

# South Carolina Math and Science Standards Update

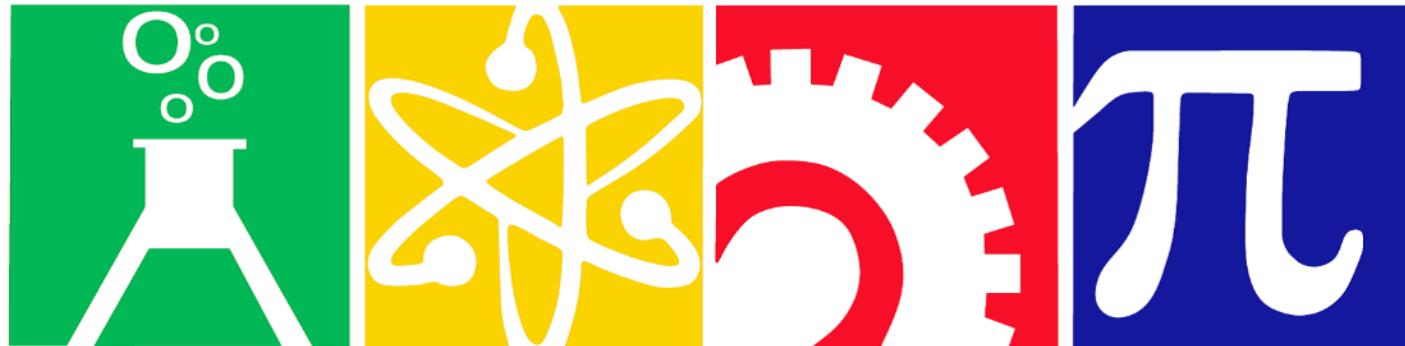


District Five Board of Trustees Meeting  
October 26, 2015

Presented by:  
Dr. Eric Levitt  
Director of STEM and Gifted & Talented Services



# South Carolina Math and Science Standards



**STEM** Science, Technology,  
Engineering, Mathematics

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# PROFILE OF THE SOUTH CAROLINA GRADUATE

## WORLD CLASS KNOWLEDGE

Rigorous standards in language arts and math for career and college readiness

Multiple languages, science, technology, engineering, mathematics (STEM), arts and social sciences

## WORLD CLASS SKILLS

Creativity and innovation  
Critical thinking and problem solving  
Collaboration and teamwork  
Communication, information, media and technology  
Knowing how to learn

## LIFE AND CAREER CHARACTERISTICS

Integrity  
Self-direction  
Global Perspective  
Perseverance  
Work Ethic  
Interpersonal Skills



AN INITIATIVE OF  
 SOUTH CAROLINA COUNCIL ON  
COMPETITIVENESS

© SCASA Superintendents' Roundtable.

Adopted by: SC Arts in Basic Curriculum Steering Committee, SC Chamber of Commerce, SC Council on Competitiveness, SC Education Oversight Committee, SC State Board of Education, SC Department of Education, TransformSC Schools & Districts



# **South Carolina College- and Career-Ready Standards for Mathematics**



**South Carolina  
Department of Education  
Columbia, South Carolina  
2015**



# South Carolina College & Career Ready Standards for Mathematics

- Written in response to Act 200 requiring new, high-quality, college- and career-ready standards for English Language Arts and mathematics.
- Collaboratively written by a team of South Carolina K-12 educators and higher education personnel.



# South Carolina College & Career Ready Standards for Mathematics

- Very fast timeline
- Draft standards, public comment period, revisions and final approval completed Summer 2014 – March 2015.

