Next Generation Math Learning Standards:

- Implementation timeline, awareness of the changes, standards document, NGMLS resources
- Resources from Office of Standards and Instruction
- Awards and Scholarships
NYS Next Generation ELA & Mathematics Learning Standards Implementation Timeline (2017-2022)

**Phase I: Raise Awareness (Winter 2018 - Winter/Spring 2019)**
- Professional development on NYS Next Generation Learning Standards
- Two-day assessments measuring the 2011 P-12 Learning Standards

**Phase II: Build Capacity (Spring 2019 - Summer 2022)**
- Professional development continuing on NYS Next Generation Learning Standards
- Two-day assessments measuring the 2011 P-12 Learning Standards

**Phase III: Full Implementation (September 2022 - ongoing)**
- Full implementation of the NYS Next Generation Learning Standards

**Spring 2023:**
New Grades 3-8 tests measuring the NYS Next Generation Learning Standards. Algebra I Regents aligned in June 2024
Awareness of the Changes in the Standards

The Results of Standards Review: What happened?

**Movement of Standards** to different grade levels to improve the focus of major content and skills for each grade-level and course; providing more time for students to develop deep levels of understanding of grade-level appropriate content;

**Clarification of Standards** to make expectations more clearly defined, without limiting instructional flexibility;

**Addition and Consolidation** of Standards to improve coherence, focus and reduce redundancy amongst grade levels;

**Maintain the Rigor** of the Standards by improving the balance of conceptual understanding, procedural skill and application;

Provide opportunities for students to **Explore** certain standards to ensure that the standards are grade-level appropriate. Exploring a standard allows a student to be introduced to and learn a concept without the expectation of mastering the concept at that grade level.
New York State Next Generation Mathematics Learning Standards

Introduction

In 2010, New York State’s Department of Education began a process of review and revision of its current mathematics standards developed in 2006. Through numerous cycles of public comment, actual and face-to-face meetings, and committees consisting of NYS Education Special Education, Bilingual Education, and English as a New Language teachers, parents,rticular educators, school administrators, college professors, and experts in cognitive research, the New York State Next Generation Mathematics Standards (2017) were developed. These revised standards reflect the collaborative efforts and expertise of all stakeholders involved.

The New York State Next Generation Mathematics Standards (2017) reflect revisions, additions, vertical movement, and correlations to the current mathematics standards. The standards are defined as the knowledge, skills, and understanding that students can and do habitually demonstrate over time because of instruction and learning experiences. These mathematics standards, outcomes, and focused and coherent—designed to support student access to the knowledge and understanding of the mathematical concepts that they need to know in order to succeed in a world very dependent upon the application of mathematics, while providing educators the opportunity to teach and assess systems that are in place for the 21st century.

Context for Revision of the NYS Next Generation Mathematics Learning Standards (2017)

Challenging expectations for mathematical achievement

Today’s children are growing up in a world very different from the one even 10 years ago. Social, economic, and political changes in the labor market means that we are living and working in a knowledge-based economy—one that demands advanced literacy and numeracy. Technology is shaping and reshaping [the] world, whether for phenomena in the private or public sector. Today, information moves through media at lightning speed and in a complex and rapid way that is unprecedented. Technology has eliminated many traditional employment and occupational barriers. This development of new groups of people to be a part of the labor market, coupled with diversity and a willingness to staff positions, has led to new requirements for educators to maintain and update their own teaching skills.

To prepare students for the changes in the way we live and work, it is very clear that our education system keeps pace with what we need to be numerically literate and equipped to analyze and model the complex world we live in. This means that our education system needs to be able to meet the needs of all students—those who are not yet proficient in mathematics.

