RCK12 Elementary Instructional Manual

Richmond County School System

Learning today...Leading tomorrow

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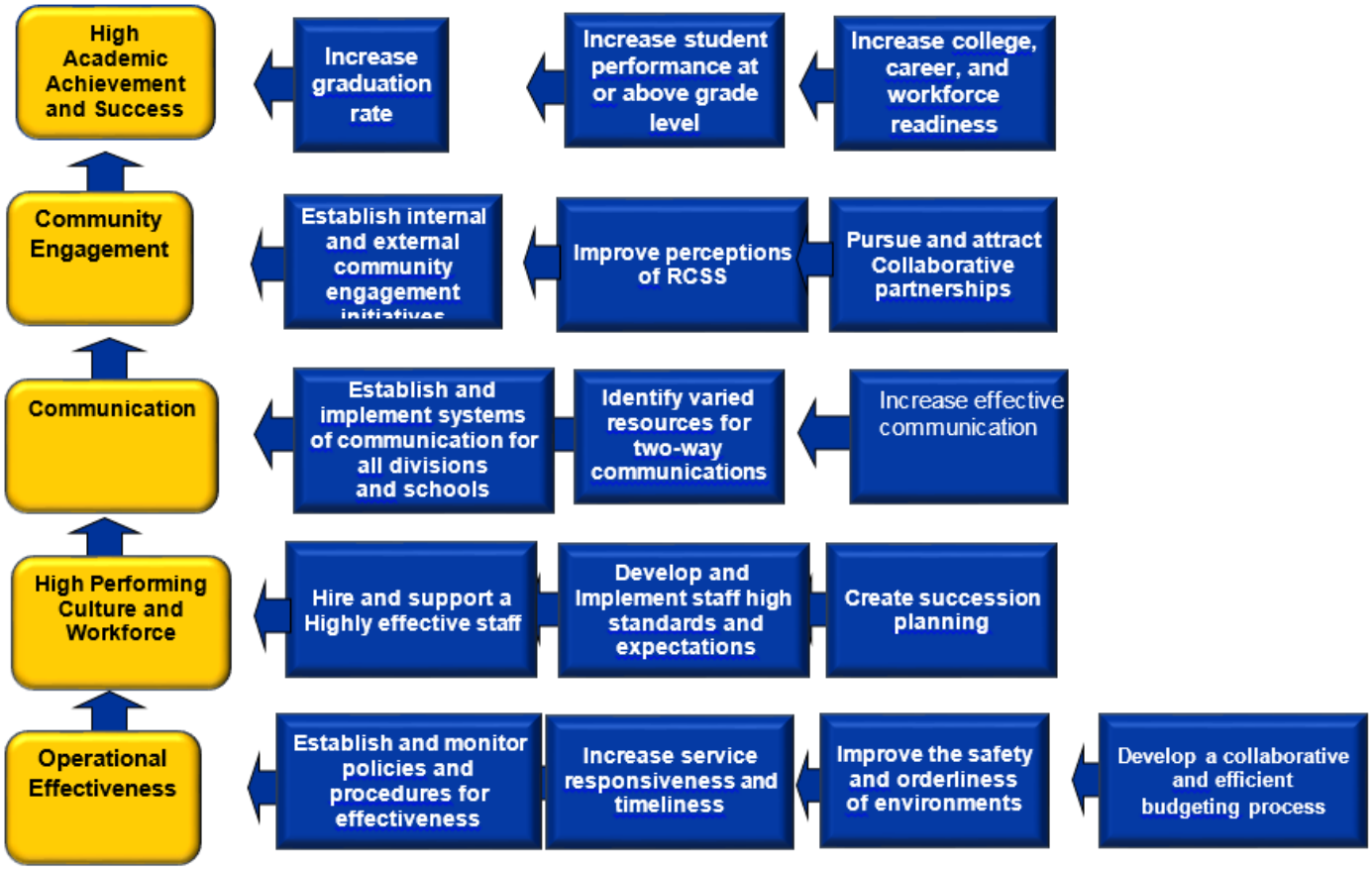
RCSS Strategy Map



RCSS Mission, Vision, and Belief Statements

Mission:

Building a world-class school system through education, collaboration and innovation.

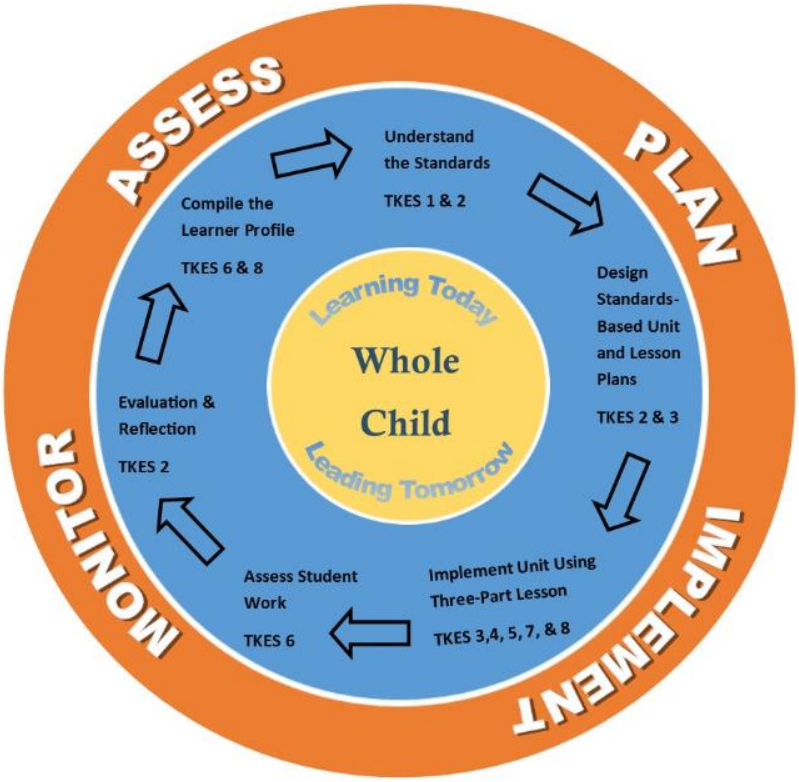
Vision:

RCSS will create a world-class, globally competitive school system where all students will graduate and are college/career ready.

Belief Statements:

- Every person has the right to a quality education
- Education is the shared responsibility of the individual, home, school and community
- Every person can learn
- Respect and acceptance are essential for learning and personal development
- A safe, healthy and orderly environment is essential to learning
- Communication is the key to understanding among people
- Excellence cannot be compromised

RCK12 Instructional Framework



PLAN

Understand the Standards (TKES Standard 1 & 2)

Review Learning Targets and Success Criteria for each Unit
Identify Key Vocabulary

Compile Learner/Class Profiles (TKES Standards 6 and 8)

Set Learning Goals for each Student
Adjust/Differentiate Instruction based on Quantile Data from iReady

Design Standards-Based Units and Lessons (TKES Standards 2 and 3)

Review District Developed Standards-Based Units
Review and/or Develop Pre and Post Assessments for the Unit based on the Learning Targets

IMPLEMENT

Implement Unit (TKES Standards 3, 4, 5, 7, 8)

Teach Three-Part Lesson that includes the 5Es and Formative Assessment
Provide interventions for Struggling Students
Enrich Students Who Have Met Standards

ASSESS

Assess Student Work (TKES Standard 6)

Analyze Student Work to Identify Strengths and Gaps
Provide Feedback

MONITOR

Evaluation and Reflection (TKES Standard 2)

Revisit Student Goals and Make Adjustments According to Student Assessment Data
Identify Interventions for Struggling Students
Identify Students Who Have Met Standards and Need Enrichment

Tiers of Instruction Overview

Tier 1 *core* instruction is the instruction that all students in a classroom receive. It entails universal screening of all students, regardless of proficiency, using valid measures to identify students at risk for future academic failure—so that they can receive early intervention. Tier 1 instruction is "high quality."

Tier 2 *targeted group* interventions—schools provide additional assistance to students who demonstrate difficulties on screening measures or who demonstrate weak progress. Tier 2 students receive supplemental small group instruction aimed at building targeted proficiencies. Student progress is monitored throughout the intervention (no more than seven students per group).

Tier 3 *intensive* interventions are provided to students who are not benefiting from tier 2 and require more intensive assistance. Tier 3 usually entails one-on-one instruction along with an appropriate mix of instructional interventions. Ongoing analysis of student performance data is critical in this tier (no more than 3 students per group).

