

NYS Next Generation Mathematics Learning Standards

NYSED AND S/CDN – MATHEMATICS TEAM
NOVEMBER 30, 2017

NEW YORK 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 Mathematics Learning Standards

2017

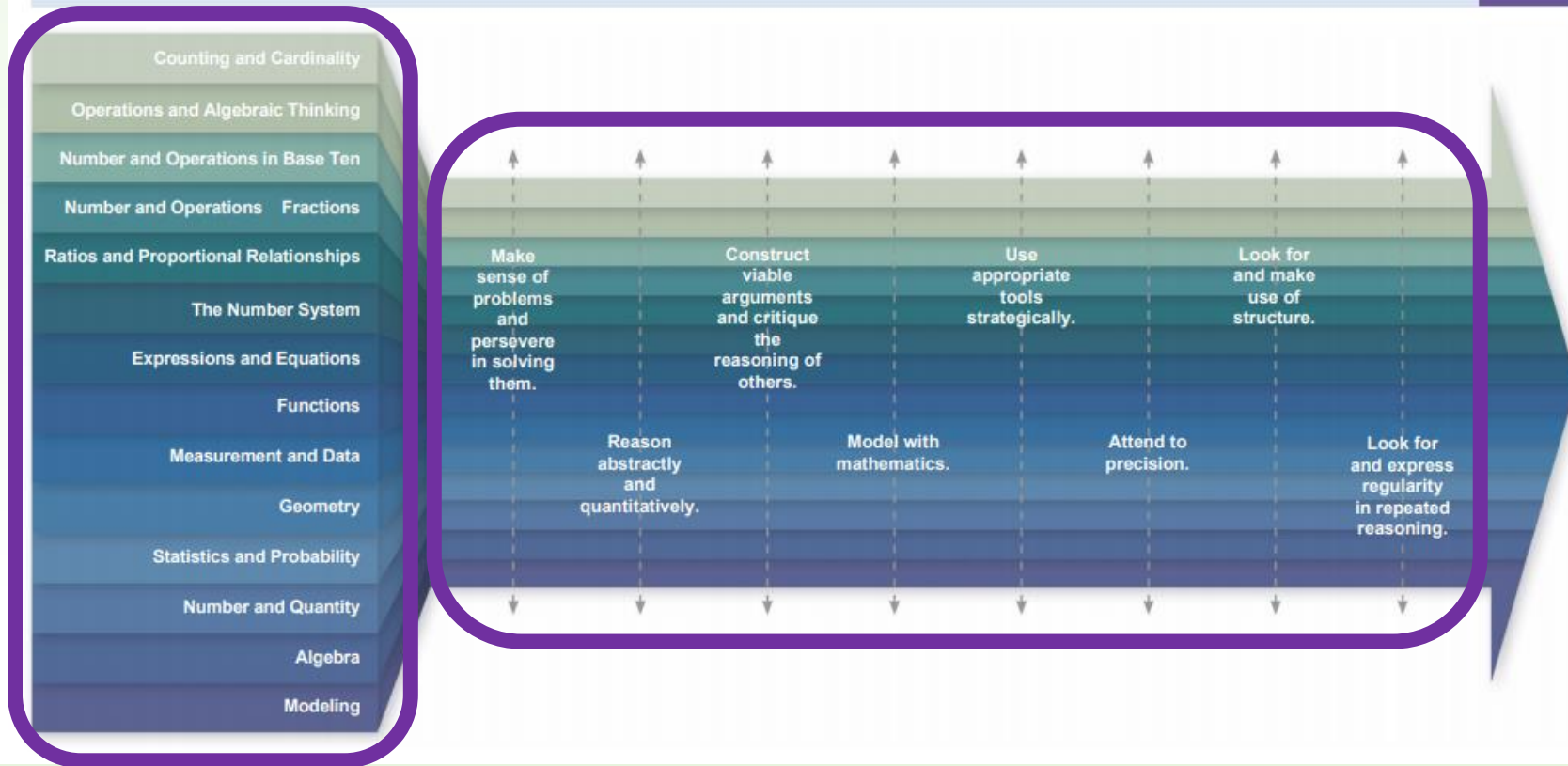


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Introduction

