MBUSD Mathematical Mind: Grade Level Sessions First Grade

Manhattan Beach USD
UCLA Mathematics Project

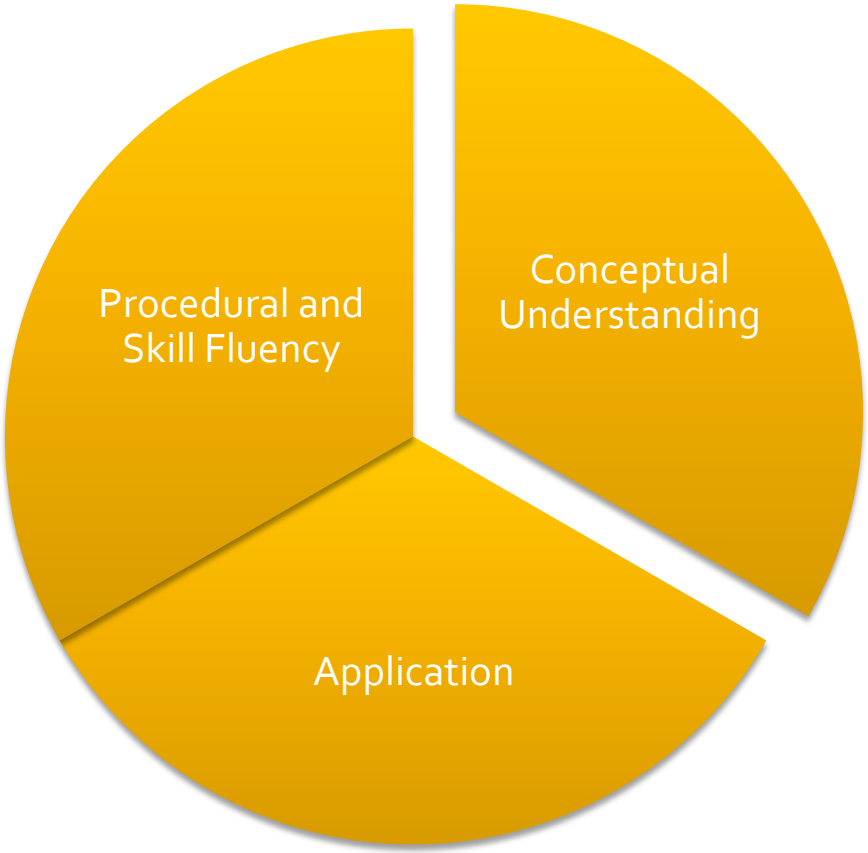
Focus & Agenda

- Why is talking about our mathematical ideas important?
- What does mathematics look like in my child's grade level?
- What can we do at home to support our children's success in mathematics?

Common Core Shifts in Mathematics

- ***Focus***: Greater focus on fewer topics
- ***Coherence***: Linking topics and thinking across the grades
- ***Rigor***: Pursue conceptual understanding, procedural skills and fluency, and application with equal intensity

MBUSD Mathematics Philosophy



Balanced Mathematics

- A Balanced Mathematics approach requires students to understand key mathematical concepts, to think flexibly, and make applications to real life experiences.

- Students need experiences in talking about their mathematical ideas to develop this understanding.

Engaging With Others' Ideas

- Ways in which students engage with each others' ideas
  - Agree, Disagree
  - Repeat, Rephrase
  - Question, Challenge
  - Defend, Justify
  - Add to, Extend
  - Propose new idea using ideas already expressed

Engaging with Others' Ideas

- The more deeply you engage with others' ideas, the more likely you are to:
  - Monitor your own ideas
  - Compare ideas
  - Make connections between ideas
  - See similarities and differences between ideas
  - Resolve inconsistency among ideas
  - See ways to extend ideas
  - Generate new ideas

Connecting Research & Practice

- We need students to verbalize ideas, listen to others' ideas, and engage with each others' ideas.
- Students must be given ample opportunities to give complete and accurate explanations.
- Adults can pose questions to prompt students to talk about their ideas and see connections across different mathematical concepts.

Let's Do Some Math!

