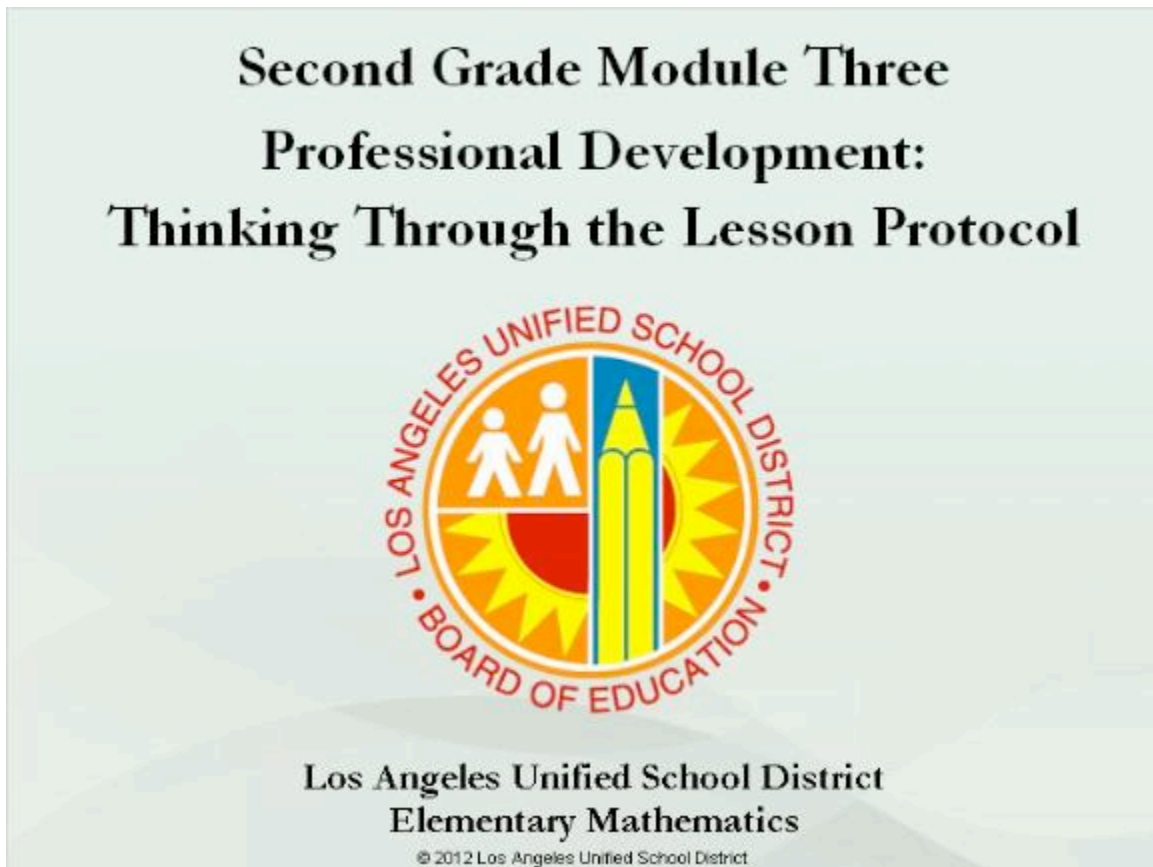


Second Grade Module Three: Thinking Through the Lesson Protocol

1. TTLP

1.1 Introduction



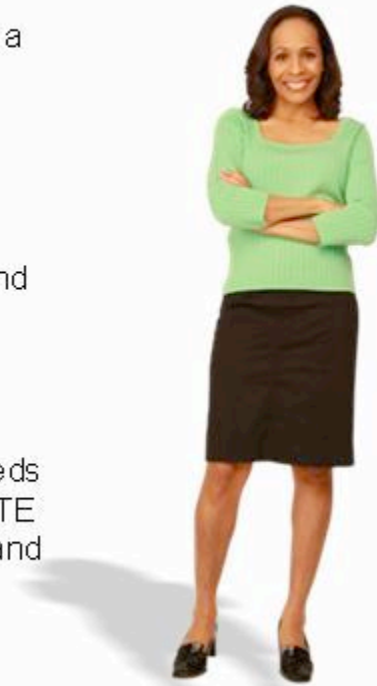
Notes:

Welcome back to our second grade math training on the Thinking Through the Lesson Protocol. This is part three of the three part series.

1.2 Outcomes

Outcomes

- Understand how the components of a Concept Lesson link to the Thinking Through a Lesson Protocol (TTLP)
- Engage in a Concept Lesson by:
 - Sequencing Student Solutions and Designing Questions that Facilitate a Mathematically Productive Discussion
- Identify strategies that meet the needs of diverse learners: ELs, SELs, GATE students, students with disabilities and other students with special needs



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Notes:

In our previous modules, we looked at the Set-Up Phase and the Explore Phase of the Thinking Through the Lesson Protocol. We solved the Concept Lesson different ways, and wrote questions to guide the students' learning. In this module, we'll work with the "Share, Discuss and Analyze" phase of the TTLP, as we continue through the Concept Lesson. Today, we'll examine the student work and what questions we ask as the class analyzes that work. And we'll identify strategies to specifically address the diverse needs of English Language Learners, Standard English Language Learners, Gifted and Talented students, students with disabilities, and other students with special needs.