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

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

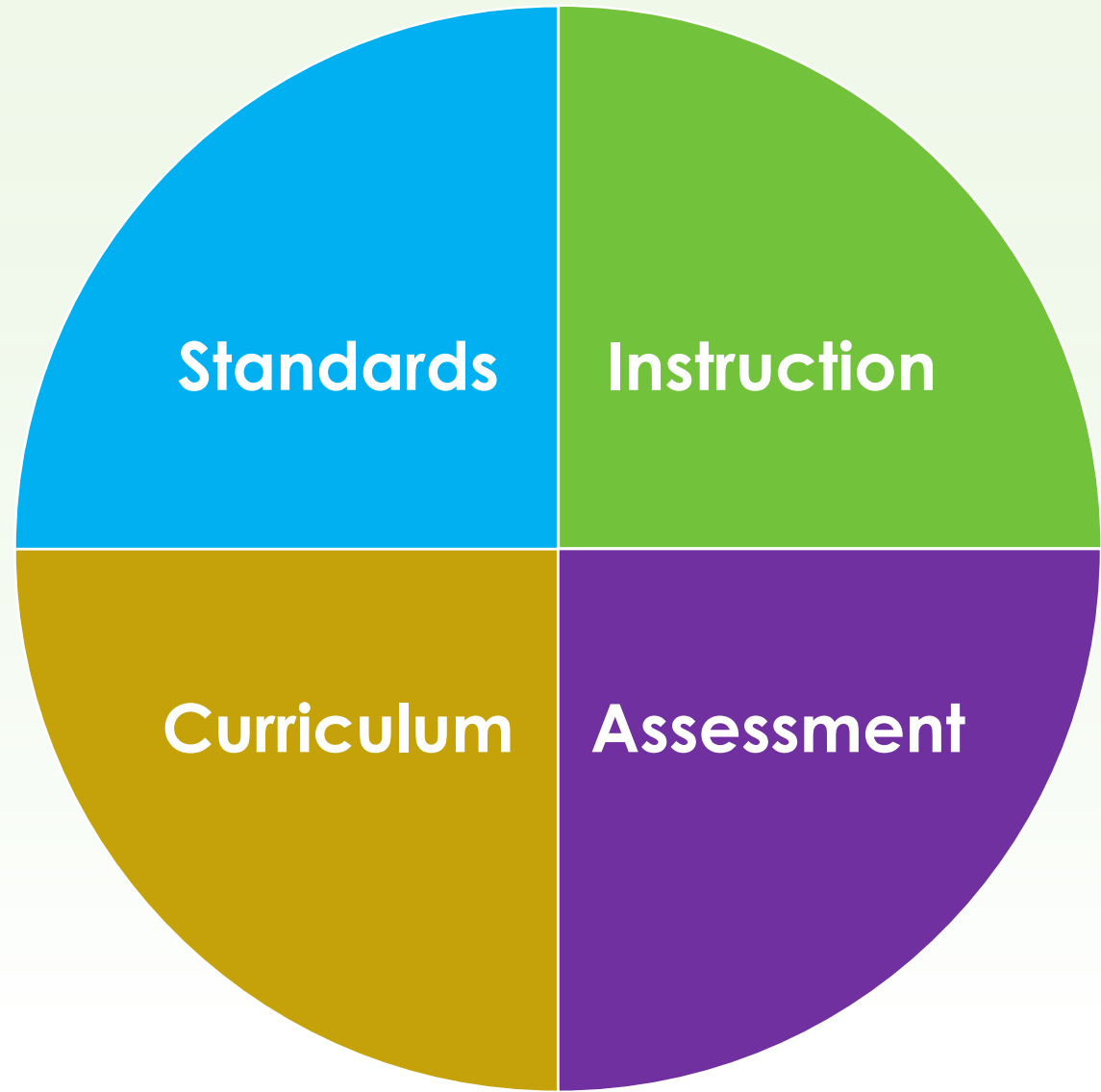
Curriculum

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?



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?