- Richard has 8 toy cars. His sister gives him 5 more toy cars for his birthday. How many toy cars does Richard have now?

Your Turn…

- It is important not only to solve mathematics problems, we must also share our mathematical ideas.

- Role Play: Choose one person to be the child and one person to be the parent. Your job as the parent is to get your students talking about their strategy and how they solved the problem. Don't do the thinking for your child!

Questioning Strategies

- **Probing**
  - Can you tell me how you did that?
  - How did you figure it out?
  - Point to one part of the strategy and ask student to tell your more about that.

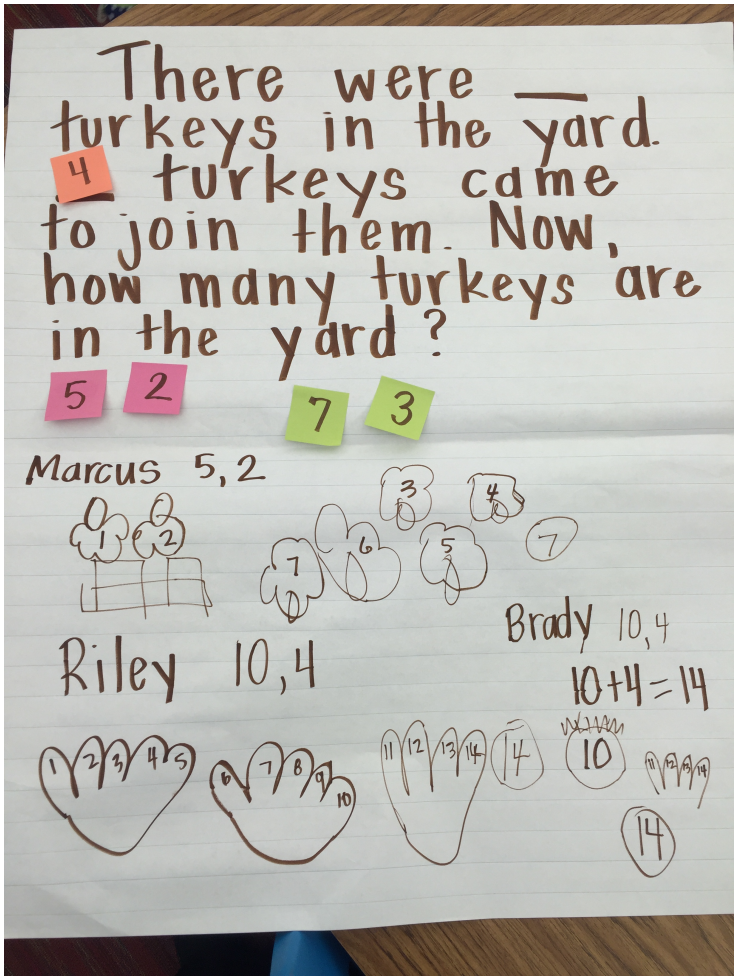
- **Extending**
  - Reflection: How do you know you got the right answer? Can you prove it?
  - Multiple Strategies: Can you think of another way to solve the problem?
  - Mathematical Representation: Ask student to write an equation or number sentence that shows how he solved the problem

Whole Group Share

We have asked a few people to share their strategies. This will introduce you to multiple strategies for solving this problem. We are also modeling classroom practices where teachers seek to encourage students to consider diverse strategies.

Problem Solving Trajectory

- Direct Modeling
- Counting
- Derived Facts
- Recall


There were ___ turkeys in the yard.
4
turkeys came to join them. Now, how many turkeys are in the yard?
5
2
7
3
Marcus 5, 2
Riley 10, 4
Brady 10, 4
10+4=14
14
10
14

Sample First Grade Problems

- Marley had _____stickers on her paper. Jake Kim gave her some more stickers. Now Marley has _____stickers. How many stickers did Jake Kim give Marley?

  (3, 6) (5, 9) (2, 8)

- Cody has _____ crayons in all. There are _____ in the box and some on the table. How many are on the table?

  (7, 3) (8, 2) (12, 6)

Sample First Grade Problems

- Megan made _____ sandwiches. She ate some and there were _____ left. How many sandwiches did Megan eat?