Increasing Diversity in Learner Populations

The nation is a diverse, multi-ethnic country in which we have diverse learning experiences and environments. Our nation is a diverse, multi-ethnic country in which we have diverse learning experiences and environments. Our nation is a diverse, multi-ethnic country in which we have diverse learning experiences and environments. Our nation is a diverse, multi-ethnic country in which we have diverse learning experiences and environments. Our nation is a diverse, multi-ethnic country in which we have diverse learning experiences and environments.
Within the NGMLS document

How to Read the P-8 & HS Standards for Mathematical Content
NYS Next Generation Mathematics Learning Standards Instruction and Assessment Implementation Timeline

Full Implementation begins:

- PreK-8: September 2022
- Algebra I: September 2023
- Geometry: September 2024
- Algebra II: September 2025
Next Generation Mathematics Learning Standards Crosswalks

<table>
<thead>
<tr>
<th>Cluster</th>
<th>New York State Next Generation Mathematics Learning Standards</th>
<th>Operations and Algebraic Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Represent and solve problems involving addition and subtraction.</td>
<td>2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.</td>
<td>NY-2.OA.1 Use addition and subtraction within 100 to solve one-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions. e.g., using drawings and equations with a symbol for the unknown number to represent the problem.</td>
</tr>
<tr>
<td>Add and subtract within 20.</td>
<td>2.OA.2 Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.</td>
<td>NY-2.OA.2a Fluently add and subtract within 20 using mental strategies. Strategies could include: • counting on; • making ten; • decomposing a number leading to a ten; • using the relationship between addition and subtraction; and • creating equivalent but easier or known sums. Note: Fluency involves a mixture of just knowing some answers, knowing some answers from patterns, and knowing some answers from the use of strategies.</td>
</tr>
<tr>
<td></td>
<td>Note: See standard 1.OA.6 for a list of mental strategies.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NY-2.OA.2b Know from memory all sums within 20 of two one-digit numbers.</td>
<td></td>
</tr>
</tbody>
</table>
Next Generation Mathematics Learning Standards **Snapshots**

---

### Grade 6 Snapshot

**Standards New to Grade 6**

- NY-6.G.5 Use area and volume models to explain perfect squares and perfect cubes.
- NY-6.SP.1b Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population.
- NY-6.SP.1e Understand that the method and sample size used to collect data for a particular question is intended to reduce the difference between a population and a sample taken from the population so valid inferences can be drawn about the population. Generate multiple samples (or simulated samples) of the same size to recognize the variation in estimates or predictions.
- NY-6.SP.6 Understand that the probability of a chance event is a number between 0 and 1 inclusive, that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
- NY-6.SP.7 Approximate the probability of a simple event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
- NY-6.SP.8 Develop a probability model and use it to find probabilities of simple events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
- NY-6.SP.8a Develop a uniform probability model by assigning equal probability to all outcomes and use the model to determine probabilities of simple events.
- NY-6.SP.8b Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.

**Standards Moved from Grade 6**

No standards moved.

**Highlights/Instructional Considerations**

- NY-6.RP.2 Unit rates are limited to non-complex fractions.
- NY-6.RP.3 Students may utilize a strategy of their choice when solving real-world and mathematical problems using ratio and rate reasoning.
- NY-6.RP.3b Unit rate problems may include unit pricing and constant speed.
- NY-6.RP.3c Percent problems involve finding a percent as a rate per 100, finding the whole given a part and the percent; also finding a part of a whole given the percent.
- NY-6.RP.3d Conversions are not across different measurement systems.
- NY-6.NS.1 Students may utilize a strategy of their choice when interpreting, computing, and solving word problems that involve quotients of fractions, including any standard algorithm.
- NY-6.NS.2 (and 3) Any standard algorithm may be used for the division of multi-digit numbers.
- NY-6.EE.2b Added “difference” as one of the mathematical terms.
- NY-6.EE.2c Order of operations, expressions may or may not include parentheses. Expressions may contain whole-number exponents. No nested grouping symbols.
- NY-6.EE.2d All four single-step equations are included. See standards document for analogous algebraic and arithmetic solution examples.
- NY-6.EE.3 Added 6 ≥ c and x ≤ c. Compound inequalities could be introduced here.
- NY-6.EE.9 Students will be given an equation (no longer need to write) and will need to analyze/identify the relationship between the independent and dependent variable.
- NY-6.G.1 Replaced special quadrilaterals with trapezoids, using the inclusive definition of a trapezoid (parallellograms are therefore also included).
- NY-6.G.4 Clarification of three dimensional figures for nets/surface area; right rectangular prisms, right rectangular pyramids, and right triangular prisms.
NGMLSS Glossary of Verbs

