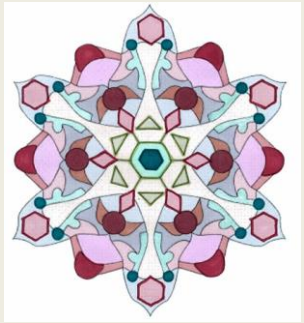

Transitioning to Common Core: Primary Grades

Tammy L Jones

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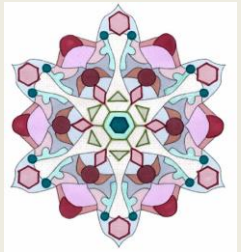
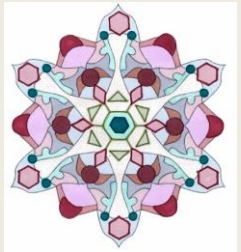
Materials

- Materials referenced in today's presentation are available at
  - www.TLJConsultingGroup.com



Common Core State Standards for Mathematics

- www.corestandards.org
  - A bit of history
  - Where we are
  - Where are we going?



CCSSM

Domains are larger groups of related standards. Standards from different domains may sometimes be closely related.

Domain

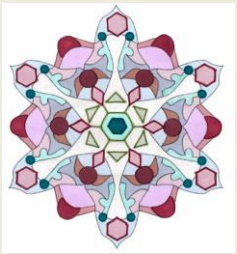
Number and Operations in Base Ten **3.NBT**

Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard

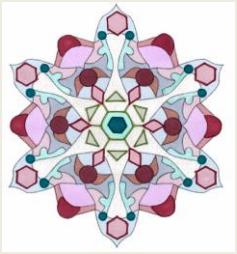
1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Cluster



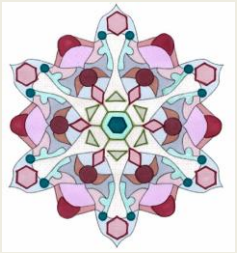
Organizational Elements

COMPARISON OF ORGANIZATIONAL ELEMENTS		
Tennessee Curriculum Framework Organization	CCSSM Conceptual Categories	Principles and Standards Content Standards
Mathematical Processes	(CCSSM Mathematical Practices)	(NCTM Process Stds)
Number & Operation	Number & Quantity	Number& Operations
(embedded in Geometry)	------	Measurement
Algebra	Algebra	Algebra
(included in Algebra)	Functions	(included in Algebra)
------	Modeling	------
Geometry & Measurement	Geometry	Geometry
Data Analysis, Probability, Statistics	Statistics & Probability	Data Analysis & Probability
Standard Strands	Domains	Areas
------	Clusters	Expectations
Grade Level Expectations/Course Level Expectations	Standards	------
Checks for Understanding	------(testing blueprint in development)	------
State Performance Indicators	------(test scheduled 2014- 2015)	------



CCSSM Progression

Strand	Common Core Progression	Start	End
Number	Counting and Cardinality	K	K
	Early Relations and Operations	K	1
	Base Ten Computation	K	5
	Quantity and Measurement	K	5
	Operations and the Problems They Solve	2	4
	Fractions	3	5
	Ratios and Proportional Relationships	6	7
	The Number System	6	8
Geometry	Shapes	K	4
	Coordinate Geometry	5	5
	Geometry	6	8
Algebra	Expressions and Equations	6	7
	Functions & The Situations They Model	8	8
Data	Statistics	5	8
	Probability	7	8



NCTM PROCESS STANDARDS

Every Day/Every Week

- PROBLEM SOLVING
- REASONING & PROOF
- COMMUNICATIONS
- CONNECTIONS
- REPRESENTATION

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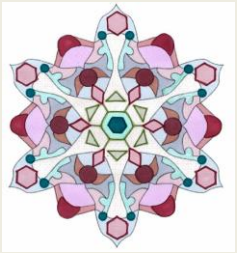
CCSSM

Mathematical Practices

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.