  (6, 2) (9, 6) (14, 8)

- London has _____ strawberries and Audrey has _____ blueberries. How many more berries does Audrey have than London?

  (4, 7) (7, 11) (4, 13)

Sample First Grade Problems

- Ryan has _____ bags of cookies with _____ cookies in each bag. How many cookies does Ryan have?

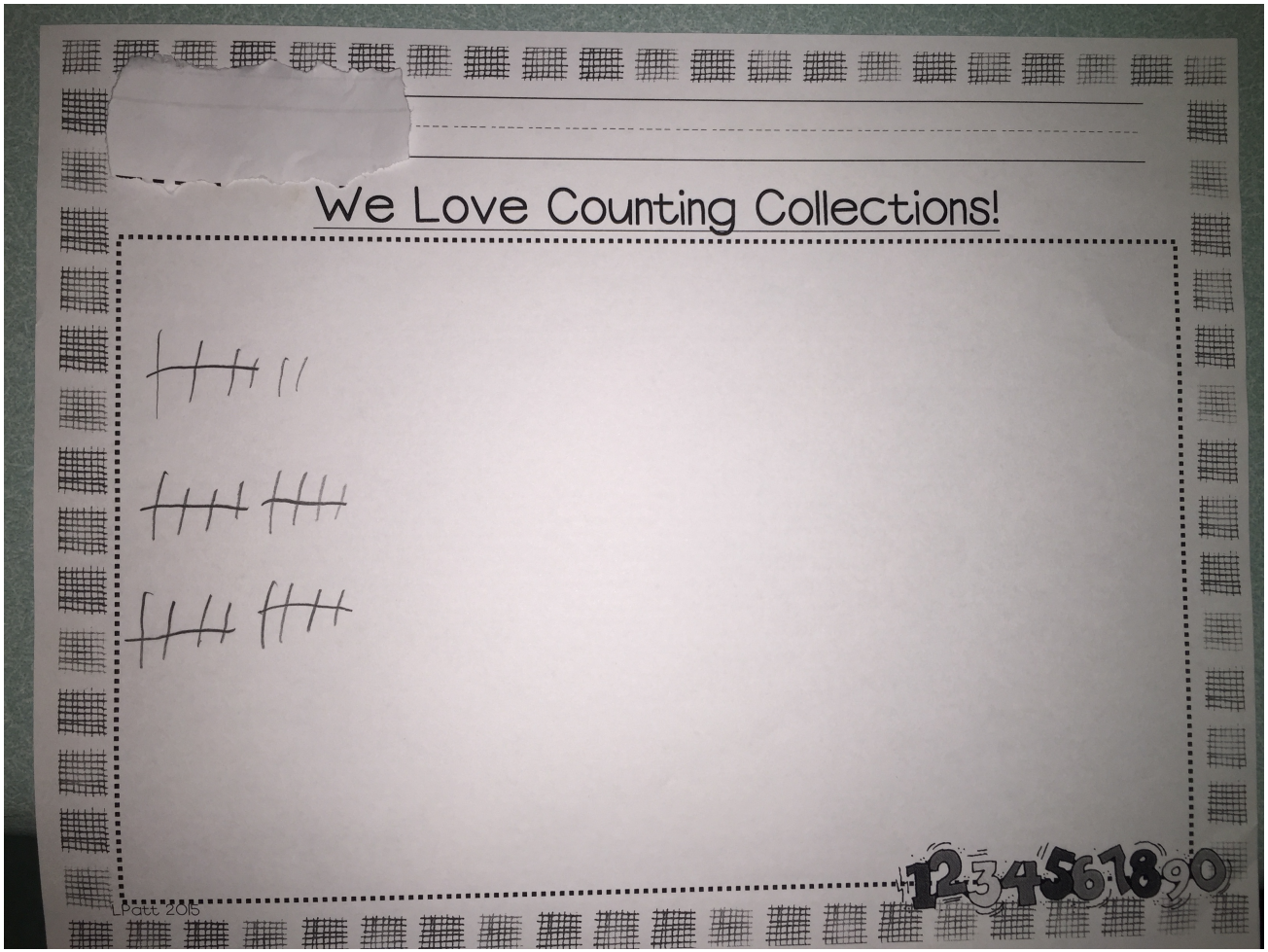
  (5, 3) (3, 4) (4,5)

