Number Talks (K – 2)  
Liberty County  
Building Mental Math and Computation Strategies while Implementing the Standards for Mathematical Practice  
January 2015
1. Make sense of problems and persevere in solving them.
6. Attend to precision.

<table>
<thead>
<tr>
<th>Reasoning and explaining</th>
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<td>2. Reason abstractly and quantitatively</td>
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<td>3. Construct viable arguments and critique the reasoning of others</td>
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<th>Modeling and using tools</th>
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<td>4. Model with mathematics</td>
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<td>5. Use appropriate tools strategically</td>
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<th>Seeing structure and generalizing</th>
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<td>7. Look for and make use of structure.</td>
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<td>8. Look for and express regularity in repeated reasoning.</td>
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Essential Questions

• What are the critical features of Number Talks?

• How can I use Number Talks to build student mathematical fluency and number sense while increasing the likelihood that the Standards for Mathematical Practice will be implemented in my classroom?
Pick a Number Before this Session about Number Talks

- 4- I UNDERSTAND IT VERY WELL AND CAN TEACH IT
- 3- I CAN DO IT WITHOUT HELP
- 2- I HAVE SOME UNDERSTANDING
- 1- I HAVE A LITTLE UNDERSTANDING WITH HELP
- 0- I DON’T UNDERSTAND
The best part of a teacher’s day

A five to fifteen minute classroom conversation around purposefully crafted computation problems that are solved mentally
Number Talk

A five to fifteen minute classroom conversation around purposefully crafted computation problems that are solved mentally.
Let’s observe a Number Talk

• Watch the classroom clip for
  – the skill or concept
  – what the teacher is doing
  – what the students are doing
  – how the setting is arranged
  – what tools are used
  – The Standards for Mathematical Practice

• Be prepared to share

• What similarities and differences to your classroom do you see?
What is a Classroom Number Talk?

• Classroom conversations and discussions around purposefully crafted computation problems

• A pivotal vehicle for developing fluency
  – Efficiency: choose appropriate and expedient strategies
  – Flexibility: use number relationships with ease
  – Accuracy: produce an accurate answer

• Built upon key foundational ideas of mathematics
  – Composition and decomposition of numbers
  – System of tens
  – Application of properties
What is a Classroom Number Talk?

• Opportunity for class to come together in a whole or small group setting to share their mathematical thinking
• Designed to elicit specific strategies that focus on number relationships and number theory
• Problems are expected to be solved mentally while students share and defend solutions
• Requires about five to fifteen minutes
What is the format for Number Talk?

- Teacher presents the problem.
- Students figure out the answer.
- Students share their answers.
- Students share their thinking.
- The class agrees on the “real” answer for the problem.
- The steps are repeated for additional problems.
Roles in Number Talks

• Read the article *Number Talks* from Math Perspectives. Use the note-taking guide to record what your assigned role does during a Number Talk.

• Be prepared to share.
What are the key components?

- Classroom environment and community
- Classroom discussions
  - Clarify their own thinking
  - Consider and test strategies for mathematical logic
  - Investigate and apply mathematical relationships
  - Build a repertoire of efficient strategies
  - Make decisions about choosing efficient strategies for specific problems
- Teacher as facilitator
- Mental math
- Purposeful computation problems
Role of Mental Math

Provides opportunities to

• Consider place value
• Build upon number relationships
• Focus on magnitude of number
• Think about reasonableness of answer
Benefits of Sharing and Discussing Computation Strategies

Students have the opportunity to:
• Clarify their own thinking.
• Consider and test other strategies to see if they are mathematically logical.
• Investigate and apply mathematical relationships.
• Build a repertoire of efficient strategies.
• Make decisions about choosing efficient strategies for efficient problems.
How do I manage Number Talks?

• Select a designated location that allows you to maintain close proximity to your students for informal observations and interactions
• Provide appropriate wait time for the majority of the students to access the problem
• Accept, respect, and consider all answers
• Encourage student communication throughout the number talk
What tools do I provide? K-2

- Number lines
- 99 charts
- Hundreds charts
- Dot cards
- Color tiles, interlocking cubes, counters
- Five or ten frames and rekenreks in primary grades
How do I record student thinking?

- Record in a clear, concise manner while capturing the big mathematical ideas
- Anticipate how students will respond by thinking through possible strategies beforehand
- Make sure your notation is mathematically correct
How do I model responding appropriately to strategies?

- I agree with __________ because __________.
- I do not understand __________. Can you explain this again?
- I disagree with __________ because __________.
- How did you decide to __________?
How do I develop student accountability?

- Ask students to use finger signals to indicate the most efficient strategy
- Keep records of problems posed and the corresponding student strategies
- Hold small group number talks throughout each week
- Create and post class strategy charts
- Require students to solve an exit problem using the discussed strategies
- Give a weekly computation assessment
Goals for Number Talks in K-2

- Developing number sense
- Developing fluency with small numbers
- Subitizing
- Making tens
Strategies in K-2

• Addition Strategies
  – Counting all
  – Counting on
  – Doubles/Near Doubles
  – Making tens
  – Making landmark or friendly numbers
  – Compensation
  – Breaking each number into its place value
  – Adding up in chunks

• Subtraction Strategies
  – Adding Up
  – Removal or counting back
How many do you see?

How do you see it?
Purposeful Computation

Problems

• Landmark numbers: $99 + 99$

• Doubles: $16 + 15$

• Compensation: $16 + 39$
Purposeful Number Talk Strings

50 + 50
49 + 49
60 + 60
59 + 59

15 + 15
15 + 16
18 + 18
18 + 17
Purposeful Number Talks

- Fluency number talks should be used to build a strong foundation before moving to computation number talks
- Do not use grade level as rigid structure
- Use tools as necessary with strategies
How do I start?

• Start with smaller problems to elicit thinking from multiple perspectives
• Be prepared to offer a strategy from a previous student
• Remember it is OK to put a student’s strategy on the back burner
• Limit talk to five to fifteen minutes
• Be patient with students and yourself
Let’s observe one more

• Watch the classroom clip
• Note any evidence of critical features of Number Talks we have discussed
• Be prepared to share
Number Talks

Number talks provide a purposeful vehicle for
• Making sense of mathematics;
• Developing efficient computation strategies;
• Communicating mathematics effectively; and
• Reasoning and providing solutions.
Why Number Talks?

Number Talks  SMPs  TKES
Pick a Number After this Session on Number Talks

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