Tier 4 is the *most intensive* tier of instruction for students identified as eligible for Special Education. Students at this level receive specially designed instruction as determined by the Special Education Department.

Early Intervention Program (EIP) Delivery Models – Elementary School

Augmented	Self-Contained	Pull-Out
The augmented model incorporates EIP services into the regular group class size by providing an additional early childhood certified teacher to reduce the teacher/pupil ratio while providing EIP services.	This model is used to reduce the class size in order to provide more emphasis on instruction and increased academic achievement.	EIP students are removed from the classroom for instruction by an additional certified teacher.

RCK12 Universal Screening and Progress Monitoring Recommendations

Screen all students to identify those at risk for potential math difficulties and provide interventions to students identified as at risk.

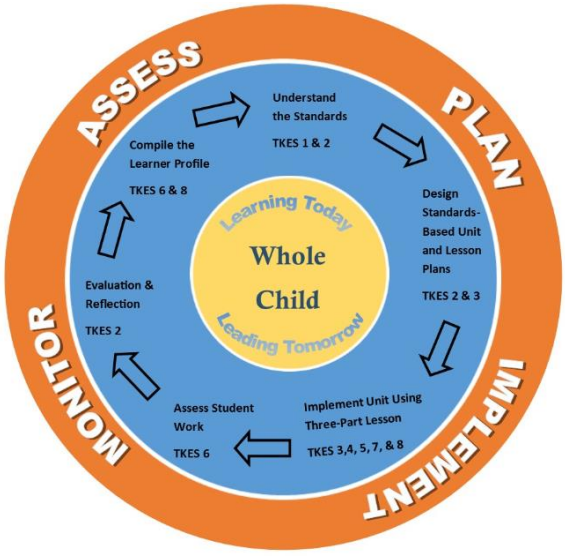
The recommendations for Progress Monitoring in math are based on the information teachers get from the diagnostic assessments, and the progress monitoring recommendations are outlined below.

- Tier 3 students (Red): every two weeks
- Tier 2 students (Yellow): once a month
- Tier 1 students (Green): at least once each 9 weeks (teacher discretion; as needed)

The measures for progress monitoring – and subsequent screenings – are equivalent in difficulty to the assessments given at the beginning of year. Progress is gauged by administering the same measures over time and tracking if students are able to perform on grade level in reading and math.

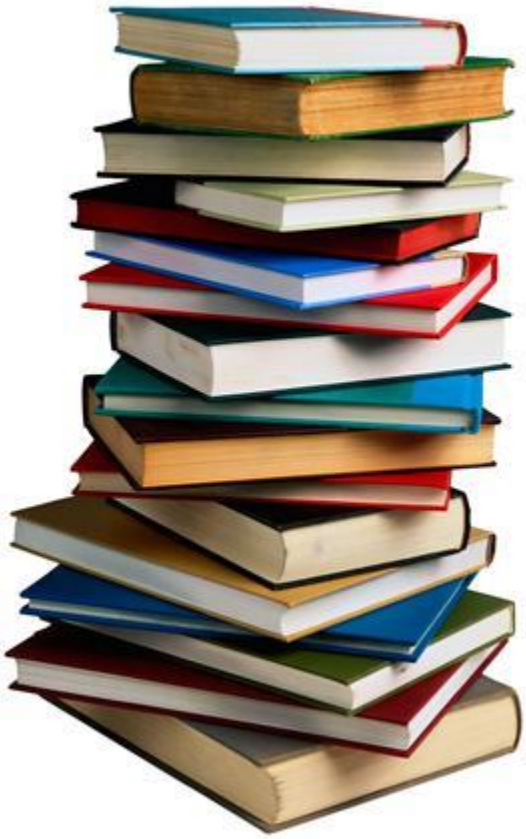
How is Progress Monitoring Connected to Instruction?
The Richmond County Instructional Framework supports setting goals for students utilizing instructional data and making adjustments based upon progress monitoring.

Progress monitoring is directly tied to instruction, so teachers should focus first on creating and implementing an instructional plan for each student. Progress monitoring results are critical tool in making these adjustments as they will tell if student's growth is indeed occurring and if it is at the appropriate rate for students to be on track by the next benchmark assessment period.



When identifying the area in which students need instruction, it is critical that teachers review all math and Quantile measures. The student's score in each measure provides focus on the most critical areas for student's growth. Students who score more than one grade level below should receive intensive intervention on a continual basis.

English Language Arts



RCK12 Pyramid of Interventions for English Language Arts

Assessment Resources:

Universal Screeners

Grade	Screener	Progress Monitoring
K – 9th	i-Ready	i-Ready

Other Assessments

Electronic Reading Assessments (Sight Word Inventory, Speaking and Listening Skills Checklist)

District Performance/Culminating Task

Assessment Scores

Strategies for Tier I English Language Arts Instruction:

- Graphic Organizers
- Review of prior reading, writing, and English concepts (includes spiraling lessons and homework)
- Strategy instruction (includes teacher modeling; think-aloud models and reading instructional strategies
- Manipulatives (Elkonin Boxes, plastic letters, letter cards, etc.)
- Cooperative learning (includes small-group instruction; teaming; peer-assisted tutoring)
- Goal setting/structure
- Scaffolding (includes guided teacher practice and questioning)
- Simulations (includes role-playing or acting out of reading or literature works)
- Computer-assisted instruction

Please note that these are examples of interventions at each tier and not all inclusive. Some interventions may be applicable to more than one tier depending on the intensity and /or frequency of the intervention.

Tier 4 - Special Education

Tier 3

SST DRIVEN INSTRUCTION
Small Group (no more than 3 students)
(Individually assigned/needs based)

K – 5th i-Ready, Start Up, Spiral Up, Build Up
6th – 9th i-Ready Print Lessons

Progress Monitoring every two weeks

Tier 2

DATA DRIVEN TARGETED INSTRUCTION
Small Group (no more than 7 students)
(Individually assigned/needs based)

K-5th	6-8th	9th
i-Ready, i-Ready Print Lessons, Start Up, Build Up, Spiral Up, FCRR lessons, Free Reading Intervention 1 – 2th 95 Percent Activities K-1th Phonemic Awareness in Young Children	i-Ready i-Ready Print Lessons Strategies from Lexile in Action	Strategies from Lexile in Action Pearson Intervention GA Virtual School i-Ready Print Lessons

Progress Monitoring once monthly

Tier 1

STANDARDS-BASED ELA INSTRUCTION

K – 5th	RCK12 Curriculum (rcboe.rubiconatlas.org) Benchmark Series RCSS Reading Scope and Sequence Activities
6th – 8th	RCK12 Curriculum (rcboe.rubiconatlas.org) HMH Literature Series Georgia Virtual School Modules, Edgenuity
9th – 12th	RCK12 Curriculum (rcboe.rubiconatlas.org) Pearson Literature Series Georgia Virtual School Modules, Edgenuity

Reference: IES Practice Guide: Assisting Students Struggling with Reading, February 2009

Richmond County School System

Tier 1
Instructional Expectations

RCK12 Balanced Literacy

The Richmond County School System provides a Standards Based Balanced Literacy Approach with a total integration of reading, writing, and word study. The RCK12 Curriculum includes authentic texts, engaging curriculum, Unit Pacing Guides, Pre/Post Assessments, Mini Tasks and Culminating Tasks, Writing Anchor Papers, and ten days of lesson plans for the first ten days of each unit. The Standards Based Balanced Literacy approach will effectively prepare students to be College and Career Ready but also instill a passion for reading. The **RCSS Curriculum** and **Balanced Literacy** approach addresses the following key components:

1. **Word Study:** Students engage in explicit instruction of sounds, letters, word parts, Greek and Latin roots, vocabulary, and spelling in small group K-5 and whole group and small group in 6 – 12.
2. **Reading**: Students engage in several different types of reading**.**
    - **Read Alouds:** Students engage in teacher facilitated Read Alouds to think critically about texts, articulate and support ideas about concepts shared in books, build comprehension of fiction and non-fiction texts, and hear models of fluent reading.
    - **Guided Reading:** Teachers guide students in small-group reading instruction designed to provide differentiated teaching that supports students on their reading level.
    - **Shared Reading:** Students participate in a whole group interactive reading experience that occurs when students join in or share the reading of a book or other text while guided and supported by a teacher.
    - **Independent Reading:** Students engage in daily reading in-school and at-home on their Lexile level to practice reading, build stamina, develop comprehension, and read for enjoyment.
3. **Writing:** Students engage in several different types of reading and writing.
    - **Guided Writing:** Teachers guide students in small group writing instruction designed to provide differentiated teaching that supports students through the writing process.
    - **Share Writing:** Students participate in a whole group interactive writing experiences that occurs when students work through the writing process while being guided and supported by a teacher.
    - **Independent Writing:** Students engage in independent writing, and the teacher supports students through conferencing.

