

# MBUSD Mathematical Mind: Grade Level Sessions Grade 3



Manhattan Beach USD  
UCLA Mathematics Project

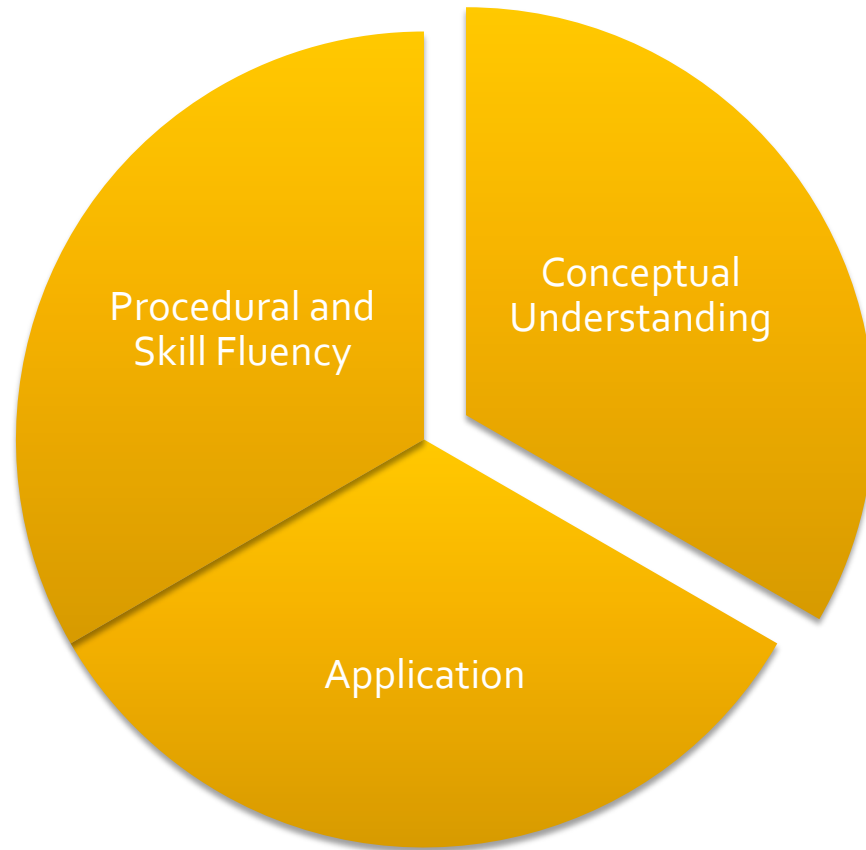
# Focus & Agenda

- 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!

- There are 4 children at a birthday party. They want to share 9 cupcakes equally so that each child gets the same amount. How many cupcakes will each child get?

# 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 you 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.

# Sample Grade 3 Problems

- Grade 3 is working on grouping problems: helping students to develop their ideas around multiplication and division

# Multiplication Fact Worksheet

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# Multiple Groups Problem Solving

There are \_\_\_ boxes of chocolates. If there are \_\_\_ chocolates in each box, how many are there altogether?

(16, 9)

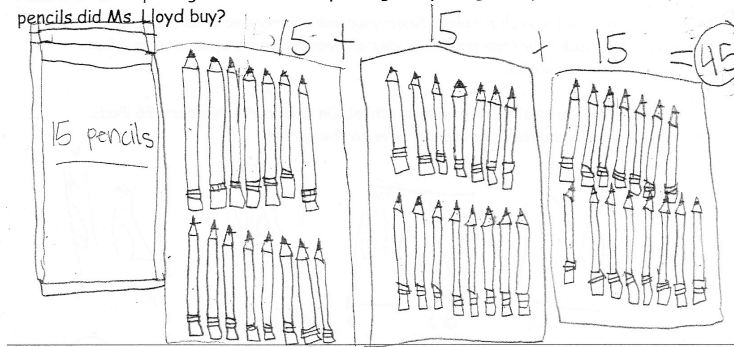
(5, 9)

(8, 9)

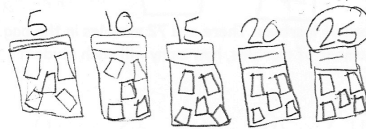
(12, 9)

Date: September 3, 2014

Pencils come in packages of 15. Ms. Lloyd bought 3 packages of pencils. How many pencils did Ms. Lloyd buy?



