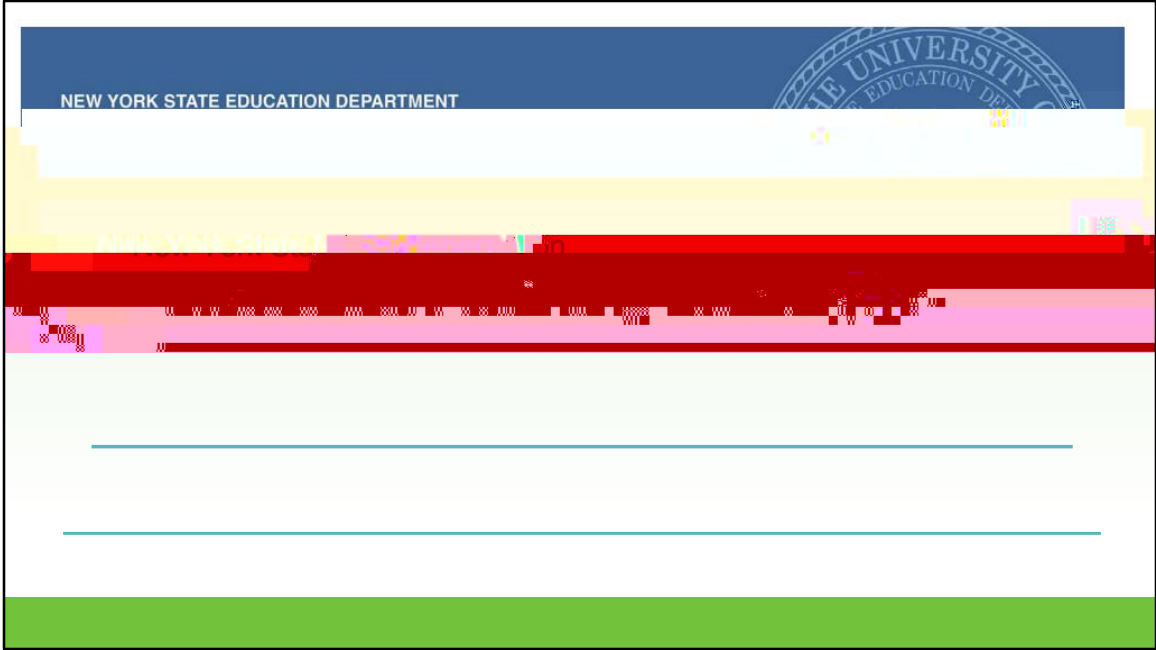


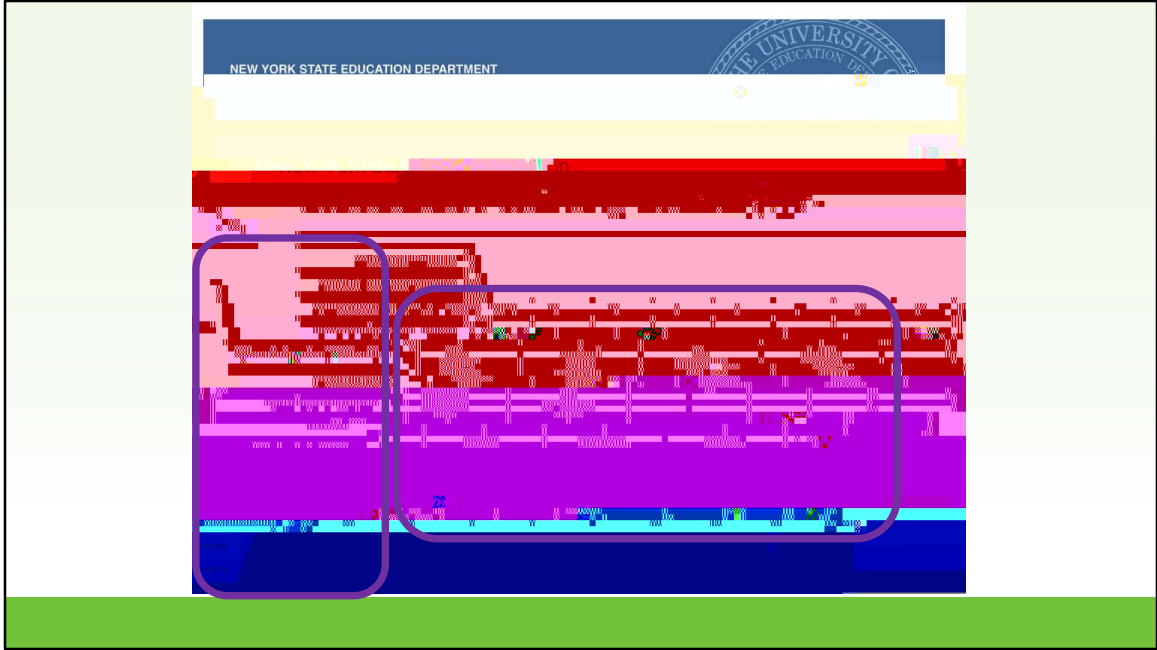
NYS Next Generation Mathematics Learning Standards