RCK12 Balanced Literacy Classroom Expectations

Readers Workshop	Opening	Work Session	Closing
The Readers Workshop block starts with a Read Aloud and a Modeled Think Aloud to build vocabulary and comprehension.	Explicit whole class guided and shared reading instruction on fluency, vocabulary, and comprehension to understand authentic literature	Purposeful small group explicit instruction for: • Phonological Awareness • Word Work/Phonics • Fluency • Vocabulary • Comprehension Small group stations provide students the opportunity to: • Partner Read • Collaborate • Read Independently • Research, etc.	Purposeful Reflection • Encourages students to reflect on what they have learned, how they learned, and what assisted them in their learning.
Writers Workshop	**Opening**	**Work Session**	**Closing**
The Writers Workshop block starts with a brainstorming or prewriting activity.	Explicit whole class guided and shared writing instruction using modeled lessons and mini lessons	Purposeful small group, partner, or individual writing on short constructed responses or the writing process using different genres. Teacher and peers conference and provide timely feedback.	Publish and share their writing.

Tier 2 - 3

Instructional Expectations

Five Recommendations for Reading Interventions

This manual offers five recommendations for supporting students struggling in reading. The recommendations are intended to be implemented within an RtI framework (four tiers for Georgia). For RtI tiers 2 and 3, recommendations 1 through 5 focus on the most effective content and pedagogical practices that can be included in reading interventions.

1. Screen all students for potential reading problems at the beginning of the year and again in the middle of the year. Regularly monitor the progress of students at risk for developing reading disabilities.

2. Provide time for differentiated reading instruction for all students based on assessments of students' current reading level.

3. Provide intensive, systematic instruction on up to three foundational reading skills in small groups to students who score below the benchmark score on universal screening.

4. Monitor the progress of tier 2 students at least once a month. Use these data to determine whether students still require intervention. For those students still making insufficient progress, schoolwide teams should design a tier 3 intervention plan.

5. Provide intensive instruction on a daily basis that promotes the development of the various components of reading proficiency to students who show minimal progress after reasonable time in tier 2 small group instruction (tier 3).

Reference: IES Practice Guide: Assisting Students Struggling with Reading, February 2009

Intervention CONTENT Expectations

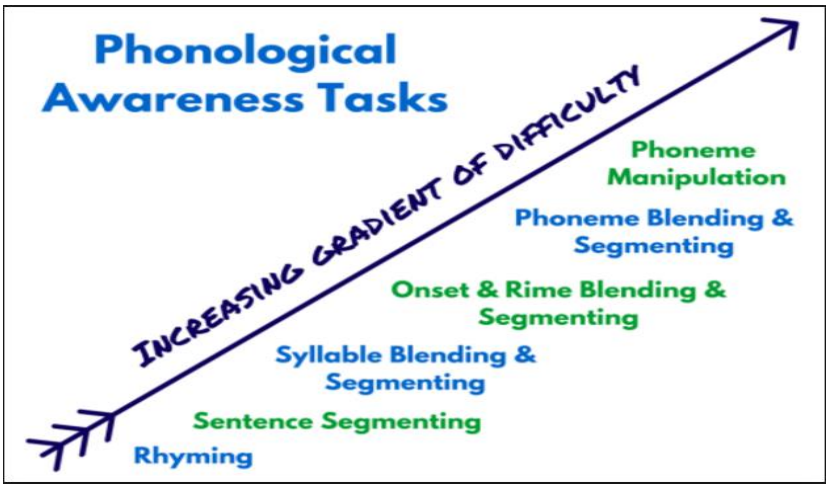
Grade Level	Intervention Content Focus
Kindergarten	**Phonological Awareness Letter Sounds
First	**Phonemic Awareness **Phonics Frequency of High Frequency Words
Second	**Phonics Fluency with Connected Text
Third	
Fourth	Fluency with Connected Text Vocabulary Comprehension
Fifth - Ninth	Vocabulary Comprehension

**See the continuum on page 13

Phonological Awareness and Phonics Continuum

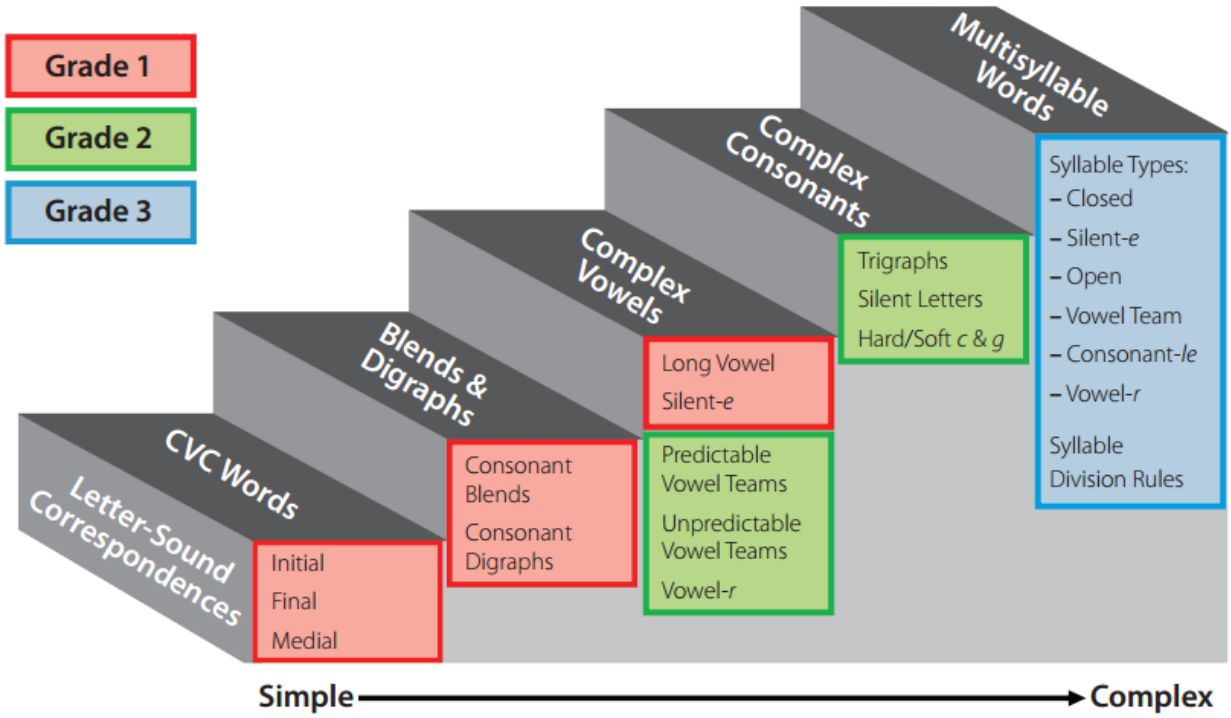
Phonological Awareness

This continuum identifies the sequence of how students learn phonological awareness and should be mastered by the end of kindergarten.



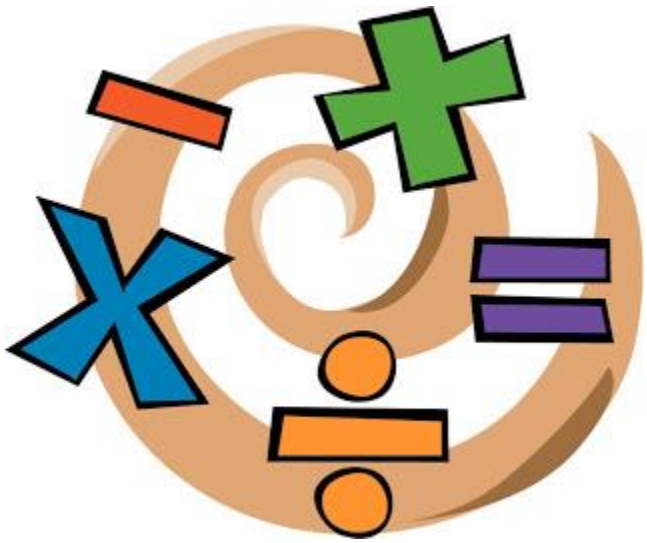
Phonics

This continuum identifies the sequence of how students learn phonics.



