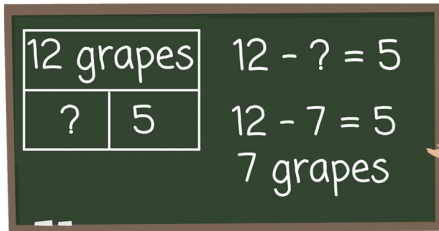


Math Summit

Applying Constructive Conversation Skills

Step 1 Use your think time to interpret the first solution.



Step 2 Listen actively as your classmate explains and justifies her solution.



Step 3 Analyze and discuss the first solution.

I noticed she used a tape diagram to represent the problem. What is your idea?



I noticed the bar on the top represents the total amount of grapes. What else do you think?



I think the question mark represents how many grapes were eaten. Does that make sense?

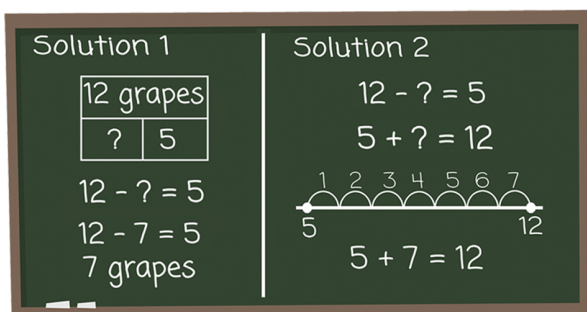


In other words, the question mark represents the unknown--what we are trying to find out. Is that what you mean?



Step 4 Repeat the process with one or two more solutions.

Step 5 Compare and connect the solutions.



Both solutions... What are your thoughts?



Another similarity is... However, they differ because...



Step 6 Summarize our learning.

- What misconceptions surfaced? How did we clarify these?
- What mathematical ideas can be drawn from all of the solutions presented?
- How are these ideas related to other math concepts?





Math Summit

Applying Constructive Conversation Skills

The MATH SUMMIT protocol supports students as they participate in a grand conversation facilitated by the teacher during Integrated ELD/Math instruction. It may be used to support ELs in the “After Phase” of a Three Phase math problem solving lesson. The teacher uses the MATH SUMMIT protocol after students have discussed their own solutions with a partner. Students apply Constructive Conversation Skills during the MATH SUMMIT as they compare and connect two or more solutions strategically selected by the teacher, in order to identify patterns and make mathematical generalizations they can apply to other problems.

Why use this protocol?

This protocol supports all students, but is especially critical for reducing barriers and providing access to ELs as they engage in interpreting/analyzing different solution pathways to complex mathematical tasks. The presenting student must explain and justify her thinking to the class. The class listens to her argument and decides whether it makes sense. Next, students ask appropriate questions to clarify, make connections to their own thinking, or improve the mathematical argument being presented. The presenter justifies her conclusions, communicates precisely, and responds to the arguments of her classmates. Repeating the process with one or more solutions, allows students to uncover big mathematical ideas they may apply to future problems.

How does this protocol support standards-based instruction?

The CA ELD Standards are designed and intended to be used in tandem with the CA CCSSM to support ELs in mainstream academic content classrooms. The MATH SUMMIT protocol supports ELs as they engage in the following CA CCSSM Standards for Mathematical Practice and CA ELD Standards:

- MP2: Reason abstractly and quantitatively.
- MP3: Create viable arguments and critique the reasoning of others.
- MP4: Model with mathematics.
- MP6: Attend to precision.
- Part I: A1 Exchanging information/Ideas
- Part I: C11 Supporting opinions

How do I plan for this protocol?

Consider the language needs of your ELs, and the language skills/academic language you want students to apply in the MATH SUMMIT. Determine which solutions will be presented and which guiding questions you will ask based on the mathematical goals of your lesson. Reflect on the following questions:

- How will you orient students to the Conversation Norms and Constructive Conversation Skills?
- What scaffolds will you provide? (e.g. Model Constructive Conversation, Prompt & Response Starters, etc.)
- How will students know what academic language they can use? (e.g. word wall, language objective, etc.)
- What big mathematical ideas will you highlight using the student solutions you selected?
- How will you support students during the protocol and monitor student progress?
- How will you debrief the protocol? What feedback will you provide to students?

LAUSD Teaching and Learning Framework Connection

- ✓ 1a2. Knowledge of Content-Related Pedagogy
- ✓ 2a3. Classroom Climate
- ✓ 3a4. Use of Academic Language
- ✓ 3b2. Discussion Techniques and Student Participation
- ✓ 3d3. Feedback to Students