NYSED AND S/CDN² MATHEMATICS TEAM
NOVEMBER 30, 2017

WELCOME and INTRODUCTIONS



- Before we begin, we would like you to access your downloaded or preprinted copy of the New York State Next Generation Mathematics Learning Standards. We



- The graphic design on the cover of the New York State Next Generation Mathematics Learning Standards is a visual representation of the domains of the Content Standards, highlighted to the left, as well as the Standards for Mathematical Practice, we see infused throughout the continuum.
- While the domains coherently build by grade level, we can see that students engage with each of the 8 Standards for Mathematical Practice throughout their mathematics learning experiences.

The
Introduction:
Why Start
Here ?



As we take

NYSED conducted a survey (AIMHighNY) of _____, _____ and other _____ about the current standards. More than 10,500 people responded to the survey and provided over 750,000 pieces of _____



If we take a closer look at the revision timeline, we gain a better understanding of how the revised standards meet the 2015 legislation requiring that standards be reevaluated with stakeholder input.

Beginning just over two years ago, in the fall of 2015, NYSED began by conducting a survey of teachers, parents, and other stakeholders about the current standards.

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



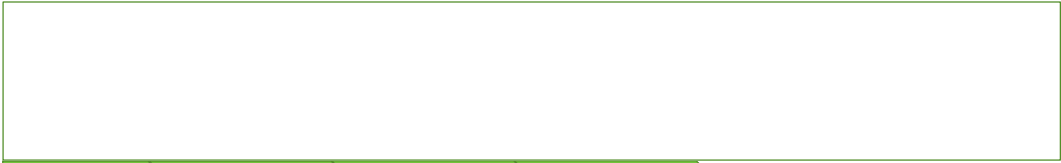
The

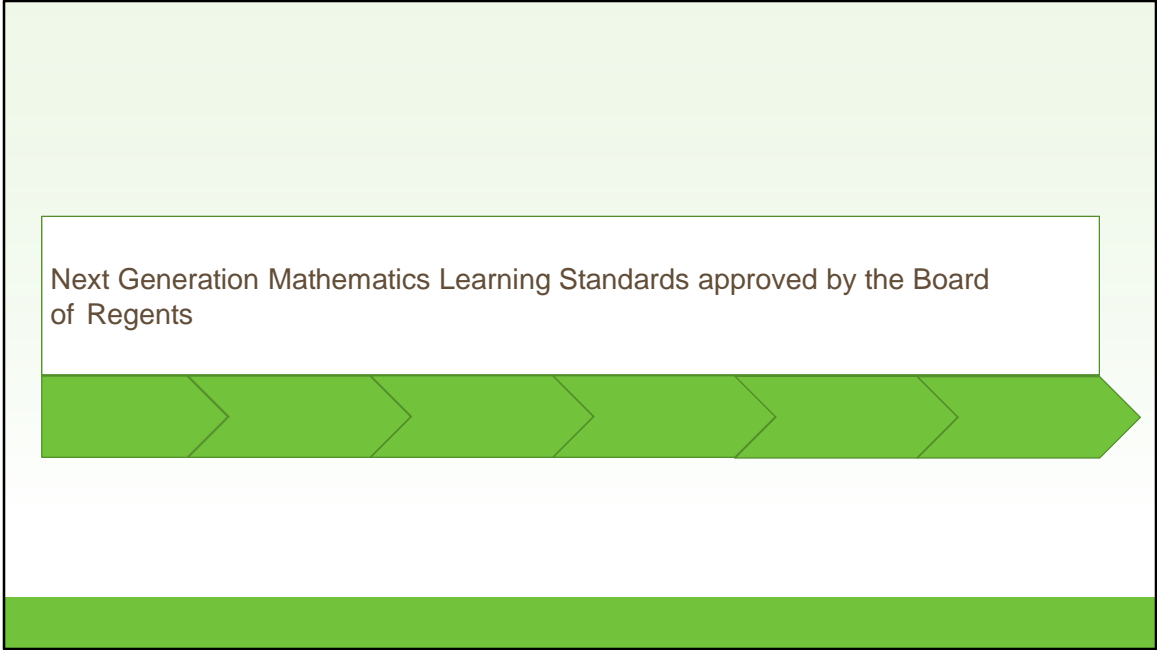


NYSED released the new draft learning standards for public comment and received more than 4,100 comments

