

Region 11 K-2 Number Sense – DAY 4 – PLC Meeting 3 Classroom Conversation B

Choose at least a Number Talk or a Conversation about Problem Solving Strategies to investigate students' mathematical thinking in your class prior to PLC Meeting 3 at your site.

ENGAGING STUDENTS IN NUMBER TALKS	ENGAGING STUDENTS IN CONVERSATIONS ABOUT PROBLEM SOLVING STRATEGIES
<p>You may do a number talk with a small group or with your entire class.</p> <p>Adapt or use activities from today's session. As you observe students working or listen to their thinking, watch for:</p> <ul style="list-style-type: none"> • language that shows they are thinking about equal groups or equal sharing • whether students solve measurement and partitive division problems differently • how students justify their thinking • how well students can mathematize their thinking with symbols & equations, if appropriate <p>You might continue to do number talks using open number lines, rekenreks, ten frames, or dot cards. Consider:</p> <ul style="list-style-type: none"> • related equations that may encourage students to derive an unknown fact from a known fact • equations or sets of dots based on equal groups or equal sharing • mental math activities from your curriculum materials <p>Reflection Questions for Your Number Talk</p> <ol style="list-style-type: none"> 1. What questions or prompts from you caused students to more clearly verbalize their thinking? 2. What strategies are most used by your students? 3. What new strategies are beginning to emerge? Why do you think that is happening? 	<p>Engage your students in at least 3 problems and have classroom conversations about their thinking and strategies.</p> <p>This month you can select from several problems. A template is included if you want to run off problems for the students. If you have PLC goals for the year that centered on concepts in sessions 1-3 and you need to measure growth over time, you could repeat problems or create similar problems to the ones from those sessions.</p> <p>Directions:</p> <ul style="list-style-type: none"> • You may do the problems/conversations over several days (the power of developing number sense over short, frequent experiences). You may do all three problems on the same day (the power of developing relational thinking by comparing and contrasting problems and solution strategies). • Select the number pair in the parenthesis that makes the most sense for the level of your students. You can differentiate and give different number pairs to different students. If you find large amounts of derived fact/recall strategies, consider using a more challenging pair of numbers. • With younger students or those with emerging number sense you can act out the problems, engage students in a classroom conversation, and, when appropriate, record their thinking on the board or chart paper. • Problems can be solved mentally, with manipulatives, or on paper/white boards. • You may read problems to students and clarify the context; manipulatives may be available. • Feel free to use your students' names in the problems or adapt problems to a context that interests your students.

GETTING READY FOR YOUR PLC

- As soon as possible after your classroom conversation, make notes of the highlights, misconceptions, strengths, perplexing moments, or ah-ha's that occurred during your discussion.
- Save any artifacts that will help you share your students' thinking, strategies, misconceptions, or mathematical strengths.

Artifacts might include: dot cards or number combinations you used, your notes, audio/video recording of the talk, copy of a recording chart you used.

GETTING READY FOR YOUR PLC

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- Save any artifacts that will help you share your students' thinking, strategies, misconceptions, or mathematical strengths. Aim to have artifacts that reflect the thinking of at least 4-6 of your students whose work you find interesting. For example:
 - if your students work on paper, save 4-6 pieces of the work;
 - If they act out the problem, work with manipulatives, or work on white boards, you could photograph/video the work or describe it in your notes;
 - if you had students describe their thinking or strategies while you recorded, you could save the recording sheet or photograph the board space.

Problems for Mathematical Conversations

Following Session 4 of Region 11 Training on 2/28/14 or 3/11/14

You can select the number choice that works best for your students. In general,

- the first two number choices use 2s, 3s, 5s, or 10s, thinking of the youngest learners or learners whose mathematical sophistication is emerging
- the last two number choices use 3s, 4s, 6s, 7s, 8s or numbers close to multiples of 10 or 25 for the older or more mathematically sophisticated learners or for students who have already had multiple experiences with equal groups/equal sharing problems

MULTIPLICATION – EQUAL GROUPS PROBLEMS

1.	Maria has _____ packages of gum. There are 5 pieces of gum in each package. How many pieces of gum does Maria have in all? (3) (4) (7) (23)
2.	Tomás gives _____ cookies to each of his _____ friends. Tomás does not want any of the cookies because he already ate a lot of them. How many cookies does Tomás give away? (2, 3) (4, 5) (8, 5) (4, 26)
3.	Mrs. Williams bought _____ boxes of cupcakes for a party. There were _____ cupcakes in each box. How many cupcakes did Mrs. Williams buy in all? (5, 2) (4, 3) (11, 6) (5, 24)

PARTITIVE DIVISION – NUMBER OF GROUPS/PARTS/PEOPLE IS KNOWN; AMOUNT IN A GROUP/PART (AMOUNT GIVEN/"MEASURED" OUT) IS UNKNOWN

4.	Mr. Rawlins has _____ soccer balls to give out to teams. Mr. Rawlins wants to put the soccer balls into _____ bags so that there are the same number of soccer balls in each bag. How many soccer balls will Mr. Rawlins put in each bag? (8, 2) (12, 3) (20, 5) (28, 4)
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5.	<p>A table had _____ people sitting at it. There were _____ pretzels in a bowl on the table. If the pretzels are shared equally, how many pretzels will each person get?</p> <p>(4, 8) (5, 25) (6, 30) (4, 48)</p>
6.	<p>Jane wants to put stars on _____ flags for a parade. Jane has _____ stars. Jane wants the same number on each flag. How many stars can Jane put on each flag?</p> <p>(3, 6) (4, 8) (3, 12) (4, 36)</p>

**MEASUREMENT DIVISION – AMOUNT TO GIVE/“MEASURE” OUT” IS KNOWN
NUMBER OF GROUPS/PARTS/PEOPLE IS UNKNOWN**

7.	<p>Ramón has _____ soccer balls. Ramón wants to put _____ balls in each bag to give to teams. How many bags will Ramón fill with soccer balls?</p> <p>(10, 2) (12, 2) (16, 4) (40, 8)</p>
8.	<p>Amelia has _____ cups of flour to make cookies. Each batch of cookies uses _____ cups of flour. How many batches of cookies can Amelia make?</p> <p>(8, 2) (9, 3) (18, 3) (28, 4)</p>
9.	<p>Terry has _____ cents. Terry wants some baseball cards. Each baseball card costs _____ cents. How many baseball cards can Terry buy if he spends all his money?</p> <p>(9, 3) (12, 4) (35, 5) (36, 4)</p>

**Another problem you might try that involves creative problem solving.
(Numbers were taken, as is, from the kindergarten study.)**

10.	<p>Nineteen children were taking a minibus to the zoo. They will have to sit either 2 or 3 to a seat. The bus has seven seats. How many children will have to sit three to a seat, and how many can sit two to a seat?</p>
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Name	Date
1.	

Name	Date
2.	

Name	Date
3.	

Name	Date
4.	