NYS Next Generation Mathematics Learning Standards

NYSED AND S/CDN – MATHEMATICS TEAM
NOVEMBER 30, 2017
New York State Next Generation
Mathematics Learning Standards

www.nysed.gov/next-generation-learning-standards

https://www.engageny.org/next-generation-learning-standards
New York State Next Generation
Mathematics Learning Standards

2017

- Counting and Cardinality
- Operations and Algebraic Thinking
- Number and Operations in Base Ten
  - Number and Operations
  - Fractions
- Ratios and Proportional Relationships
- The Number System
- Expressions and Equations
- Functions
- Measurement and Data
- Geometry
- Statistics and Probability
- Number and Quantity
- Algebra
- Modeling

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.
**Introduction:**

Why Start Here?

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The Opening Paragraph...

In 2015, New York State (NYS) began a process of review and revision of its current mathematics standards adopted in January of 2011. Through numerous phases of public comment, virtual and face-to-face meetings with committees consisting of NYS educators (Special Education, Bilingual Education and English as a New Language teachers), parents, curriculum specialists, school administrators, college professors, and experts in cognitive research, the New York State Next Generation Mathematics Learning Standards (2017) were developed. These revised standards reflect the collaborative efforts and expertise of all constituents involved.
2015 Legislative Requirement: Standards re-evaluated with stakeholder input

NYSED conducted a survey (AIMHighNY) of teachers, parents and other stakeholders about the current standards. More than 10,500 people responded to the survey and provided over 750,000 pieces of feedback.
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NYSED formed the Mathematics Learning Standards Review committee comprised of more than 68 educators and key stakeholders across the state that met for a week in Albany during July.
2015 Legislative Requirement:
Standards re-evaluated with stakeholder input

NYSED released the new draft learning standards for public comment and received more than 4,100 comments
2015 Legislative Requirement: Standards re-evaluated with stakeholder input

The Mathematics Content Advisory Panel and other committees reviewed every learning standard, making any necessary modifications based on professional expertise as well as input gathered from public comment and child development experts.
Revised learning standards presented to the Board of Regents
2015 Legislative Requirement: Standards re-evaluated with stakeholder input

Next Generation Mathematics Learning Standards approved by the Board of Regents

- Fall 2015
- April 2016
- Sept. 2016
- Dec. 2016 – April 2017
- May 2017
- Sept. 2017
The New York State Next Generation Mathematics Learning Standards (2017) reflect revisions, additions, vertical movement, and clarifications to the current mathematics standards. The Standards are defined as the knowledge, skills and understanding that individuals can and do habitually demonstrate over time because of instruction and learning experiences.
These mathematics standards, collectively, are focused and cohesive—designed to support student access to the knowledge and understanding of the mathematical concepts that are necessary to function in a world very dependent upon the application of mathematics, while providing educators the opportunity to devise innovative programs to support this endeavor.
As with any set of standards, they need to be rigorous; they need to demand a balance of conceptual understanding, procedural fluency and application and represent a significant level of achievement in mathematics that will enable students to successfully transition to post-secondary education and the workforce.
How do these four components work together to support student learning?
Introduction

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

- Changing expectations for mathematics achievement
- Increasingly Diverse Learner Populations
- Students with Disabilities and the Standards

Understanding the *NYS Next Generation Mathematics Learning Standards (2017)*
Round Robin

- Each team of 4 will be provided a set of task cards to read
- While reading your assigned task card, answer the following:
  - What is the most important takeaway?
  - How do you relate your takeaway to standards, curriculum, instruction, and/or assessment?
What types of learning experiences support these changing expectations?
Describe how the shapes are growing.

Case 1

Case 2

Case 3
Continuous Round Table

- Pass your paper clockwise
- Read your teammates description
- Write at least 1 comment reflecting on their description
- Repeat process until you receive your paper back
That’s Me!

• Which method do you identify with?
• We’ll share some common strategies. If you hear one of yours, stand up and say, “That’s me!”
Raindrop Method
Bowling Alley Method
Wayne’s World
Red Sea Method
Square Method
Team Collaboration

• What would the 6\textsuperscript{th} case look like? How many \textit{total} blocks would it have? How do you know?

• How many blocks would there be in the n\textsuperscript{th} case? How do you know?
How Do The NYS Next Generation Mathematics Learning Standards Support These Changing Expectations?

Connecting Content to Practice

Standards for Mathematical Content

NY-3.OA.9
NY-4.OA.5
NY-5.OA.3
NY-6.EE.1
NY-6.EE.2
NY-6.G.5
AI-F.BF.1a
How Do The NYS Next Generation Mathematics Learning Standards Support These Changing Expectations?

Connecting Content to Practice

Standards for Mathematical Content

Standards for Mathematical Content & Practice

Standards for Mathematical Practice

What are the Standards for Mathematical Practice?
Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning
Table Talk

- Each table has been assigned a number
- At your table fill in the following sentence frame:

  SMP ________ Looked like __________ and
  Sounded like ____________ during this activity.
Work as an impactful and motivated data scientist developing technical solutions to complex problems. Analyze data to identify trends and support the development of mission-related analyses, using techniques such as econometrics regression analysis, cluster analysis, Bayesian analysis, discriminant analysis, sentiment analysis, support vector machines, survival analysis, and other modes of machine learning. Contribute to the development of new concepts and experiments, translate these ideas into executable action plans, and communicate these plans to a diverse client base. Create mathematical models and programs used to test solutions to complex systems. Work within cross-functional teams to engage the client, comprehend the client's problems, develop strategic analytical products, support requirements analysis, including process and systems analyses, support the development of business and system architectures, and define actionable system requirements.

What do the Standards for Mathematical Practice Look and Sound Like in Kindergarten?

https://www.teachingchannel.org/videos/pre-k-math-lesson
Boards of Cooperative Educational Services (BOCES)
Staff and Curriculum Development Network (S/CDN)
NYSCDN.COM

Whose mission is to strengthen the capacity of school districts to promote successful attainment of the New York State Standards by all students.
The Math and ELA Leadership Teams plan the logistics for the standards review process including developing materials and providing guidance for the Standards Review Committees.

Both Math and ELA Committees are split into grade band subcommittees; and into course subcommittees for high school math.

**Grade Band Committees**

- **Facilitator:** Content Advisory Member
- **Teachers:** P-12, ENL, Special Education
- **Administrators:** Building level, District level, Instructional Coaches
- **College Professors:** SUNY, CUNY, Community Colleges
- **Parents:** Urban, Suburban, rural, ENL, SWD