By September, the Education Department released a new draft of the mathematics learning standards, and once again sought public comment, resulting in an additional 4,100 comments.







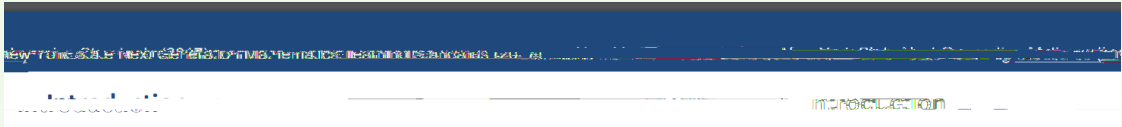
Next Generation Mathematics Learning Standards approved by the Board of Regents

In September 2017, the Next Generation Mathematics Learning Standards were approved by the New York State Board of Regents.

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 , and that individuals can and do habitually demonstrate over time because of instruction and learning experiences.

In the second paragraph of the Introduction we come across four terms: Standards, Curriculum, Instruction, and Assessment.

- How do they relate?
 - How are they different?
-
- The NYS Next Generation Mathematics Learning Standards were built from the revisions, additions, vertical movement of, and clarification to the NYS CCLS for mathematics which will be in effect through the school year 2020.
 - We can agree that standards are the knowledge, skills, and understanding that we want our learners to be able to do so that they are successful in their post secondary path of their choosing.



These mathematics standards, collectively, are focused and cohesive 3
designed to support to the and
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



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** *in* **mathematics that will enable students to successfully transition to post** - **secondary education and the workforce.**

- We find that the standards are both rigorous and balanced in conceptual understanding, procedural fluency and application.
- They represent the level of achievement in mathematics that will allow students to successfully transition to either postsecondary education or workforce opportunities.
-

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

NYS Next Generation Mathematics Learning Standards (2017)

