

Standards To Students K-12 Mathematics Standards Draft 3

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Desired Outcomes

- **Share** the process for revising Math standards.
- **Present** Draft 3 and major changes from the current SCOS.
- **Highlight** a tentative Math installation and implementation timeline.



ACHIEVING EDUCATIONAL **EXCELLENCE**



**Prepare Each Student
for Their Next Phase
in Life**

PILLAR 1

Focus Area 2 | Elevate Teaching and Learning



ACTION 3

Design a **Pre-K–12 Teaching and Learning Framework** with PSUs to set shared expectations for standards-aligned instruction, integrated supports and access **high-quality learning** for all students.

“The future of mathematics in North Carolina is shaped by the standards we design, and how they come to life for students in classrooms across the state.”

Focus Area 1 | Ignite Early Learning



ACTION 2

Build on the implementation of North Carolina's Science of Reading initiative by continuing to expand high-impact literacy practices and **launch a parallel focus on foundational mathematics** to support early learning.

Standards



Students



Mathematical Reasoning



High Expectations for All



Alignment to Workforce

TRANSFORMING EXPECTATIONS



INTO EXPERIENCES

Meaningful Math Experiences



Applied Learning & Problem Solving



Data Literacy





Internal Procedures Manual

North Carolina Standard Course of Study Internal Procedures Manual

For the Review, Revision, Installation, and
Implementation of the NCSCOS

 North Carolina Department of
PUBLIC INSTRUCTION

2



Standards

K-12 Mathematics
Standard Course of Study



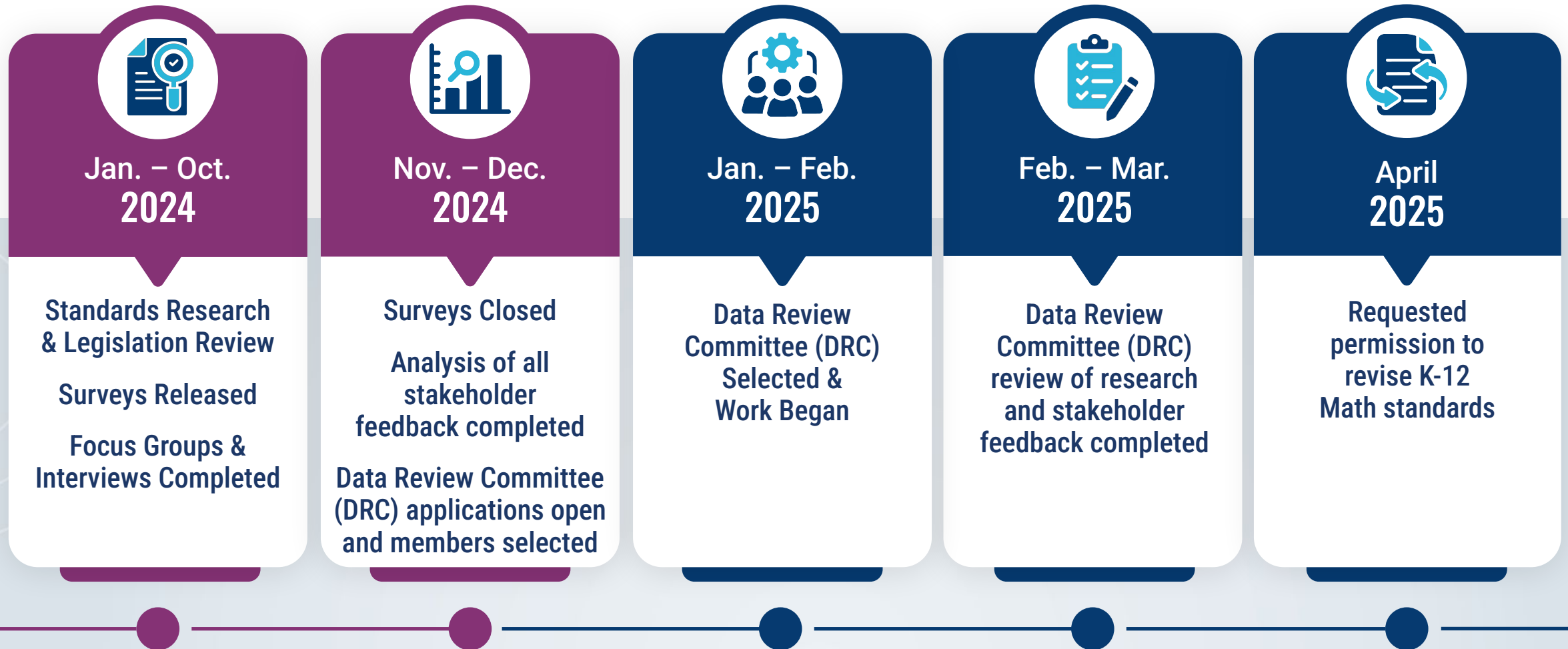
Curriculum

Texts
Lessons
Activities & Tasks
Classroom Assessments



K-12 Mathematics Standards Review and Revision Timeline

Review Phase Timeline 2024-2025



Listening to Our Stakeholders

Insights That Are Shaping Math Standards Revision

"I'm not a math person"

"Why do I need to learn this?"