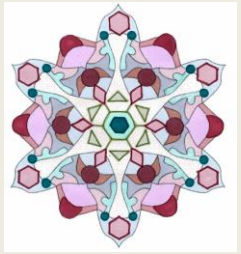


Side by Side by Side

COMPARISON OF APPROACHES TO PROCESS STANDARDS/PRACTICES		
Tennessee Mathematics Curriculum Framework Mathematical Process Standards Strand	CCSSM Standards for Mathematical Practices	NCTM Principles & Standards Process Standards
GLE 0106.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.	**1. Make sense of problems and persevere in solving them.** • Younger students may use concrete objects and pictures to conceptualize and solve a problem. • Mathematically proficient students check their answers to problems using a different method. • These same students ask themselves, "Does this make sense?" • These students understand the reasoning of others and identify the similarities of both approaches.	**Problem Solving** **Communication** **Representation**
GLE 0106.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.	**2. Reason abstractly and quantitatively.** • Mathematically proficient students make sense of the quantities and their relationships in problem situations.	**Problem Solving** **Reasoning & Proof**
GLE 0106.1.3 Develop independent reasoning to communicate mathematical ideas and derive algorithms and/or formulas.	**3. Construct viable arguments and critique the reasoning of others.** • Construct arguments using diagrams, drawings, objects and actions. • Should make sense and be correct. • Ask questions to clarify or improve arguments.	**Reasoning & Proof** **Communication** **Representation**
GLE 0106.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.	**4. Model with mathematics.** • Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. • In K-2 this may be writing an addition equation to describe a situation.	**Problem Solving** **Reasoning & Proof** **Connections** **Representation**

CCSSM – TN Alignments

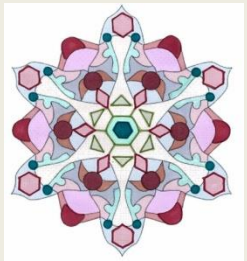
How do the Critical Areas from CCSSM align to the Critical Areas from the TN Curriculum Framework for Mathematics?



Kindergarten Critical Areas

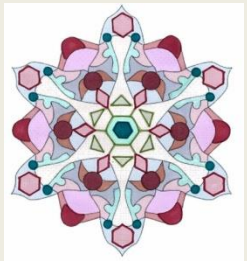
- Representing and comparing whole numbers, initially with sets of objects;
- Describing shapes and space.

  – More learning time in Kindergarten should be devoted to number than to other topics.



TN Critical Areas - Kindergarten

- **Numeracy**
- **Patterns**
- **Geometry**
- **Calendar, Time, and Money**
- **Data Analysis**



CCSSM Domains & Clusters	CCSSM Critical Areas	Tennessee Curriculum Framework for Mathematics
KINDERGARTEN		
• *Counting and Cardinality* o *Know number names and the count sequence.*	(1) Representing and comparing whole numbers, initially with sets of objects	GLE 0006.2.1 Count objects in a set and use numbers, including written numerals to 25. GLE 0006.2.2 Create, represent and recognize a set with a given number of objects. GLE 0006.3.1 Identify, duplicate, and extend simple number patterns and sequential and growing patterns.
o *Count to tell the number of objects.*		GLE 0006.2.1 Count objects in a set and use numbers, including written numerals to 25. GLE 0006.2.2 Create, represent and recognize a set with a given number of objects. GLE 0006.2.3 Recognize, compare and order sets of numerals by using both cardinal and ordinal meanings. GLE 0006.2.5 Model the numbers 1 through 10 as sums or differences of different sets of whole numbers (composing and decomposing numbers).
o *Compare numbers.*		GLE 0006.2.1 Count objects in a set and use numbers, including written numerals to 25. GLE 0006.2.3 Recognize, compare and order sets of numerals by using both cardinal and ordinal meanings.

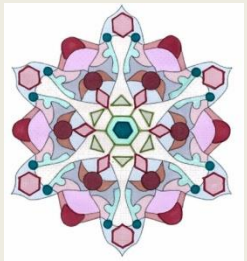
CCSSM Deficiencies

CCSSM Deficiencies in TN Mathematics Curriculum Framework
Kindergarten

✓0006.1.3 Use words to describe time. ✓0006.1.4 Tell time to the hour. ✓0006.1.5 Recognize a calendar as a way of measuring time. ✓0006.1.6 Name and identify coins and their values. ✓0006.1.7 Use words to describe temperature. ✓0006.1.8 Recognize a thermometer as a way of measuring temperature.	✓0006.2.3 Count backwards from 10 to 1. ✓0006.2.4 Count to 20 by twos. ✓0006.2.11 Recognize and use ordinal numbers.	GLE 0006.3.2 Recognize attributes and patterns ✓0006.3.1 Use a variety of manipulatives to create patterns. ✓0006.3.3 Translate simple patterns into rules. ✓0006.5.3 Collect and count data.

