



Dr. John D. Barge, State School Superintendent
"Making Education Work for All Georgians"

Common Core Georgia Performance Standards Second Grade



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Thank you for being here today.



You will need the following materials during today's broadcast:

- Second Grade handouts/resource packet
- Markers, connecting cubes, paper
- Note-taking materials

(This session is being recorded, and all materials, including the powerpoint, are available for download)



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Activate your brain



81224 14
72
135 0

- My husband's height
- Number of nephews and grand-nephews
- A zip code
- Number of hamburgers I eat in a year
- A house number

Number sense builds on students' natural insights and convinces them that mathematics makes sense, that it is not just a collection of rules to be applied.



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Hilde Howden, 1989

Why Common Core Standards?



- Preparation: The standards are college- and career-ready. They will help prepare students with the knowledge and skills they need to succeed in education and training after high school.
- Competition: The standards are internationally benchmarked. Common standards will help ensure our students are globally competitive.
- Equity: Expectations are consistent for all – and not dependent on a student’s zip code.



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Why Common Core Standards?



- Clarity: The standards are focused, coherent, and clear. Clearer standards help students (and parents and teachers) understand what is expected of them.
- Collaboration: The standards create a foundation to work collaboratively across states and districts, pooling resources and expertise, to create curricular tools, professional development, common assessments and other materials.



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Common Core State Standards



Building on the strength of current state standards, the CCSS are designed to be:

- Focused, coherent, clear and rigorous
- Internationally benchmarked
- Anchored in college and career readiness
- Evidence and research based



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Common Core State Standards in Mathematics



K 1 2 3 4 5 6 7 8 9 - 12

Measurement and Data

Counting and Cardinality

Number and Operations Fractions

Number and Operations in Base Ten

Operations and Algebraic Thinking

Geometry

Statistics and Probability

Ratios & Proportional Relationships

F

The Number System

Expressions and Equations

Statistics and Probability

Functions

Number and Quantity

Algebra

Geometry

Modeling



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Standards for Mathematical Practice



1. Make sense of problems and persevere in solving them.
6. Attend to precision.

2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others

4. Model with mathematics.
5. Use appropriate tools strategically.

7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Reasoning and explaining

Modeling and using tools

Seeing structure and generalizing



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(McCallum, 2011)



Geometry

Domain

- Reason with shapes and their attributes.

Standards
CLUSTER Heading

Standards

MCC2.G.1- Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring)

MCC2.G.2- Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.



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While the standards focus on what is most essential, they do not describe all that can or should be taught. A great deal is left to the discretion of teachers and curriculum developers. The aim of the standards is to articulate the fundamentals, not to set out an exhaustive list or a set of restrictions that limits what can be taught beyond what is specified.

corestandards.org



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So what's a Second Grade teacher to do?



- Read your grade level standards. Use the CCGPS Teaching Guide found on georgiastandards.org and in Learning Village.
- Discuss the standards with your colleagues.



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Second Grade Curriculum Map



Common Core Georgia Performance Standards: Curriculum Map

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Extending Base Ten Understanding	Becoming Fluent with Addition and Subtraction	Understanding Measurement, Length, and Time	Applying Base Ten Understanding	Understanding Plane and Solid Figures	Developing Multiplication	Show What We Know
MCC2.NBT.1 MCC2.NBT.2 MCC2.NBT.3 MCC2.NBT.4 MCC2.MD.4 MCC2.MD.10	MCC2.OA.1 MCC2.OA.2 MCC2.NBT.5 MCC2.MD.10	MCC2.MD.1 MCC2.MD.2 MCC2.MD.3 MCC2.MD.4 MCC2.MD.5 MCC2.MD.6 MCC2.MD.7 MCC2.MD.9 MCC2.MD.10	MCC2.NBT.6 MCC2.NBT.7 MCC2.NBT.8 MCC2.NBT.9 MCC2.MD.8 MCC2.MD.10	MCC2.G.1 MCC2.G.2 MCC2.G.3 MCC2.MD.10	MCC2.OA.3 MCC2.OA.4 MCC2.MD.10	ALL
<p>These units were written to build upon concepts from prior units, so later units contain tasks that depend upon the concepts addressed in earlier units. All units will include the Mathematical Practices and indicate skills to maintain.</p>						