# South Carolina College & Career Ready Standards for Mathematics

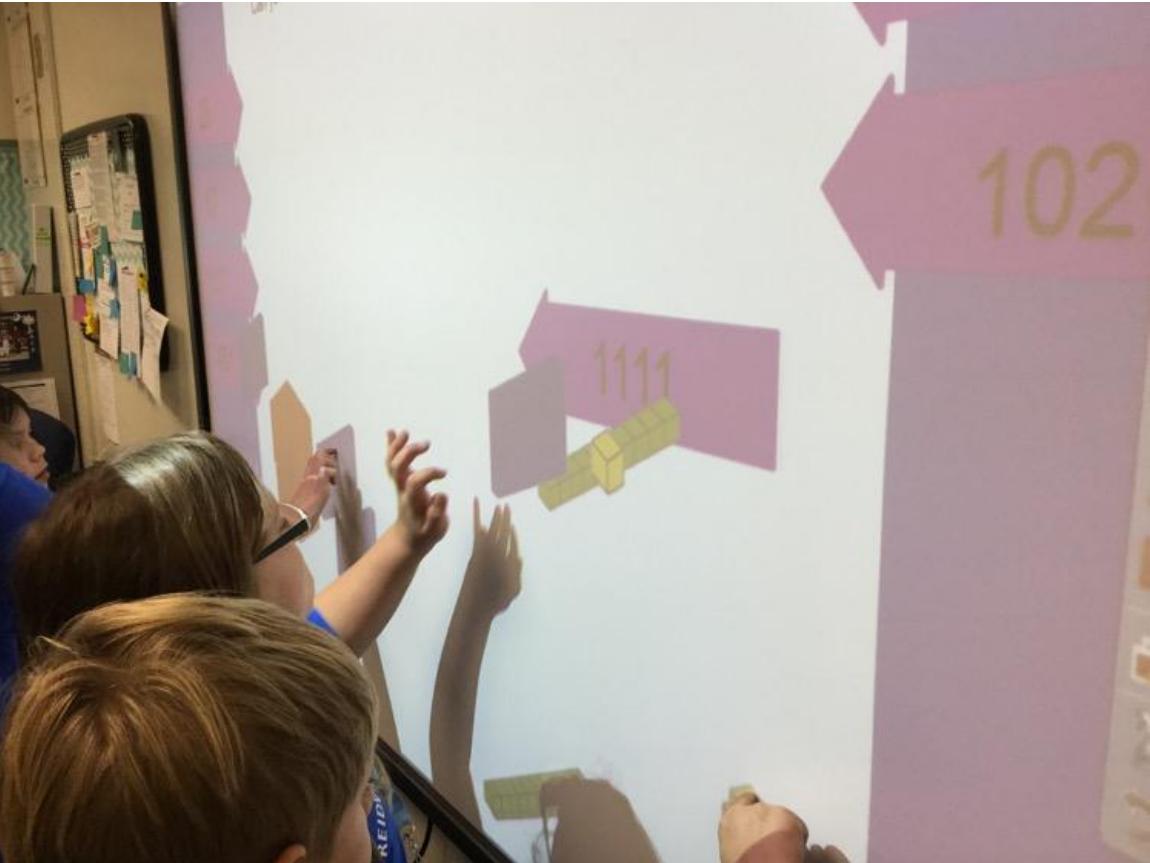


- Balance of **conceptual** and **procedural knowledge**
- **Graduation Standards**
- Suggested **course sequences** in high school aligned with intended career paths

# Mathematical Process Standards

Require students to:

- Make **sense** of problems and **persevere** in solving them.
- **Reason** in context and abstractly and use **critical thinking** skills to justify mathematical reasoning.
- **Connect** mathematical ideas to real-world situations and **communicate** mathematically with precision.
- Use a **variety** of mathematical **tools** effectively and strategically.



# Mathematics Support Document

## New Academic Vocabulary for This Unit

- Reciprocal
- Inverse
- Greatest common factor
- Least common multiple
- Prime factorization
- Distributive property
- Rational number

## Prior Knowledge Required for this Unit

- Multiplication facts (3.ATO.1, 3.ATO.3)
- Understand the relationship between multiplication and division (5.NSF.3)
- Understand parts of a fraction (3.NSF.1)
- Divide up to four-digit dividends by two-digit divisors (5.NSBT.6)
- Add, subtract, multiply, and divide decimal numbers to hundredths using concrete area models and drawings (5.NSBT.7)
- Firm conceptual understanding of place value (3.NSBT.1, 4.NSBT.1, 5.NSBT.1)

## Subsequent Knowledge Related to this Unit

This unit will end direct instruction for operations with whole numbers, fractions, and decimals. To ensure readiness for work with integers in Grade 7, students must be computationally fluent with these operations. In Grade 8, students will be solving multi-step equations where the computational skills will be secondary skills in an algebraic approach. Students will begin multiple representations of rational numbers with limited denominators in Grade 6. That knowledge in Grades 7 and 8 will be extended to include all denominators and repeated decimals in Grade 8. The information taught in this unit will also prepare students for ratios and rates including work with greatest common factor and least common multiple for simplifying rates. This knowledge will be extended in Grade 8 to include work with functions including linear functions where students will analyze slope as the constant rate of change.