1.3 Objectives

Objectives

- Tie to Teaching and Learning Framework:

3b. Using Questioning and Discussion Techniques

- Tie to CCSS Math Practice 3:

Construct viable arguments and critique the reasoning of others



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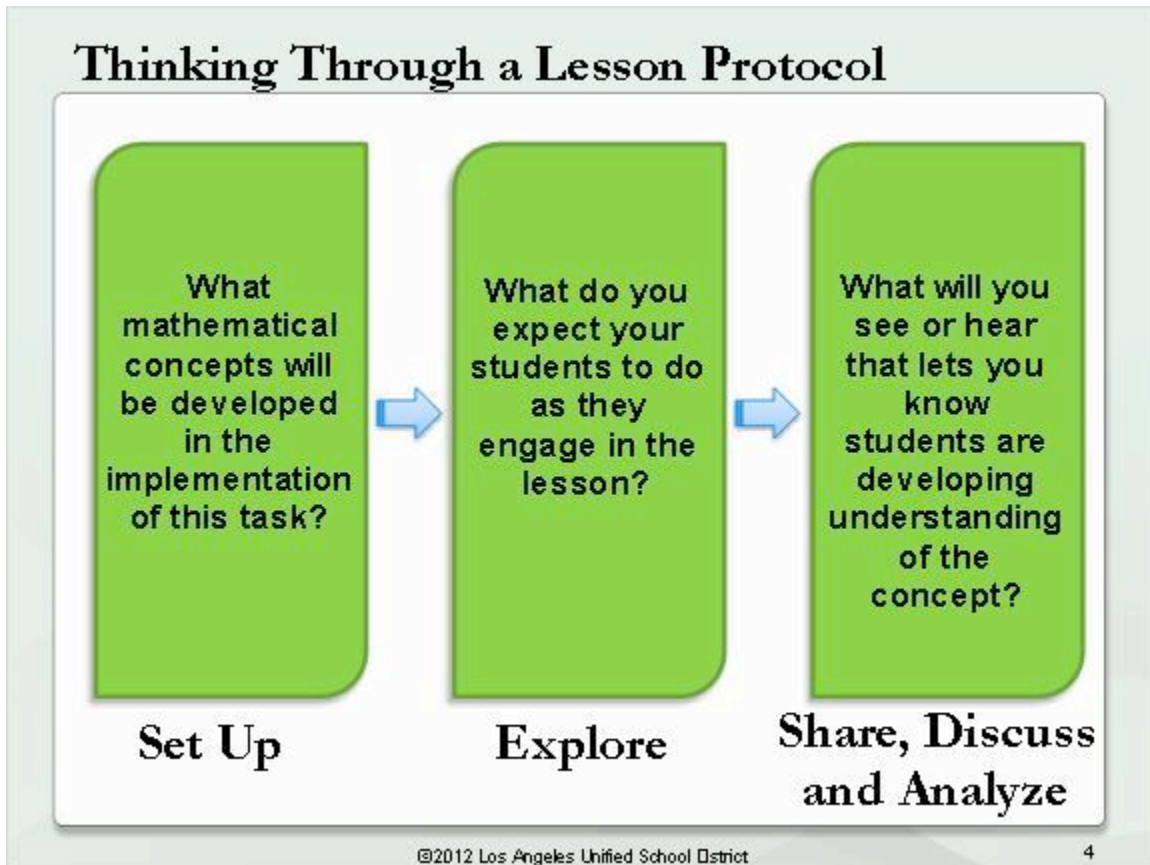
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Notes:

We'll be calling out the connections to the Teaching and Learning Framework, especially practice 3b: using questioning and discussion techniques, and exploring the connection with the Common Core Math Practice 3:

Construct viable arguments and critique the reasoning of others.

1.4 Thinking Through a Lesson Protocol



Notes:

In the Share, Discuss and Analyze phase, we'll be looking at the students' work, and the role of the teacher in ordering the solutions to lead the learning. What will we ask to help them explain their thinking? What will you see or hear that lets you know students are developing an understanding of the concept?

1.5 Rationale for Set Up

Rationale for Share, Discuss and Analyze Phase

“A key challenge mathematics teachers face in enacting current reforms is to orchestrate discussions that use students’ responses to instructional tasks in ways that advance the mathematical learning of the whole class.”



