NYS Next Generation Mathematics Learning Standards

NYSED AND S/CDN – MATHEMATICS TEAM
MARCH 28, 2018

NEW YORK STATE EDUCATION DEPARTMENT

THE UNIVERSITY OF THE STATE EDUCATION DEPARTMENT

New York State Next Generation
Mathematics Learning Standards

2017

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

https://www.engageny.org/next-generation-learning-standards

New York State Next Generation English Language Arts and Mathematics Learning Standards

☰ Next Generation Learning Standards

English Language Arts Learning Standards ▸

Mathematics Learning Standards ▸

Roadmap and Implementation Timeline

Early Learning Task Force

Supporting All Students Conferences ▸

NYS ED.gov **NYS Next Generation LEARNING STANDARDS**

New York State Next Generation Learning Standards Now Available

The Board of Regents adopted the newly revised English Language Arts and Mathematics Learning Standards on September 11, 2017. The new standards have been the result of over two years of collaborative work to ensure New York State has the best learning standards for our students. Over 130 educators and parents worked together to make recommendations and revise the standards, resulting in a new set of revised English Language Arts and Mathematics Learning Standards. Additional information about the timeline for implementation in schools is available from Standards and Assessment Implementation Timeline.

Next Generation Learning Standards Roadmap and Implementation Timeline

The Next Generation English Language Arts (ELA) and Mathematics Implementation Roadmap is a document prepared by the State Education Department to assist educators' transition to fully implement the new Next Generation Standards. The Roadmap's goals and activities were designed by the State Education Department in collaboration with various local school districts and stakeholders to ensure that all New York State schools would be equipped to implement the Next Generation Standards. The overall timeline for the implementation of the Next Generation ELA and Mathematics is as follows:

- **September 2017:** Adoption of NYS Next Generation Learning Standards.

- **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 2020):** Professional development continuing on NYS Next Generation Learning Standards; two-day assessments measuring the 2011 P-12 Learning Standards.

- **Phase III Full Implementation (September 2020 – ongoing):** Full implementation of the NYS Next Generation Learning Standards.

- **Spring 2021:** New grade 3-8 tests measuring the NYS Next Generation Learning Standards. The timeline regarding the full-implementation/assessment alignment at the high-school level has not yet been determined and will be forthcoming; however, full-implementation/assessment alignment will not be before the school year 2020-2021.

NYS NEXT GENERATION ENGLISH LANGUAGE ARTS and MATHEMATICS LEARNING STANDARDS

Phase I: Raise Awareness

Make all education stakeholders aware of the revised standards and the timeline for implementation; highlight areas of impact with respect to current standards, instruction, and assessment. This collaborative phase will help identify the necessary professional development that will occur in Phase II.

Please note: In Spring 2021, the NYS 3-8 assessments will align to the NYS Next Generation Learning Standards. The timeline regarding assessment alignment at the high school level has not been determined and will be forthcoming.

Stakeholder Groups *

Timeline: Winter 2018-Winter/Spring 2019

Goal(s)	Key Implementation Activities	NYSED	S/CDN & BOCES	Local School Districts	Other Stakeholder Groups	Action Steps Taken (To be completed by local districts)
Goal 2: Understand and clearly communicate the changes between the 2011 P-12 Learning Standards and the NYS Next Generation Learning Standards.	Review the Introduction to the New York State Next Generation Early Learning Standards, the Preface to the ELA and Mathematics Standards, and the Next Generation Learning Standards Introductions for both ELA and Mathematics, identifying potential needs for future professional development in Phase II.		✓	✓	✓	
	Review and discuss Dr. Lesaux's literacy briefs that offer deeper explanation of concepts embedded in the standards. Provide guidance to districts that serve linguistically diverse learning populations. Additional resources: Blueprint for Improved Results for Students with Disabilities and Blueprint for English Language Learner Success		✓	✓	✓	
	Review the new Lifelong Practices of Readers and Writers and Standards for Mathematical Practices, identifying potential needs for future professional development in Phase II.		✓	✓	✓	
	Create and release crosswalks that show the differences between the 2011 P-12 Learning Standards and 2017 NYS Next Generation ELA and Mathematics Standards.	✓				