"It's okay - math is hard."

What do all graduates need to know — and have the opportunity to learn?



How can we *increase proficiency* for all students?



How can we increase *real-world application* of math?



How can we increase *student interest and engagement* ?

Math Standards **Revision** Timeline





State and National Stakeholders



THE UNIVERSITY OF
NORTH CAROLINA SYSTEM



Friday Institute
for Educational Innovation



The University of Texas at Austin
Charles A. Dana Center



ExcelinEd

Draft 2 Stakeholder Review Process & Feedback



Draft 2 PSU Feedback

Participants could choose from highly satisfied, satisfied, neutral, dissatisfied, highly dissatisfied

CURRENT STANDARDS

Overall percent *satisfied* or *highly satisfied*

<50%

NC Math 3

60-70%

NC Math 1, NC Math 2, NC Math 4

71-80%

3rd, 4th, 6th, 7th, and 8th Grades

81-90%

2nd, 5th Grade, Discrete Math

90+%

Kindergarten, 1st Grade



DRAFT 2 STANDARDS

Overall percent *satisfied* or *highly satisfied*

<50%

None

60-70%

None

71-80%

8th Grade, NC Math 1, NC Math 2,
Applied Statistics and Data Science,
Mathematical and Statistical Modeling

81-90%

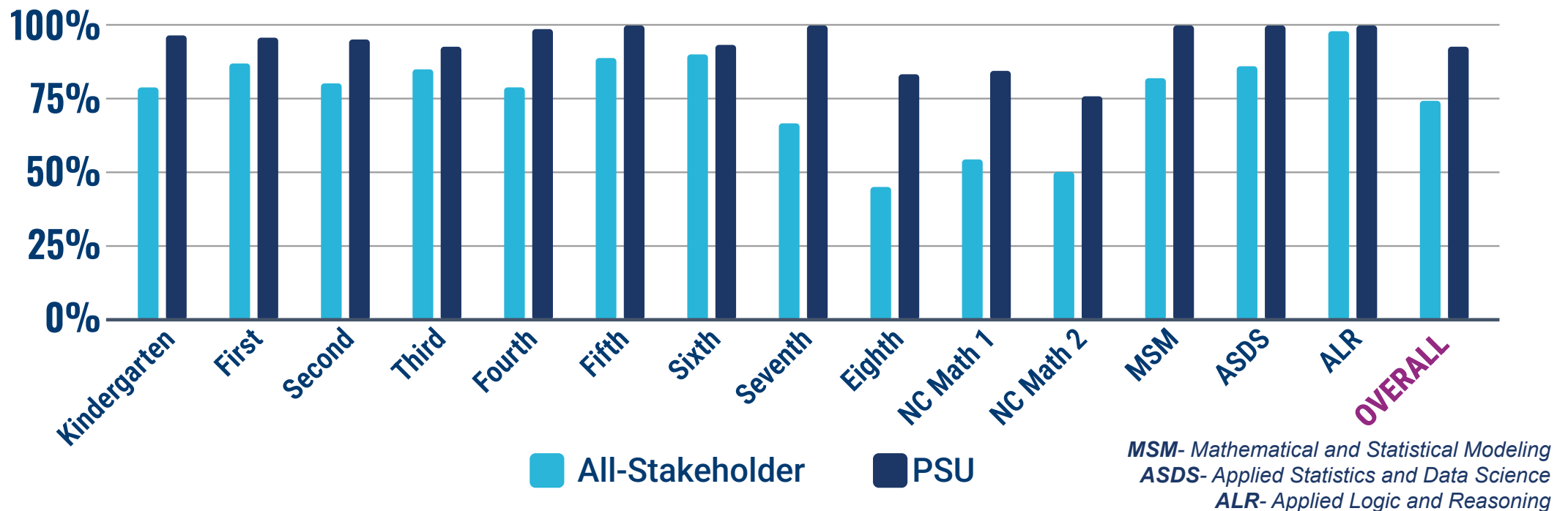
3rd, 4th, 6th, and 7th Grades,
Applied Logic and Reasoning

90+%

Kindergarten, 1st, 2nd and 5th Grades

Draft 2 Feedback – Item by Item

Percent of Standards/Objectives with at least 80% marked **“Keep as is”**



Participants could choose “Keep as is” , “Keep but change grade level” , “modify” , or “remove”

Math Standards: More Than Just Content

NC K-12 Standards for Mathematical Practice



Make sense of problems and persevere in **solving** them.



