Mathematics Update: Resources and Tools for Teachers and Leaders in Georgia

Brooke Kline and Lya Snell
Mathematics Program Specialists
Georgia Department of Education
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Students mathematically proficient in Grades 3-8 reason about situations involving quantities.
Purpose

Big Idea 1: Purpose

Ensure all students learn at high levels

Teachers should ask and answer these four questions when planning instruction:

✓ What is it we want our students to learn?
✓ How will we know if our students are learning?
✓ How will we respond when students do not learn?
✓ How will we enrich and extend the learning for students who are proficient?
What is it we want our students to learn?

• Georgia Standards of Excellence
  • Coding... MGSE...

• [www.georgiastandards.org](http://www.georgiastandards.org)
College Readiness Mathematics

- CRM is designed for students who have been successful in the first three courses but have struggled and need additional support in preparation for enrollment in non-STEM post-secondary study.
- CRM meets the 4th course requirements for High School graduation purposes and has been approved by USG as a 4th course beyond Algebra II or Advanced Algebra for non-STEM majors.
- NCAA has not approved CRM as an additional mathematics course or as a course that can be included in the “additional course” area.
- CRM resources are available on georgiastandards.org.
- Through a partnership with SREB, CRM Summer Professional Learning is being offered in Macon on June 12 – 14, 2018.
Technical College Readiness Mathematics

• TCRM is designed to solidify content assessed on the Technical College System of Georgia’s placement assessment — ACCUPLACER.


• While districts’ strategic waivers can offer the flexibility to include this course for mathematics graduation requirements for a very specialized population of students, the course needs to be marketed as an alternative to Algebra II/Advanced Algebra ONLY for students who have experienced difficulty in passing middle school mathematics End of Grade (EOG) assessments, have struggled significantly in the first one or two high school core mathematics courses, and have scored less than 34 on the Arithmetic ACCUPLACER Placement Test.

• By completing TCRM and attaining the required ACCUPLACER score, students will be able to take advantage of the Senate Bill 2 option associated with Dual Enrollment.

• TCRM resources developed by Hall County are available through TRL.
What is it we want our students to learn?

• Georgia Standards of Excellence
  • Coding... MGSE...

• www.georgiastandards.org
How will we know if our students are learning?
Remember When...
Focus on the 8 Overarching Standards for Mathematical Practice
There are 8 important Standards for Mathematical Practice that should be incorporated in daily lessons to help students develop the critical-thinking and problem solving skills necessary for success in their post-secondary college and career plans.
The 8 Standards for Mathematical Practice are:

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
Why SMPs?

“The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years.”

—Georgia Standards of Excellence for Mathematics
How do we transform our current classrooms into content-rich, engaging mathematics learning laboratories?
Instructional Practices Video

Website: https://www.georgiastandards.org/Georgia-Standards/Pages/Looking-Inside-Mathematics-Classrooms.aspx
Focus on Early Numeracy
Math Anxiety

• Timed Tests create an unhealthy anxiety for mathematics learners.

• Research suggests timed tests cause math anxiety
  Jo Boaler, Stanford University
  
Number Talks

- Number Talks is an effective strategy to help students develop a solid foundation in numeracy.

9 + 1
9 + 2
9 + 3
9 + 4

4 + 1
4 + 2
4 + 4
4 + 5
4 + 6
The Importance of Number Talks
Dr. Jo Boaler, Stanford University
FOCUS ON CONCEPTUAL UNDERSTANDING
How do you learn mathematics?
How do you see the shapes growing?

Case 1

Case 2

Case 3
Math Pattern Task

• Where can teachers go to get this type of supporting resources?

  • [http://www.mathtalks.net/](http://www.mathtalks.net/)
  • [http://www.visualpatterns.org/](http://www.visualpatterns.org/)
Math Talks

• Math Talks is an effective strategy to help students conceptually understand the mathematics and communicate with other students

Pattern Talks

• Pattern Talks is also an effective strategy to help students see the beautiful interconnectedness of mathematical ideas to help make sense of the concepts.
3-Act Math Tasks

• Super Stairs

• http://www.101qs.com/2714-super-stairs
Now let’s look at what this looks like in the classroom based on the Georgia Standards of Excellence
Misconception

Have you ever heard…

“Teaching the frameworks provided by the DOE are for the Advanced kids.”
Misconception

Have you ever heard...

“Our kids can’t think that way. It’s too hard for them.”
Misconception

Have you ever heard...

“We use our textbook, but our students are not being successful.”
NEW

Video Resources Available to Help Teachers Understand the Standards

www.georgiastandards.org
Sample video provided for teachers...

MGSE9-12.G.MG.3

HS Math MGSE9 12 G MG 3 Video
Sample video provided for teachers…
How will we respond when students do not learn?

- Formative Assessment Lessons (FALs)
- GoFar
- K-5 Intervention Tables
- 6-8 Remediation Resources
- Foundations of Algebra Interventions for Numeracy
How will we enrich and extend the learning for students who are proficient?

Extension activities embedded in the Mathematics Frameworks

Additional Resources:
- Illustrative Mathematics
- Graphing Stories
- Open Middle Problems
- 3-Act Tasks
- Estimation 180
- 101 questions
What resources can teachers use to teach the Georgia Standards of Excellence?

➢ Georgia Standards (GS0) – [www.georgiastandards.org](http://www.georgiastandards.org)
➢ Grade Level Wikis
➢ Georgia Virtual School Open Source Material [http://www.gavirtuallearning.org/Resources.aspx](http://www.gavirtuallearning.org/Resources.aspx)
➢ GADOE Website: Curriculum Resources & Assessment Resources [www.gadoe.org](http://www.gadoe.org)
Georgia Virtual Learning – FREE Resources
Illustrative Mathematics

• https://www.illustrativemathematics.org/
Georgia DOE Math Team

Mr. Brooke Kline
Mathematics Program Specialist
Bkline@doe.k12.ga.us
Voicemail: (404) 657-9064

Lya R. Snell, Ph.D.
Mathematics Program Specialist
Lsnell@doe.k12.ga.us
Voicemail: (404) 463-7087