Reference: 95Percentgroup.com

Mathematics



RCK12 Pyramid of Interventions for Mathematics

Assessment Resources:

Universal Screeners

Grade	Screener	Progress Monitoring
K – 9th	i-Ready	i-Ready

Other Assessments

District Performance/Culminating Task (K – 12)

RCK12 Curriculum Unit Pre and Post Assessment (K – 12)

RCK12 Curriculum Unit Informal Check Assessments (K – 12)

Strategies for Tier I Mathematics Instruction:

- Concrete-Representational-Abstract Model
- Graphic Organizers
- Review of prior math concepts (includes spiraling lessons and homework)
- Strategy instruction (includes teacher modeling; think-aloud models and cues; simplifying and reducing strategies)
- Hands-on devices and visual aids (includes manipulatives; graphing calculators; graph paper; flash cards; drawings; number lines)
- Cooperative learning (includes small-group instruction; teaming; peer-assisted tutoring)
- Goal setting/structure
- Scaffolding (includes guided teacher practice and questioning)
- Simulations (includes role-playing or acting out mathematical concepts)
- Computer-assisted instruction

Please note that these are examples of interventions at each tier and not all inclusive. Some interventions may be applicable to more than one tier depending on the intensity and /or frequency of the intervention.

Tier 4 - Special Education

Tier 3

SST DRIVEN INSTRUCTION
Small Group (no more than 3 students)
(Individually assigned/needs based)

K – 5th envision Math: Intervention System
Numeracy Development Project Books*
6th – 9th i-Ready Intervention Print Lessons
Numeracy Development Project Books*
*located in RCK12 Mathematics Curriculum (Rubicon Atlas)

Progress Monitoring every two weeks

Tier 2

DATA DRIVEN TARGETED INSTRUCTION
Small Group (no more than 7 students)
(Individually assigned/needs based)

K – 5th i-Ready Intervention Print Lessons and online instruction, Targeted First in Math RTI, **GaDOE Intervention Table***

6th – 8th i-Ready Intervention Print Lessons and online instruction, Go Math RTI Intervention System, **GaDOE Intervention Table***

9th – 11th i-Ready Intervention Print Lessons and online (9th grade ONLY), HRW (AGA) RTI Intervention System

Progress Monitoring once monthly

Tier 1

STANDARDS-BASED MATHEMATICS INSTRUCTION

K – 5th RCK12 Curriculum (rcboe.rubiconatlas.org), enVision Math Instructional Resource/Textbook Think Math with lessons focused on Concrete-Representational-Abstract Model First in Math Software, Quantile Framework for Mathematics (https://www.quantiles.com)

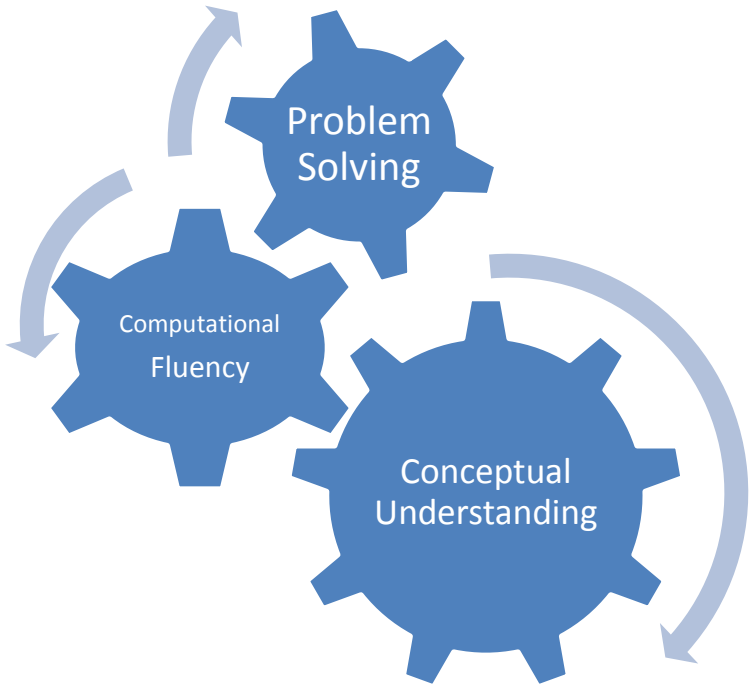
6th – 8th RCK12 Curriculum (rcboe.rubiconatlas.org), GO Math Instructional Resource/Textbook Georgia Virtual School Modules, Edgenuity lessons, Quantile Framework for Mathematics (https://www.quantiles.com)

9th – 12th RCK12 Curriculum (rcboe.rubiconatlas.org), HRW (AGA) Collections AND Pearson Collections Instructional Resource/Textbook, Georgia Virtual School Modules, Edgenuity lessons, Quantile Framework for Mathematics – 9th grade ONLY (https://www.quantiles.com)

Tier 1
Instructional Expectations

RCK12 Balanced Numeracy

The Richmond County School System's Mathematics Department provides an aligned, standards-based, **balanced**, and engaging comprehensive curriculum including Curriculum Maps, Unit Snapshots, Unit Pacing Guides, Pre/Post Assessments, Informal Checks, Performance Tasks, Culminating Tasks, and five days of scripted lesson plans for each unit. These documents specify the standards to be taught for each grade level that will not only effectively prepare students to be College and Career Ready but also instill a passion for mathematics. The **RCSS Curriculum** and **Balanced Numeracy** approach addresses the following key components:



1. **Conceptual Understanding:** The conceptual understanding part of the math lesson is designed to explore, develop, and teach mathematical concepts using the Concrete-Representational-Abstract Model (i.e. math tools).

2. **Problem Solving:** Problem Solving develops mathematical reasoning and problem solving abilities. Problem solving provides students the opportunity to apply the mathematics they are learning in the Conceptual Understanding component of instruction to a problem-solving situation.

3. **Computational Fluency**
   - **Math Review:** Math review emphasizes the development of number sense as students practice procedural mathematics and computational skills every day. Learning objectives are connected to what students have previously learned. Student work connects what they are learning to prior learning.
   - **Mental Math:** Mental math helps students become skillful in computing math problems mentally.

RCK12 Balanced Numeracy "Look-Fors"

Conceptual Understanding (Know WHY)	Computational Fluency (Know HOW)	Problem Solving (Know WHEN)
Concrete-Representational-Abstract • **Concrete** math tools (i.e. base-ten blocks, cubes, counters) • Pictorial **representations** (i.e. circles to represent coins, pictures of objects, tally marks, number lines) • Numbers and variables to explain how symbols can be used as an efficient way to represent **numeric and algebraic** situations • Show different representations of the same mathematical situation	***Math Review and Mental Math*** • 2-5 problems daily on the same repeat concept • Emphasis on Number Sense (reasonable answers and estimation); Error Analysis • Student Reflection (student talk) • Problem strings of numbers and operations (i.e. Number Talks and Problem Strings) • Calendar Math • Strategies to solve problems	***Mathematical Reasoning*** • Understand and explore the problem • Strategies to solve problems • Look back and reflect on the solution • Connect new learning to prior knowledge to make sense of the problem • Apply conceptual learning to familiar and unfamiliar situations

RCK12 Balanced Numeracy Classroom Expectations

Numeracy Block	Opening	Work Session	Closing
The Numeracy Block starts with Number Talks, Calendar Math, and/or Fluency Activities to build computational fluency using a variety of strategies.	Explicit whole class guided (teacher modeling) and shared instruction aligned to the standards that includes a balance of: • Computational Fluency (i.e. purposeful practice) • Conceptual Understanding (i.e. using tools) • Problem Solving (i.e. problems that students can solve in a variety of ways)	Data-driven small group scaffolded instruction that provides students with opportunities to engage in: • Problem Solving • Purposeful Fluency Practice • Conceptual Understanding using concrete and pictorial representations • Explicit Teacher Instruction for addressing individual needs, etc. Teacher and peers conference and provide timely feedback.	Purposeful Reflection • Encourage students to reflect on what they have learned, how they learned, and what assisted them in their learning.

Standards of Mathematical Practices

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education.