Stein, M. K., Engle, R. A., Hughes, E. K., & Smith, M. S. (2006) *Orchestrating productive mathematical discussions: Helping teachers to learn to better incorporate student thinking.*

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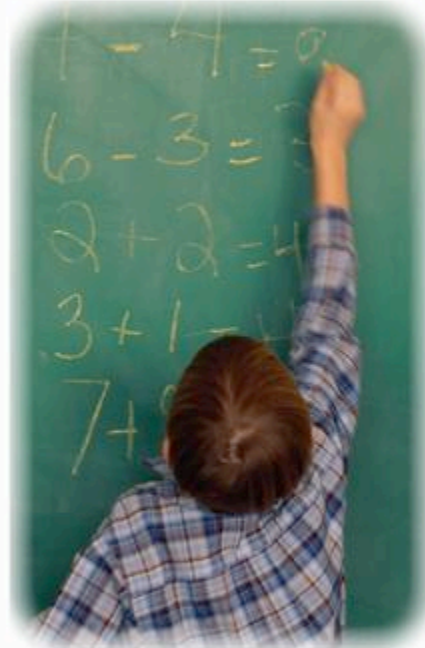
Notes:

Let's keep this rationale in mind as we work today. "A key challenge mathematics teachers face in enacting current reforms is to orchestrate discussions that use students' responses to instructional tasks in ways that advance the mathematical learning of the whole class." The TTLP ties into the Teaching and Learning Framework in its use of quality questions and discussion techniques to advance learning. And this phase shows the Common Core Math Practice 3 in action, with students constructing viable arguments and critiquing the reasoning of others.

1.6 Second Grade California Math Standards

Second Grade California Math Standard

NS 2.0: Students estimate, calculate, and solve problems involving addition and subtraction of two and three-digit numbers.



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Notes:

As we prepare to dive back into the Concept Lesson, please review the California standard that guides today's work.

1.7 Second Grade CCSS Math Standards

Second Grade CCSS Math Standards

2.OA.1: 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.



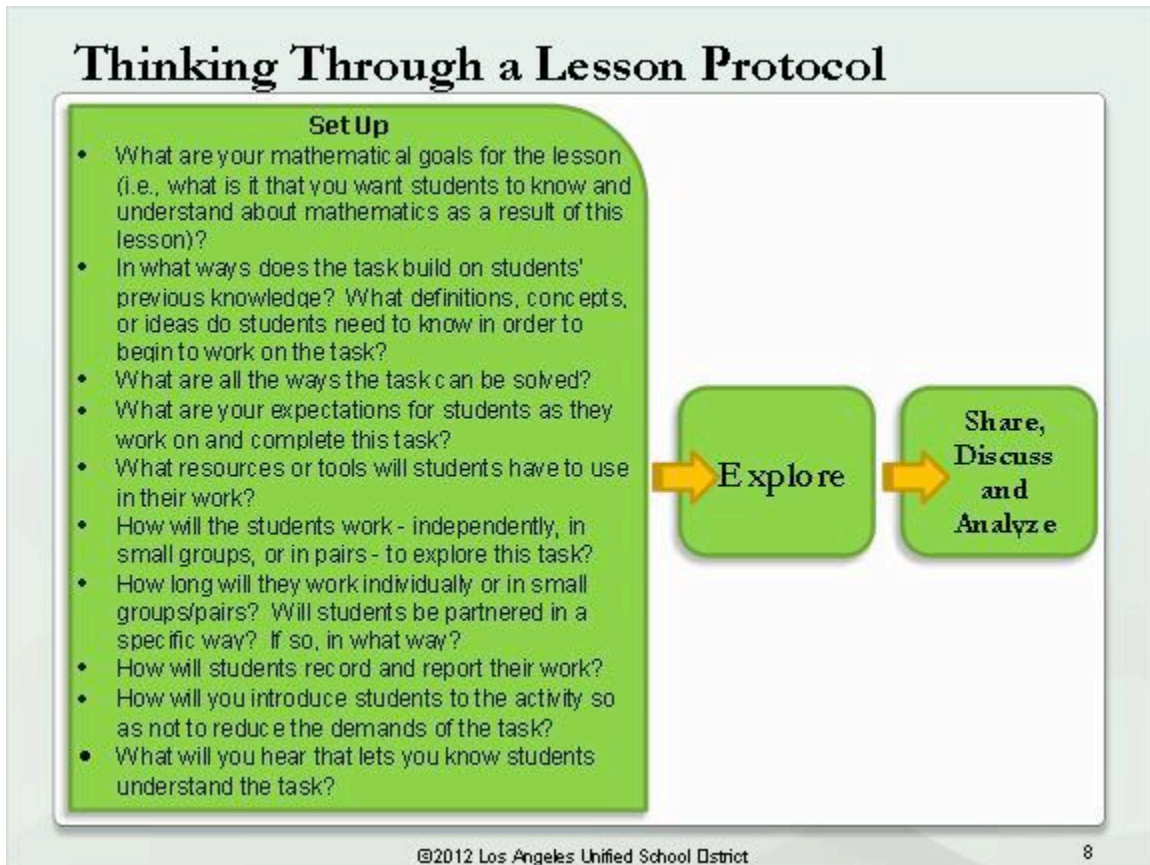
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Notes:

...and the Common Core Standard that the Concept Lesson addresses: Second Grade Operations and Algebraic Thinking-point-one: 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.