## Relationship Among Standards in this Unit

Standards in this unit are all necessary to develop computational skills necessary for work with positive rational numbers.

**SOUTH CAROLINA**  
**ACADEMIC STANDARDS AND PERFORMANCE**  
**INDICATORS**  
**FOR SCIENCE**



**Mick Zais, Ph.D.**  
**State Superintendent of Education**

**South Carolina Department of Education**  
**Columbia, South Carolina**



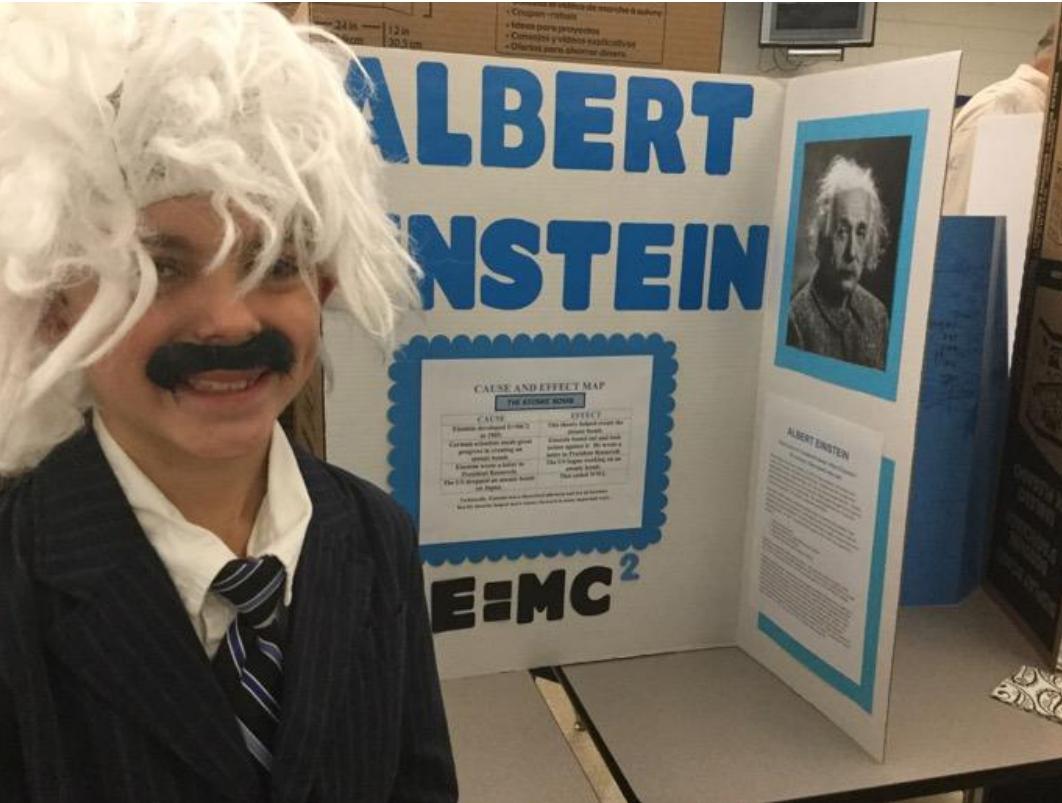
# 2014 South Carolina Science Standards

## -Background-

- Process to update 2005 standards lasted 2011 through 2013.
- Standards approved January 2014 for full implementation in 2016-2017.
- Districts encouraged to begin implementing now (however, students will still be assessed on 2005 standards this year).