#1 Make sense of problems and persevere in solving them **What it means:** Understand the problem, find a way to attack it, and work until it is done. Basically, you will find practice standard #1 in every math problem, every day. The hardest part is pushing students to solve tough problems by applying what they already know and to monitor themselves when problem-solving. **Own it:** Give students tough tasks and let them work through them. Allow wait time for yourself and your students. Work for progress and "aha" moments. The math becomes about the process and not about the one right answer. Lead with questions, but don't pick up a pencil. Have students make headway in the task themselves.	**#2 Reason abstractly and quantitatively** **What it means:** Get ready for the words *contextualize* and *decontextualize.* If students have a problem, they should be able to break it apart and show it symbolically, with pictures, or in any way other than the standard algorithm. Conversely, if students are working a problem, they should be able to apply the "math work" to the situation. **Own It:** Have students draw representations of problems. Break out the manipulatives. Let students figure out what to do with data themselves instead of boxing them into one type of organization. Ask questions that lead students to understanding. Have students draw their thinking, with and without traditional number sentences.
#3 Construct viable arguments and critique the reasoning of others **What it means:** Be able to talk about math, using mathematical language, to support or oppose the work of others. **Own it:** Post mathematical vocabulary and make your students use it — not just in math class, either! Use "talk moves" to encourage discourse. Work on your classroom environment from day one so that it is a safe place to discuss ideas.	**#4 Model with mathematics** **What it means:** Use math to solve real-world problems, organize data, and understand the world around you. **Own it:** Math limited to math class is worthless. Have students use math in science, art, music, and even reading. Use real graphics, articles, and data from the newspaper or other sources to make math relevant and real. Have students create real-world problems using their mathematical knowledge.

Standards of Mathematical Practices

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education.

#5 Use appropriate tools strategically **What it means:** Students can select the appropriate math tool to use and use it correctly to solve problems. In the real world, no one tells you that it is time to use the meter stick instead of the protractor. **Own it:** Don't tell students what tool to use. Try to leave the decision open ended and then discuss what worked best and why. For example, I wanted my students to find their height. They had measuring tapes, rulers, and meter sticks among their math tools. Once everyone found their height, we discussed which tools worked best and why. Leave math tools accessible and resist the urge to tell students what must be used for the task. Let them decide; they might surprise you!	**#6 Attend to precision** **What it means:** Students speak and solve mathematics with exactness and meticulousness. **Own it:** Push students to use precise and exact language in math. Measurements should be exact, numbers should be precise, and explanations must be detailed. One change I've made is not allowing the phrase, "I don't get it." Students have to explain exactly what they do and do not understand and where their understanding falls apart.
#7 Look for and make use of structure **What it means:** Find patterns and repeated reasoning that can help solve more complex problems. For young students this might be recognizing fact families, inverses, or the distributive property. As students get older, they can break apart problems and numbers into familiar relationships. **Own It:** Help students identify multiple strategies and then select the best one. Repeatedly break apart numbers and problems into different parts. Use what you know is true to solve a new problem. Prove solutions without relying on the algorithm. For example, my students are changing mixed numbers into improper fractions. They have to prove to me that they have the right answer without using the "steps."	**#8 Look for and express regularity in repeated reasoning** **What it means:** Keep an eye on the big picture while working out the details of the problem. You don't want kids that can solve the one problem you've given them; you want students who can generalize their thinking. **Own it:** Show students how the problem works. As soon as they "get it," start making them generalize to a variety of problems. Don't work fifty of the same problem; take your mathematical reasoning and apply it to other situations.

Reference: http://www.scholastic.com/teachers/top-teaching/2013/03/guide-8-mathematical-practice-standards

Tier 2 - 3

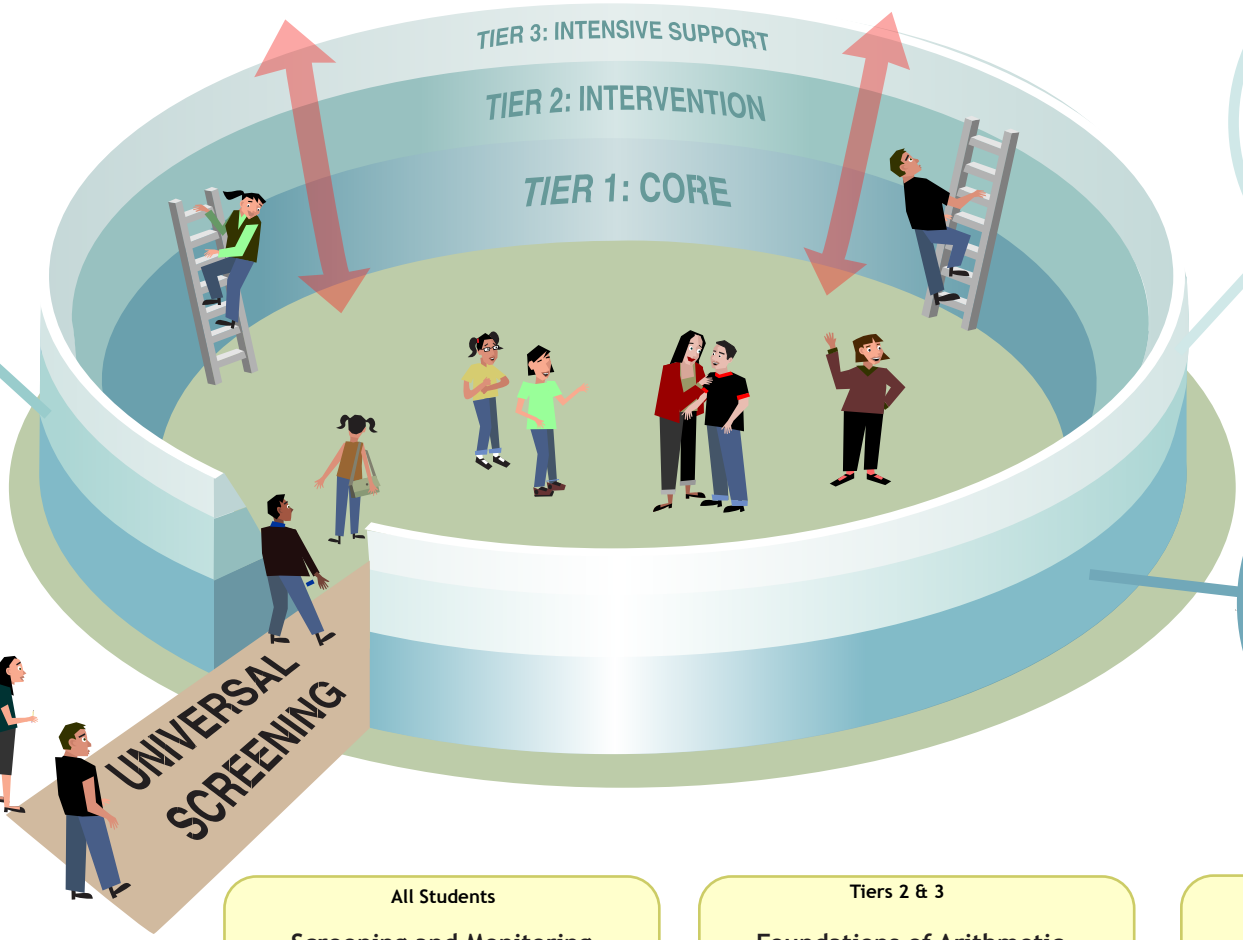
Instructional Expectations

RCK12 Response to Intervention Framework in Mathematics

Response to Intervention (RtI) is a framework for supporting students who are potentially at risk and assisting them before they fall behind. RtI is grounded in high quality core classroom instruction for all students which is then supplemented as necessary by progressively more intensive interventions for students who may struggle with mathematics. Key components of RtI are periodic universal screening to determine which students may need additional instruction and ongoing progress monitoring to ascertain the effectiveness of additional instruction.

