Mountain View School
District Math Follow-Up
Day 5

Grades 1st and 2nd

Presented by: Melissa Canham

October 20, 2014
When you think of CCSS in Math, what one word comes to mind?

Text 190540 and your message to 37607

Submit responses at PollEv.com/melissacanha432
Agenda

- Welcome
- How is it going? - Grade level share out
- What should Mathematics look like in the classroom?
- Warm-up Review
- Classroom Discourse
- Multi-Digit Problem Solving Trajectory
- Analyzing Student Work
- Planning Time
Grade Level Share Out

- What does math time look like in your classroom?

- Share with your group any successes, challenges and/or questions that you may have in regards to transitioning to the Common Core Standards in Math.
  - Be prepared to report ideas back to the whole group.
What does Common Core Math look like in the classroom?

- Problem solving is the focus of instruction; teachers pose a variety of problems.
- Many problem-solving strategies are used to solve problems. Children decide how they should solve each problem.
- Children communicate to their teachers and peers how they solve the problems.
- Teachers understand children’s problem-solving strategies and use that knowledge to plan instruction.
The Upside-Down Model

You – We – I:

You (students) will mess around with a task for a while, ideally engaging in some thinking, trying things out, and generally wrestling with or constructively struggling with mathematics arising from the problem;

Cathy L. Seeley, Smarter Than We Think, Upside-Down Teaching (Scholastic, 2014)
The Upside-Down Model

You – We – I:

then We (students and teacher) will discuss the different approaches students tried, with students explaining, questioning, clarifying, and further grappling with the mathematics;

Cathy L. Seeley, Smarter Than We Think, Upside-Down Teaching (Scholastic, 2014)
The Upside-Down Model

You – We – I:

finally, I (the teacher) will connect this work and the class’s productive discourse around the problem and related mathematical ideas, facilitating the whole process and ensuring that students come away with the intended mathematics lesson.

Cathy L. Seeley, Smarter Than We Think, Upside-Down Teaching (Scholastic, 2014)
# Sample Daily Schedule

1 – 1¼ Hour Daily

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-20 Min</td>
<td>Warm Up</td>
</tr>
<tr>
<td>5 Min</td>
<td>Unpack the Problem</td>
</tr>
<tr>
<td>25-30 Min</td>
<td>Problem Solving: Conferencing</td>
</tr>
<tr>
<td>15 Min</td>
<td>Share Out</td>
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<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
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<tbody>
<tr>
<td>1</td>
<td>Warm Up: __________ + Problem Solve</td>
</tr>
<tr>
<td>2</td>
<td>Warm Up: __________ + Problem Solve</td>
</tr>
<tr>
<td>3</td>
<td>Warm Up: __________ + Math Page from textbook</td>
</tr>
<tr>
<td>4</td>
<td>Warm Up: __________ + Problem Solve</td>
</tr>
<tr>
<td>5</td>
<td>Games/Centers/Review-Preteach-Reteach</td>
</tr>
</tbody>
</table>
Four Corners – Warm-Ups

• Pick the group of warm-ups that you would like to discuss. This could be based on:
  ◦ Successes that you would like to share
  ◦ Questions that you would like to ask
  ◦ Warm-ups that you would like to find more about

• You will have 5 minutes to discuss and then we will switch corners for one more discussion.
Warm-Up Review

1. True/False Number Sentences
2. Number Talks
3. Quick Images/Subitizing/How do you see _____?
4. Write a Story For…
5. What can you tell me about ___?/Number of the Day
6. Which one doesn’t belong?
7. Choral Counting and Patterns
8. Guess My Number
9. 100 Chart Activities
10. Decompose/Compose
11. Mental Math
Classroom Discourse

Four steps toward productive discussions:

1. Helping individual students clarify and share their own thoughts.  
   Pp. 13 - 15

2. Helping students orient to the thinking of other students.  
   Pp. 15 - 16

3. Helping students deepen their reasoning.  
   Pp. 16 - 17

4. Helping students engage with others’ reasoning.  
   Pp. 17 - 19
Where are you in terms of implementing Productive Discussions?

- Text a **CODE** to 37607
- Submit responses at [PollEv.com/melissacanha432](http://PollEv.com/melissacanha432)

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<table>
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<tbody>
<tr>
<td>1</td>
<td>196979</td>
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<td>2</td>
<td>196980</td>
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<tr>
<td>3</td>
<td>196981</td>
</tr>
<tr>
<td>4</td>
<td>196984</td>
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</tbody>
</table>
Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.
 Hundreds Chart in 1st Grade
Debriefing the Video

- What do you think Susan’s goal(s) for the routine was?
- What productive discussion steps are Susan setting up?
- What Standards for Mathematical Practice are evident in this routine?
Isabelle had ___ stickers. For her birthday she was given ___ more stickers. How many stickers does Isabelle now have?
Typical Addition and Subtraction Strategies

- **Direct Modeling**
  - Every number in the problem is represented by physical objects