Use appropriate **tools** strategically.



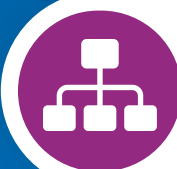
Reason abstractly and quantitatively.



Attend to **precision** .



Construct **viable** arguments and critique the reasoning of others.



Look for and make use of **structure** .



Model with mathematics.

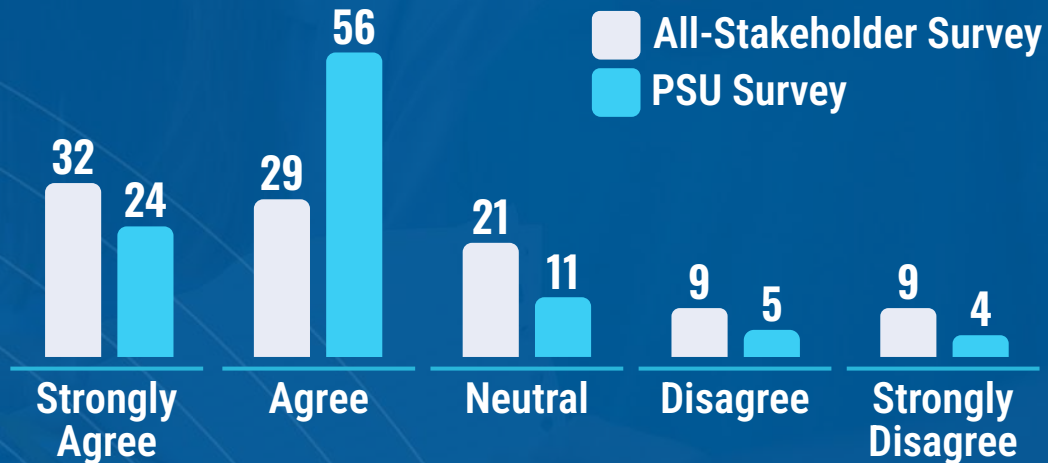


Look for and express **regularity** in repeated reasoning.

Feedback on Math Practices

"The Standards for Mathematical Practice should be written in the content standards when possible."

RESULTS (%)



DRAFT 1 Feedback

- **80%** of PSUs agreed/strongly agreed that mathematical practices **should be written into the content standards** when possible
- **63%** of responses from the All-Stakeholder survey felt similarly, with **21%** neutral

DRAFT 2 Feedback

- Improve **strategic coherence** of which practices are used when
- Preferred a **simplified version** and will need professional learning to support teachers

Key Changes to Current Standards

Current NC Student Experience

Focus	Future Ready/UNC System Institution Minimum Admission Requirements	Admission into a Community College or Entering the Workforce Directly after Graduation
Required for all students*	NC Math 1	NC Math 1
	NC Math 2	NC Math 2
	NC Math 3	NC Math 3
Options Available For 4th Math credit	- NC Math 4 - Precalculus/AP Precalculus - AP Calculus - AP Statistics - Discrete Mathematics for Computer Science - Approved IB courses - Approved dual enrollment course	- AP/IB Computer Science - NCDPI - CTE course or course pairing
Example Careers	All post-secondary careers and majors requiring university level admission	- Credentials and certifications for trades, vocations - Immediate workforce entry - Community college

Course Options

- Consistent Graduation Expectations
- Essential Skills for Graduates
- Future-Ready Math Pathways

	Future Ready/UNC System Institution Minimum Admission Requirements			
Student Career Interests	Biological & Physical Sciences Engineering Mathematics Scientist Financial Management	Database Administrator Business Marketing Cybersecurity Social Sciences	Teacher Social Sciences Fine Arts Humanities Performing Arts Criminal Justice	Admission to Community College or entering the Workforce Directly After Graduation
Required for All Students	NC Math 1	NC Math 1	NC Math 1	NC Math 1
	NC Math 2	NC Math 2	NC Math 2	NC Math 2
Students Must Earn TWO Credits from These Courses	Mathematical & Statistical Modeling Applied Statistics & Data Science Applied Logic and Reasoning (Formerly Discrete Math for Computer Science) AP Precalculus AP Statistics AP Calculus* Approved IB/Dual Enrollment course*			<u>Students Must Earn ONE Credit from These Courses</u> Mathematical & Statistical Modeling Applied Statistics & Data Science Applied Logic and Reasoning AP/IB Computer Science** <u>AND</u> ONE CTE Course or Course Pairing
Example Pairings	Mathematical & Statistical Modeling AP Precalculus <u>OR</u> AP Precalculus AP Calculus*	Applied Statistics & Data Science AP Statistics <u>OR</u> Mathematical & Statistical Modeling Applied Logic and Reasoning	Mathematical & Statistical Modeling Applied Logic and Reasoning <u>OR</u> Applied Statistics & Data Science Applied Logic and Reasoning	