Changing expectations for mathematics achievement

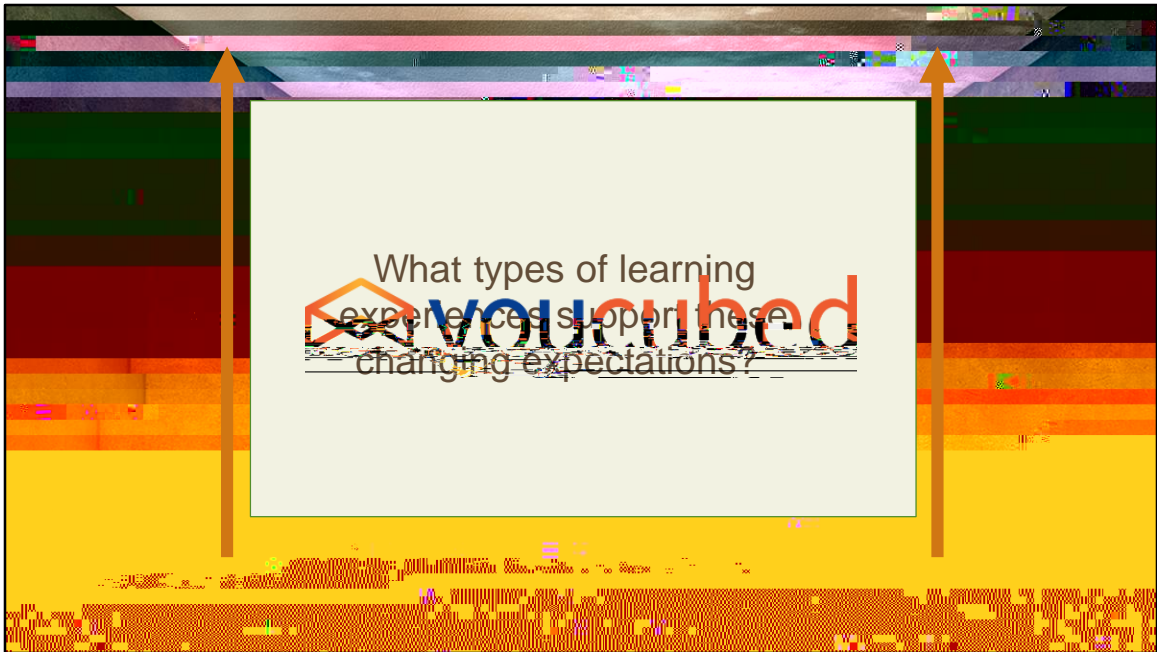
Increasingly Diverse Learners

2017

- 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?



- To deepen the understanding of the first 4 sections of the Introduction, we will engage in a round robin jigsaw task.
- Teams of 4 will be provided a set of task cards.

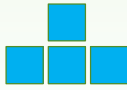


What types of learning experiences support these changing expectations?

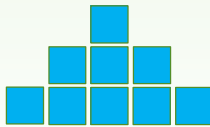
To make the content standards more accessible to ALL STUDENTS, we can use tasks that have a low floor and a high ceiling

Today you will engage in a task that comes from [Boaler and YouCubed.org](https://www.youcubed.org/).

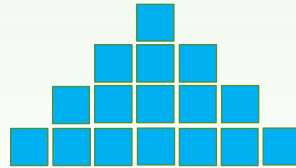
Describe how the shapes are growing.



Case 1



Case 2



Case 3

Ask the participants to look at the cases and think about how the shapes are growing.

- 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



- Which method do you identify with?

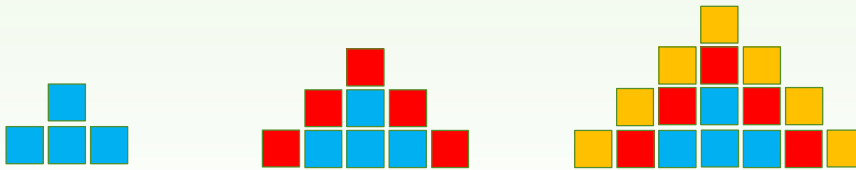
- :H·OO VKDUH VRPH FRPPRQ VWUDWH
If you hear one of yours, stand up
DQG VD\ '7KDW·V PH μ

How did you engage in this task?

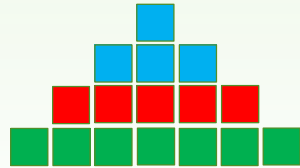
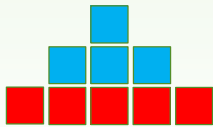
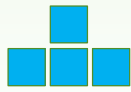
We will share with you some common ways students see this pattern grow.

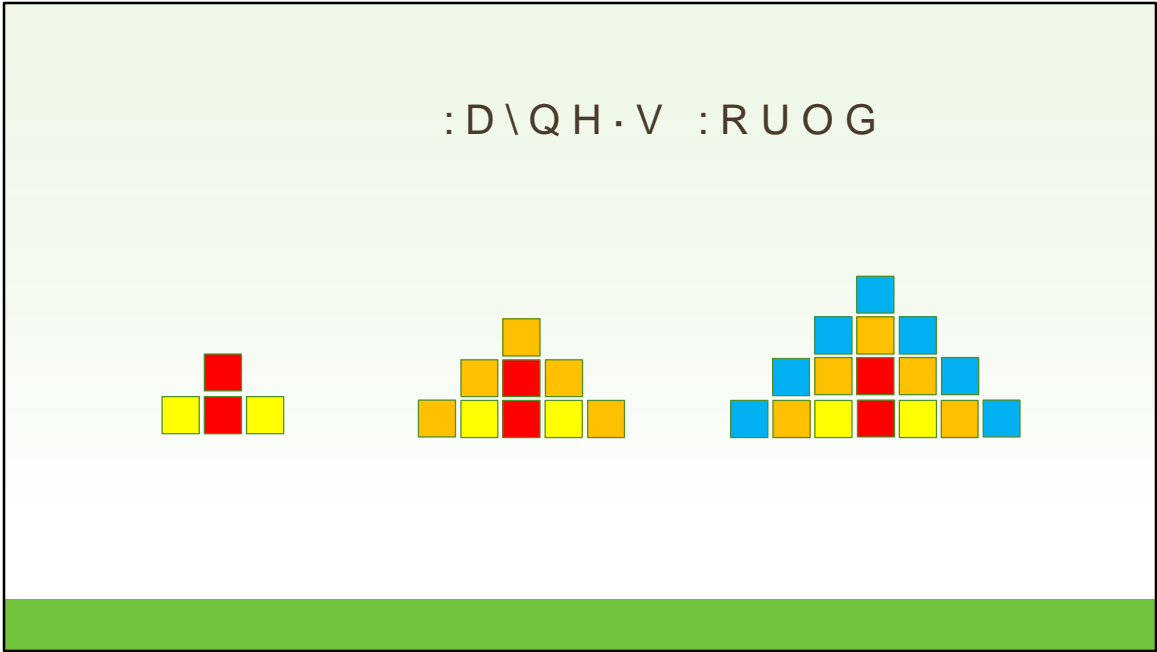
If you hear one that you used, stand up and say "that's me!"