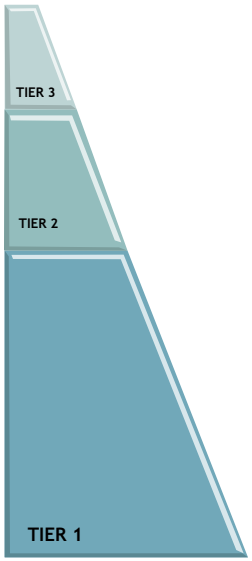
Tier 2: Interventions
Small group, more intense Instruction focused on specific skills

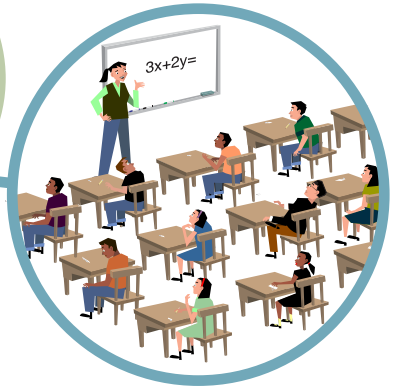
Tier 4: MOST INTENSIVE SUPPORT



Tier 3: Intensive Support
Most intense, often one-to-one

TIER 4





Tier 1: Core Instruction
All students

All Students

Screening and Monitoring

- Screening three times a year (iReady)
- Ongoing progress monitoring (iReady)
- Reliable, efficient, valid measures

Tiers 2 & 3

Foundations of Arithmetic

- In-depth topic coverage:
  - Whole numbers (K-5)
  - Rational numbers (4-9)
- Underlying structures of word problems
- Daily fact fluency practice

Tiers 2 & 3

Intentional Teaching

- Explanations, think alouds, modeling
- Scaffolded problem-solving
- Visual representations
- Immediate corrective feedback
- Praise for effort & engagement

Seven Recommendations for Mathematics Interventions

This manual offers seven recommendations for supporting students struggling in mathematics. The recommendations are intended to be implemented within an RtI framework (four tiers for Georgia). For RtI tiers 2 and 3, recommendations 1 through 7 focus on the most effective content and pedagogical practices that can be included in mathematics interventions.

1. Instructional materials for students receiving interventions should focus intensely on in-depth treatment of whole numbers in kindergarten through grade 5 and on rational numbers in grades 4 through 9 (refer to the Pyramid of Interventions for Tier 2 and Tier 3).

2. Instruction during the intervention should be explicit and systematic. This includes providing models of problem solving, verbalization of thought processes (i.e. think alouds), guided practice (i.e. gradual release model), corrective feedback, and frequent cumulative review.

3. Interventions should include instruction on solving word problems that is based on common underlying structures.

4. Intervention materials should include opportunities for students to work with visual representations of mathematical ideas, and interventionists should be proficient in the use of visual representations of mathematical ideas (i.e. Concrete-Representational-Abstract Model).

5. Interventions at all grade levels should devote approximately 10 minutes in each session to building fluent retrieval of basic arithmetic facts (i.e. computational strategies using mental math).

6. Monitor the progress of students receiving supplemental instruction and other students who are at risk.

7. Include motivational strategies in Tier 2 and Tier 3 interventions (refer to Growth Mindset Resources in Rubicon).

Reference: IES Practice Guide: Assisting Students Struggling with Mathematics: Response to Intervention (RtI) for Elementary and Middle Schools, **April 2009**

Best Practices for Mathematics Intervention

This checklist is designed for teachers to use to reflect on how they are currently supporting students who are struggling with learning mathematics and identify opportunities for providing additional support.

Reflection of Intervention "Intentional" Teaching Practices	Yes	No
1. Intervention time is scheduled and occurs daily.		
2. Students receive instruction in skill groups to address deficits as evident from the informal diagnostic measures or from error pattern analysis		
3. Intervention instruction is a high priority and small groups of no more than 7 meet for intervention daily (3 groups each day in elementary school ONLY)		
4. Provide step-by-step demonstrations and modeling of math concepts.		
5. Use visual representations and manipulatives to make math concepts explicit.		
6. Scaffold students from concrete materials to representations to abstract concepts, spending adequate time to ensure student understanding at each stage.		
7. Explain the reasoning behind each step, using "think alouds".		
8. Provide guided practice (I do, we do, you do), including scaffolding and solving problems along with students.		
9. Frequently check for student understanding and provide frequent review during the lesson.		
10. Students to explain their reasoning and approaches.		
11. Reteach when students don't understand. Include reteaching that demonstrations in alternate formats so students have multiple ways to understand and practice the concepts.		
12. Provide immediate corrective feedback to students, specifically identifying correct work and errors.		
13. When students are ready, allow independent practice so students' understanding can be checked.		
14. Students work on a varied mix of challenging and easier problems, including worked examples for students to review.		
15. Encourage students to persist with challenging problems.		
16. Praise students' accomplishments and recognizes their efforts.		
17. Devote time daily in each session to building fluent retrieval of basic arithmetic facts (i.e. computational strategies using mental math).		

Intervention CONTENT Expectations

Grade Level	Intervention Content Focus	Grade Level Fluency Expectation
Kindergarten	Significant attention to counting (e.g., counting up), number composition, and number decomposition (to understand place-value multi-digit operations). Interventions should cover the meaning of addition and subtraction and the reasoning that underlies algorithms for addition and subtraction of whole numbers, as well as solving problems involving whole numbers. **This focus should include understanding of the base-10 system (place value).**	Add/subtract within 5 (mental math)
First		Add/subtract within 10 (mental math)
Second		Add/subtract within 20 (mental math) & Add/subtract within 100 (pencil and paper)
Third	Focus on rational numbers should include understanding the meaning of fractions, decimals, ratios, and percents, using visual representations (including placing fractions and decimals on number lines, and solving problems with fractions, decimals, ratios, and percents).	Multiply/divide within 100 & Add/subtract within 1000
Fourth		Add/subtract within 1,000,000
Fifth		Multi-digit whole number multiplication (up to 3 digit by 2-digit factor) and division (up to 4 digit dividends and 2 digit divisors)
Sixth		Multi-digit division & Multi-digit decimal operations
Seventh	Focus on rational numbers should include understanding the meaning of fractions, decimals, ratios, percents and **integers**, using visual representations (including placing fractions and decimals on number lines, and solving problems with fractions, decimals, ratios, and percents).	Add/subtract/multiply/divide integers Solve one- and two-step algebraic equations
Eighth		Solve one- and two-step algebraic equations Solve simple 2×2 systems by inspection
Algebra I		Solve multi-step algebraic equations Solve 2×2 systems by inspection

Fluency: Computational fluency is defined as skill in carrying out procedures *flexibly, accurately, efficiently*, and *appropriately*. Fluent problem solving does not necessarily mean solving problems within a certain time limit, though there are reasonable limits on how long computation should take. *Fluency is based on a deep understanding of quantity and number*.

Fluent students:

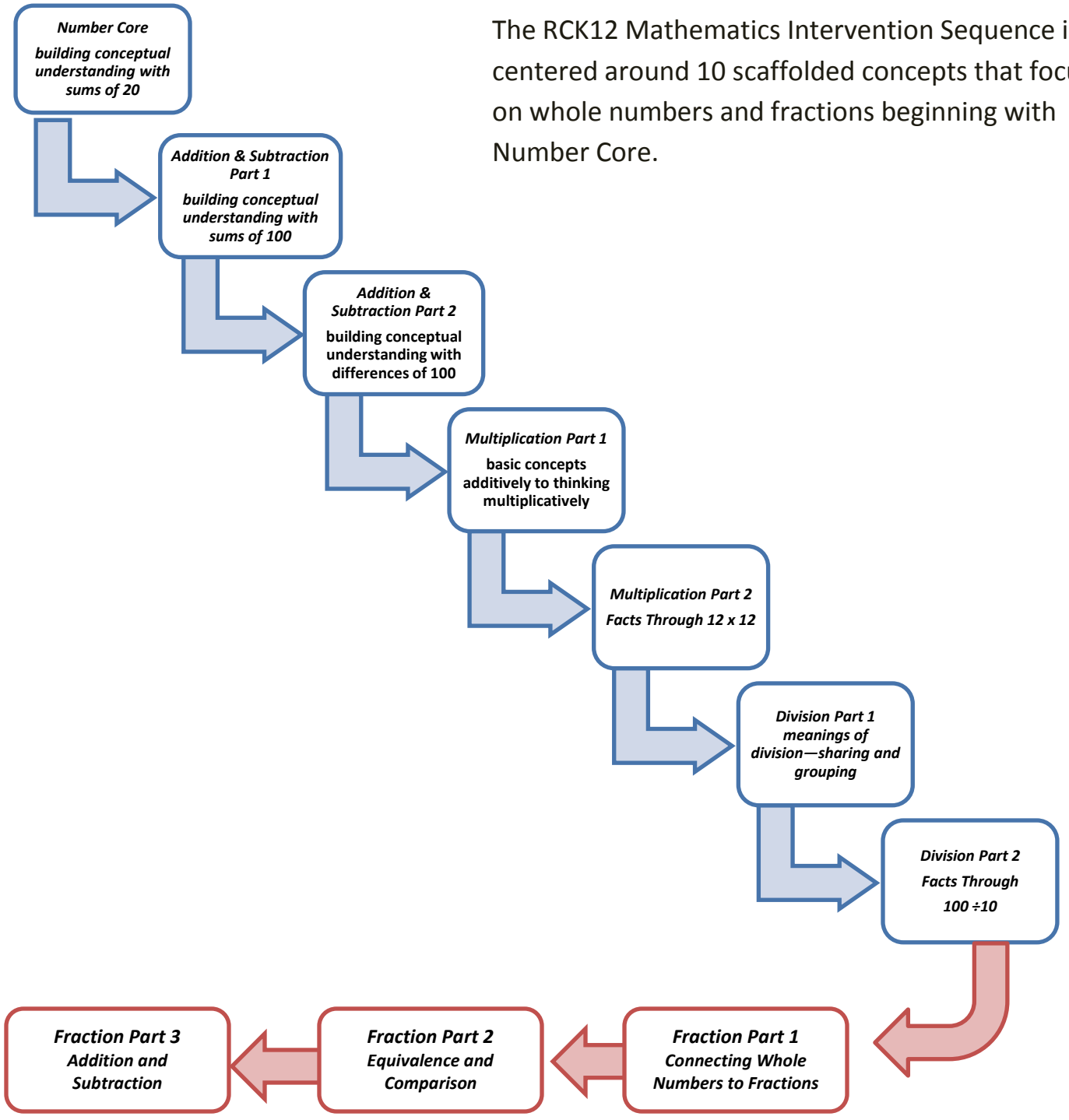
- flexibly use a combination of deep understanding and number sense.
- are fluent in the necessary baseline functions in mathematics so that they are able to spend their thinking and processing time unpacking problems and making meaning from them.
- are able to articulate their reasoning.
- find solutions through a number of different paths.