# 2014 South Carolina Science Standards

## -Major Changes-



- Some elementary content moved between grade levels.
- Scientific Engineering Practices

# Science and Engineering Practices



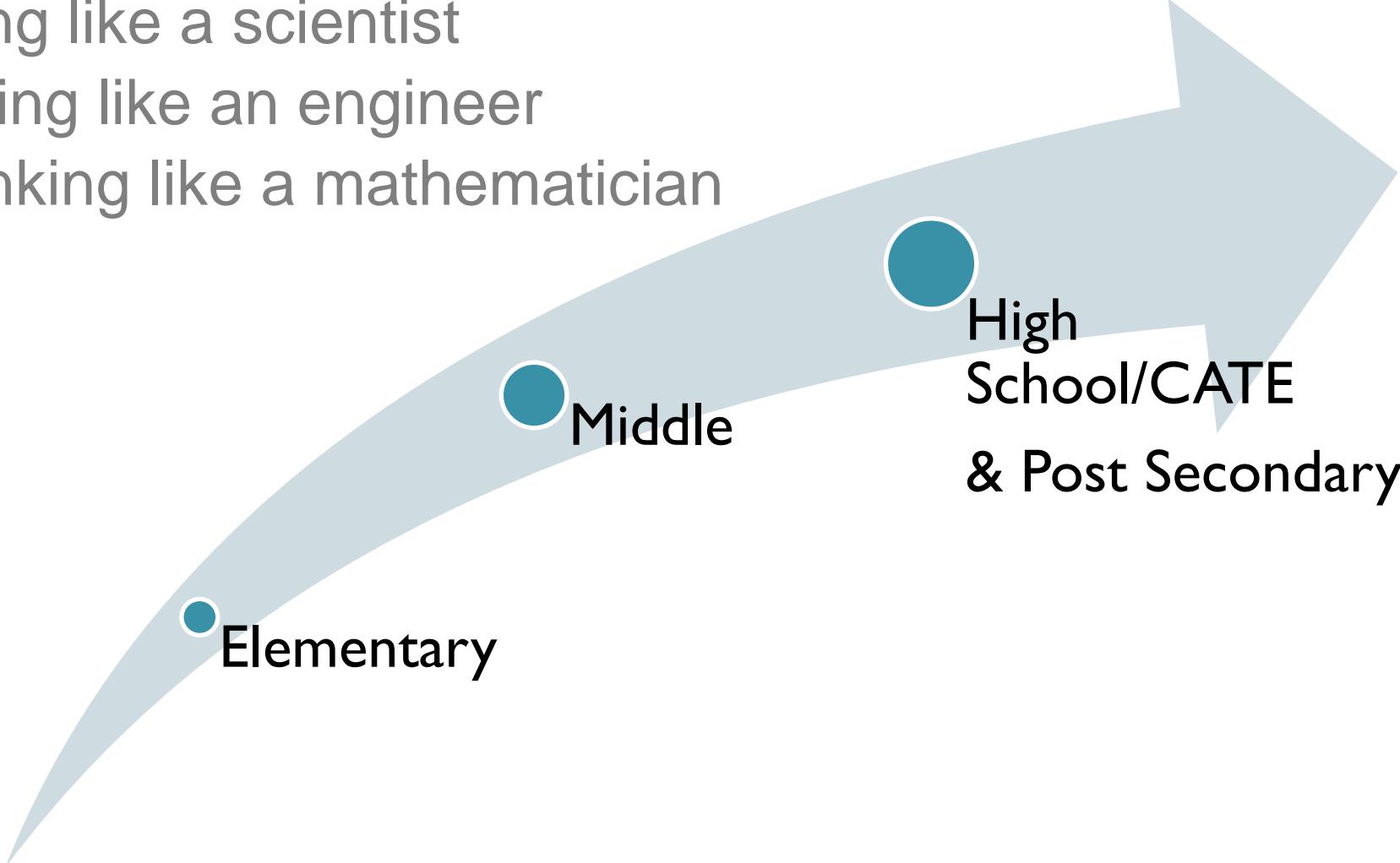
- Ask **questions** and **define** problems
- Develop and use **models**
- Plan and conduct **investigations**
- **Analyze** and **interpret** data
- Use **mathematical** and **computational** thinking
- **Construct** explanations and **design** solutions
- Engage in scientific **argument** from evidence

# STEM Framework

thinking like a scientist

thinking like an engineer

thinking like a mathematician



Middle

Elementary

High  
School/CATE  
& Post Secondary

# Support for Teachers



- iSTEM
- Standards Implementation Training
- Elementary Math Coaches

## Purpose

The purpose of the iSTEM Innovation Pilot is to develop an instructional leadership experience for science, technology, engineering, mathematics (STEM) leadership teams. Through participation in iSTEM, leadership teams are prepared to better understand and implement engineering practices as identified in national and state standards documents now under development.

