COMMON CORE STATE STANDARDS

MATHEMATICS TRAINING

for

PARENTS of K-2nd GRADE

SEPTEMBER 2013
COMMON CORE STATE STANDARDS
Adopted Aug. 2010

Depth vs. Breadth

Assessed in 2014–2015 (Nationwide)

Less multiple choice, more written responses

Adopted by 45 states

Common Core Standards
Common Core State Standards

- Define the knowledge and skills students need for college and career
- Developed voluntarily and cooperatively by states; more than 40 states have adopted
- Provide clear, consistent standards in English language arts/literacy and mathematics

Source: www.corestandards.org
COLLEGE AND CAREER READY:

COLLEGE READINESS: BELOW THE BAR

A majority of students in the class of 2013—regardless of race or ethnicity—are not ready for college, based on benchmarks set by ACT Inc.

SOURCE: ACT Inc.
Key Features of Smarter Balanced

- Measures student achievement and growth in English language arts/literacy and mathematics in grades 3–8 and high school.

- Includes accommodations for students with disabilities and English language learners so that all students can demonstrate what they know.

- Administered online with questions and performance tasks that measure critical thinking and problem solving skills.

- Expectations of student performance linked to international benchmarks.

http://www.smarterbalanced.org
NEW CCSS ASSESSMENTS:

Administer online with timely results

Computer Adaptive Test:
measures individual growth
selected response
constructed response
performance task

Common comparable scores across states

www.corestandards.org
KEY SHIFTS IN MATH

Focus
- Teach less, learn more
- International comparisons

Coherence
- Progression across grades
- Foundational skills for the learning of algebra

Rigor
- Conceptual understanding
- Procedural knowledge and fluency
- Problem solving
CRITERIA FOR THE CCSS:

- Fewer, clearer, and higher
- Aligned with college and work expectations
- Include rigorous content and application of knowledge through high-order skills
- Build upon strengths and lessons of current state standards
- Internationally benchmarked, so that all students are prepared to succeed in our global economy and society
- Based on evidence and research
8 STANDARDS OF 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.
What is Mathematical Proficiency?

- **Conceptual Understanding**—comprehension of concepts, operations, and relations—supports retention and prevents common errors
- **Procedural Fluency**—carrying out procedures flexibly, accurately, efficiently, and appropriately
- **Strategic Competence**—ability to formulate, represent, and solve mathematical problems
- **Adaptive Reasoning**—capacity for logical thought, reflection, explanation, and justification
- **Productive Disposition**—inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one’s own efficacy.
Math Discourse
Talk Moves

Revoice
- So, what you are saying is...
- I think I hear you saying...

Repeat
- Can you repeat what ____ said in your own words?
- Can you repeat what ___ and ___ said in your own words?

Reason
- Do you agree or disagree with what ____ said? Why?

Add on
- Who can add on to what ___ said?
- Who can add more to this _____?

Wait
- Take your time to think. We'll wait.
TOOLS

- Tens Frames
- Number Line
- Hundreds Chart
Kindergarten

- Counting and Cardinality
- Operations & Algebraic Thinking
- Number & Operations in Base Ten
- Measurement & Data
- Geometry
FIRST & SECOND GRADE

- Operations & Algebraic Thinking
- Number & Operations in Base Ten
- Measurement & Data
- Geometry
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

35 + 7
57 + 23
Apply properties of operations as strategies to add and subtract. *Examples: if* $8 + 3 = 11$ *is known, then* $3 + 8 = 11$ *is also known.* (Commutative property of addition.) *To add* $2 + 6 + 4$, *the second two numbers can be added to make a ten, so* $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)

- $37 + 18 + 13 + 12$
- $55 + 99 + 1$
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).
5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

- 39 – 10
- 68 – 19

\[ 6 \div 3 = 2 \]
\[ 4 \div 2 = 2 \]
\[ 8 \div 4 = 2 \]
\[ 6 \div 2 = 3 \]
6. Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.¹
2. Fluently add and subtract within 20 using mental strategies.\(^2\) By end of Grade 2, know from memory all sums of two one-digit numbers.
Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
MAKING MEANING:

- Rename the following numbers:
  79: 7 tens and 8 ones  ____ tens and ____ ones
  53: 5 tens and 3 ones  ____ tens and ____ ones

- Name the number:
  7 tens and 13 ones  ________________
  9 tens and 10 ones:  ________________
MAKING MEANING:

In which of the following problems will we need to rename the first number? Explain why.

- 37 – 16  yes  no
- 53 – 15  yes  no
- 50 – 16  yes  no
LET’S DO SOME THINKING:

28 + 32
17 + 29 + 23
18 + 17 + 3
17 + 17 + 17 + 17 + 17
100 - 25
QUESTIONS?