Students are putting 5 books in each bag. If there are 25 books, how many bags can they fill?



The students filled in five bags  
with twenty-five books.

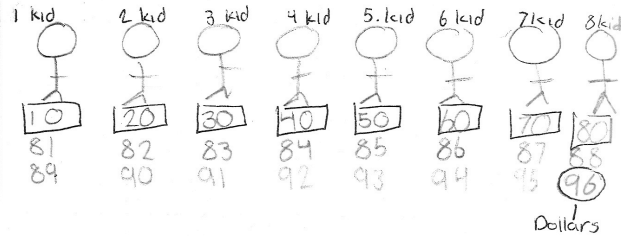




In room 18, 8 students participated in the school fundraiser. If each student brought in 12 dollars, how much money did room 18 raise for the school?

10-28-14

(8 12) ✓ (6 15) ✓ (6 13)



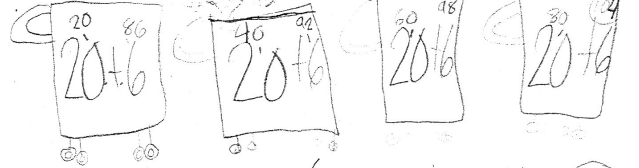
$$\begin{array}{cccccccc}
 1^{\text{st}} & 2^{\text{nd}} & 3^{\text{rd}} & 4^{\text{th}} & 5^{\text{th}} & 6^{\text{th}} & 7^{\text{th}} & 8^{\text{th}} \\
 10 & +10 & +10 & +10 & +10 & +10 & +10 & +10 = 80 \\
 \swarrow & & \swarrow & & \swarrow & & \swarrow & \\
 20 & + & 20 & + & 20 & + & 20 & \\
 \swarrow & & \swarrow & & \swarrow & & \swarrow & \\
 40 & & & & 40 & & & \\
 & & & & + & & & \\
 & & & & & & & 40 = 80 \\
 2 & 4 & 6 & 8 & 10 & 12 & 14 & 16 \dots
 \end{array}$$

(80) IIII IIII IIII I - Dollars  
 85 90 95 96

$$\begin{array}{l}
 12 + 12 + 12 + 12 + 12 + 12 + 12 + 12 = 96 \\
 12 \times 8 = 96 \\
 8 \times 12 = 96
 \end{array}$$

December

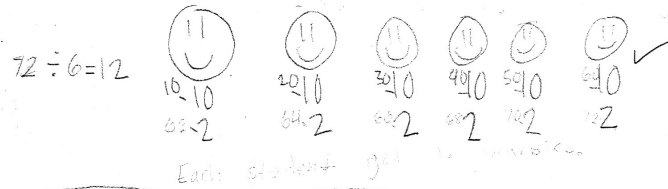
1. There are 4 carts of iPads at Green school. On each cart, there are 26 iPads.  
How many iPads does Green school have on the carts?



$(20 \times 4) + (6 \times 4)$  Green school has 104 iPads in the carts.



2. There are 6 students sharing a bag of marbles. There are 72 marbles in the bag.  
If each student gets the same number of marbles, how many will each student get?



# 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.

# 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?
  - If we buy three bags of apples, how much will that cost?
  - A bag with 4 apples costs \$3. How much does each apple cost?
  - How much do you think we will pay at the grocery store?
  - How did you arrive at that answer?
  - How much should the tip be?
- Give your children experiences in creating equal groups and in fair sharing
  - It is our turn to make the snack bags for the soccer game. There are 12 players on the team. If we plan on including three snacks in each bag, how many snacks do we need?
  - There are five people in our family. If we want to fair share our 15 brussel sprouts at dinner, how many brussel sprouts should we put on each plate?

# 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

# Math Game: I am Thinking of a Number

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# 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?