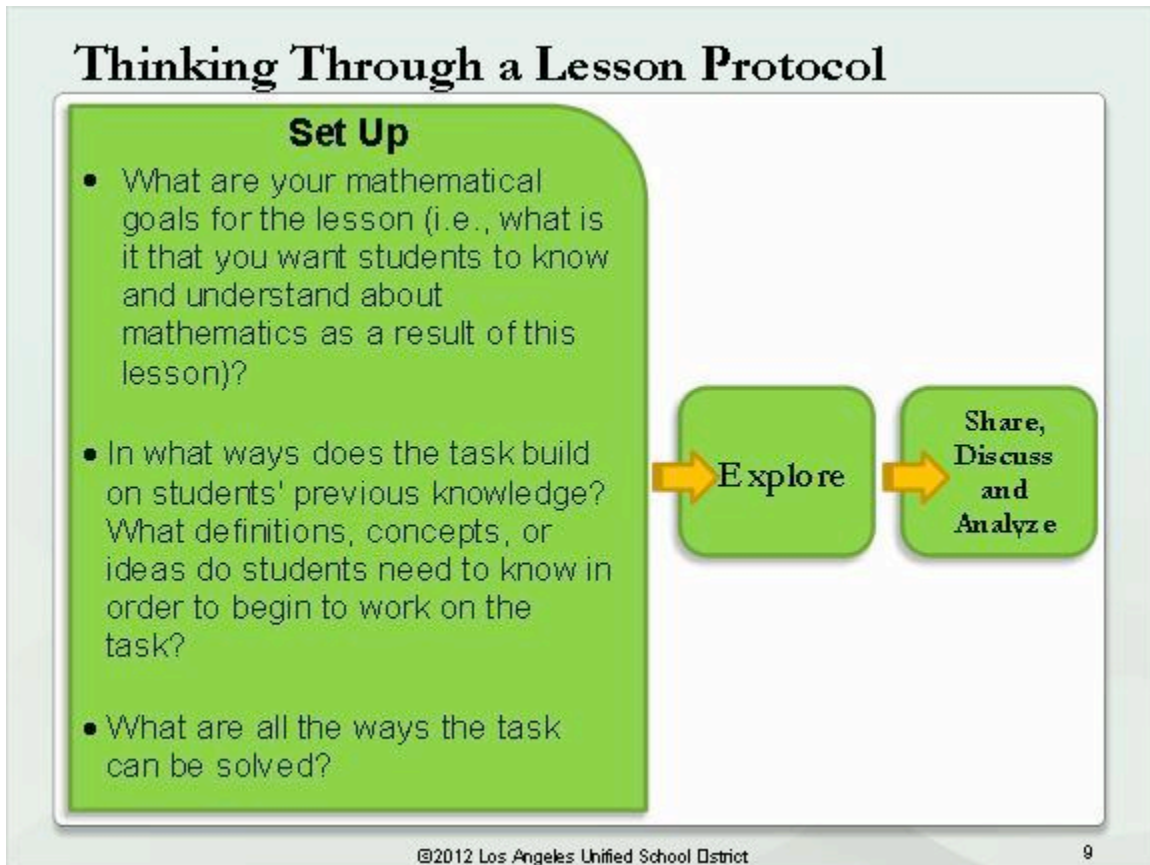
1.8 Thinking through a lesson protocol 2



Notes:

You'll recall that in Module 1, we began with the Set-Up phase.

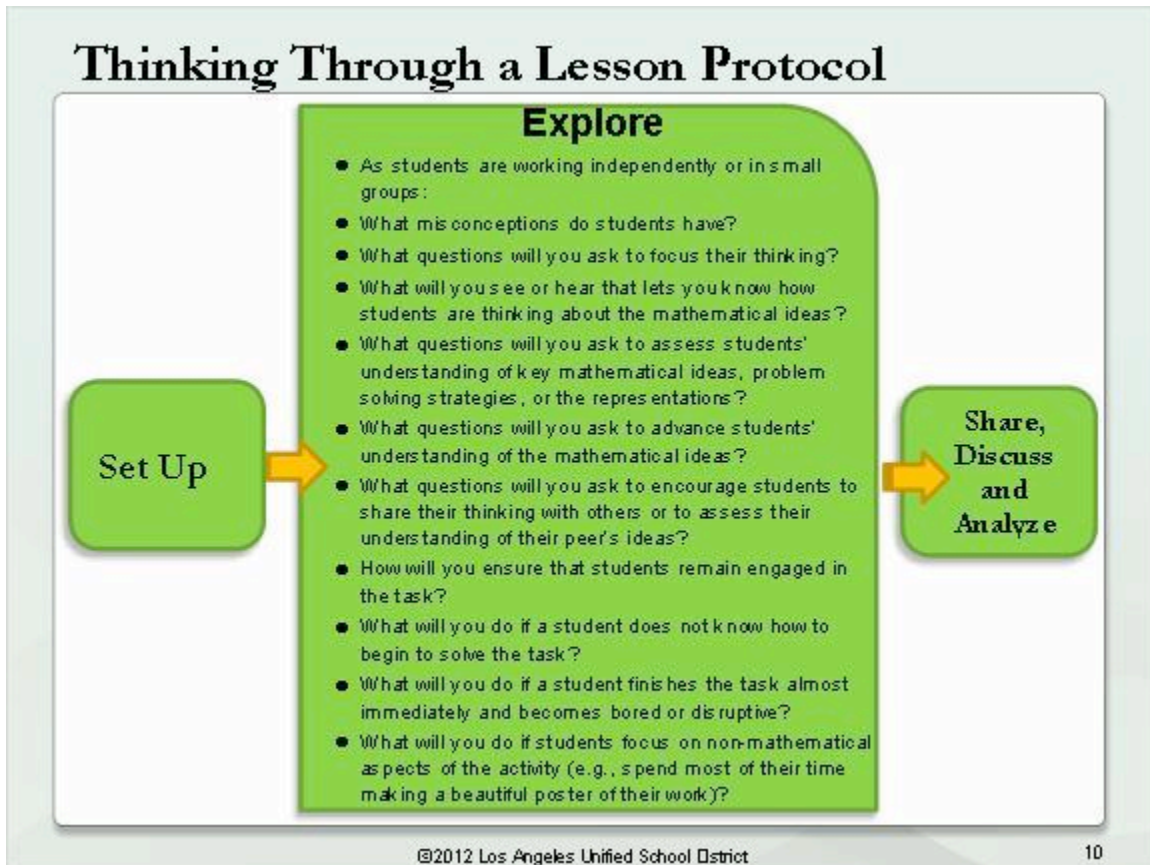
1.9 Thinking through a lesson protocol 3



