

# MBUSD Mathematical Mind: Grade Level Sessions Grade 4



Manhattan Beach USD  
UCLA Mathematics Project

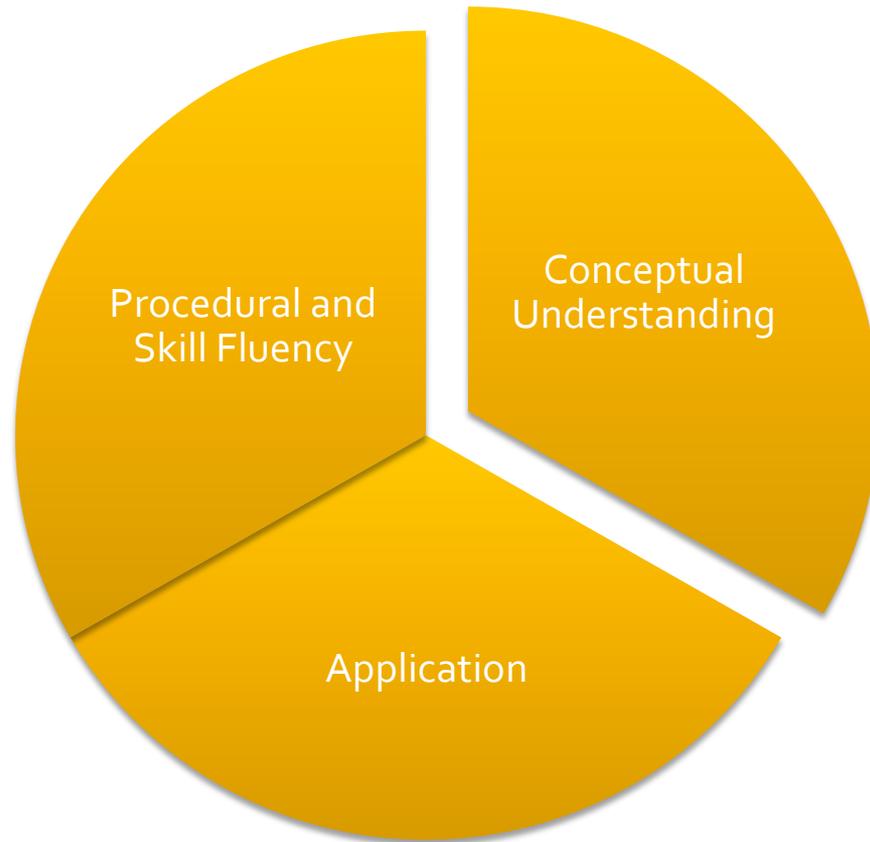
# Focus & Agenda

- 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!

- Malory's family is going to buy oranges. The Grand Market sells oranges at 3 pounds for 87 cents. How much does 1 pound of oranges cost at Grand Market?

# 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.

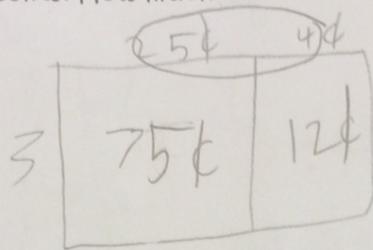
## ■ Extending

- 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.

Malory's family is going to buy oranges. The Grand Market sells oranges at 3 pounds for 87 cents. How much does 1 pound of oranges cost at Grand Market?

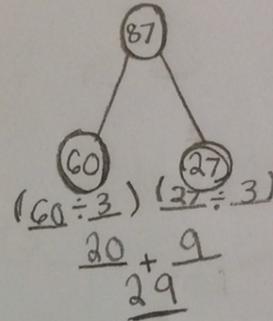
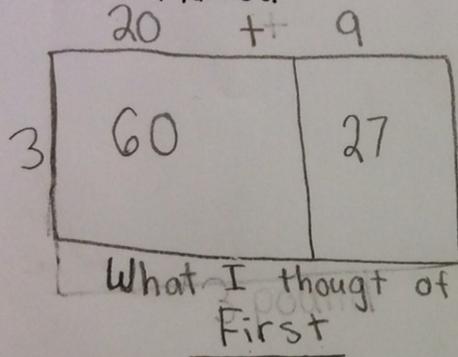


29¢

a pound of oranges = 29¢ because  $87 \div 3 = 29$  and 3 pounds of oranges is 87¢

Malory's family is going to buy oranges. The Grand Market sells oranges at 3 pounds for 87 cents. How much does 1 pound of oranges cost at Grand Market?