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Second Grade Overview



Unit 1: Extending Base Ten Understanding

MCC2.NBT.1

Number and Operations in Base Ten

- Understand place value

MCC2.NBT.2

MCC2.NBT.3

MCC2.NBT.4

Measurement & Data

- Measure and estimate lengths in standard units

- Represent and interpret data

MCC2.MD.4

MCC2.MD.10



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Second Grade Overview



Unit 2: Becoming Fluent with Addition and Subtraction

- **MCC2.OA.1**
 - **MCC2.OA.2**
 - **MCC2.NBT.5**
 - **MCC2.MD.10**
- Operations and Algebraic Thinking**
- Represent and solve problems involving addition and subtraction.
 - Add and subtract within 20
- Number and Operations in Base Ten**
- Use place value understanding and properties of operations to add and subtract.
- Measurement & Data**
- Represent and interpret data.



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Second Grade Overview



Unit 3: Understanding Measurement, Length, and Time

- **MCC2.MD.1** **Measurement & Data**
- **MCC2.MD.2** •Measure and estimate lengths in standard units.
- **MCC2.MD.3** •Relate addition and subtraction to length.
- **MCC2.MD.4** •Represent and interpret data.
- **MCC2.MD.5**
- **MCC2.MD.6**
- **MCC2.MD.7**
- **MCC2.MD.8**
- **MCC2.MD.9**
- **MCC2.MD.10**



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Unit 4: Applying Base Ten Understanding

MCC2.NBT.6

MCC2.NBT.7

MCC2.NBT.8

MCC2.NBT.9

MCC2.MD.8

MCC2.MD.10

Number and Operations in Base Ten

- Understand Place Value

Measurement & Data

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Represent and interpret data.



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Second Grade Overview



Unit 5: Understanding Plane and Solid Figures

MCC2.G.1

Geometry

- Reason with shapes and their attributes.

MCC2.G.2

MCC2.G.3

Measurement and Data

- Represent and interpret data.

MCC2.MD.10



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Second Grade Overview



Unit 6: Developing Multiplication

Operations & Algebraic Thinking

MCC2.OA.3

- Work with equal groups of objects to gain foundations for multiplication.

MCC2.OA.4

MCC2.MD.10

Measurement and Data

- Represent and interpret data.



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Unit 7: Show What You Know



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What's Different in Second Grade?



Operations and Algebraic Thinking

- One- and two-step word problems within 100
- Fluently + and – within 20 w/mental strategies
- Know from memory sums of two one digit numbers to 18
- Odd and even (to 20)

Number and Operations in Base Ten

- Fluently add and subtract within 100 using strategies, explaining strategies, and relating to written method.
- Skip count forward and backward by 5, 10, 100 to 1000 instead of to 100
- Add up to four 2-digit numbers using strategies
- Add and subtract within 1000 using concrete models or drawings, and strategies
- Add and subtract multiples of 10 and 100 to 900.
- Write an equation to express total as sum of addends (foundation of multiplication)



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What's Different in Second Grade



Measurement and Data

- Comparison- how much longer?
- Relate + and – to length
- Line plot
- Solve problems using data
- Analog and digital, a.m. and p.m.
- Money understanding related to place value (\$ and ¢ symbols)

Geometry

- Partition a rectangle into rows and columns and find total # of squares
- Partition circles and rectangles into two, three, or four equal shares



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Common Misconceptions



Operations and Algebraic Thinking

- Stopping after the first step
- Equal sign
- Key words
- Properties misuse
- Zero (addition *a/ways* means bigger?)
- Regrouping misunderstandings (also in NBT)
- Reverting to inefficient strategies

Number and Operations in Base Ten

- Limiting thinking to standard expansion of number
- Misunderstanding numerals (4 in 47 is equal to 4)



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Common Misconceptions



Measurement

- Markings vs space
- Confusing hour and minute hands
- Closest numeral to hand is the time
- Coin value and size
- Object size/attribute makes equal values appear unequal
- Estimation and rounding

Geometry

- Size of shares/number of shares/equal shares
- Connecting orientation to shape



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Focus
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Fluency
Deep Understanding
Applications
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Focus



The student...

- spends more time thinking and working on priority concepts.
- is able to understand concepts and their connections to processes (algorithms).



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Focus



The teacher...

- builds knowledge, fluency, and understanding of why and how certain mathematics concepts are done.
- thinks about how the concepts connect to one another.
- pays more attention to priority content and invests the appropriate time for all students to learn before moving onto the next topic.