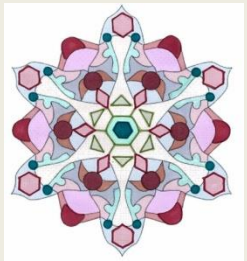
First Grade Critical Areas

- Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20;
- Developing understanding of whole number relationships and place value, including grouping in tens and ones;



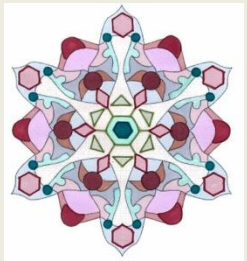
First Grade Critical Areas

- Developing understanding of linear measurement and measuring lengths as iterating length units; and
- Reasoning about attributes of, and composing and decomposing geometric shapes.

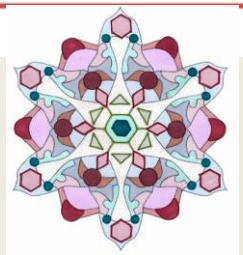


TN Critical Areas – First Grade

- **Numeracy**
- **Patterns**
- **Geometry**
- **Calendar, Time, and Money**
- **Data Analysis**

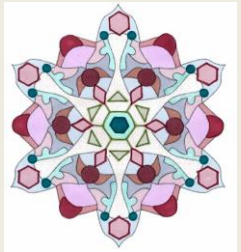


CCSSM *Domains & Clusters*	*CCSSM* *Critical Areas*	Tennessee Curriculum Framework for Mathematics
FIRST GRADE		
• **Operations and Algebraic Thinking** o Represent and solve problems involving addition and subtraction.	1) Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20;	GLE 0106.2.3 Develop strategies for learning basic addition facts and related subtraction facts. GLE 0106.2.4 Use multiple representations (including groups of ten) to model two-digit addition and subtraction. GLE 0106.3.1 Identify, describe, and extend simple number patterns to develop strategies for adding and subtracting whole numbers.
o Understand and apply properties of operations and the relationship between addition and subtraction.		GLE 0106.2.3 Develop strategies for learning basic addition facts and related subtraction facts. GLE 0106.3.2 Understand that addition and subtraction are inverse operations. GLE 0106.3.3 Extend the strategies for basic facts to include other properties of number and operations.
o Add and subtract within 20.		GLE 0106.2.3 Develop strategies for learning basic addition facts and related subtraction facts.



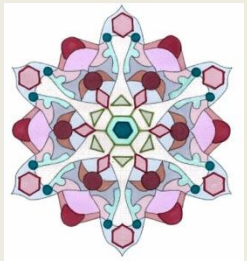
CCSSM Deficiencies

CCSSM Deficiencies in TN Mathematics Curriculum Framework First Grade		
✓0106.1.1 Describe the relationship between days and months. ✓0106.1.4 Count the value of a set of coins up to fifty cents. ✓0106.1.5 Use a thermometer to measure temperature. ✓0106.1.6 Recognize scales as a way of measuring weight. ✓0106.1.7 Apply spatial sense to recreate a figure from memory.	✓0106.2.2 Write numbers up to 10 in words. ✓0106.2.4 Skip count by twos, fives, and tens. ✓0106.5.2 Represent data in both horizontal and vertical form.	GLE 0106.2.2 Compare and order whole numbers to 100 .



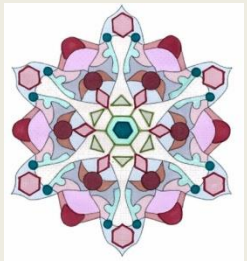
Second Grade Critical Areas

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



TN Critical Areas – Second Grade

- **Numeracy**
- **Patterns**
- **Geometry**
- **Calendar, Time, and Money**
- **Data Analysis**



CCSSM Domains & Clusters	CCSSM Critical Areas	Tennessee Curriculum Framework for Mathematics
SECOND GRADE		
• *Number and Operations in Base Ten* o *Understand place value.*	(1) Extending understanding of base-ten notation	GLE 0206.2.1 Understand and use place value concepts to 1000. GLE 0206.2.2 Understand and use the base-ten numeration system.
o *Use place value understanding and properties of operations to add and subtract.*		GLE 0206.2.1 Understand and use place value concepts to 1000. GLE 0206.2.2 Understand and use the base-ten numeration system. GLE 0206.2.3 Use efficient and accurate strategies to develop fluency with multi-digit addition and subtraction. GLE 0206.3.2 Extend knowledge of the properties of numbers and operations to multiplication.
• *Operations and Algebraic Thinking* o *Represent and solve problems involving addition and subtraction.*	(2) Building fluency with addition and subtraction	GLE 0206.2.3 Use efficient and accurate strategies to develop fluency with multi-digit addition and subtraction. GLE 0206.3.3 Solve simple arithmetic problems using various methods.
o *Add and subtract within 20.*		GLE 0206.2.3 Use efficient and accurate strategies to develop fluency with multi-digit addition and subtraction.
o *Work with equal groups of*		GLE 0206.2.4 Develop an initial understanding of