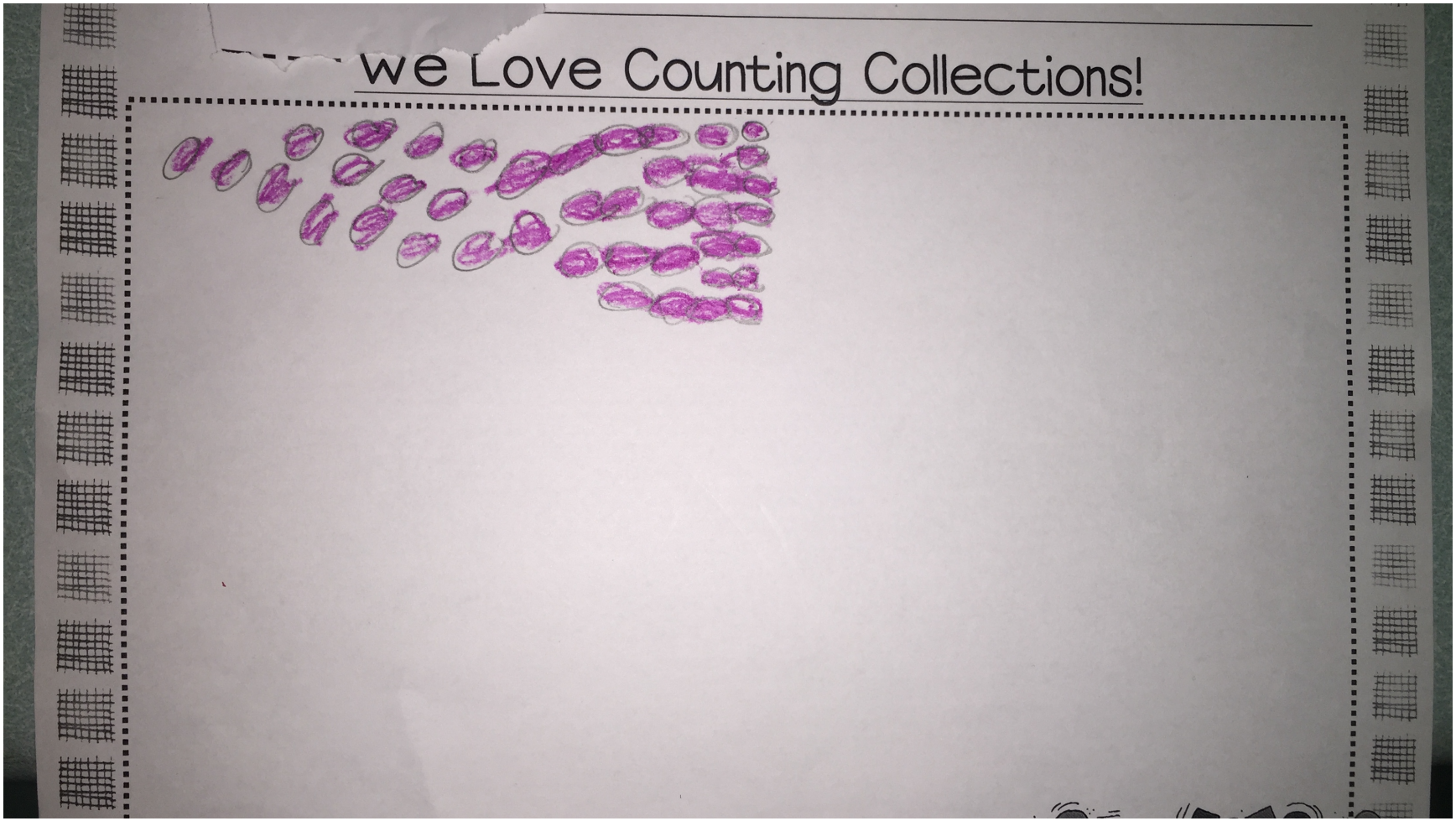
Counting Collections

Count this collection.