[More information about standards development at the national level.](#)

[More information about the ongoing Science Standards revision process in South Carolina.](#)



## Partnerships

S<sup>2</sup>TEM Centers SC is partnering with Appalachian Regional Commission (ARC) and engineers from Fluor and Lockheed Martin on this Innovation Pilot.

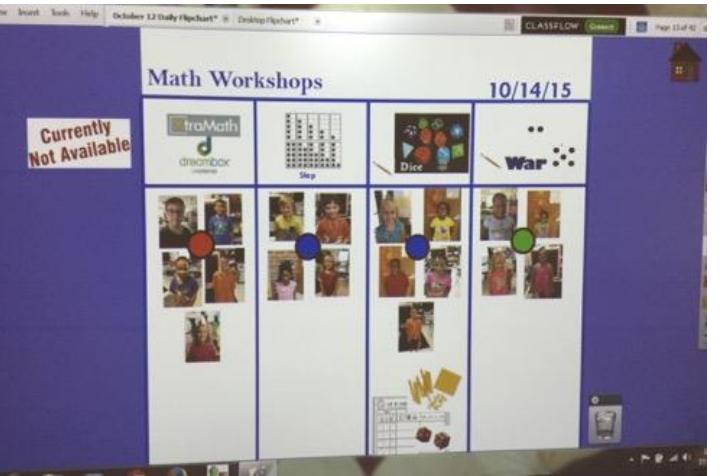
### Participating school and district leadership teams will

- Learn about STEM partnership opportunities, government agency offerings and instructional materials from not-for-profit organizations and associations,
- Engage in industry/government agency based engineering experiences,
- Develop instructional plans, and
- Implement instructional materials with an engineering focus.

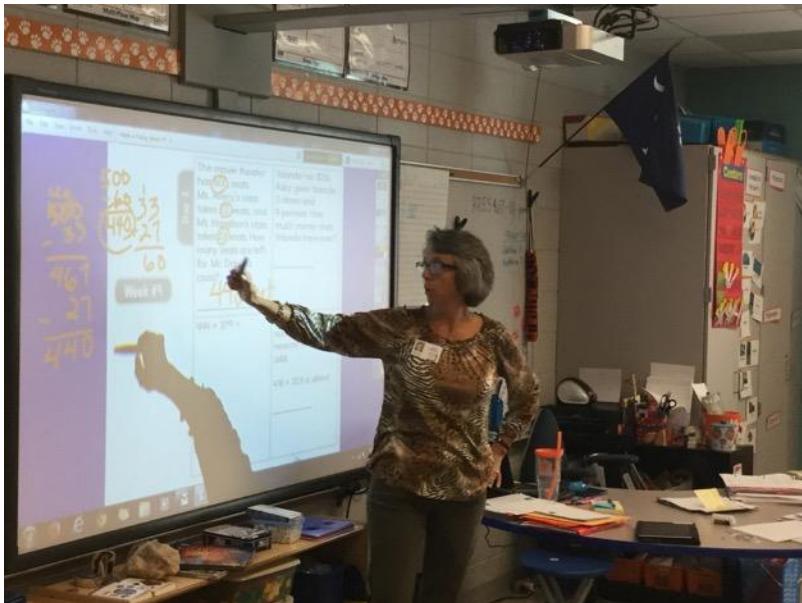


## Training Overview

- The STEM Pipeline: Exploring STEM and a Theory of Action for STEM School Success
- Assessing your STEM capacities: Applying a STEM Schools Rubric
- STEM: A National Perspective on Rationale and Resources with a focus on Engineering
- Summer Institute: Investigations in Engineering (3 days)—School teams work with engineers in a problem solving setting
- Meet the Engineers: Defining Problems in Engineering with Project-Based Implications for the Classroom
- Meet the Engineers: Planning and Carrying Out Investigations in Engineering with Project-Based implications for the classroom
- Meet the Engineers: Analyzing and Interpreting Data in Engineering and Project-Based implications for the classroom