I thought of this 2nd



It will cost 29¢ to buy a pound of oranges.

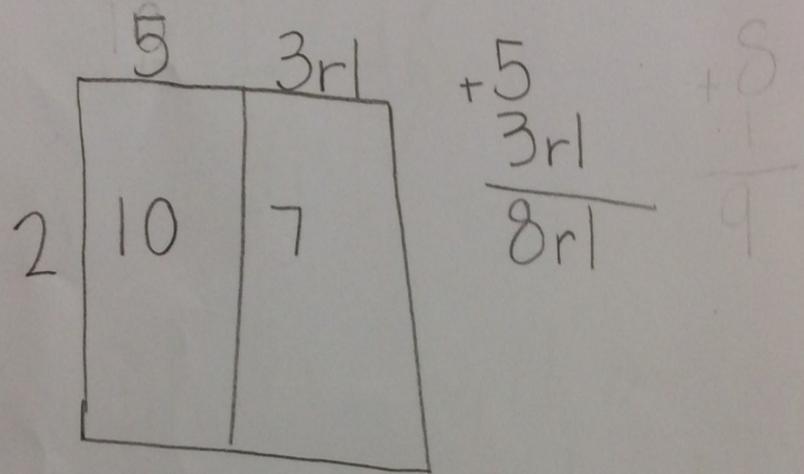
$$\begin{array}{r} 29 \\ 3 \overline{) 87} \\ \underline{\phantom{00}} \\ \phantom{00} \end{array}$$

What Angelena was doing !!

$$\begin{array}{r} 60 \div 3 = 20 \\ 27 \div 3 = 9 \\ + \\ \underline{29} \\ \underline{\phantom{00}} \end{array}$$

Linda makes booklets using 2 sheets of paper. She has 17 sheets of paper.  
How many of these booklets can she make? Will she have any extra paper?  
How many sheets?

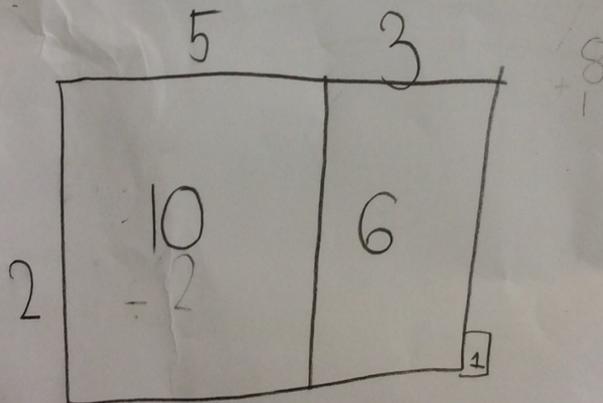
$$17 \div 2 = 8 \text{ r } 1$$



Linda will be able to make 8 booklets.  
1 extra

Linda makes booklets using 2 sheets of paper. She has 17 sheets of paper. How many of these booklets can she make? Will she have any extra paper? How many sheets?

$$17 \div 2 = 8 \text{ R}1$$
$$\begin{array}{r} 17 \\ \div 2 \\ \hline 7 \end{array}$$



She can make 8 booklets  
and she will have 1  
extra sheet

# 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?
    - One bag of apples costs \$3.75. 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?

# 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: Target Number

- This game can be played in pairs, small groups, or individually.
- Flip over five cards and arrange them in a row. Flip over one more card and place it above the row.
- Using all five cards exactly once, your task is to make the target number (the sixth flipped card). Use any mathematics you know to help you.
- Decide if you want to find another way to make the target number or deal out six new cards and play again.

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