* NYSED, S/CDN, BOCES, Big 5, Districts, professional organizations, NYSUT, NYS Teacher Centers, IHEs, PTA, and others

Phase I: Raise Awareness

Starting in Winter 2018 through Winter/Spring 2019, we want to ensure all education stakeholders are aware of the revised standards and the timeline for implementation and highlight areas of impact with respect to current standards, instruction, and assessment. This collaborative phase will help identify the necessary professional development that will occur in Phase II.*

Phase II: Capacity Building

Starting in Spring 2019 through Summer 2020, we will provide guidance and support for districts with regards to the professional development needs identified in Phase I, with a focus on the integration of the Next Generation ELA and Mathematics Learning Standards into curriculum, instruction, and assessment design.*

Phase III: Implementation

In September 2020 and on, local school districts will fully implement the NYS Next Generation Mathematics and ELA Learning Standards in classrooms for Prekindergarten-Grade 12.*

*Please note: In Spring 2021, the NYS 3-8 assessments will align to the NYS Next Generation Learning Standards. The timeline regarding assessment alignment at the high school level has not been determined and will be forthcoming.
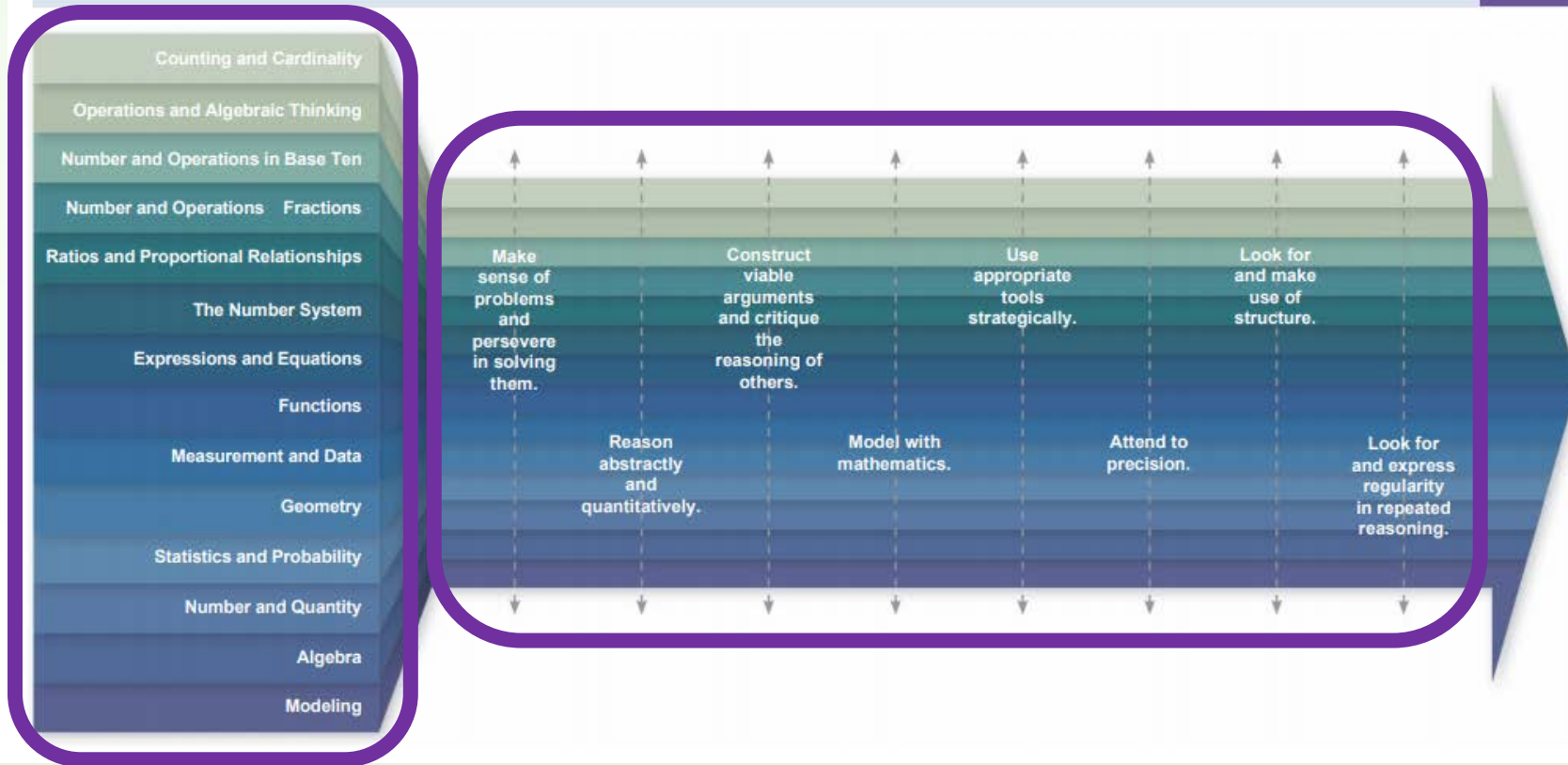
NYS NEXT GENERATION ENGLISH LANGUAGE ARTS and MATHEMATICS LEARNING STANDARDS