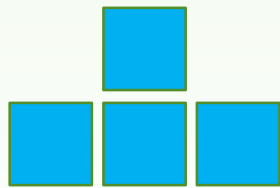


HIGH CEILING

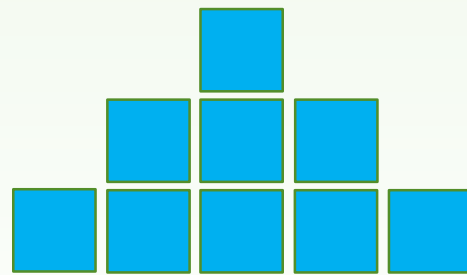
What types of learning experiences support these changing expectations?

LOW FLOOR

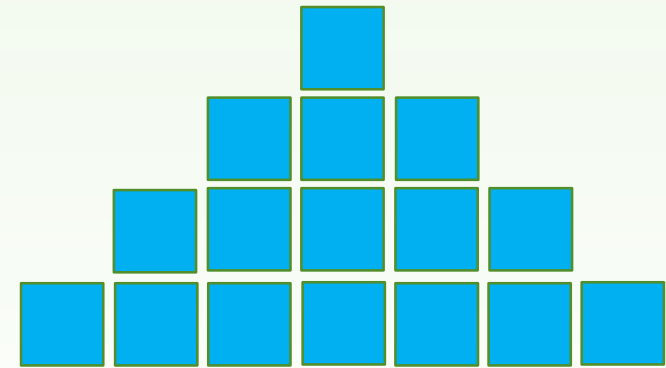
Describe how the shapes are growing.



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

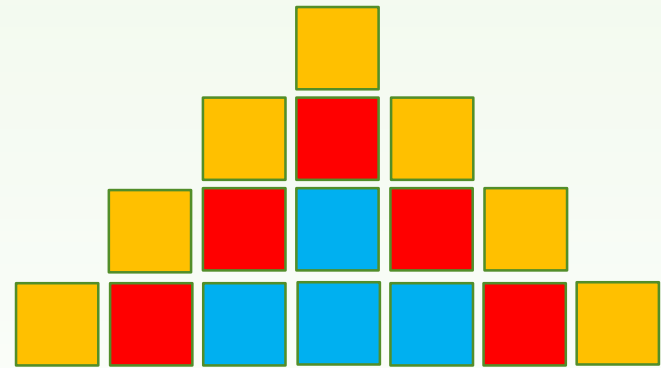
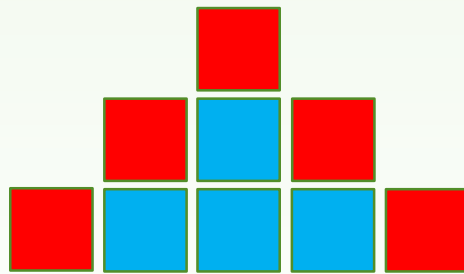
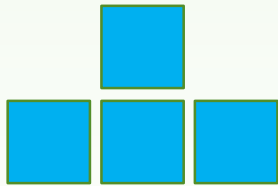


That's Me!

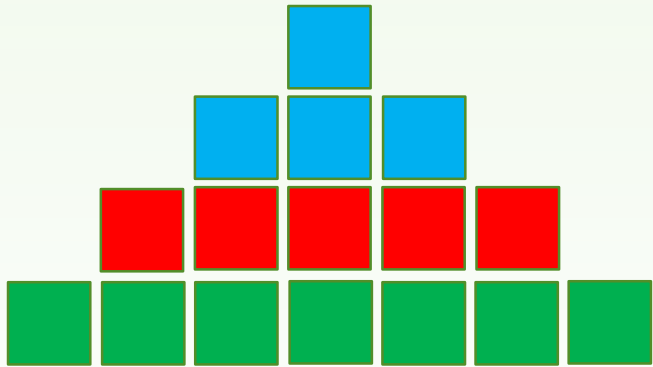
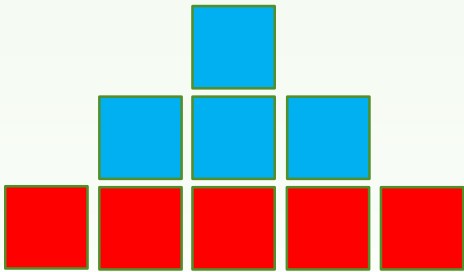
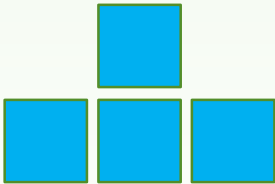
- Which method do you identify with?
- We'll share some common strategies.
If you hear one of yours, stand up
and say, "That's me!"



