Halifax County Schools
K-12 Comprehensive Mathematics Framework

Purpose: To engage quality lesson planning and lesson delivery that develops conceptual, procedural and application knowledge according to the NC Mathematics Standard Course of Study.

District Goal: K-12 students master basic at-level conceptual understandings with procedural fluency and application for college and career readiness

K-12 Standards by Domain

Grades: K-5

- Counting & Cardinality (k only)
- Operations & Algebraic Thinking
- Number & Operations in Base Ten
- Number & Operations Fractions
- Measurement & Data
- Geometry

Grades 6th – 7th

- Ratios & Proportional Relationships
- The Number System
- Expressions & Equations
- Geometry
- Statistics & Probability

Grade 8th

- The Number System
- Expressions and Equations
- Functions
- Geometry
- Statistics & Probability

K-8 Math Critical Instructional Focus

Kindergarten:

1. Representing, relating, and operating on whole numbers, initially with sets of objects;
2. Describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

First Grade:

1. Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20;
2. Developing understanding of whole number relationships and place value, including grouping in tens and ones;
3. Developing understanding of linear measurement and measuring lengths as iterating length units; and
4. Reasoning about attributes of, and composing and decomposing geometric shapes.

Second Grade:

1. Extending understanding of base-ten notation;
2. Building fluency with addition and subtraction;
3. Using standard units of measure;
4. Describing and analyzing shapes

Third Grade:

1. Developing understanding of multiplication and division and strategies for multiplication and division within 100;
2. Developing understanding of fractions, especially unit fractions (fractions with numerator 1);
3. Developing understanding of the structure of rectangular arrays and of area; and
4. Describing and analyzing two-dimensional shapes.

Fourth Grade:

1. Developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends;
2. Developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers;
3. Understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel

K-12 Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly & quantitatively.
3. Construct viable arguments & critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for & make use of structure.
8. Look for & express regularity in repeated reasoning. expectations for instructional materials and models of appropriate instructional approaches and assessment practices

Pedagogy: Teaching & Learning

Systematic Delivery of Instruction:

I Do: (Teacher Facilitated Instructions)

- **Explore Connections** to conceptual understanding & its impact
- **Concrete modeling of procedural Skills and fluency**; physically manipulating objects relative to the numerical concept to problem solve
- **Symbolic representation** of conceptual understanding of numerical concept; imaging/picturing (drawing) of numerical concept to problem solve; technology
- **Abstract problem solving**; Correctly applying mathematical knowledge & procedural skills with limited use of concrete objects and the drawing of pictures

We Do: (Teacher & Student; Collaborative Partners)

- Guided Math Instruction/Practice;
- Peer Facilitative Processing of Numerical concepts; Building Concepts
- Collaborative Practice; Shared Practice; Scaffolding of numerical concepts; Various opportunities to practice with immediate feedback; Teacher-Student Conferences
- Math Talk

You Do: (Independent Work)

- Independent Application of numerical concepts; conceptual understanding, procedural skills and numerical fluency
- Constructing meaning; Application of rules, algorithms and rubrics/self-correcting;
- Graded Tasks; Presentations; Reflections; Formative/Summative Assessments

(Continued)

Outcomes: Essential Understandings

Core Curriculum Measures:

- NC Mathematic Standard Course of Study
- Unit Pretest/Standards-based Screening
- Quizzes
- Bi-weekly Progress Monitoring
- NC Check-ins (vetting underway)
- Teacher-Made Unit Assessments
- Common Formative Assessments
- Quarterly Summative Benchmarks
- ACT, Summative EOG, EOC, Final Exams
- K-2 Math Assessment
- K-2 Number Knowledge Screening

Accountability Measures:

- NC K-12 Mathematics SCOS
- NC Grade Level Math Test Specs
- Personalized Education Plan (PEP)
- Individualized Education Plan (IEP)
- Student Retention Plan
- English Language Learner Plan (ELL/ESL)
- Advanced Placement Assessments
- MTSS: Tiered Instruction (core, supplemental & intensive intervention)

Adherence to:

- K-12 NC Math SCOS
- K-12 Math Pacing Guides
- Testing Calendar
- 504 Student Accommodation Plan
- Prerequisite Math Instructional Models
- Protected Instructional Time/Block
- District Definition of Rigor
- Technology/Internet Agreement
- Usage of Data-driven EVAAS Tool

High School

- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability

sides, perpendicular sides, particular angle measures, and symmetry.

Fifth Grade:

1. Developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions);
2. Extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and
3. Developing understanding of volume.

Sixth Grade:

1. Connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems;
2. Completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers;
3. Writing, interpreting, and using expressions and equations; and
4. Developing understanding of statistical thinking.

Seventh Grade:

1. Developing understanding of and applying proportional relationships;
2. Developing understanding of operations with rational numbers and working with expressions and linear equations;
3. Solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and
4. Drawing inferences about populations based on samples

Eight Grade:

1. Formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations;
2. Grasping the concept of a function and using functions to describe quantitative relationships;
3. Analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

Tiered Instructional Block
Instructional Models:

- Whole Group
- Small Group
- Flexible Grouping
- Same Skill Groups
- One-to One

Tier 1: Core Instructional Block:

- Core Block: 60 minutes minimum
- Core Block: 90 minutes maximum

Tier 2: Supplemental Instruction

- Small Groups: minimum 15 to 25 minutes

Tier 3: Intensive Intervention Block

- 30 min. – 45 minutes

Core Instructional Resources:

- Current NC Math SCOS & Math Practices
- Math Unpacking documents
- Lesson Plan Template
- Core basal math text
- Core manipulatives
- Project-based Task Rubrics
- School Net Resources
- Formative, Summative & Performance Assessments
- Technology: Universal Screening Programs
- Quarterly Benchmark Assessments
- Quality Grading Scale
- Quarterly Math Journals
- NC DPI Mathematics Wiki/website
- Released Math EOG & K-2 assessment Items

Supplemental Interventions:

- Data-driven Title 1 Elementary and Secondary Supplemental Math Programs
- Aligned mathematical tools and manipulatives
- Highly Qualified Title 1 Intervention Tutors
- Training in the use of mathematical tools and relevant math resources
- Strategic implementation of math instructional technology
- NC DPI Check-in Assessments
- Project Math & Home Connection

- Math Word Wall/Concept Wall
- Cornell Notebook
- Math Anchor Charts
- Integration of instructional technology
- Writing integration

NC Professional Teaching Standards

Standard #3: Teachers Know the Content They Teach

- Develop and apply strategies to make the curriculum rigorous and relevant
- Promote global awareness and its relevance
- Demonstrate the relationship between the core content and 21st century content that includes global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; and health and wellness awareness.

Standard #4: Teachers Facilitate Learning for Their Students

- Know how students think and learn;
- Understand the influences on student learning and differentiate instruction;
- Keep abreast of evolving research; and
- Adapt resources to address the strengths and weaknesses of students.

Standard #4: Teachers help students develop critical thinking and problem-solving skills

- Encourage students to ask questions, think creatively, develop and test innovative ideas, synthesize knowledge and draw conclusions; and
- Help students exercise and communicate sound reasoning; understand connections; make complex choices; and frame, analyze, and solve problems