Phase I: Raise Awareness Make all education stakeholders aware of the revised standards and the timeline for implementation; highlight areas of impact with respect to current standards, instruction, and assessment. This collaborative phase will help identify the necessary professional development that will occur in Phase II. **Please note: In Spring 2021, the NYS 3-8 assessments will align to the NYS Next Generation Learning Standards. The timeline regarding assessment alignment at the high school level has not been determined and will be forthcoming.**	Stakeholder Groups *				Timeline: Winter 2018-Winter/Spring 2019
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Goal 2: Understand and clearly communicate the changes between the 2011 P-12 Learning Standards and the NYS Next Generation Learning Standards.	Build, support, and enhance knowledge of the NYS Next Generation ELA and Mathematics Learning Standards in the public sector (other stakeholders, higher education, parents, and the community) to promote effective implementation.	✓	✓	✓	✓	
Goal 3: Develop a P-12 district/building/grade level plan to be utilized in Phase II for curriculum development and professional development aligned to the NYS Next Generation ELA and Mathematics Learning Standards.	Identify district-level policies, initiatives, funding, and schedules that will support implementation.	✓	✓	✓	✓	
	Develop professional learning plan to determine the focus of future professional development and major initiatives for effective implementation of the Next Generation Learning Standards	✓	✓	✓	✓	
Goal 4: Support the development of summative assessments at the state level aligned to NYS Next Generation ELA and Mathematics Learning Standards.	Work collaboratively with the Office of State Assessment to analyze the standard changes and implications to the test development cycle/guidance documents. Note: New York State Education Department State Assessment teacher participation opportunities are available on the OSA website.	✓	✓	✓		

NEW YORK STATE EDUCATION DEPARTMENT

THE UNIVERSITY OF THE STATE EDUCATION DEPARTMENT

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.

Table of Contents

The Introduction: Why Start Here ?

Why is there a need for change ?

What is the relationship between standards, curriculum, instruction and assessment with regards to student learning ?

How do we make the standards accessible to our diverse learner populations ?

What is the importance of connecting the Content Standards to the Standards for Mathematical Practice, and what does this look like ?

Introduction

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**

Fall 2015

2015 Legislative Requirement:
Standards re-evaluated with stakeholder input

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

Fall 2015 **April 2016**

Standards Review Committee

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.

BOCES/SCDN	NYC DOE
Standards Review Leadership Team	
NYSUT	NYSED

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

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

Fall 2015 → **April 2016** → **Sept. 2016**

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

| Fall 2015 | April 2016 | Sept. 2016 | Dec. 2016 – April 2017 |

2015 Legislative Requirement:
Standards re-evaluated with stakeholder input

Revised learning standards presented to the Board of Regents

| Fall 2015 | April 2016 | Sept. 2016 | Dec. 2016 – April 2017 | May 2017 |

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 |

Introduction

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.

Standards

Introduction

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..

Instruction   Curriculum

Introduction

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.

Assessment

How do these four components work together to support student learning?