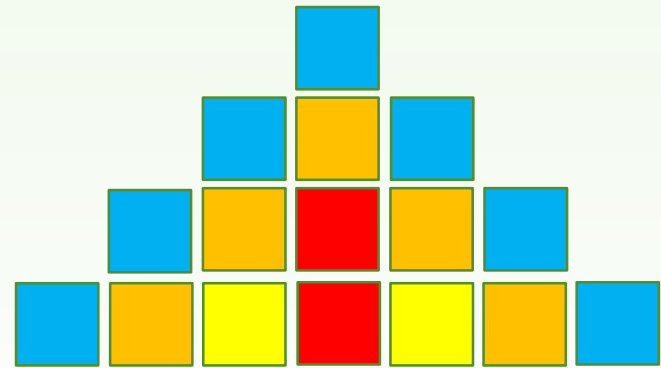
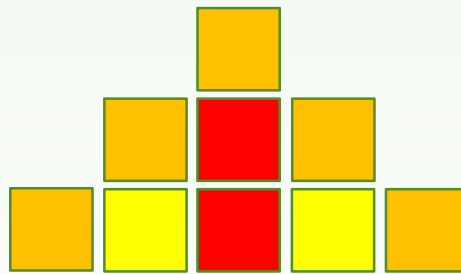
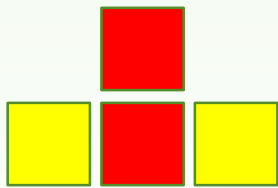
Raindrop Method



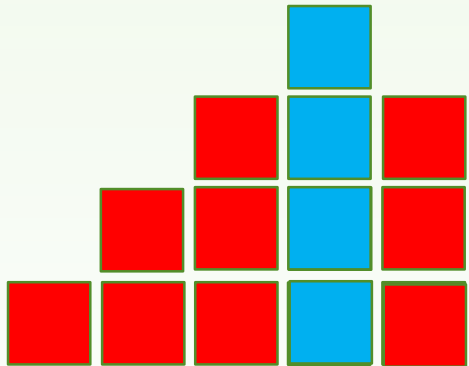
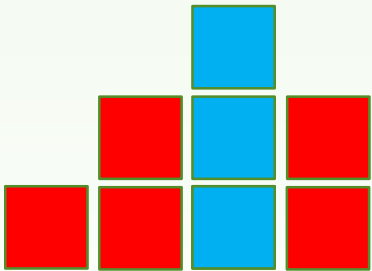
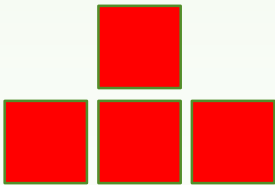
Bowling Alley Method



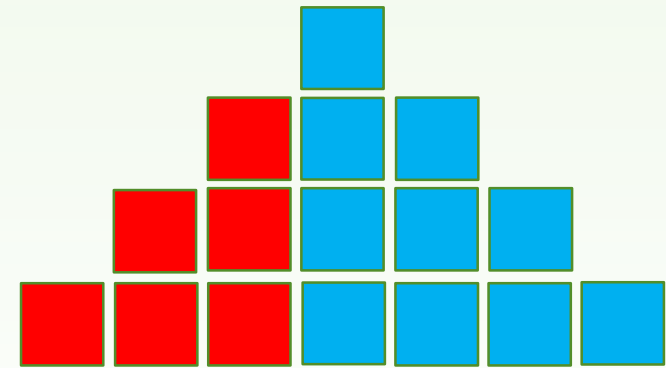
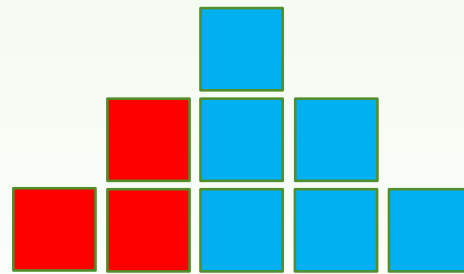
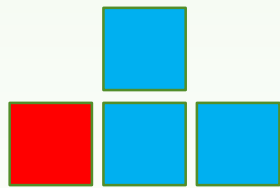
Wayne's World