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition/context of use in the standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyze</td>
<td>Analyze requires students to examine carefully, take apart mathematically, and break down into components or essential characteristics to identify causes, key factors, and possible results.</td>
</tr>
<tr>
<td>Apply</td>
<td>Apply requires a student to use mathematical knowledge in a variety of situations.</td>
</tr>
<tr>
<td>Calculate</td>
<td>Calculate requires a student to determine an answer.</td>
</tr>
<tr>
<td>Classify</td>
<td>Students classify by determining characteristics (attributes) that objects (numbers, shapes, etc.) share, and characteristics (attributes) they don't share.</td>
</tr>
<tr>
<td>Compare</td>
<td>Students compare by examining two or more objects, numbers or mathematical situations in order to determine similarities and differences.</td>
</tr>
<tr>
<td>Compose</td>
<td>Compose requires students to form or make something (numbers, functions, sets, etc.) by combining parts.</td>
</tr>
<tr>
<td>Convert</td>
<td>Students convert by changing the form (e.g., measurement, different units) without a change in the size or amount.</td>
</tr>
</tbody>
</table>

Downloadable Resource:

PDF Version of this Glossary
NGMLS Unpacking Documents

Section I

1. Unpacking How the Standard Relates to Its Domain and Cluster
   - Understand the standard's relationship to the domain and cluster.

2. Identifying Learning Targets
   - List the learning targets associated with the standard.

3. Identifying Foundational Understanding
   - Explain the foundational understanding of the standard.

Section II

1. Performance/Knowledge Transits (measurable and observable)

2. Aspects of Rigor
   - Process, Conceptual, Proficiency

Section III

1. New York State Next Generation Mathematics Learning Standards

2. Unpacking Document (DRAFT)

GRADE: 1
DOMAIN: Ratio and Proportional Reasoning

Cluster: Analyze proportional relationships and use them to solve real-world and mathematical problems.

- Model with mathematics
- Use appropriate tools strategically
- Look for and express regularity in repeated reasoning

Mathematics Practices

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Attend to precision.
- Look for and make use of structure.
Statistics Progression Video & Toolkit

Stats Progression Video

Statistics: Pk-12

What is the average height of the students at Lincoln Middle School and Washington Middle School?

Lincoln Middle School

<table>
<thead>
<tr>
<th>Population</th>
<th>56</th>
<th>57</th>
<th>58</th>
<th>59</th>
<th>60</th>
</tr>
</thead>
</table>

(Sample)

| Sample Mean | 56.4 in |

Washington Middle School

<table>
<thead>
<tr>
<th>Population</th>
<th>55</th>
<th>56</th>
<th>57</th>
<th>58</th>
<th>59</th>
</tr>
</thead>
</table>

(Sample)

| Sample Mean | 56.8 in |

Statistics: Pk-12

Since 68.6 inches falls outside of the 95% interval, it is an unusual mean height for seventh-grade students.

Simulate Mean Heights (95% confidence interval)

Middle 95% interval centered on the mean:

(58.329, 58.413)
Guide to Aligning Local Curricula & Toolkit

Curriculum decisions are locally determined, and this alignment guide is an **optional resource** for school districts to utilize.

This document is designed to assist New York State school districts in the curriculum alignment process, so educators are **empowered** to do this work.