Standards

Instruction

Curriculum

Assessment
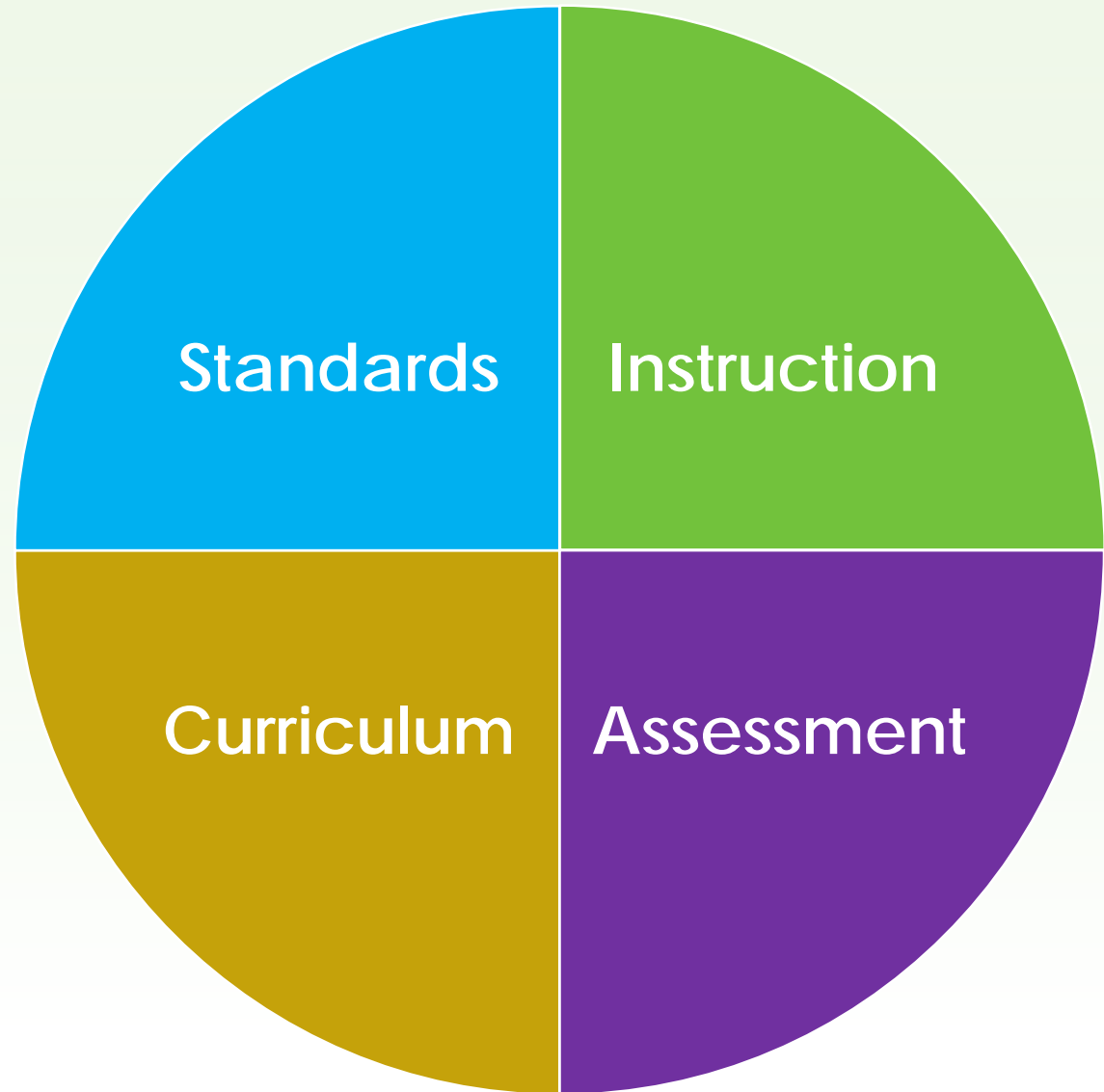
Introduction

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?