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

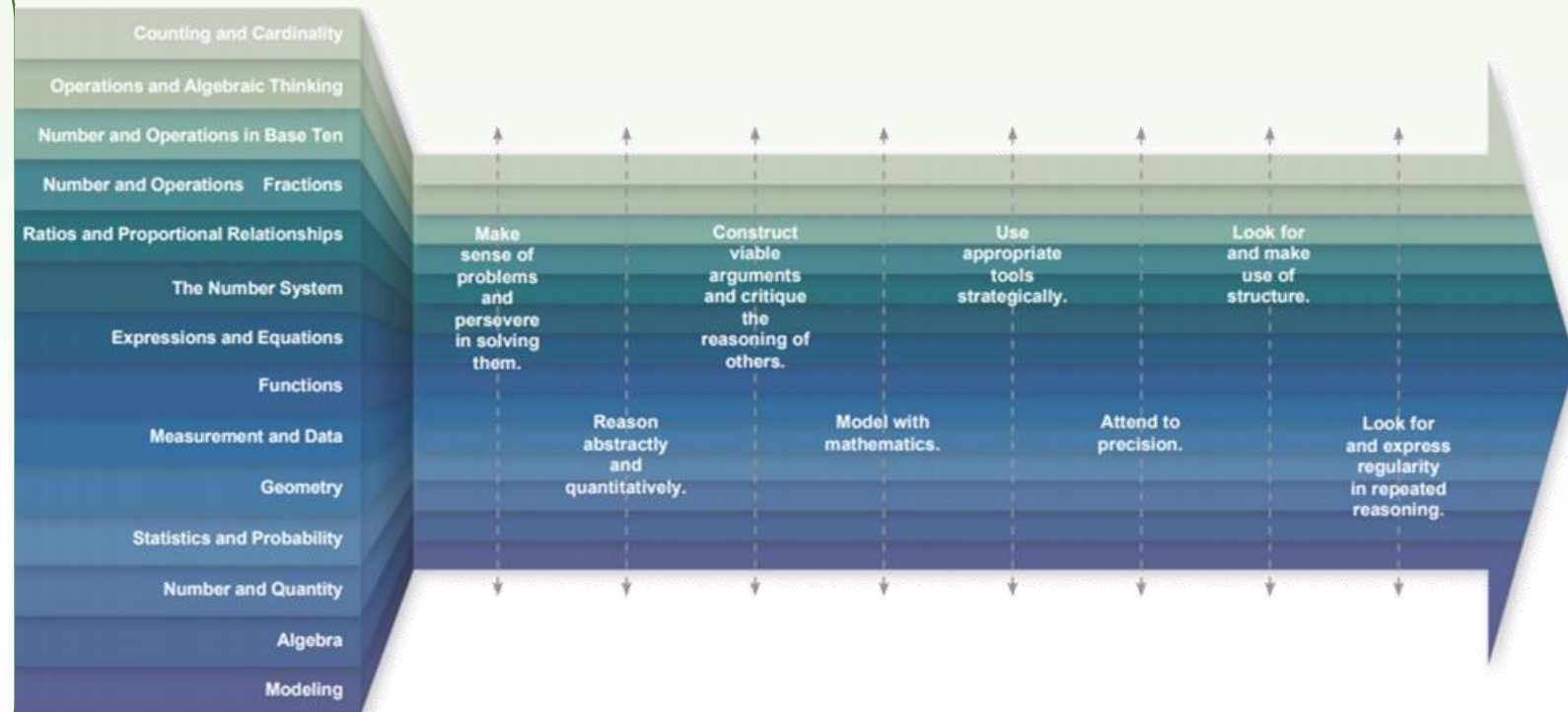
NY-5.OA.3

NY-6.EE.1

NY-6.EE.2

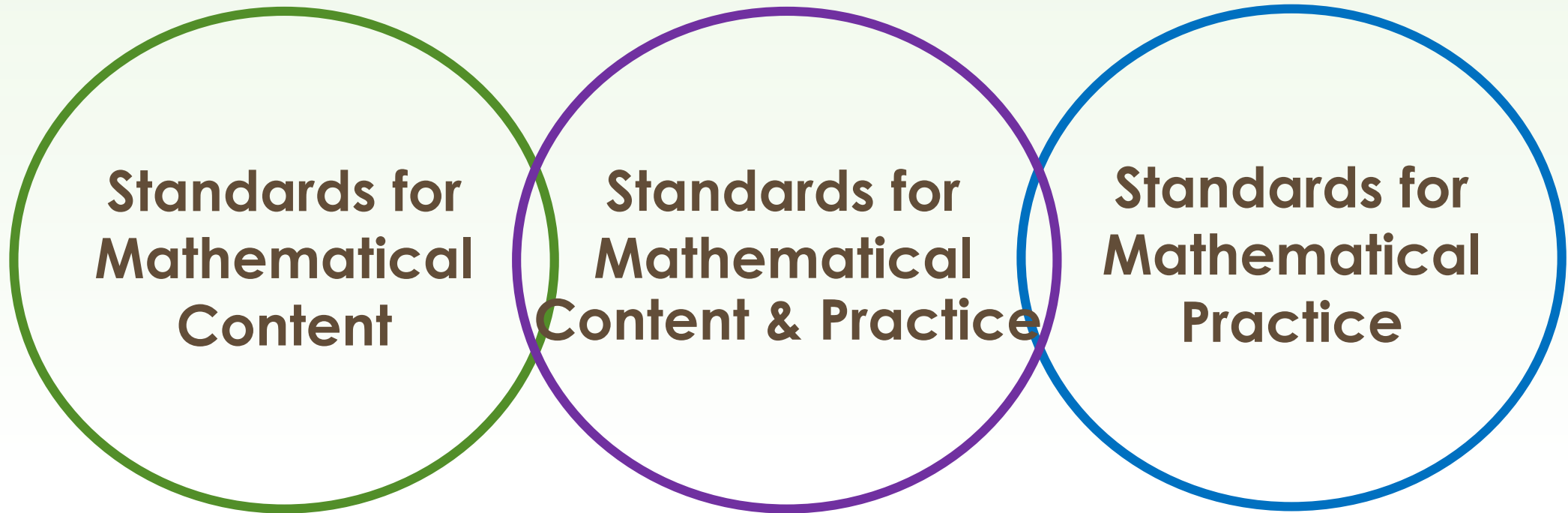
NY-6.G.5

AI-F.BF.1a



How Do The NYS Next Generation Mathematics Learning Standards Support These Changing Expectations?