Guide to Aligning Local Curricula to the NGMLS
New York State Next Generation Mathematics Learning Standards Glossary

<table>
<thead>
<tr>
<th>A</th>
<th>F</th>
<th>L</th>
<th>Q</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>G</td>
<td>M</td>
<td>R</td>
<td>W</td>
</tr>
<tr>
<td>C</td>
<td>H</td>
<td>N</td>
<td>S</td>
<td>X</td>
</tr>
<tr>
<td>D</td>
<td>I</td>
<td>O</td>
<td>T</td>
<td>Y</td>
</tr>
<tr>
<td>E</td>
<td>K</td>
<td>P</td>
<td>U</td>
<td>Z</td>
</tr>
</tbody>
</table>
**Scaffolding Guides (Grades 3-8)**

**Goal:** To support teachers with designing instruction that makes general education curriculum more accessible to ALL students without interfering with the rigor of grade-level content.

**Supporting All Students: Resource Guides for Scaffolding Instruction of English Language Arts and Mathematics**
A Parent’s Guide to the NYS Next Generation ELA & Math Learning Standards

What are the Next Generation Learning Standards?
The Next Generation Learning Standards are the educational goals for all of New York State’s students from prekindergarten through grade 12 in English Language Arts and Mathematics.

Why were the standards revised?
The standards were revised to ensure they are appropriate for students’ grade levels and reflect what students should know and be able to do in math and ELA.

When will the Next Generation Standards be implemented?
Full implementation of the NYS Next Generation Learning Standards begins during the 2022-2023 school year for prekindergarten through grade 8. The implementation timeline can be found at http://www.nysed.gov/curriculum/Instruction/next-generation-learning-standards-and-assessment-implementation-timeline.

How will the standards be assessed?
While teachers assess standards daily in their classrooms, students will also be assessed on the Next Generation Learning Standards beginning in spring of 2023 on the Grades 3-8 New York State ELA and Mathematics Assessments.

How can I learn more?
You can learn more about the Next Generation ELA and Mathematics Learning Standards, by talking to your child’s teacher or visiting www.nysed.gov/next-generation-learning-standards.

Parent Resources
Supporting Learning at Home

Next Generation Learning Standards in English Language Arts & Mathematics
www.nysed.gov/next-generation-learning-standards

New York State Parent Teacher Association
PTSA Parent Resources
nycpta.org/home/parent-resources/

Resources for Parents of Students with Disabilities

Multilingual Learner/English Language Learner Parent Resources

New York State Education Department Office of Curriculum & Instruction
www.nysed.gov/curriculum-instruction

Phone (518) 474-5822

Standards and My Child’s Classroom Learning

Student learning is best supported when goals are well defined. The model below shows how key parts of learning work together. The central focus, student learning, depends on curriculum, instruction, and assessment. The learning standards represent the overall knowledge and skills students need to learn by the end of each school year.

Curriculum
What are we learning?

Instruction
How are we teaching?

Assessment
What have we learned? What should we do next?

Standards
What do we need to learn? What is expected of our students? How do we know they are learning?

• goals for New York State students
• organized by subjects and grade levels
• the learning intended to be accomplished by the end of a specific
school year
• approved by the New York State Board of Regents


Example: Locally developed units of study, such as a unit on poetry or multiplication of two-digit numbers.

Example: small group instruction or cooperative learning.

Assessments:
• a process used to learn about student progress
• guide and inform teaching
• determined by local districts and/or teachers, as well as New York State
• New York State assessments:
• ELA and Mathematics Assessments in Grades 3-8
• Science Assessments in Grades 3 & 8
• Regents Examinations
• English as a Second Language Achievement Test ( NYSEALT)
• Alternate Assessment (NYSAA)

Example: classroom demonstration of a student recognizing patterns or outlining a student’s literature writing sample.
NGMLS Post-test Standard Designations

- **Grade 3**: Scaled pictograph/bar graph (NY-3.MD.3) (Additional)
- **Grade 5**: Order of Operations Standards (NY-5.OA.1 and 2) (Additional)
- **Grade 6**: All Probability and Statistics
- **Grade 7**: Area and Circumference of a Circle (NY-7.G.4) (Additional)
- **Grade 8**: Scientific Notation (NY-8.EE.3 and 4), Linear Systems of Equations (NY-8.EE.8)