Describe how the shapes are growing.
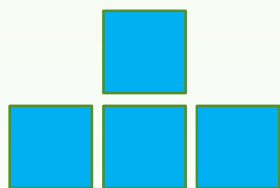
Case 1
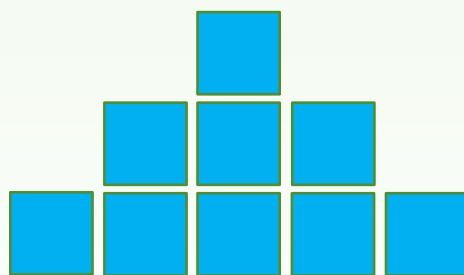
Case 2
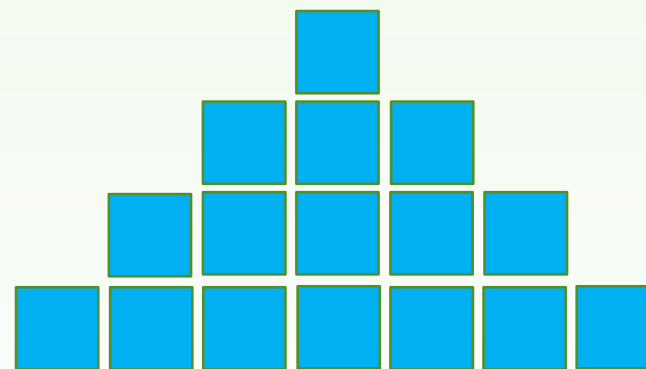
Case 3