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Grade	Priorities in Support of Rich Instruction and Expectations of Fluency and Conceptual Understanding
K-2	Addition and subtraction, measurement using whole number quantities
3-5	Multiplication and division of whole numbers and fractions
6	Ratios and proportional reasoning; early expressions and equations
7	Ratios and proportional reasoning; arithmetic of rational numbers
8	Linear algebra
9-12	Modeling

Critical Areas



In Second Grade, instructional time should focus on **four critical areas**:

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



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Priorities in Second Grade



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



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Sample high leverage task



Numbers to 100 on the rekenrek

- Let's add on the rekenrek. Show as many ways as you can to make 78. Share what you see.
- Why is this important?



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Another High Leverage Task



My monkey had 12 grapes in his bowl in the morning. I added 5 more grapes before I went to school. My monkey ate some grapes while I was at school. If there are 3 grapes left in the bowl when I get home, how many grapes did my monkey eat?

How many ways can you find the answer?



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What is no longer in Second Grade ?



What about

- Regrouping without understanding?
- Multiplication table?
- \neq ?
- Seconds in minute, minutes in hour, hours in day?
- Representations of numbers over 1000?
- Making change, mixing coins and currency
- Temperature
- Rectangle and square?
- Cutting 3-D shapes

What about Calendar Time?



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Coherence



The student...

- builds on knowledge from year to year, in a coherent learning progression.



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Coherence



The teacher.....

- connects mathematical ideas across grade levels.
- thinks deeply about what is being focused on.
- thinks about the way those ideas connect to how they were taught the year before and the years after.



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What do Second Grade students bring? What are they connecting to later?



From 1-

- Fluent addition and subtraction to 10.
- Foundational place value understanding.
- Foundational ideas about shape and position in space.
- Ability to compare and categorize.
- Understanding of quantities to 120.
- Measurement as unit iteration
- Transitive property

Later-

- Deep understanding of addition and subtraction.
- Useful place value understanding.
- Understanding of defining attributes about shape, comparison of shape.
- Foundational fractional relationships.
- Continuation of fluency/algebraic thinking.
- Measurement/addition/subtraction relationships
- Data analysis



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Sample Coherence Task



Where am I on the number line?



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Again, where is it all going?



- Deep understanding of addition and subtraction.
- Useful place value understanding.
- Understanding of defining attributes about shape, comparison of shape.
- Foundational fractional relationships.
- Continuation of fluency, algebraic thinking.
- Measurement/addition/subtraction relationships
- Data analysis



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Fluency



The student...

- spends time practicing skills with intensity and frequency.



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Fluency



The teacher...

- pushes students to know basic skills at a greater level of fluency based on understanding.
- focuses on the listed fluencies by grade level.



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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)
3	Multiply/divide within 100 & Add/subtract within 1000
4	Add/subtract within 1,000,000
5	Multi-digit multiplication
6	Multi-digit division & Multi-digit decimal operations
7	Solve $px + q = r$, $p(x + q) = r$
8	Solve simple 2×2 systems by inspection
9-12	Algebraic manipulation in which to understand structure. Writing a rule to represent a relationship between two quantities. Seeing mathematics as a tool to model real-world situations. Understanding quantities and their relationships.