For more about fluency, see: http://www.youcubed.org/wp-content/uploads/2015/03/FluencyWithoutFear-2015.pdf

Reference: Georgia Department of Education, Georgia Standard of Excellence Math Overview, **2016**

RCK12 Math Intervention Instructional Sequence

The RCK12 Mathematics Intervention Sequence is centered around 10 scaffolded concepts that focus on whole numbers and fractions beginning with Number Core.



Science

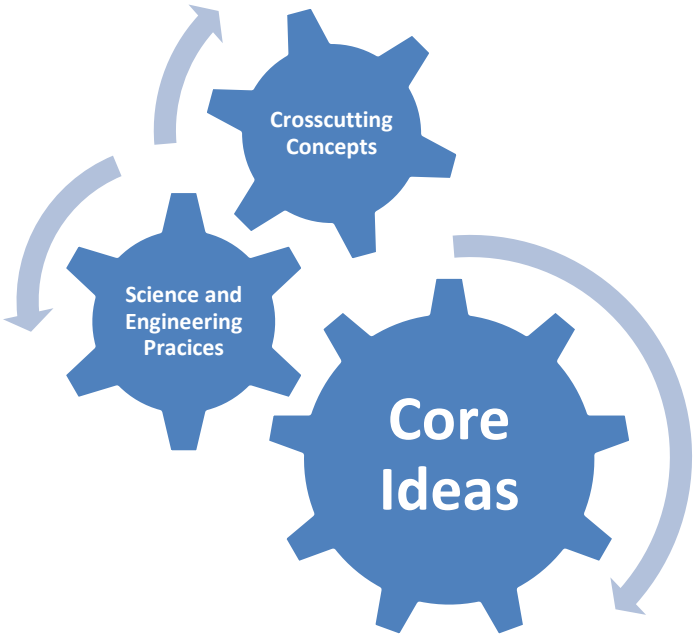
Tier 1

Instructional Expectations

RCK12 Science in 3D

(Phenomenon Based Instruction)

The Richmond County School System provides a Standards-Based Science program aligned to the Georgia Standards of Excellence (GSE). The Georgia Standards of Excellence (GSE) are designed to provide students with the knowledge and skills for proficiency in science that will support students to become College & Career Ready and to become scientific literate. 3-Dimensional Learning can promote literacy when the teacher creates literacy- rich projects that require active reading; making inferences, analyzing data, drawing conclusions and justifying results in writing and using scientific texts as the anchor for rich discussions and debates. 3-Dimensional Science instruction will be comprised of the following three components:



1. **Core Ideas:** Provides the key tool for understanding or investigating complex ideas and solving problems, relate to societal or personal concerns, and can be taught over multiple grade levels at progressive levels of depth and complexity.

2. **Science and Engineering Practices:** Describes behaviors that scientists and engineers engage in as they investigate the world and design solutions, and students engage in these same practices.

3. **Crosscutting Concepts:** Help students connect ideas across domains of science *(life, physical, earth and space and engineering design)* and provide them with tools to make sense of new observations and information.

Reference: Northeast Georgia RESA-Science, 2016 and Teaching Channel

RCK12 Science in 3D "Look-Fors"

CLASSROOM ENVIRONMENT/ROUTINES:

- Essential Questions and/or Learning Targets related to Georgia Standards of Excellence (GSE) or key science concepts are posted and referred throughout the lesson.
- Routines are clearly defined, communicated and followed.
- Science safety is clearly defined, communicated and followed.

TEACHER'S DAILY INSTRUCTION:

Teacher(s) Should:

- Align all instructional activities based on the Georgia Standards of Excellence (GSE).
- Follow the RCK12 Curriculum Pacing Guide which serves as a guide to what students will be learning in the classroom at any point throughout the year.
- Use evidence of learning through 3-Dimensional Learning with the incorporation of the 5Es Instructional Model.
- Use Essential Questions and/or Learning Targets to help students understand the purpose and focus of the lesson.
- Integrate real-life applications to exemplify how the disciplines co-exist in actual practices
- Deliver standards-based curriculum using appropriate pedagogy/instructional materials/instructional strategies.
- Introduce scientific vocabulary after students have had an opportunity to explore a scientific concept.
- Move around the room, guiding cooperative learning groups in formulating solutions and using manipulatives.
- Use formative and summative assessments that focus on problem-solving and deep understanding, rather than memorizing facts.

STUDENT BEHAVIOR:

Students Should:

- Actively engage and work cooperatively in small groups to complete investigations, test solutions to problems, and draw conclusions. Use rational and logical thought processes and effective communication skills(writing, speaking and listening)
- Ask questions, define problems, and predict solutions/results
- Design, plan and carry our investigations to collect and organize data (i.e. science notebook/journal).
- Develop and use models.
- Obtain, evaluate, and communicate information by constructing explanations and designing solutions
- Analyze and interpret data to draw conclusions and apply understandings to new and novel situations
- Acquire and apply scientific vocabulary after exploring scientific concept.

Is it a Good Phenomenon? Can it anchor 3D Learning?

Making sense of and being able to explain phenomena are central to 3-dimensional learning. It is very important for teachers to be able to identify educationally productive phenomena. A **phenomenon** is defined as an observable event, demonstration or process that generates questions from students. A phenomenon might be condensation on the outside of a glass, a wonderment (how the Grand Canyon formed?), a discrepant event (clingy socks?), or an engineering problem (how can we design a chemical system to produce maximum product?)

So, how can you tell a good phenomenon from an unproductive phenomenon? When identifying a good phenomenon, teachers should select a phenomenon that can meet as many of the following criteria. Teachers need to be mindful that few phenomenon will meet all criteria.

Criteria in white are vital and teachers should avoid phenomena that do not fulfill those particular requirements.

Is the phenomenon observable to students? (common, relateable, and relevant)	**Fully address the core ideas of one or more GSE elements**	**Engaging, thought provoking and requires some explanation so that it engages all students**
Does the phenomenon have relevant data, images, and/or text to engage students in the core ideas that the students need to understand?	**Will the phenomenon cause students to generate questions?**	**Does the phenomenon support students in making sense of or building on other's ideas?**

Remember: Phenomenon do not have to be Phenomenal ☺

Reference: GSTA, 2017

www.georgiascienceteacher.org

Science and Engineering Practices

The Science and Engineering Practices describe behaviors that scientists and engineers engage in as they investigate the world and design solutions, and students should engage in these same practices. The science practices are not independent, but rather they overlap and work synergistically in classrooms.