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?
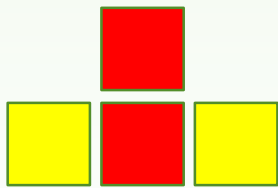
- We'll share some common strategies. If you hear one of yours, stand up and say, "That's me!"
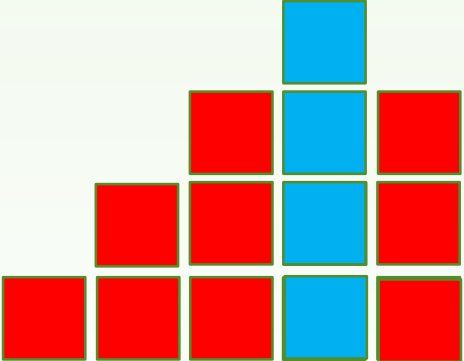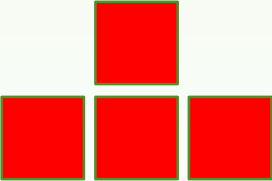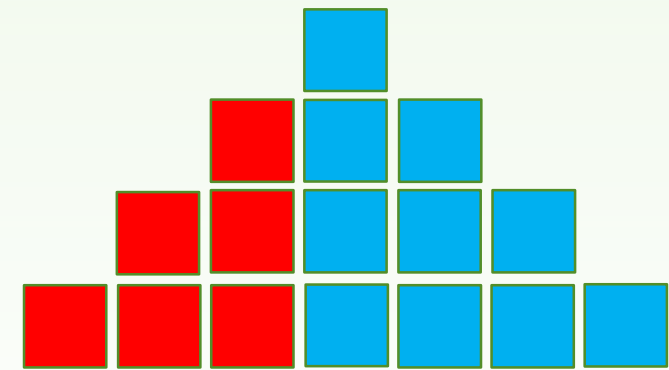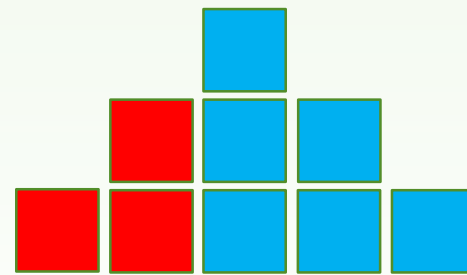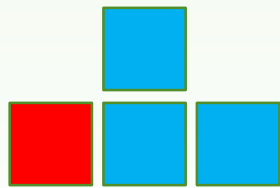
Raindrop Method
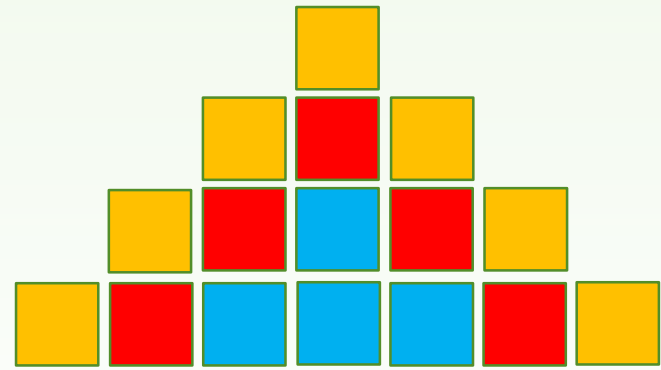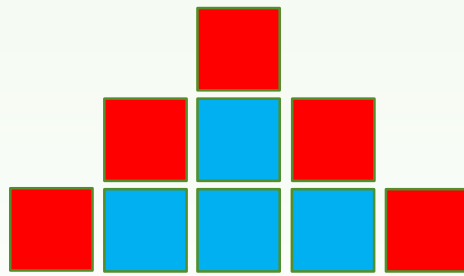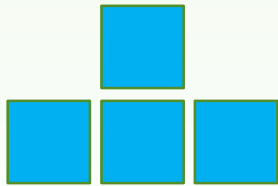
Bowling Alley Method
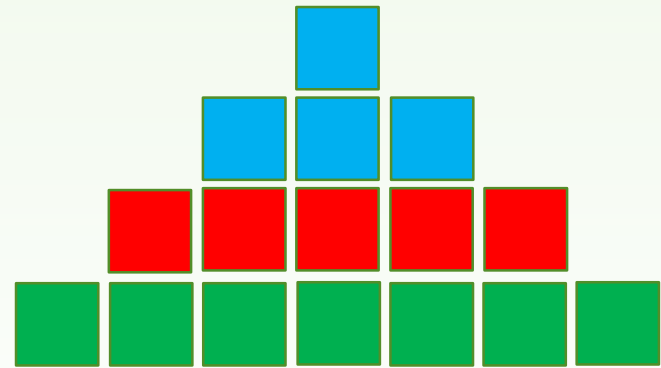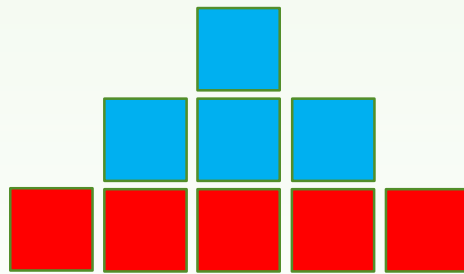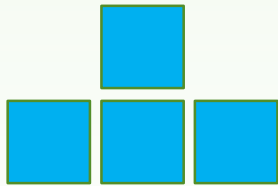
Wayne's World
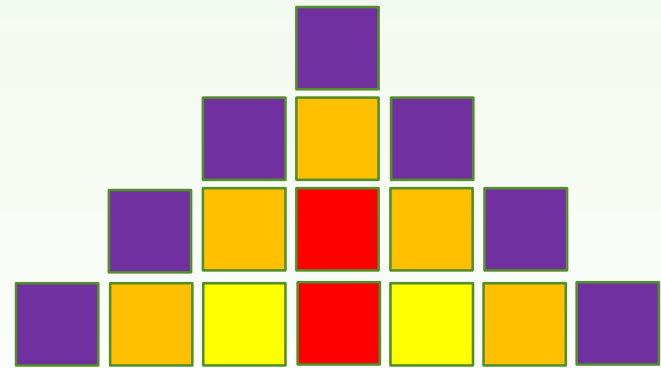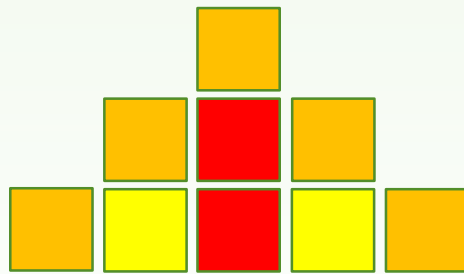
Red Sea Method
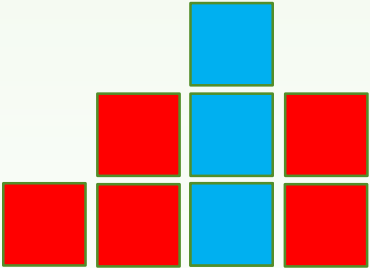
Square Method

Team Collaboration

- What would the 6th case look like? How many **total** blocks would it have? How do you know?