Notes:

We solved the Concept Lesson in multiple ways and began to look at student misconceptions.

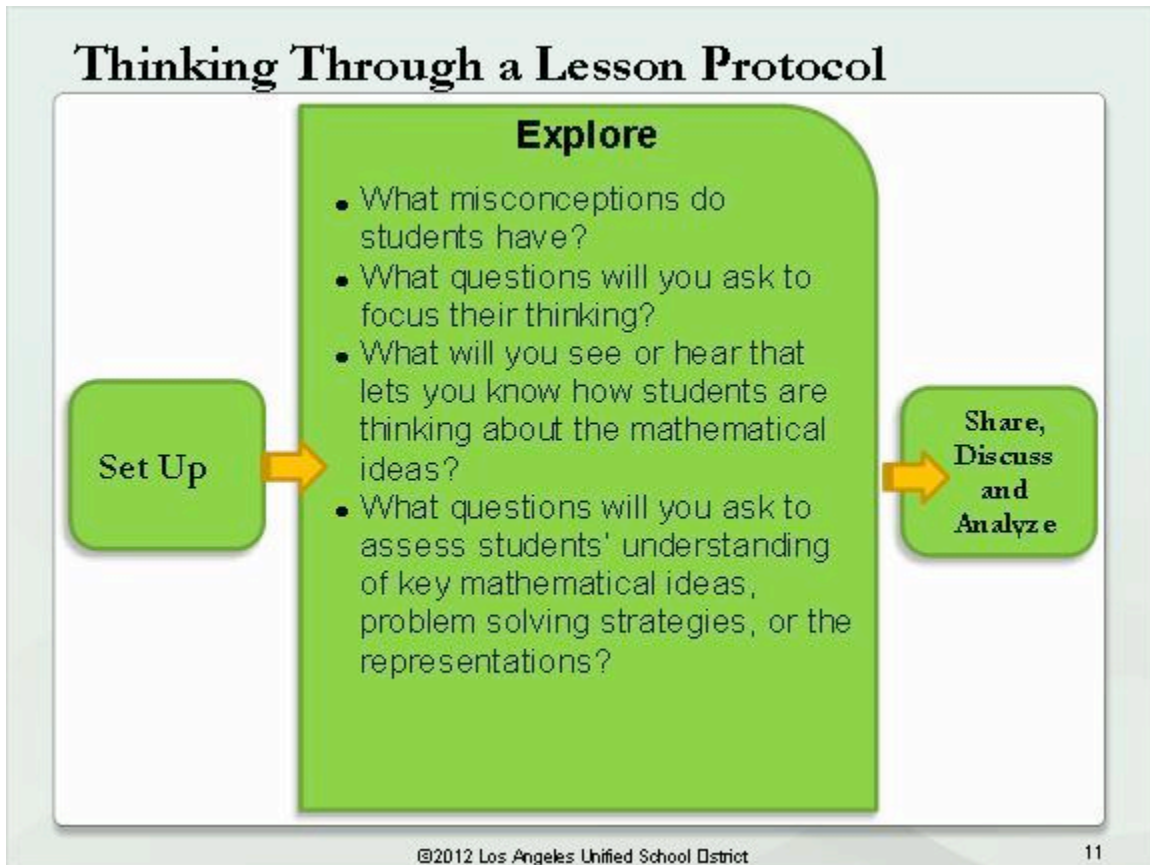
1.10 Thinking through a lesson protocol 3



Notes:

In module two, we focused on what the students do during the lesson.

1.11 Thinking through a lesson protocol 3



Notes:

...and the role of questioning in moving the students toward greater mathematical understanding. We wrote questions to address the specific needs of the students in the class to focus, assess and advance their thinking. Remember, we're not telling the students what to do. We're asking them questions that will lead them to a deeper conceptual understanding, as seen in the Teaching and Learning Framework, Standard 3b.