Post-test content (at teacher’s discretion) may be introduced at various points throughout the year. Then, reinforced during the remaining months of school.
Grades 3 – 8 Performance Level Descriptions

Grades 3-8 ELA and Mathematics Tests

- Past Grades 3-8 Released Questions
- Memo: Spring 2021 Grades 3-8 English Language Arts and Mathematics Tests
- 2021 Grades 3-8 English Language Arts and Mathematics Test Manuals, Educator Guides and Teacher’s Directions
- 2019 Grades 3-8 English Language Arts and Mathematics Score Report and Understanding Report Samples
- Grades 5-8 Mathematics Reference Sheets (All Languages)

Next Generation Learning Standards

- Next Generation Learning Standards English Language Arts Performance Level Descriptions
- Next Generation Learning Standards Mathematics Performance Level Descriptions
Math Frequently Asked Questions

Learning Standards/Curriculum/Instruction

Graduation Requirements/Part 100 Regulations

State Assessments

1. What are the mathematics requirements for a Regents Diploma?

According to the Part 100 (100.5[a3][v]) of the Regulations of the Commissioner of Education, to receive a Regents Diploma a student must earn three commencement-level mathematics credits (more advanced than grade eight and must meet the commencement-level mathematics learning standards as determined by the commissioner) and achieve a passing score on one Mathematics Regents Examination or Department Approved Alternative Mathematics examination.

2. What are the mathematics requirements for a Regents Diploma with Advanced Designation?

In order to earn a Regents Diploma with Advanced Designation Students must earn 3 commencement level Mathematics credits and pass the Regents examinations in Algebra I, Geometry and Algebra II or the Department Approved Alternative for the examination requirements. Further information regarding diploma requirements and the STEM pathway can be found on the CII website.

3. Can a student earn two credits for Algebra I?

According to the Part 100 (100.5[a3][v]) of the Regulations of the Commissioner of Education ... no more than two credits shall be earned for any Algebra I, Geometry, or Algebra II commencement level mathematics course. Algebra I is designed to be a one-unit course, however, the content of Algebra I (Geometry or Algebra II) may be spread out over two years with each year culminating in one credit.
Expanded Math Access Program

• State initiative to promote the math fluency and the love of math in K-5 students across New York.

• Not a curriculum; Curriculum decisions are locally determined

• Online, standards-based math games and activities at no cost to districts; standards correlation document available

• Optional program with flexible use

• Use of free resource is not a requirement for districts; an additional asset to promote mathematical thinking and fluency
PAEMST Announcement

2020 PAEMST National Mathematics Awardees for New York State (K-6)

Leslie Anson, Millbrook Middle School, Millbrook CSD, Millbrook, NY
Lynda Brennan, RP Connor Elementary School, Suffern CSD, Suffern, NY

For more information, please visit www.paemst.org

• Content knowledge
• Instructional methods and assessments
• Broad range of learners and teaching environments
• Reflective teaching practice
• Leader in math education
PAEMST Announcement

2022 PAEMST NY State Finalists for Mathematics (K-6)

Kristin Hanley
Lakewood Elementary School, Clarkstown CSD, New City, NY

Justin Wiedrick
Adirondack Middle School, Adirondack CSD, Boonville, NY

For additional information, please visit www.paemst.org
PAEMST AWARD

2022-2023 PAEMST Award Cycle
grade 7-12 educators

The Nation's Highest Honors for Teachers of Science, Technology, Engineering, and Mathematics (STEM, including Computer Science)

Three Application Components:
Administrative, Narrative, Video

Nominations open:
Fall 2022

Please visit www.paemst.org for more information.
Content Area Notification Service

Join our Notification Service for updates from the Office of Standards and Instruction.
Contact Information

Graduation Requirements:
EMSCGRADREQ@nysed.gov

Assessment Questions:
EMSCASSESSINFO@nysed.gov

Standards/Presentation Questions:
EMSCCURRIC@nysed.gov