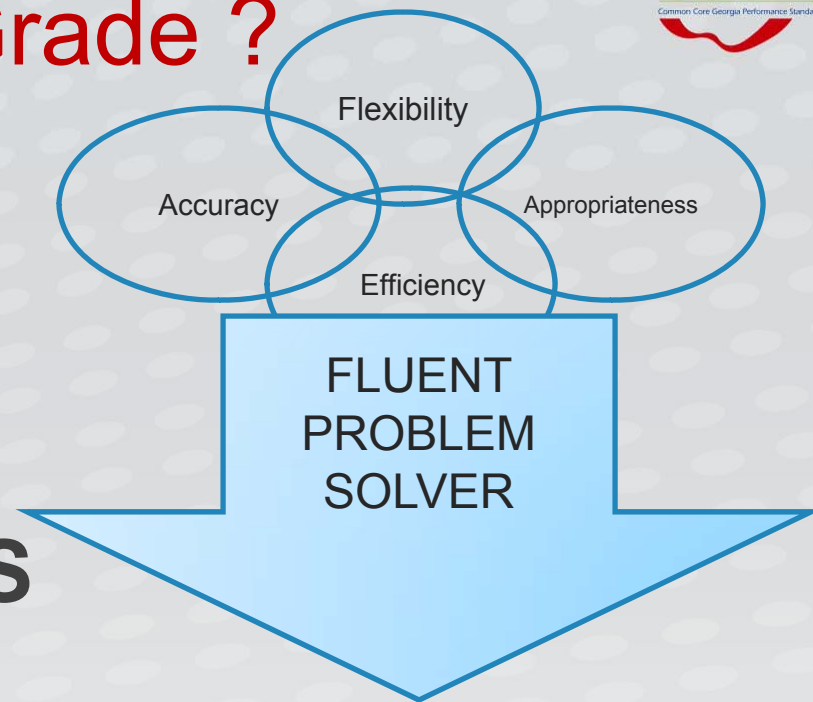


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What does Fluency Look Like in Second Grade ?



- **FLEXIBILITY**
- **ACCURACY**
- **EFFICIENCY**
- **APPROPRIATENESS**



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What does Fluency Look Like in Second Grade ?



Add and Subtract within 20

MCC2.OA.2- Fluently add and subtract within 20 *using mental strategies*. By the end of grade 2, know from memory all sums of two one digit numbers.

Build fluency using:

- number string
- ten frames
- Rekenrek
- meaningful tasks

Build memory using:

- games, games, games
- application



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Let's play a game



- Make 24

7

4

8

5



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Deep Understanding



The student...

- shows mastery of material at a deep level in numerous ways.
- uses mathematical practices to demonstrate understanding of different material and concepts.



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Deep Understanding



The teacher...

- asks self what mastery/proficiency really looks like and means.
- plans for progressions of levels of understanding.
- spends the time necessary to gain the depth of the understanding.
- becomes flexible and comfortable in own depth of content knowledge.



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How Many Ways?



- How many different ways can you make 47¢ using pennies, nickels, dimes, and quarters?

Show all the ways you can think of.

- Make a picture graph for one of the ways you made 47¢ which used all four coins.
- Answer these questions about your graph:

How many pennies and dimes did you use in your solution?

If I traded one coin for some of yours, how would your graph change? Make sure to show what coin we traded.



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Task Structure



- Pre-Assessment/Opening
- Collaborative activity
- Whole-class discussion
- Return to the pre-assessment/opening and bring it all back to the standards



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Application



The student...

- applies mathematics in other content areas and situations.
- chooses the right mathematics concept to solve a problem when not necessarily prompted to do so.



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Application



The teacher...

- contextualizes mathematics.
- creates real world experiences in which students use what they know, and in which they are not necessarily prompted to apply mathematics.



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Mathematizing Second Grade



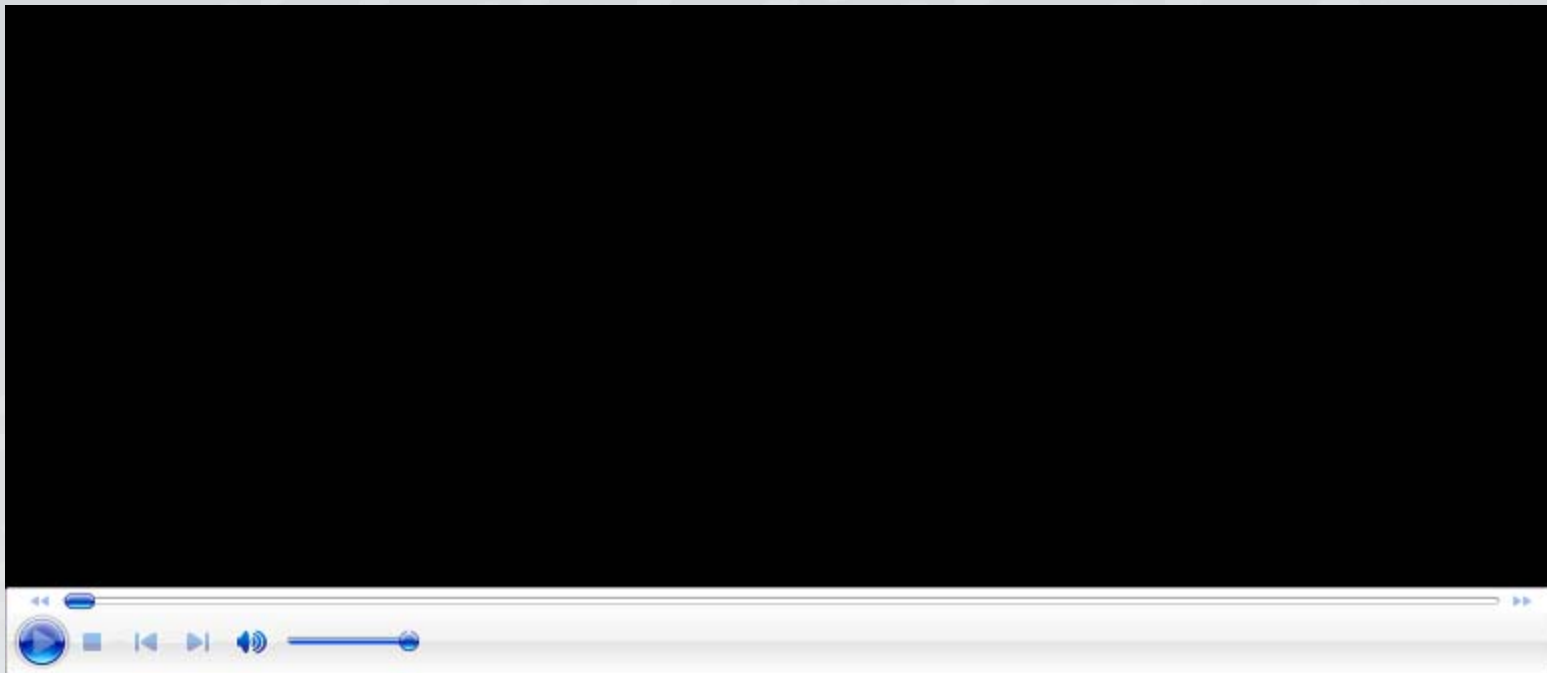
What does it mean to apply mathematics in Second Grade ?