1.12 Thinking through a lesson protocol 3

Thinking Through a Lesson Protocol

```
graph LR; A[Set Up] --> B[Explore]; B --> C[Share, Discuss, and Analyze];
```

Share, Discuss, and Analyze

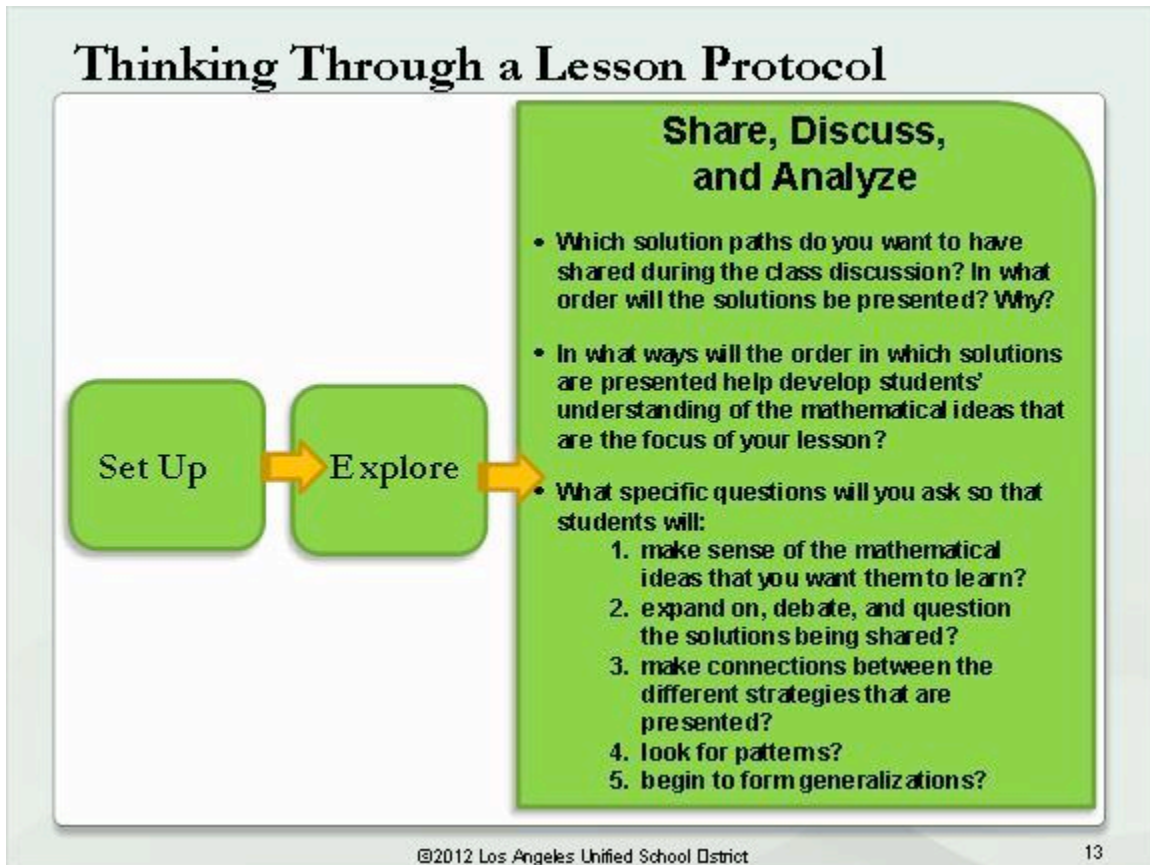
- How will you orchestrate the class discussion so that you accomplish your mathematical goals?
- Which solution paths do you want to have shared during the class discussion? In what order will the solutions be presented? Why?
- In what ways will the order in which solutions are presented help develop students' understanding of the mathematical ideas that are the focus of your lesson?
- What specific questions will you ask so that students will:
 1. make sense of the mathematical ideas that you want them to learn?
 2. expand on, debate, and question the solutions being shared?
 3. make connections between the different strategies that are presented?
 4. look for patterns?
 5. begin to form generalizations?
- What will you see or hear that lets you know that students in the class understand the mathematical ideas that you intended for them to learn?
- What will you do tomorrow that will build on this lesson?

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Notes:

Today, we focus on how we share the student work...

1.13 Thinking through a lesson protocol 3



Notes:

...and the role of questioning in moving the students toward greater mathematical understanding because it makes sense to them.

Please use handout #2 to read the Share, Discuss and Analyze phase of the TTLP. Click the "Next" button when you're ready to continue.

(2 minutes)

1.14 Concept Lesson

Concept Lesson

- Take the next few minutes to read the Share, Discuss and Analyze phase of the Concept Lesson, and re-read the problem to refresh your memory
- With your group, discuss what the teacher is doing during this phase, and what the students are doing



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Notes:

Please take a moment to read the Share, Discuss and Analyze phase of the Concept Lesson, and re-read the problem. Think about what the teacher is doing, and what the students are doing during this phase, and jot down some notes. Briefly discuss the teacher and student responsibilities with your group. Click on the "Next" button to move on.