- How many blocks would there be in the nth 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
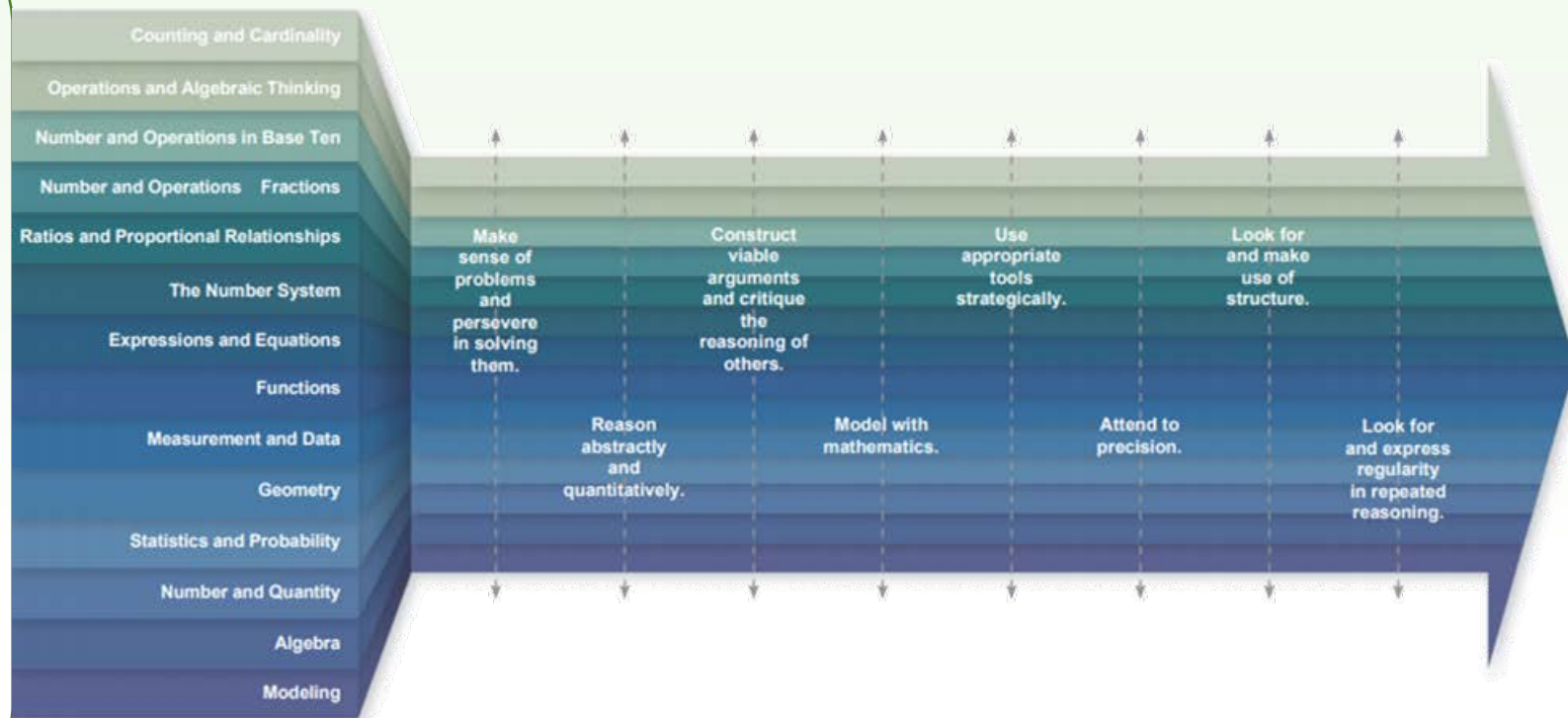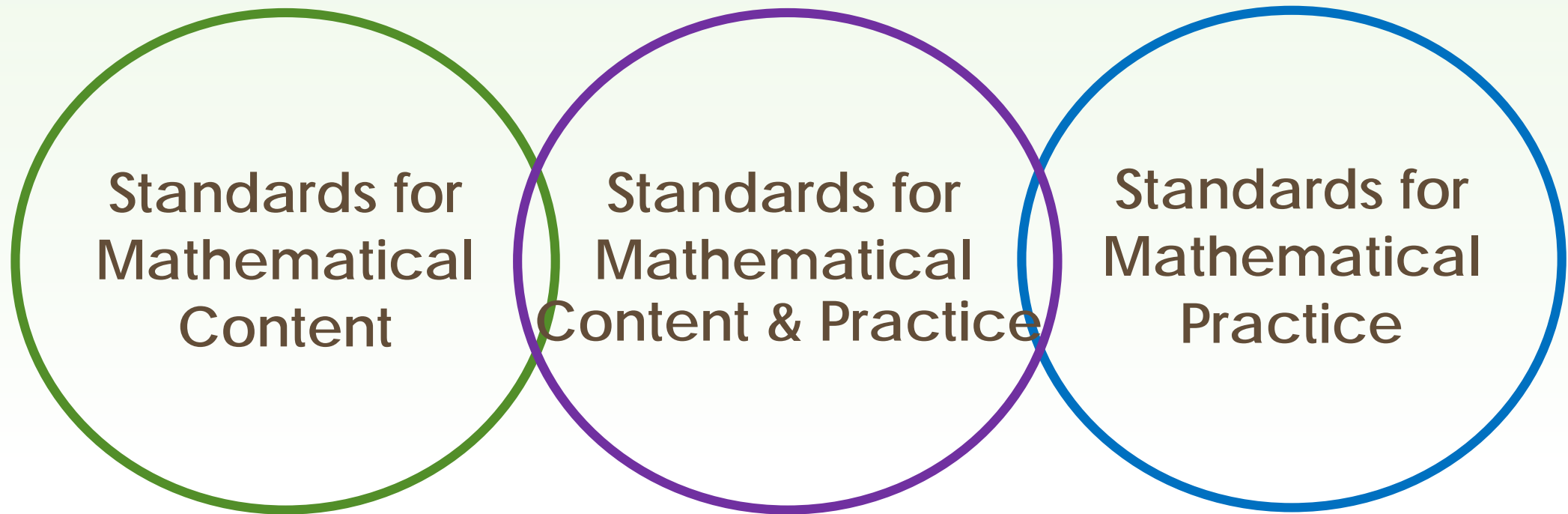**NY-6.EE.1**
NY-6.EE.2
NY-6.G.5
AI-F.BF.1a