Key Changes | Domains

Current

K	1	2	3	4	5	6	7	8	9	10
Counting & Cardinality										
Numbers & Operations in Base Ten						Ratio & Proportional Relationships				
				Number & Operations: Fractions		The Number System		Number & Quantity		
Operations & Algebraic Thinking						Expressions & Equations		Algebra		
								Functions		
Geometry										
Measurement & Data						Statistics & Probability				



Draft 3

K	1	2	3	4	5	6	7	8	NC Math 1	MC Math 2
Algebraic & Numerical Reasoning						Ratio & Proportional Reasoning		Algebraic, Numerical, & Functional Reasoning		
Spatial, Geometric, & Measurement Reasoning								Reasoning with Mathematical Modeling		
Reasoning with Data									Statistical & Data Science Reasoning	

Key Changes | Standards for Mathematical Practice

Standards for Mathematical Practice (SMPs)

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.



Mathematical and Statistical Processes



Modeling and Using Tools and Representations

Ex. - Model with mathematics, use appropriate tools, use representations to examine multiple points of view



Explaining, Reasoning, and Proving

Ex. - Reason inductively and deductively, construct viable arguments and critique others



Seeing, Describing, and Generalizing Structure

Ex. - Look for and make use of structure, look for and express regularity in repeated reasoning



Productive Mathematical and Statistical Thinker

Ex. - Attend to precision, make sense of problems and persevere to solve them

Key Changes | Vertical Alignment

K	1	2	3
Identify and describe shapes.	Describe and create shapes based on their defining attributes.	Reason with 2-D and 3-D shapes and their attributes.	Reason with quadrilaterals and their attributes.
Name triangles, squares, rectangles, hexagons, circles, cubes, cones, cylinders, and spheres regardless of their orientations or overall size.	Distinguish between defining and non-defining attributes of shapes.	Compare the defining attributes of triangles, quadrilaterals, pentagons, hexagons, octagons and circles using the number of sides, vertices and angles.	Construct points, lines, line segments, and perpendicular and parallel lines.
Identify triangles, squares, rectangles, hexagons, circles, cubes, cones, cylinders, and spheres as two-dimensional or three-dimensional.	Describe the defining attributes of triangles, squares, rectangles, hexagons, and circles including the number of sides, vertices and angles.	Describe the defining attributes of cubes, rectangular prisms, pyramids, spheres, cones, and cylinders using the number of faces, edges and vertices.	Construct examples and non-examples of types of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.
Compare two-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, attributes and other properties.	Describe the defining attributes of cubes, cones, cylinders, and rectangular prisms, including the number of faces, edges, and vertices.	Compare attributes of similar 2D and 3D shapes.	Name types of quadrilaterals including rhombuses, rectangles, squares, parallelograms, and trapezoids.
Create shapes based on their defining attributes.	Draw triangles, rectangles, squares, hexagons, and circles.		Identify points, lines, line segments, and perpendicular and parallel lines within two-dimensional figures and contextualized situations.
Draw triangles, rectangles, squares, and circles.	Build triangles, rectangles, squares, hexagons, circles, cubes, cones, cylinders, and rectangular prisms.		
Build triangles, rectangles, squares, circles, cubes, cones, spheres, and cylinders.	Compose 2D figures by combining two or more simple shapes (triangles, squares, rectangles, and/or hexagons).		
Compose larger plane figures by combining two or more simple plane figures (triangles, rectangles and/or squares).			

Key Changes | Consistent Format for Clarity and Ease of Use

Current

Operations and Algebraic Thinking	
Represent and solve problems involving multiplication and division	
NC.3.OA.1	For products of whole numbers with two factors up to and including 10: - Interpret the factors as representing the number of equal groups and the number of objects in each group. - Illustrate and explain strategies including arrays, repeated addition, decomposing a factor, and applying the commutative and associative properties.
NC.3.OA.2	For whole number quotients of whole numbers with a one-digit divisor and a one-digit quotient: - Interpret the divisor and quotient in a division equation as representing the number of equal groups and the number of objects in each group. - Illustrate and explain strategies including arrays, repeated addition or subtraction, and decomposing a factor.
NC.3.OA.3	Represent, interpret, and solve one-step problems involving multiplication and division: - Solve multiplication word problems with factors up to and including 10. Represent the problem using arrays, pictures, and/or equations with a symbol for the unknown number to represent the problem. - Solve division word problems with a divisor and quotient up to and including 10. Represent the problem using arrays, pictures, repeated subtraction and/or equations with a symbol for the unknown number to represent the problem.
Understand properties of multiplication and the relationship between multiplication and division.	
NC.3.OA.6	Solve an unknown-factor problem by using division strategies and/or changing it to a multiplication problem.
Multiply and divide within 100.	
NC.3.OA.7	Demonstrate fluency with multiplication and division with factors, quotients, and divisors up to and including 10.