What Are We Looking For When Children Count?

- One-to-one correspondence
- Cardinality
- Ordinality
- Organization
- Counting the whole collection


We Love Counting Collections!
LPatt 2015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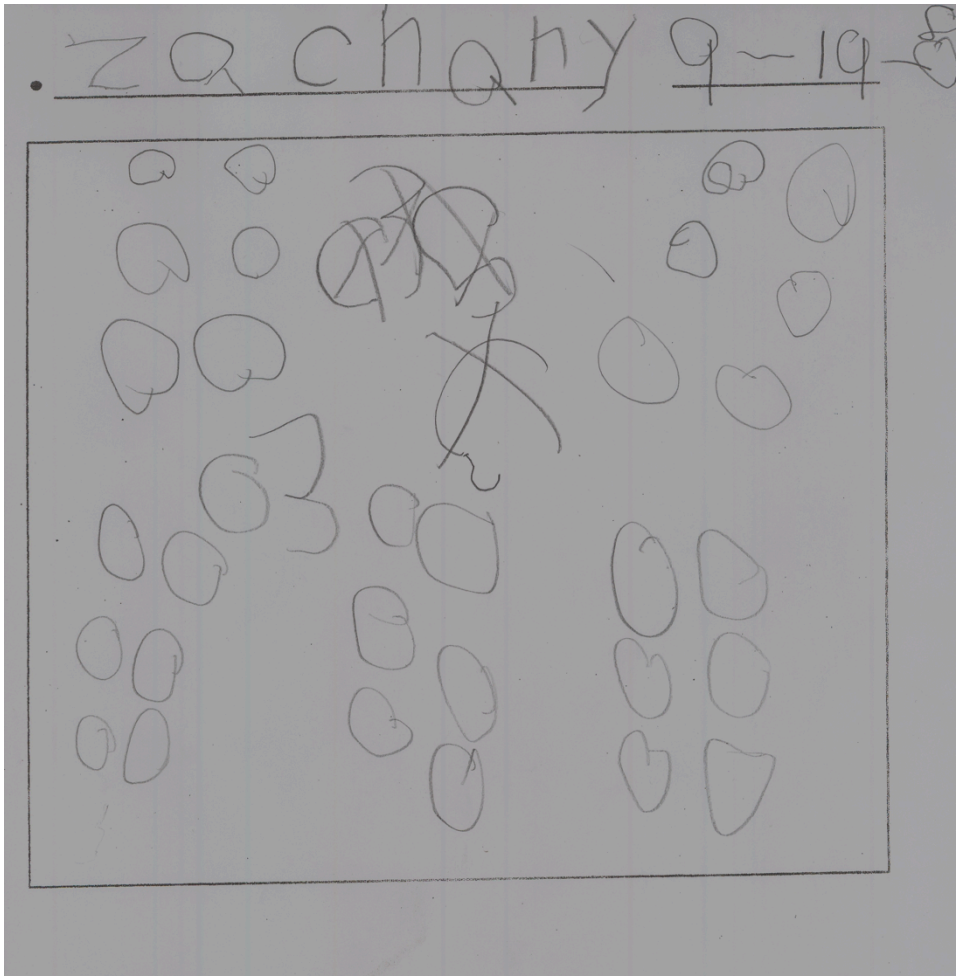
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Parents' Role in Homework

