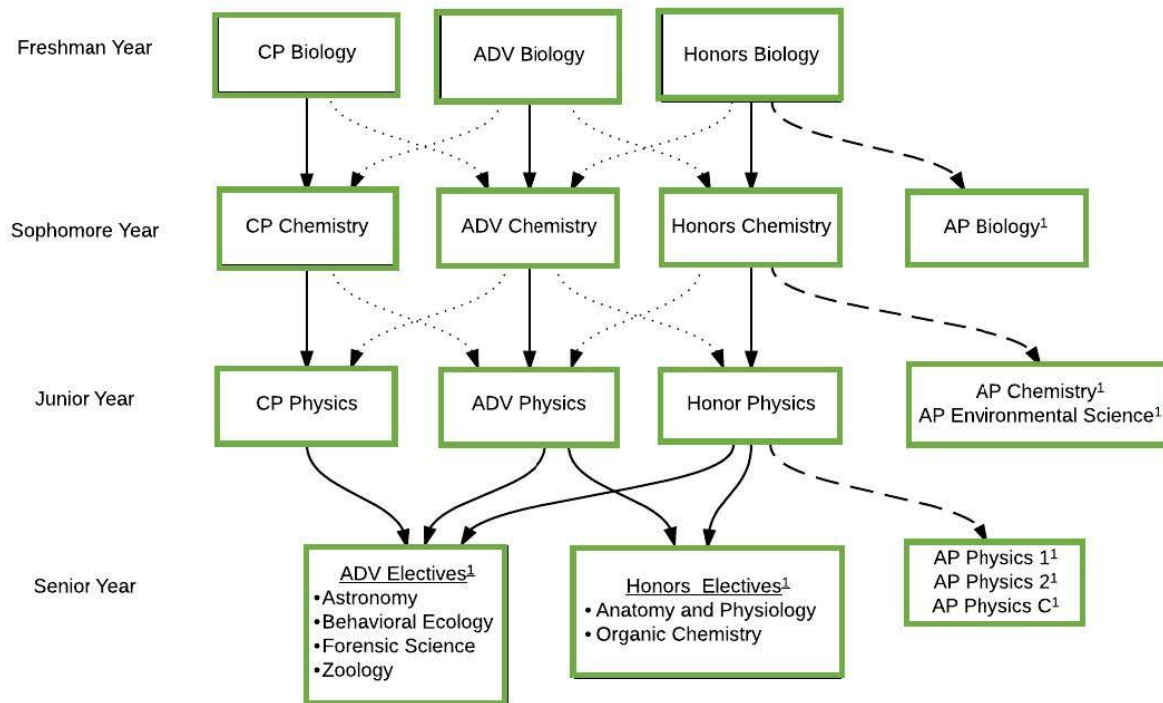
Grade 9 Science Courses:

- CP Biology
- Advanced Biology
- Honors Biology

Criteria used to determine placement:

- Grade 8 Science Test Scores
- Grade 8 Science Lab Scores
- Grade 8 Science Teacher Recommendation
- Grade 9 ELA and Math Placement

Voorhees High School Science Courses



Lines

Solid lines (→) Typical Course Progression
 Dashed Lines (- - ->) Typical AP Progression
 Dotted Lines (- · - · ->) Possible Progression with a level change

AP Classes and Electives

1. AP Classes and Electives can be taken in any sequence as long as students have met requirements



Preparing for College Entrance Exams

- The SAT Math questions draw from four areas of math: number and operations; algebra and functions; geometry and measurement; and data analysis, statistics, and probability.
- Geometry Skills: The Pythagorean Theorem, Special Right Triangles, Triangle Congruence Theorems, Circle formulas: area and diameter, Circle ratios: arcs, central angles, & sectors, and Inscribed Angle Theorem.



Areas to Consider When Thinking Ahead to HS and College

- Strengthen Algebra Skills
- Don't forget Geometry
- Increase SAT/ACT Scores
- AP Courses
- Course Sequence



How Can Parents Help?

- Encourage your child to do his or her homework on a regular basis.
- Provide a regular place and time to do homework.
- Encourage your child to attend class
- Take advantage of E & R and After-school Homework Helper Club
- Teachers want to know if your child is having difficulty so they can help
- Have your child show you her or his mathematics notebook and explain to you what she or he has been doing in class.
- Help him or her to be more organized. Look for sections in the notebook that contain class notes, vocabulary, homework, and assessment pieces.
- Have your child explain the words in the vocabulary list or the solution to a problem.
- Encourage your child by explaining that you believe that she or he can succeed through trying and working hard at the assignments.



Websites

- <https://www.nj.gov/education/standards/math/>
- <https://www.hmhco.com/blog/7-tips-for-helping-your-child-with-math-at-home?srsId=AfmBOor2IIWs31sCCTZNGiCxZSxm5XR3tpb678CMzsH1bt6wGdH4IrmQ>
- <https://www.nytimes.com/2014/07/27/magazine/why-do-americans-stink-at-math.html>
- <https://www.nextgenscience.org/>
- <https://www.nj.gov/education/standards/science/>