# Making an Impact

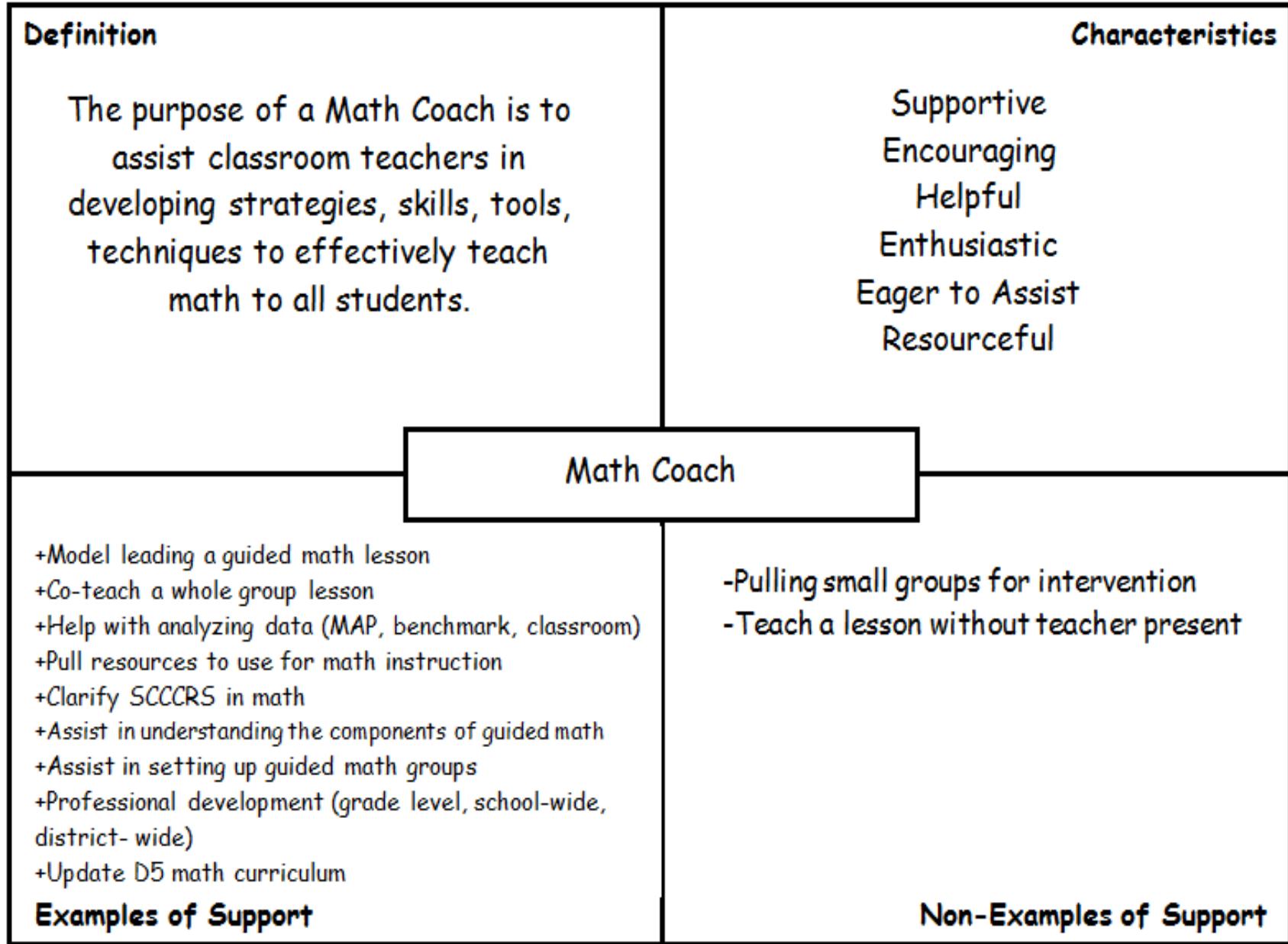




# Math Coaches Making an Impact

- Model Teach
- Co-Teach
- Analyze Data
- Plan with Teachers
- Provide Feedback
- Present to Faculties
- Professional Development

# Frayer Model



## September Professional Development

Assist teachers with writing long range plans; writing student learning objectives.



## October Professional Development

Taking a closer look at the South Carolina College and Career Ready Standards for math.





“The Math professional development allowed me to **collaborate** with teachers within the district to **dive deeper** into the SCCR Math standards. I loved learning from our coaches and other district teachers. It was nice to have the time to sit and **share** experiences and expertise with other teachers in the district about something that is new to all of us.” (Janelle Hunton , DES)