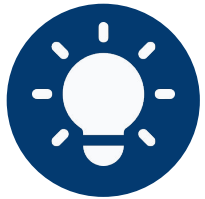


Draft 3

3rd Grade	
Standards and Objectives	
Algebraic and Numerical Reasoning	
Standard 1	Develop an understanding of multiplication with whole numbers.
Objective 1	Interpret factors as representing the number of equal groups and the number of objects in each group for products of whole numbers with two factors up to and including 10.
Objective 2	Model strategies including repeated addition, skip-counting, decomposing a factor, and commutative property with representations for products of whole numbers with two factors up to and including 10.
Objective 3	Interpret patterns of multiplication using visual tools.
Objective 4	Represent to solve one-step contextual problems involving multiplication with factors up to and including 10.
Objective 5	Connect multiplication contextual situations with equations using a symbol for the unknown number.
Objective 6	Find the product of a one-digit whole number by a multiple of 10 in the range 10-90 by using representations, based on place value and the properties of operations.
Standard 2	Develop an understanding of division with whole numbers.
Objective 1	Interpret the divisor and quotient in a division equation as representing the number of equal groups and the number of objects in each group for whole-number quotients of whole numbers with a one-digit divisor and a one-digit quotient.

How the Draft Standards Respond

- Streamlined language and clearer expectations
- Improved progression across grade levels
- Maintain rigor with increased relevance for all students
- *Balanced emphasis on:*