Connecting Content to Practice



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)

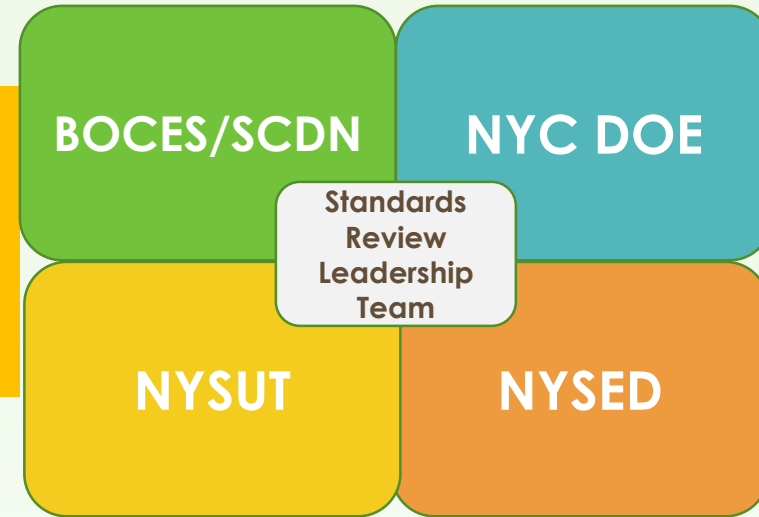
Staff and Curriculum Development Network
(S/CDN)

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.



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