

Nebraska's College and Career Ready Standards for Mathematics

Key Features & Talking Points

These standards outline grade-level expectations for mathematics and provide a framework upon which Nebraska districts develop, establish, and implement their locally determined curriculum. The standards are also the foundation for the selection and implementation of instructional materials, resources, and interim, formative, and summative assessments.

The **structure** of the standards:

- Includes grade-level standards for grades K-8; grade-banded standards for high school.
- Is organized by four (4) content strands: NUMBER SENSE, ALGEBRA, GEOMETRY and DATA, with the addition of Ratios and Proportions in the 6-8 grade band
- Identifies “mathematical processes” that are necessary for success in mathematics at each grade level: PROBLEM SOLVING, REPRESENTATIONS, COMMUNICATION, REASONING, and CONNECTIONS.

The **content** of the Mathematics Standards:

- Centers deep learning of mathematics concepts while actively building new knowledge across K-12.
- Reflects the processes needed for students develop mathematical habits of mind and become mathematically proficient.
 - Strengthens the mathematics processes within the standards based on previous input from educators, employers, and post-secondary educators.
- Aligns with current research and evidence-based practices for improving teaching and learning in mathematics.
- Strengthens the DATA strand across K-12 and includes revised standards related to understanding data and basic statistics.
- Focuses on ratios, proportional reasoning, and arithmetic of rational numbers in Grades 6-8 to build a strong foundation prior to high school.
- Aligns with the expectations required of the 11th Grade Summative Assessment – the ACT.

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Revision Timeline:

August

- **Approval Draft to State Board; Public Release of Final Draft**

September

- **Action Item for State Board: Approval of standards**

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Comparison Table: 2015 version to 2022 Draft #2

Key Features of Proposed Revisions	Differences Between 2015 and 2022 Versions	Rationale
<p>In K-5, the content strands of NUMBER, ALGEBRA, GEOMETRY and DATA are the same.</p>	<ol style="list-style-type: none"> 1. K-2 has strategically placed all curricular indicators that align with Algebraic Relationships in the main content strand of NUMBER rather than ALGEBRA. 2. Grades 3-5 have added standards related to Fractions. 3. Grades 6-8 have added a standalone strand entitled, RATIOS AND PROPORTIONS. 	<ol style="list-style-type: none"> 1. <i>The foundation for algebra in the early grades is reflected in the essential conceptual knowledge of addition/subtraction or making meaning for these operations. The placement increases the visibility of the interconnectedness for classroom teachers.</i> 2. <i>Fractions are a challenging math concept to comprehend but the foundation starts in elementary grades.</i> 3. <i>To encourage more instructional time to build foundational understanding for high school algebra at the middle grades, emphasis of numerical operations, including ratios, has been added to the standards.</i>
<p>The 2015 Nebraska Mathematical Process Standards include Problem Solving, Representations,</p>	<ol style="list-style-type: none"> 1. Revised the title of “Process Standards” to Mathematical Processes. 	<ol style="list-style-type: none"> 1. <i>This more accurately describes how processes support the mathematical content</i>

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<p>Communication, and Connections. The 2022 version includes Problem Solving, Representations, Communication, Connections, and Reasoning.</p>	<ol style="list-style-type: none"> 2. Addition of Reasoning as a mathematical process. 3. Written narrative for the five mathematical processes 4. Develop a visual that communicates the integration of mathematical processes in all grade levels. 	<p><i>included in the standards.</i></p> <ol style="list-style-type: none"> 2. <i>Reasoning was included in the 2009 Mathematical Processes, and the writing team indicated it was a critical skill for students to master.</i> 3. <i>With the addition of Reasoning, the narrative for each of the other four mathematical processes was revised to clearly depict the importance for each.</i> 4. <i>Using input from various stakeholders, a banner was designed to increase visibility and placed at the beginning of each grade level. This also highlights the importance of the mathematical processes in teaching the content outlined in the standards.</i>
<p>NUMBER: Emphasize Number Sense in the K-5 Standards.</p>	<ol style="list-style-type: none"> 1. The categories are specific to the grade level. For example, for K-2, NUMBER is subdivided into: <ol style="list-style-type: none"> a. Counting b. Base Ten 	<ol style="list-style-type: none"> 1. <i>In the 2015 standards, the categories under NUMBER were very broad (Numeric Relationships and Operations) and spanned K-12. This revision provides</i>

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	<p>c. Number and Algebraic Relationships</p> <p>d. Number and Operations</p> <p>Similar categories in NUMBER are proposed for Grades 3-5 and High School.</p>	<p><i>greater specificity and guidance for instruction.</i></p>
<p>ALGEBRA: Create greater K-12 coherence.</p>	<p>1. The 2015 standards have only three broad categories for ALGEBRA.</p> <p>To improve elementary algebra standards, Algebraic Relationships was removed from Grades 3-5 with categories designed that reflect an emphasis on Operations and Algebraic Thinking, followed by Algebraic Processes and Applications for Grades 6-8.</p> <p>The High School categories remain the same.</p>	<p>1. <i>Increases clarity and reserves Algebra 1 concepts for Algebra 1.</i></p>
<p>GEOMETRY: Create greater K-12 coherence.</p>	<p>1. Grade-level categories added to reflect how curricular indicators "cluster" and are unique to age groups. These include:</p> <ul style="list-style-type: none"> a. Shapes and Their Attributes, b. Measurement; Time and Money, 	<p>1. <i>This adds specificity that was lacking in the 2015 Math Standards for Geometry to inform instruction.</i></p> <p>2. <i>Many of the basic geometry concepts are to be learned in grades K-8 leaving the proof and logic level</i></p>

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	<ul style="list-style-type: none"> c. Area and Perimeter, d. Area and Volume, e. Coordinate Geometry, f. Coordinate Geometry and Transformation and, g. Logic and Proof 	<p><i>of thinking for high school.</i></p>
<p>DATA: Create greater K-12 coherence.</p>	<ol style="list-style-type: none"> 1. As with other strands (e.g. NUMBER, GEOMETRY), the categories are proposed to be specific to the grade level. For example, at the kindergarten level, Classification is a category under DATA. 2. Probability remains a category under the DATA strand and concepts begin in grade 6. 3. High School DATA represents the content that all students should learn prior to graduation. 	<ol style="list-style-type: none"> 1. Including Classification under DATA for kindergarten emphasizes the foundational skill of sorting to precede graphical representations. 2. A frequent theme of feedback over the past seven years has been the need to further develop standards related to understanding data and basic statistics. It is important to be able to collect, display and interpret data accurately.