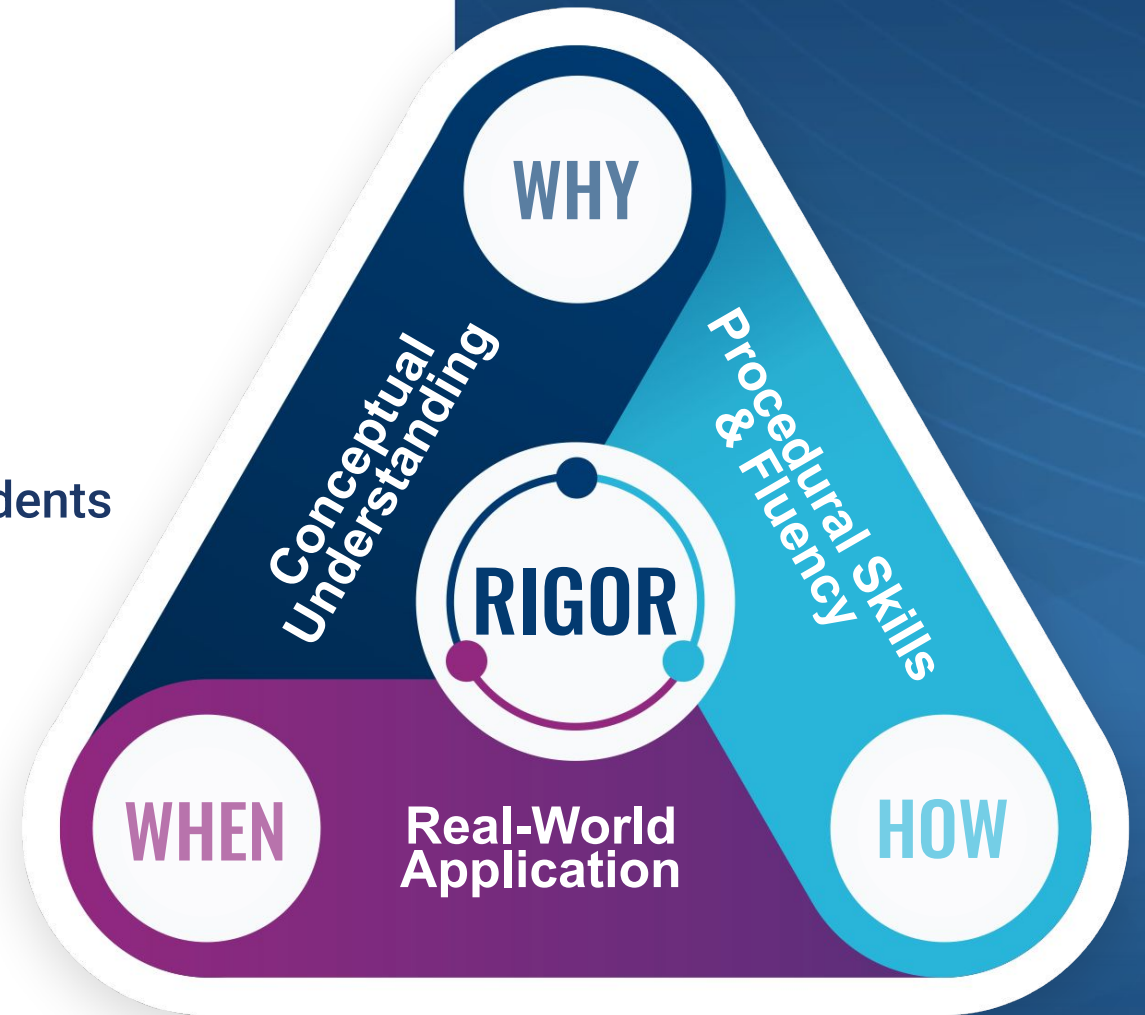
Conceptual
Understanding



Procedural
Fluency



Real-World
Application





Extended Content Standards

Alternate Achievement Standards

Students with Disabilities

99%

- Participate in Standard Course of Study Assessments with or without Accommodations
- Receive a High School Diploma

**Standard
Course of Study**

1%

- For Students with Significant Cognitive Disabilities
- Placement Decision Made by the IEP Team
- Participate in an Alternate Assessment (NCEExtend1)
- Receive a Graduation Certificate

**Extended
Content Standards**

Similarities | Standards



Alignment

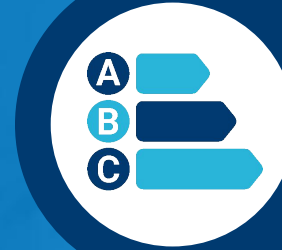
K-2 Standards & Objectives



Structure

Domains

Differences | Standards



Taxonomy
Breadth & Depth



Assisted Divergence
3-8 Standards & Objectives



Pathways
NC Math 1 (A & B)



Installation and Implementation Plans

2026-27 + 2027-28

School Years (*Tentative*)



Installation Phase

Communication

- PSU leadership
- Educators
- Parents
- Other Stakeholders

Professional Learning

- Regional Professional Learning
- Virtual
- DPI Staff

Support Documents

- Unpacking
- Glossary
- Crosswalk
- Parent Guides

Data Collection

- Needs Assessment
- CAO Input
- PSU Implementation Plans
- Regional Data

2028-29

School Year (*Tentative*)



Implementation Phase

Communication

- PSU leadership
- Educators
- Parents
- Other Stakeholders

Professional Learning

- Regional PD
- Virtual

Support Documents

- Based on Data from the Field

Data Collection

- Needs Assessment
- CAO Input
- Regional Data



State assessments aligned to the new standards

Tentative Installation Timeline

2026-27 School Year

OCTOBER 2026

Release Standards to the Field

Standards, Crosswalk, Installation Timeline, Comms Toolkit, & FAQ released.

Begin unpacking documents.

NOV. 2026 – JAN. 2027

Regional Presentations

Present at statewide conferences (State Math and Counselor)

Present to regional CAO meetings – provide overviews and conduct listening sessions in

MAY 2027

Release New Resources + Registration for Professional Learning Opens

Standards Update Webinar provided, Unpacking and Glossary released.

In-person, regional Professional learning (PL) opens and PL content and materials are developed.

JUNE 2027

Regional Professional Learning

Professional learning provided in-person in all 8 regions.

Professional learning also provided virtually.

AUGUST 2027

Additional Resource Development for 27-28

Professional learning concludes and resource creation begins.

Tentative Installation Timeline

2027-28 School Year

OCTOBER 2027

Begin Internal, Statewide & PSU-Specific Professional Learning

Standards Professional Learning provided via webinar series and leader meetings. Monthly communication continues.

DECEMBER 2027

Release Additional Resources

Standards Update Webinar provided and additional new resources released, including Parent/Caregiver Guide.

JANUARY 2028

Registration for Professional Learning Opens

In-person, regional Professional learning (PL) opens and PL content and materials begin to be developed.

MARCH 2028

Release Additional Resources

Standards Update Webinar provided and additional new resources released.

