The New York State Next Generation Mathematics Learning Standards

Crosswalk Documents

Reflection in Action

In 2015, New York State (NYS) began a process of review and revision of the New York State P-12 Common Core Learning Standards for Mathematics, adopted in January 2011. Through numerous phases of public comment, virtual and face-to-face meetings with committees consisting of NYS educators (including 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 standards reflect the collaborative efforts and expertise of all constituents involved and were adopted by the Board of Regents in September 2017.

Learning standards are defined as the knowledge, skills and understanding that individuals can habitually demonstrate over time because of instruction and learning experiences. The mathematics standards, collectively, need to be 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 and curricula 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, as well as represent a significant level of achievement in mathematics that will enable students to successfully transition to post-secondary education and the workforce.

In this regard, The New York State Next Generation Mathematics Learning Standards (2017) reflect revisions, additions, vertical movement, and clarifications to the NYS CCLS for Mathematics. Significant changes/modifications include the following:

- **High school standards listed by course** in the standards document (Algebra I, Geometry, Algebra II). There is also a section that contains the Plus (+) Standards; additional mathematics beyond Algebra II that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics. The Plus (+) Standards are not a high school course, however, may be dispersed throughout course curricula, including Algebra I, Algebra II and Geometry, to increase rigor and support the needs of individual students and mathematical programs. They will not, however, be addressed on state assessments. The Plus (+) Standards provide coherence and extend concepts previously taught in Algebra I, Geometry, and Algebra II.

- **Standards moved to different grade levels** to improve focus; providing more time for students to develop deep levels of understanding of major grade-level content and skills.
- **New standards added** to strengthen the coherency of the standards, allowing for a stronger connection of learning within and across grade levels.
- **Consolidation/removal of standards** to improve coherence, focus and reduce redundancy amongst the grade levels.
- **Added the language "explore"** to some standards to ensure standards are grade-level appropriate. Exploring a standard allows students to be introduced to and learn a concept without the expectation of mastering the concept at that grade level. Exploring the topic recognizes the importance of building a foundation toward mastering the concept in subsequent grades.
- **Clarified existing standards** to more clearly identify the expectation of the standard, helping to improve the focus of instruction. Clarification included the changing/deleting/adding of language, the addition of notes and diagrams, and the modification of prior examples.
- **Maintained the rigor of the standards** by balancing the need for conceptual understanding, procedural skill and application.
- **Added the supplement "Glossary of Verbs Associated with the Next Generation Mathematics Learning Standards"** that contains an explanation of the context in which certain verbs that appear throughout the standards are used.

How to Read/Utilize the Crosswalk Documents

The crosswalk documents were designed by a team of NYS educators as a guidance tool that can be utilized to identify the content similarities and differences between the NYS P-12 CCLSM and the NYS Next Generation Mathematics Learning Standards for each grade level/course. The crosswalks can assist educators in the preliminary work required in assessing the scope of the content changes and the impact those changes will have on student learning, locally devised curriculum/mathematics programs, instruction and instructional resources. The crosswalk documents are not as comprehensive in nature as the New York State Next Generation Mathematics Learning Standards document, found at http://www.nysed.gov/curriculum-instruction/teachers/new-york-state-next-generation-mathematics-learning-standards. To understand the full scope of the content and the learning progressions outlined in the Next Generation Mathematics Learning Standards, educators are encouraged to examine the coherence links and the within-grade connections that are provided throughout the standards document, as well as the cited research-based sources, such as the Progressions for the Common Core State Standards in Mathematics documents and the Guidelines for Assessment and Instruction in Statistics Education (GAISE) Report.

There are two different types of crosswalks for each course/grade:

The **Grade-level Snapshot** which provides a condensed one-page summary that lists standards that were added to the grade/course, standards that were moved, and any instructional considerations that need to be highlighted based on new standard clarifications or language modification.

The **Grade-level Side-by-Side** uses the full-text (no diagrams or charts) of both sets of standards so that readers can review and compare the two sets side-by-side. Strike-through and bolded text can be seen throughout in order to highlight content differences and wording modifications between the two sets of standards.

The following two samples show some of the types of changes reflected in the **Side-by-Side** crosswalks:

New York State Next Generation Mathematics Learning Standards **Grade 6 Crosswalk** **Statistics and Probability**		
Cluster	**NYS P-12 CCLS**	**NYS Next Generation Learning Standard**
Summarize and describe distributions.	**6.SP.5c** Giving quantitative measures of center (median and/or mean) and variability (~~**interquartile range and/or mean absolute deviation**~~), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	**NY-6. SP.5c Calculate range and measures of center, as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.** **Note: Measures of center are mean, median, and mode. The measure of variation is the range. Role of outliers should be discussed, but no formula required.**
	6.SP.5d Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	**NY-6. SP.5d** Relate **the range** and the choice of measures of center to the shape of the data distribution and the context in which the data were gathered. **Note: Measures of center are mean, median, and mode. The measure of variation is the range.**
Investigate chance processes and develop, use and evaluate probability models.		**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. **e.g., When rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.** **Note: Compound events are introduced in grade 7.**

Text deleted from the CCLS standard to show that the content is no longer a grade-level expectation (strike-through), replacement text in the Next Generation standard is in bold.

Text modified in the Next Generation standard (bold) to further clarify grade-level expectation.

New standard added to grade-level/course.

New standard added to grade-level/course.

New York State Next Generation Mathematics Learning Standards **Geometry Crosswalk** **Geometry** **Circles (G.C)**		
Cluster	**NYS P-12 CCLS**	**NYS Next Generation Learning Standard**
Understand and apply theorems about circles.	**G-C.1** Prove that all circles are similar.	**GEO-G.C.1** Prove that all circles are similar.
	G-C.2 Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.* Note: Relationships include but are not limited to the listed relationships. Example: angles involving tangents and secants.	**GEO-G.C.2a** Identify, describe **and apply relationships between the angles and their intercepted arcs** of a circle. **GEO-G.C.2b**. Identify, describe and **apply relationships among radii, chords, tangents, and secants** of a circle. **Note: These relationships that pertain to the circle may be utilized to prove other relationships in geometric figures, e.g., the opposite angles in any quadrilateral inscribed in a circle are supplements of each other.** **Also includes algebraic problems built upon these concepts.**
	G-C.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	**STANDARD REMOVED** **Constructing the incenter and circumcenter of a circle has been embedded in standard GEO-G.CO.12. The properties of the angles for a quadrilateral inscribed in a circle is now embedded in standard GEO-G.C.2a.**
Find arc lengths and area of sectors of circles.	**G-C.5** ~~Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality;~~ derive the formula for the area of a sector.	**GEO-G.C.5 Using proportionality, find one of the following given two others; the central angle, arc length, radius or area of sector.** **Note: Angle measure is in degrees.**

CCLS standard has been broken down into parts. The Next Generation standard contains modified/additional language in bold.

CCLS standard has been removed from the grade-level/course.

Text deleted from the CCLS standard to show that the content is no longer a grade-level expectation (strike-through), replacement text in the Next Generation standard is in bold.

Keeping in mind that the crosswalk documents were created by fellow state educators and highlight the changes/modifications they thought were necessary to bring to the forefront, districts are encouraged to edit the documents as they best see fit to assist with their curriculum/instructional planning.