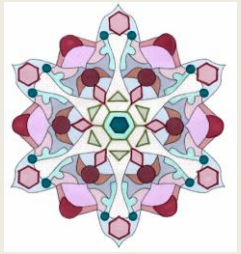
CCSSM Deficiencies

CCSSM Deficiencies in TN Mathematics Curriculum Framework
Second Grade

✓0206.1.2 Relate days, dates, weeks months, and years to a calendar.
✓0206.1.4 Solve problems involving elapsed time in hour and half-hour intervals.
✓0206.1.6 Read thermometers with Fahrenheit and Celsius scales.
✓0206.1.7 Measure weight to the nearest pound or kilogram.
✓0206.1.14 Create and observe numerical patterns on a calculator by repeatedly adding or subtracting the same number from some starting number.

✓00206.4.2 Reflect, rotate, and translate.

GLE 00206.5.2 Determine whether an event is likely or unlikely.
✓0206.5.3 Explain whether a real world event is likely or unlikely.
✓0206.5.4 Predict outcomes of events based on data gathered and displayed.



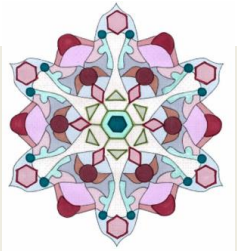
PARCC

- www.PARCConline.org

Examples of Key Advances from Grade 2 to Grade 3

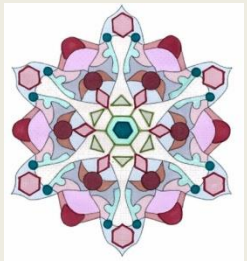
- Students in grade 3 begin to enlarge their concept of number by developing an understanding of fractions as numbers. This work will continue in grades 3–6, preparing the way for work with the complete rational number system in grades 6 and 7.

- Students in grades K–2 worked on number; place value; and addition and subtraction concepts, skills and problem solving. Beginning in grade 3, students will learn concepts, skills and problem solving for multiplication and division. This work will continue in grades 3, 4 and 5, preparing the way for work with ratios and proportions in grades 6 and 7.



PARCC Fluency Lens

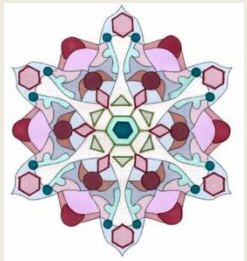
- "Fluent in the standards means 'fast and accurate.' It might also help to think of fluency as meaning more or less the same as when someone is said to be fluent in a foreign language. To be fluent is to flow; fluent isn't halting, stumbling, or reversing oneself."
  - PARCC Draft Model Content Frameworks Mathematics – 2011
    - www.PARCConline.org



PARCC Fluency Lens

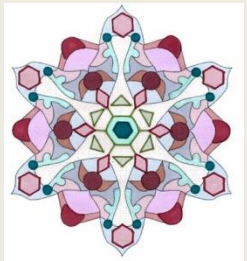
Table 1: Grade-Level Fluency

Grade	Required Fluency
K	Add/subtract within 5
1	Add/subtract within 10
2	Add/subtract within 20
	Add/subtract within 100 (pencil and paper)



What about…..

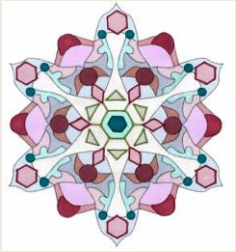
- NAEP?
- ACT?
- Currently, TN Curriculum Framework for Mathematics is *Nationally aligned*
- We exceed CCSSM

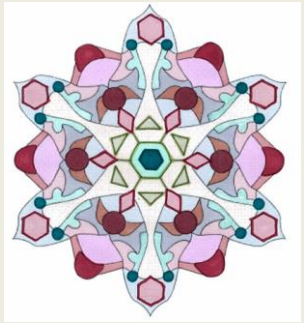


Common Core K-8 Mathematics Summit, Summer 2012

- Save the Date: **June 25-27, 2012**
- TLJ Consulting Group will host a **K-8** Common Core Mathematics Summit, focused on helping classroom teachers transition to the Common Core State Standards for Mathematics and their related assessments.
- Located in Nashville, Music City Sheraton
- Registration information is posted to www.TLJConsultingGroup.com
- Email for more information:

  info@TLJConsultingGroup.com





Transitioning to Common Core: Primary Grades

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