MAY 2028

Regional Professional Learning

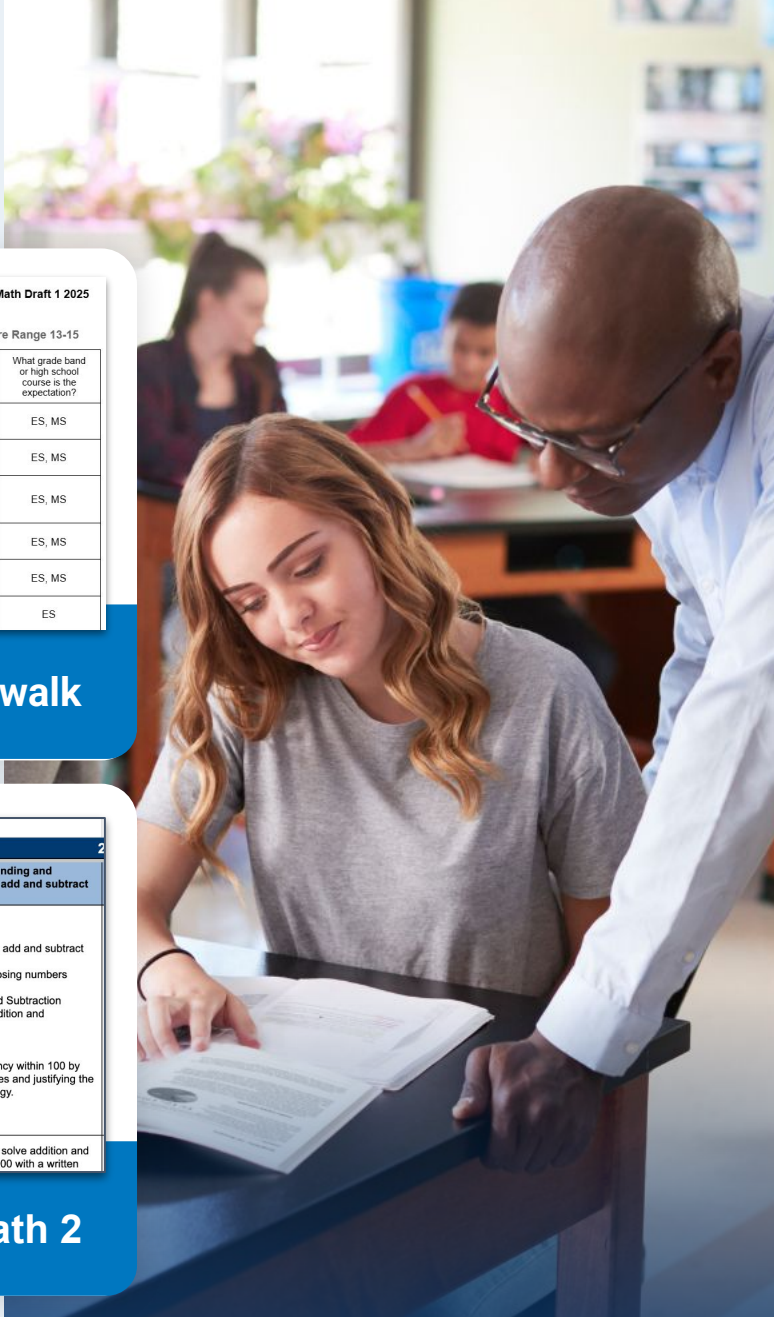
Professional Learning provided in-person in all 8 regions.
Professional Learning will include foundational skills PL for secondary.

SUMMER 2028

Continue Resource Development for 28-29

Professional learning concludes and planning for initial implementation begins.

Resources Already Released



Standards Review & Revision Updates

K-12 Math Standards Draft 1 Proposal - Frequently Asked Questions

1) When would new standards and courses begin?

The current timeline is for draft standards to be approved by the State Board of Education in the late Summer or early Fall of 2026. A two-year installation phase would occur during the 2026-2027 and 2027-2028 school years. These two years would be used to transition from the current standards and courses. *New standards and courses would begin with the 2028-2029 school year.*

2) What happens during the Two-Year Installation phase?

During the first year of the installation phase, NCDPI staff will work with stakeholders to develop supporting documents, provide professional development on the proposed standards and courses, and assist in the transition from current standards and courses to the new standards and courses.

K-12 Math Standards FAQ

Vertical Alignment for HS Pathway Courses

Applied Logic and Reasoning

Number and Quantity

Vertical Connection	ALR Standards and Objectives
Math 1 ANFR.7 Create systems of linear equations and inequalities in context.	Standard 1 Apply operations with matrices and vectors. Objective 1 Use appropriate tools strategically to implement procedures of addition, subtraction, multiplication, and scalar multiplication on matrices. Objective 2 Justify the conditions under which matrix addition, subtraction, multiplication, and scalar multiplication are defined using examples. Objective 3 Use appropriate tools strategically to implement procedures of addition, subtraction, scalar multiplication, and the dot product of vectors. Objective 4 Use appropriate tools strategically to implement procedures to find the inverse of invertible matrices.
Math 2 ANFR.6 Apply systems of equations to solve problems from a context.	