- Attendance
- Lunch count
- Snack preparation
- Counting, measuring, sorting, classifying, describing everything!
- Contextualizing math



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What does this mean in terms of assessment?



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Balanced Approach



The student...

- practices mathematics skills to achieve fluency.
- practices math concepts to ensure application in novel situations.



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Balanced Approach



The teacher...

- finds the balance between understanding and practice.
- normalizes the productive struggle.
- ritualizes skills practice.



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What does balance mean in Second Grade ?



Squirreling It Away

Austin has a bag of 18 acorns. Eight squirrels came up to him. He gave each squirrel an acorn. Then five more squirrels came up to him and he gave away one acorn to each of them.

- How many more squirrels can he still feed?

Show how you figured it out. How do you know you are right?

If only two squirrels came up to Austin and his bag of 18 acorns, how many acorns could he give to each squirrel and have none left?

- How many ways could he feed the two squirrels all of his acorns at once?

Show how you figured it out.

How do you know you have found all the ways?



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How could we launch this task?



- Diagnostic- look for potential misconceptions
- 0-99 chart
- Number lines
- Manipulatives



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CCGPS Suggestions:



1. Read the CCGPS. The Teaching Guide for next year, curriculum maps and the standards can be found in Learning Village, on the math program page, and on Georgiastandards.org.
2. View the Fall 2011 Grade Level Webinars if you haven't already seen them.
3. Review this broadcast with your team to identify key areas of focus.



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CCGPS Suggestions:



4. Participate in the unit-by-unit webinars beginning in May.

Second Grade Unit 1- 3:15, May 3, 2012.

5. Structure time for grade level/content areas to use framework units as a guide for planning.

6. Plan to get together with your colleagues at the end of each CCGPS unit to analyze student work samples and compare how student learning and performance look.



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Second Grade Support:



Now-

- Fall 2011 Grade Level Webinars
- Teaching Guide
- Curriculum map
- Standards document

Coming soon-

- Frameworks units- posting in April, 2012
- Unit-by-unit webinars:

Second Grade Unit 1, 3:15 pm, May 3, 2012



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Takeaways?



3 Things-

1. What's new?
2. What's different?
3. What resources and support are available for CCGPS mathematics?



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Food for Thought



“The resources we need in order to grow as teachers are abundant within the community of colleagues. Good talk about good teaching is what we need...”

Parker Palmer
Courage to Teach



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THANK YOU

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Thank you for participating in this CCGPS Professional Learning Session. We value your feedback. Please go to the following website, take the anonymous feedback survey, and complete the participation log to receive a certificate of participation:



<http://survey.sedl.org/efm/wsb.dll/s/1g10a>

If you have questions, feel free to contact any of the English/Language Arts or Mathematics staff at the following email addresses:

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