(5:00)

1.15 Share, Discuss

Share, Discuss and Analyze: Ordering Solutions

- Decide which student samples you would choose to share
- Decide in which order you would share them and why
- Share the choices with your group



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Notes:

As you know, critical to helping students gain mathematical understanding is how we order the student work for sharing and what questions we ask as the class analyzes that work. In your packet you will find student work samples, labeled handouts A through H. These are examples of what you might find in your own classroom. Please look at the samples, and decide which ones you would choose to share, and put them in order. Remember to keep the lesson's learning objectives in mind. You may record notes on the samples to explain your choices. Remember, that these are samples with which to practice. In your own classroom, you will be sharing the work your students do. Click the "Next" button when you're ready to continue.

(10 minutes)

1.16 Share, Discuss

Share, Discuss and Analyze: Ordering Solutions

- What similarities and differences were there in the ways that solutions were ordered?



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Notes:

There is no one right way to order the student work samples. Sometimes we may choose to start with the most basic developmental work, and move into progressively more symbolic work. Another choice may be to start with the symbolic and then show the manipulatives and drawings that explain it. Whatever order you select, do it with intentionality. Know what you want to highlight to accomplish your math goal. And know that children are pattern seekers. If you always show the correct solution before the incorrect one, the students will quickly notice. Having a variety of sharing strategies will keep the students thinking. Take a few minutes for discussion. What similarities and difference were there in the ways that solutions were ordered? Click the "Next" button to continue.

(5 minutes)

1.17 Share, Discuss

Share, Discuss and Analyze: Analyzing Solutions

- What questions will you ask to connect solutions and strategies to the lesson's objectives?
- What might you hear your students say to summarize the mathematical ideas of the lesson?
- What follow-up activities will you do?



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Notes:

Now is the time to work with your group to create questions to guide the sharing of the work. Using handout #3, record your questions to connect solutions and strategies to the lesson's objectives. What might you hear your students say to summarize the mathematical ideas of the lesson? What follow-up activities will you do?

Click the "Next" button to continue.

(5 minutes)

1.18 Addressing Diverse Learners

Addressing Diverse Learners

- Choose a question in the left column
- Choose a diverse learner from the middle column
- Reflect on what strategies you might use and record them in the right column



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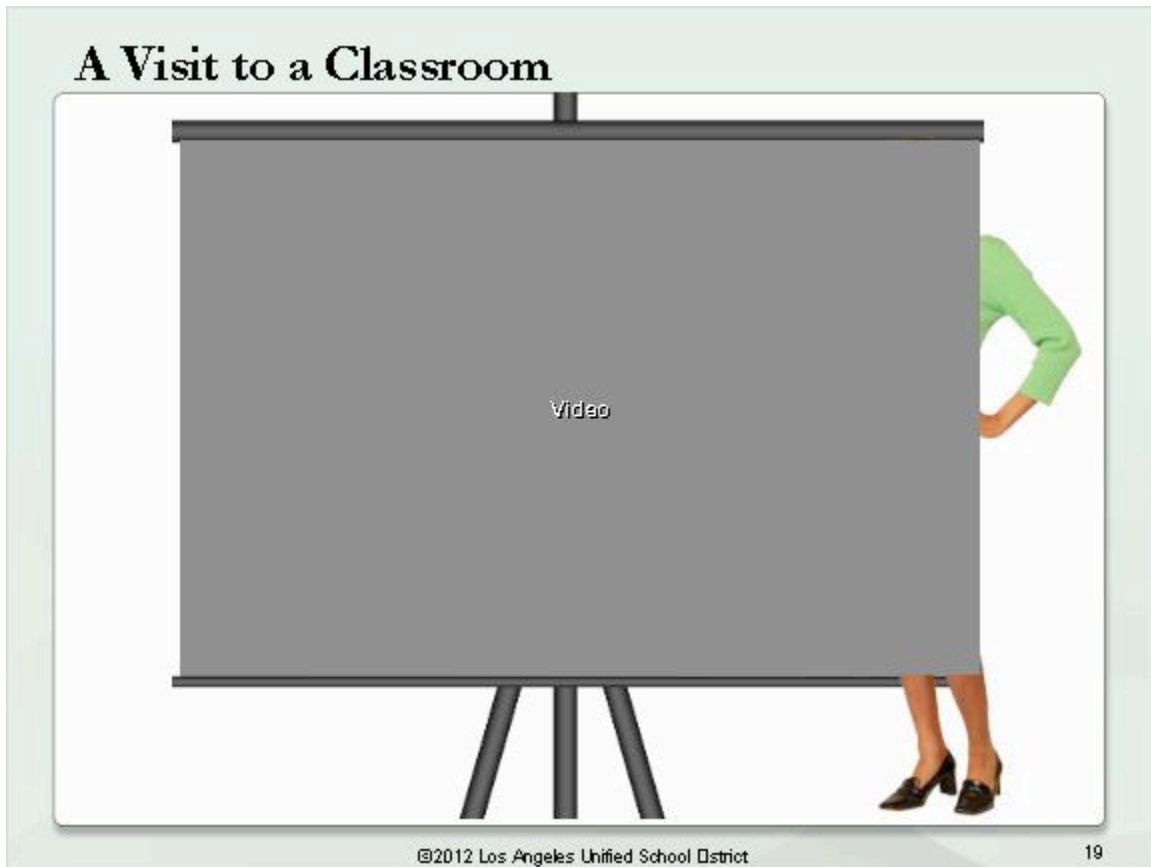
Notes:

How will our diverse learners respond to the questions we ask in the Share, Discuss and Analyze phase? Hand out #4 gives an opportunity to think about the specific learners in your classroom. Working with your group, look at the questions on the left. Choose a student from the middle column. Then think about strategies to record in the right column.