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

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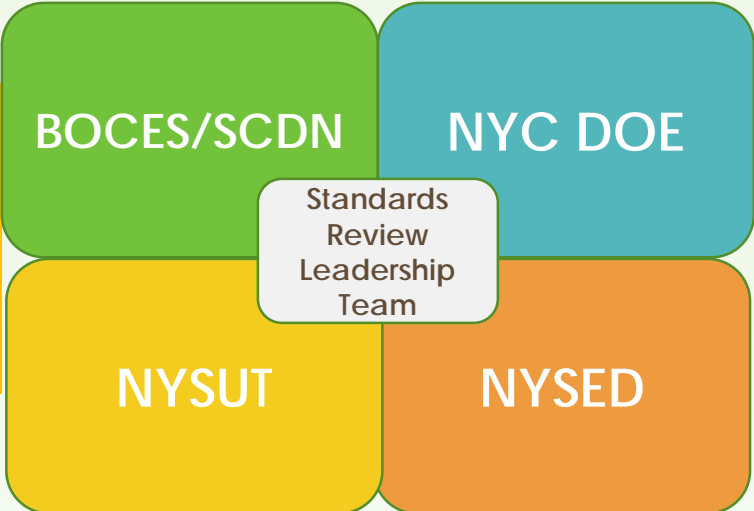
Boards of Cooperative Educational Services (BOCES)
Staff and Curriculum Development Network (S/CDN)

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.

Standards Review Committee

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.

BOCES/SCDN	NYC DOE
Standards Review Leadership Team	
NYSUT	NYSED

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Parents: Urban, Suburban, rural, ENL, SWD