In Math 2, students learn to solve

Vertical Progressions for New High School Courses

ACT Mathematics College and Career Readiness Standards and NC Math Draft 1 2025				
Table 1. ACT Mathematics College and Career Readiness Standards for Score Range 13-15				
Mathematics College and Career Readiness Standards			Is it included in Draft 1 of the Mathematics Standards?	What grade band or high school course is the expectation?
N	201	Perform one-operation computation with whole numbers and decimals	Yes	ES, MS
N	202	Recognize equivalent fractions and fractions in lowest terms	Yes	ES, MS
N	203	Locate positive rational numbers (expressed as whole numbers, fractions, decimals, and mixed numbers) on the number line	Yes	ES, MS
AF	201	Solve problems in one or two steps using whole numbers and decimals in the context of money	Yes	ES, MS
A	201	Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$)	Yes	ES, MS
A	202	Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals	Yes	ES

ACT Standards Crosswalk

AP Precalculus Recommended Levels of Understanding		
AP Precalculus Course and Exam Description		
Level of Understanding	Prerequisite Recommendation Per AP Precalculus Framework	Location of concept in proposed Draft 1 standards
Level of Understanding	Proficiency with the skills and concepts related to linear and quadratic functions, including algebraic manipulation, solving equations, and solving inequalities	- Linear function - Math 1 - Quadratic functions - Math 2
	Proficiency in manipulating algebraic expressions related to polynomial functions, including polynomial addition and multiplication, factoring quadratic trinomials, and using the quadratic formula	- Operations with algebraic expressions - Math 1 - Factoring trinomials - Math 2 - Quadratic formula - Additional topic for Math 2*
	Proficiency in solving right triangle problems involving trigonometry	Math 2
	Proficiency in solving systems of equations in two and three variables	Math 1 and Math 2
	Familiarity with piecewise-defined functions	- Mathematical and Statistical Modeling - Additional topic for NC Math 2*

AP Precalculus Expected Levels of Understanding

	A	B	C	D	E
1	DRAFT 1	K		1	2
2	Addition & Subtraction	Understand addition and subtraction within 10.	Understand addition and subtraction within 20.	Apply place value understanding to add and subtract within 100.	Apply place value understanding and properties of operations to add and subtract within 100.
3		Combine groups with totals up to 5 (conceptual subitizing).	Objective: Apply reasoning strategies to add and subtract within 20 including: - Counting on/back - Doubles - Near Doubles - Making ten	Apply place value reasoning to add and subtract a two-digit number and a one-digit number by composing or decomposing a number leading to a multiple of 10 and/or creating equivalent but simpler or known sums.	Apply reasoning strategies to add and subtract within 100 including: - Composing and decomposing numbers based on place value - Properties of Addition and Subtraction - Relationship between addition and subtraction.
4		Compose numbers less than or equal to 10 in more than one way using objects or drawings.	- Decomposing a number leading to a ten - Using the relationships between addition and subtraction - Creating equivalent but simpler or known sums.	Apply place value strategies to add and subtract a two-digit number and a multiple of 10.	Demonstrate procedural fluency within 100 by explaining reasoning strategies and justifying the selection of an efficient strategy.
5		Decompose numbers less than or equal to 10 in more than one way using objects or drawings.	Apply the commutative and associative properties of addition to solve problems within 20 that call for the addition of three addends.	Represent strategies to solve addition and subtraction within 100 with a written record.	Represent strategies used to solve addition and subtraction problems within 100 with a written
6		Find the number that makes 10 when added to the given number using objects or drawings for any number from 0 to 10.	Connect composition and decomposition to addition and subtraction by recording written expressions with (+) as a symbol for addition and		
7		Apply reasoning strategies to add and subtract within 10 including: - Counting all - Counting on - Counting back - One more, one less - Combinations of ten	Represent strategies to solve addition and subtraction within 20 with a written record.		
8					

Vertical Progressions for K-5, 6-8, and Math 1 and Math 2

Areas of Professional Learning

Identified Through Feedback



- Utilization of the Math Practices
- Overview of Standards
- Data Literacy/Science
- Statistics Standards



- New Course Standards and Content
- Student Advising/Counseling

Collaboration Already Underway

Meetings with key stakeholder groups including:

- North Carolina Center for the Advancement of Teaching (NCCAT)
- Friday Institute
- North Carolina Collaborative for Mathematics Learning
- UNC System STEM Centers
- Launch Years Task Force
- North Carolina Council of Teachers of Mathematics
- Association of Mathematics Teacher Educators-NC



Friday Institute
for Educational Innovation

THE UNC
SYSTEM



STEM Centers



Questions?

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