#1 Asking Questions What it Means: • Scientific questions lead to explanations of how the natural world works and can be empirically tested using evidence. How the Students Own It: • Scientific questions lead to explanations of how the natural world works and can be empirically tested using evidence. • Ask questions that can be answered using evidence from investigations or gathered by others.	**#2 Developing and Using Models** What it Means: • A model is an abstract representation of phenomena that is a tool used to predict or explain the world. Models can be represented as diagrams, 3-D objects, mathematical representations, analogies or computer simulations. How the Students Own It: • Create or use models to explain and/or predict scientific phenomena, processes, or relationships. • Evaluate the merits and limitations of models.
#3 Planning and Carrying Out Investigations What it Means: • An investigation is a systematic way to gather data about the natural world either in the field or in a laboratory setting. How the Students Own It: • Design investigations that will produce data that can be used to answer scientific questions. This includes determining the goal of the investigation, developing predictions, and designing procedures.	**#4 Analyzing and Interpreting Data** What it Means: • Analyzing and interpreting data includes making sense of the data produced during investigations. Because patterns are not always obvious, this includes using a range of tools such as tables, graphs and other visualization techniques. How the Students Own It: • Analyze and interpret data to determine patterns and relationships. • Represent data in tables and graphs to reveal patterns and relationships. • Consider the limitations of data analysis such as sources of error.

#5 Using mathematical and computational thinking What it Means: • Mathematical and computational thinking involves using tools and mathematical concepts to address a scientific question. How the Students Own It: • Describe, measure, compare, and estimate quantities (e.g., weight, volume) to answer a scientific question. • Organize data in graphs or charts • Use mathematical concepts (e.g., ratios) to answer scientific questions. • Use digital tools to accomplish these goals when appropriate.	**#6 Construction Explanations** What it Means: • A scientific explanation is an explanatory account that articulates how or why a natural phenomenon occurs that is supported by evidence and scientific ideas. How the Students Own It: • Construct an explanation for a natural phenomenon. • Use evidence (e.g. measurements, observations) to construct or support an explanation. • Consider the qualitative or quantitative relationships between variables to explain a phenomenon. • Apply scientific ideas to construct or revise an explanation
#7 Engaging in argument from evidence What it Means: • Scientific argumentation is a process that occurs when there are multiple ideas or claims (e.g. explanations, models) to discuss and reconcile. An argument includes a claim supported by evidence and reasoning as well as evaluates and critiques competing claims. How the Students Own It: • Construct and refine arguments based on evidence and reasoning (understanding of disciplinary core ideas). • Compare and critique two arguments based on the quality of their evidence and reasoning.	**#8 Obtaining, evaluating, and communicating information** What it Means: • Obtaining, evaluating and communicating information occurs through reading and writing texts as well as communicating orally. Scientific information needs to be critically evaluated and persuasively communicated as it supports the engagement in the other science practices. How the Students Own It: • Read appropriate texts and related features (i.e. graphs) to obtain scientific information. • Evaluate the information gathered from texts and other sources.

Reference: Instructional Leadership for Science Practices (ILSP), 2016

http://www.sciencepracticesleadership.com/

RCK12 Science in 3D Instruction

5E Instructional Model

Opening *(Engage)*	**Work Period** *(Explore, Explain, Extend)*	**Closing** *(Evaluate)*
Whole group Create a need to know/create an interest Assess prior knowledge Focus on a problem/ask questions Ask questions about the real world Note unexpected phenomena(natural occurrence)	Small Group or Independent Design & conduct experiments Clarify understanding Define concepts or terms Build on their understanding of concepts Use knowledge of concepts to investigate further-extension Apply explanations and skills to new, but similar, situations	Whole group or Independent Portfolios Performance assessments Demonstrate and understanding or knowledge of concept or skill

RCK12 Science in 3D Instructional Toolbox

Creating a Positive Learning Environment:

- Believe All Students Can Learn
- Think Scientifically
- Develop Positive Attitudes and Motivation
- Reinforce Progress and Effort
- Teach Students to Be Metacognitive

Identifying Important Content:

- Engaging Students with Content
- Identifying Preconceptions and Prior Knowledge
- Assessment-How Do You Know That They Learned
- Sequencing the Learning Targets into a Progression

Developing Student Understanding:

- Engaging Students in Science Inquiry
- Implementing Formative Assessments
- Addressing Preconceptions and Prior Knowledge
- Providing Wrap-Up and Sense-making Opportunities
- Planning for Collaboration Science Discourse
- Providing Opportunities for Practice, Review and Revision

Reference: What works in Science Instruction?

Social Studies

Tier 1

Instructional Expectations

RCK12 Inquiry Based Social Studies

The Richmond County School System's Social Studies Department provides an aligned, standards-based, curriculum that includes Curriculum Maps, Unit Pacing Guides, Teacher Notes, Teacher Content Tutorial Videos, Instructional Activity Tutorial Videos, Social Studies Labs, Unit Lesson Plans, Informal Progress Checks and Virtual Specialist Professional Learning Communities. This context provides the necessary perspective to create a structure of inquiry based learning experiences that will support students to become College & Career Ready and active citizens in a global society. The RCK12 Social Studies Curriculum addresses the following key components.

1. **Inquiry Based Learning**: Inquiry based learning requires students to use critical thinking skills to access multiple sources of information. Students use those sources to build content knowledge and conceptual understanding while continuing to develop literacy skills and social studies practices.

2. **Skills & Practices**: Social Studies Skills are identified on the skills matrices. Map & Globe and Informational Processing Skills are introduced in a given year and developed and mastered over time; and once mastered, they must continue to be refined throughout the student's academic career. The Georgia Standards of Excellence provide the content that is taught. Connecting Themes and Understandings are used to provide a "bridge" from the content to real-life experiences.

3. **Literacy**: Literacy in the social studies classroom includes the processes that are embedded in daily social studies instruction that enhances students' ability to read, write, and think about social studies concepts. Critical literacy skills are used to demonstrate their level of understanding. Social Studies and literacy integration work together to support student learning.

RCK12 Inquiry Based Social Studies "Look-Fors"

Inquiry Based Learning	Skills and Practices	Literacy
• Asking relevant questions • Analyzing artifacts and documents • Planning inquiries • Constructing arguments • Identifying possible solutions • Researching historical concepts • Making real-world connections • Creating products based on new learning	• Using geographic tools (i.e. digital and printed maps, globes) to describe location and other geographic characteristics of a place • Integrating Informational Processing Skills • Promoting civic engagement • Investigating connecting themes • Comparing perspectives of people of the past and present	• Drawing evidence from informational texts • Constructing narratives of historical events • Determining central ideas from primary or secondary sources • Reading a variety of informational texts • Communicating conclusions using various formats (speaking, writing, listening, reading)

RCK12 Inquiry Based Social Studies Classroom Expectations

Integration: Content, Artifact/Document Analysis, Map & Globe Skills and Informational Processing Skills

Opening *(Engage)*	**Work Period** *(Explore, Explain, Extend)*	**Closing** *(Evaluate)*
Whole group Document/artifact analysis Real world connections Vocabulary acquisition Questioning techniques to "hook" students Activate prior knowledge	Small Group or Independent Debates Document analysis Examining Concepts Collaborative Structures Graphic Organizers Socratic Seminar Philosophical Chairs Apply new learning or similar situations-across the disciplines Targeted feedback to students	Whole group or Independent Formally or informally assesses students Provides targeted feedback to students Questioning techniques that check for understanding Quick Writes Reflection Logs

RCK12 Inquiry Based Social Studies Instructional Toolbox

What to do when supports are needed with…

*Descriptions of each strategy are included in the RCK12 Social Studies Curriculum

Comprehension of Content	**Written Expression**
• Storyboarding a Textbook or Visual • Anticipation Guide • Questioning the Author • Read, Write, Speak, and Listen • Think Aloud With Text • Quotation Mingle • Conversation Questions • Gallery Walk • Carousel Brainstorming • Document/Artifact Analysis • Social Studies Matrices	• Journal (Dialectical, Metacognition, Problem Solution, Reflective) • Interviews • Original Commentary • Editorial • Letter of Concern (Governmental Official) • Viewpoint/Perspective • Primary Source Rewrite • Document Based Essay • Poetry • Sensory Writing • RAFT
Oral Presentation Skills	**Critical Thinking Skills**
• Performance Assessment Tasks • Oral Essay • Meeting of the Minds • Reader's Theatre • Research a Topic, Then make a Documentary • Tableau • Historic Character • Hot Seat	• Questioning Strategies • Think-Pair-Share • Fish Bowl Discussion/Inner Outer Circle Discussions • Four Corners • History Debate • Discussions from Different Perspectives • Socratic Seminar • Philosophical Chairs • Jigsaw
Organizational Skills	
• Cornell Notes • Graphic Organizers (descriptive, compare/contrast, supporting idea, cause/effect, classification, sequence, analogy, annotated timeline, describing a historical event	