Raindrop Method

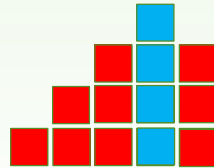
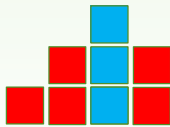
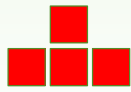


One common way to visualize this pattern is the raindrop method. The learner sees the square tiles falling down from above like raindrops. If you used the raindrop method, stand up and say, "That's me."

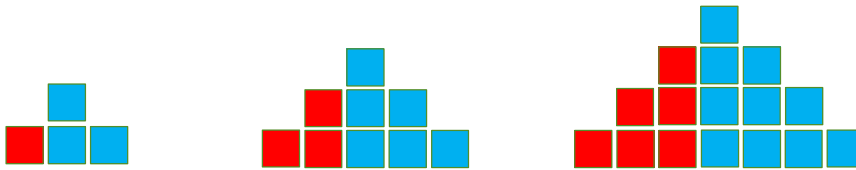




Here's a throwback to 1992.
In the Wayne's World method, the learner sees the squares going up like the stairway to heaven.....access denied.
If you used the Wayne's World staircase method, stand up and say, "That's me."



Square Method



Another way to see the pattern grow is the square method.
The learner moves the tiles to create a square.
If you used the square method, stand up and say, "That's me!"
(2 minutes total).

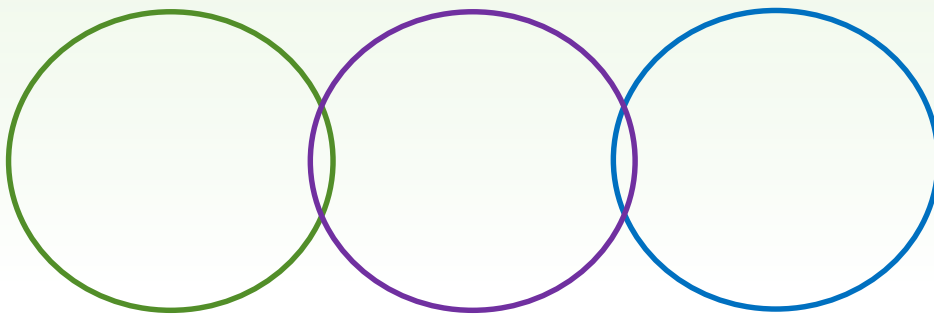
- What would the 6th case look like? How many _____ blocks would it have? How do you know?
- How many blocks would there be in the nth case? How do you know?

Standards for
Mathematical Content

Content and Proficiency

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

Connecting Content to Practice



True understanding of the content standards does not occur until there is a merging of the content standards and the Standards for Mathematical Practice.

Mathematical Practice.



The Standards for Mathematical Practice were developed prior to the adoption of the Common Core Learning Standards.

They were based upon the NCTM math strands.

The Standards for Mathematical Practice can be thought of as what we should see students doing as part of their natural routine in math classroom.

[Hand out Standard for Mathematical Practices sheet.]

The Standards for Mathematical Practice are outlined in more detail on pages 7 and 8 in the Next Generation Mathematics Learning Standards document.

Work as an impactful and motivated data scientist developing technical **solutions to complex problems.**

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



NYSED Office of Curriculum and Instruction
518-474-5922

John Svendsen (NYSED Math Associate) John.Svendsen@nysed.gov

Sue Brockley (NYSED Math Associate) Susan.Brockley@nysed.gov

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.*

NYSED

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.

teachers.