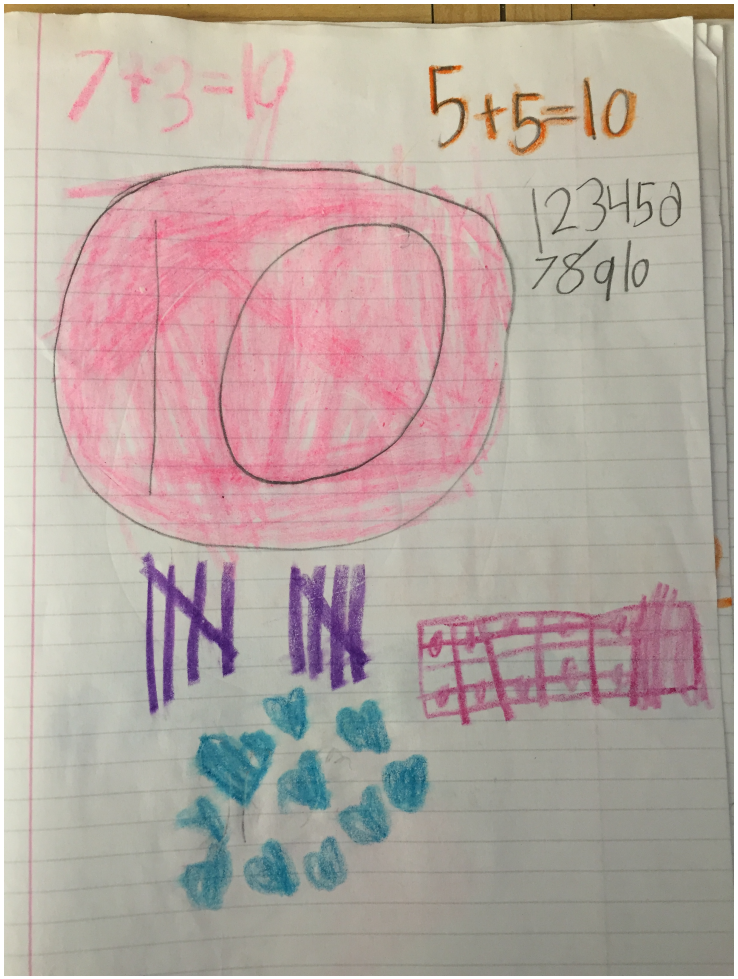
What do you see your role to be when your child is working on his or her homework?

The Changing Parents' Role

Before	Now
Check homework for accuracy: Focus on correct answers	Ask your child to explain her thinking and reflect on the process of solving. Try to make connections to other problems they solved that week. Ask your kids "What if?"questions
Explain steps to child so they can replicate the procedure	Pose a problem and let your child work through the problem before you intervene.
Make sure child does many problems of the same type	Give fewer problems and encourage the use of multiple strategies.
Drilling students to memorize facts	Expect your child to explain her thinking, especially with new concepts. Students should develop conceptual understanding before procedural fluency.

How Many Ways Can You Make… (Number of the Day)

10


7+3=10
5+5=10
12345
678910

Math Game: Make 10

- Players use one deck of cards (take face cards out) and place 9 cards in a three by three fashion
- Players take turns "making ten"
- Replenish the cards when tens can no longer be made
- Continue the game until no more tens can be made
- Players work together until all cards are used

What can I do at home to support my child's mathematical success?

Be Curious: Ask Questions!

- Try to allocate 10-15 minutes once per week to talk math with your child
- Ask questions such as:
  - How did you get that?
  - Point to one thing you see on their paper and say "Tell me more about that"
  - "I think you are right. Can you prove it to me?"
  - "What If …? (change numbers, etc)
  - "Can you show me a different way?"

What can I do at home to support my child's mathematical success?

Make Math Part of Your Regular Routine

- Examples from Everyday Experiences
  - What time do you think we will arrive at school?
  - If we arrive to school at 8:19, and school starts at 8:45, how much time do you have to play before school starts?
  - Count often, count everything.
  - Estimation: How many apples do you think are in the bag?
  - How did you arrive at that answer?

- Give your children experiences in Making 10
  - How Many Ways Can You Make 10?

What can I do at home to support my child's mathematical success?

Math Games

- Monopoly
- Rummy or Rummy Cubes
- Shut the Box
- Card Games: Make 10 or 24, Target Number
- Bonanza
- Uno
- Yahtzee
- I am thinking of a number/ Guess My Number

Internet Resources

- Parent Roadmaps to Common Core: http://www.cgcs.org/Page/244
- California Department of Education Mathematics Resources for Parents and Guardians: http://www.cde.ca.gov/re/cc/mathinfoparents.asp

Revisiting Our Focus

- Why is talking about our mathematical ideas important?
- What does mathematics look like in my child's grade level?
- What can we do at home to support our children's success in mathematics?

What is one thing you can do as a parent to support your child in mathematics?