- **Counting Strategies**
  - Parts of the problem will still be modeled by all numbers no longer need to be represented by physical objects
Typical Addition and Subtraction Strategies

- Invented Algorithms
  - Doubles, use of 10-facts, combine 10s and 1s, group friendly numbers, compensation

- Standard Algorithm/ Recall
Design of the Instruction

- Selecting a problem or task
- Anticipating likely student responses to cognitively demanding mathematical tasks
- Monitoring students’ responses to the tasks during the explore phase
- Selecting particular students to present their mathematical responses during the discuss-and-summarize phase
Design of the Instruction

- Purposefully *sequencing* the student responses that will be displayed
- Helping the class *make mathematical connections* between different students’ responses and between students’ responses and key ideas
**PROBLEM SOLVING PLANNING WORKSHEET**

<table>
<thead>
<tr>
<th>Task(s):</th>
<th>Target Goals (math, social, etc.)</th>
<th>Anticipated Student Responses</th>
<th>Possible Next Steps</th>
</tr>
</thead>
</table>

**WARM-UP ACTIVITY**

**Text of Story Problem:**
Isabelle had _____ stickers. For her birthday she was given _____ more stickers. How many stickers does Isabelle now have?

(15, 10)  (10, 29)  (35, 7)

**Problem Type:** Add To Result Unknown (Join Result Unknown)

**Anticipated Student Strategies**

**Partner Goals**
Looking at Student Work

With your group, look at the student work samples and:

- Each person shares one new student strategy until all different strategies have been presented.
- What question(s) might you ask the students if you want to better understand what they were doing?
- Group papers by students you think solved the problem the same way.
- Rearrange the student work from least to most sophisticated strategies and record in the chart.
- Look through your student work, did you have similar strategies? Did you have different strategies?
### Sorting Student Work
for Addition and Subtraction Problems

<table>
<thead>
<tr>
<th>Direct Modeling</th>
<th>Counting</th>
<th>Derived Facts/Grouping/Invented Algorithm</th>
<th>Recall/Standard Algorithm</th>
<th>Invalid Strategy</th>
</tr>
</thead>
</table>
Create a Poster

- Pick three work samples that you would have students share
  - Why did you choose them?
  - What questions would you ask?
  - What ideas would you try to bring out?

- What follow-up problem would you want to pose to them?
  - What problem type would you use?
  - What number choices would encourage the strategies you would like to bring out?
Planning Sheet

Problem Type: ______________________        Date: ____________________

1. Sort student work to determine what mathematics students brought to bear on the problem and what mathematics is available for instruction through a discussion. Sort by...strategy, representation used, level (correct/complete, productive failure), missing elements.
2. Determine where most of the class appears to be in terms of the mathematics they understand and the mathematics they are ready to learn.
3. Select/create a learning goal or goals that will address where your class is. In doing so, think about how to support students that might be working below the rest of the class so the discussion helps them as well.
4. Select student papers that can be used as the basis for a discussion/lesson directed at the learning goal(s). Determine in what order to use the student work.
5. Develop questions to pose about the work, either to the student it belongs to (O) or to the class (C).

<table>
<thead>
<tr>
<th>Selected Work</th>
<th>Learning Goal(s)</th>
<th>Questions to Pose</th>
<th>Who do we need to focus on this strategy?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1:</td>
<td></td>
<td></td>
<td>O: Student who is presenting</td>
</tr>
<tr>
<td>Description of Strategy:</td>
<td></td>
<td></td>
<td>C: Whole Class</td>
</tr>
<tr>
<td>Student 2:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of Strategy:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student 3:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of Strategy:</td>
<td></td>
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</tbody>
</table>
What do the Common Core Standards Say?

1st Grade:

- Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.

- Add and subtract within 20. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationships between adding and subtracting; and creating equivalent but easier or known sums.

- Use place value understanding and properties of operations to add and subtract.
What do the Common Core Standards Say?

- 2nd Grade:
  - Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.
  - Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
  - Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method.
Grade Level Planning

- Complete the *Problem Solving Planning Worksheet* for your grade level to all try this coming week.
  - Plan out the Warm-Up activity:
    - What numbers will you use?
    - What questions might you ask?
  - Plan out the Problem Solving activity:
    - What problem type and numbers will you use?
    - What strategies do you want students to share?
  - Calendar a time that you will get together as a team to discuss outcomes.
Other Ways You Can Use Your Planning Time...

- Write story problems and choose numbers
- Plan just your warm-ups
- Plan out one in-depth lesson
- Make a 4 week plan
- Check out websites
- Make a list of materials to gather
Contact Information

Melissa Canham
mcanham@dusd.net

THANK YOU!!!
For each expression below, choose two different values that would make calculations “easy”. Then simplify the expressions.

\[
\begin{align*}
4 & + \underline{\phantom{0}} + 8 \\
25 & + \underline{\phantom{0}} + 9 \\
47 & + \underline{\phantom{0}} + 99 \\
68 & + \underline{\phantom{0}} + 107
\end{align*}
\]