Click the "Next" button to continue.

(5 minutes)

1.19 Reflection (Video Clip)



Notes:

Let's visit a classroom to see the Share, Discuss and Analyze phase in process. Please click the "Next" button after the video.

1.20 Reflect on Video

Reflection

- What did you see and hear that lets you know that students in the class understand the mathematical ideas intended?



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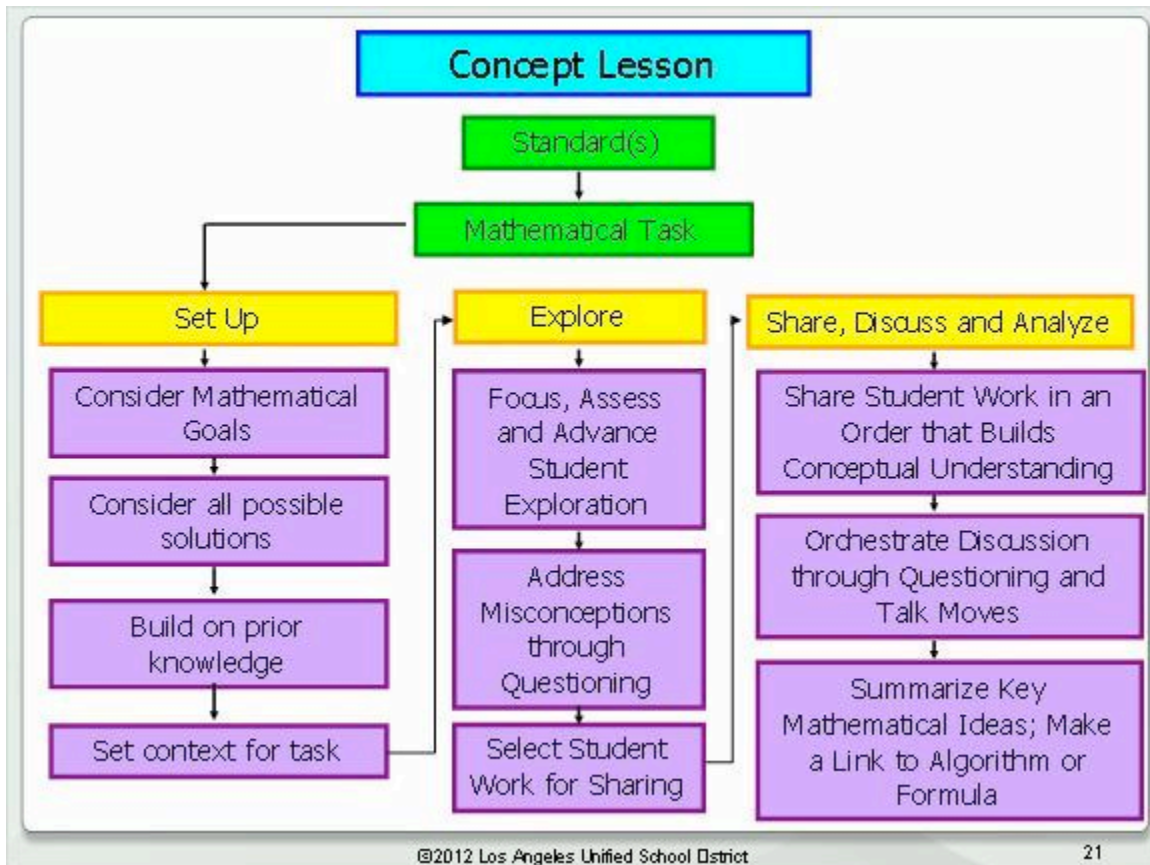
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Notes:

Please share your observations of what you see and hear that lets you know that students in this class understand the mathematical ideas intended. Click the "Next" button to continue.

(3 minutes)

1.21 Concept Lesson



Notes:

This concludes our three modules on the TTLP. As you plan for teaching the concept lesson in your own classroom, remember that this is a lesson to develop conceptual understanding in the students. It's a chance to explore, to make connections with the math that they already know, and to make sense of new ideas. As we move into the Common Core State Standards and the Mathematical Practices, the TTLP will give us a tool to help our students to a deeper mathematical understanding. In collaboration with the Teaching and Learning Framework, standard 3b, and the Master Plan, we are being intentional about creating the best learning environment for all students. Thank you for your participation.

1.22 Conclusion

Conclusion

Thank you for participating in this module on the Share, Discuss and Analyze phase of the Thinking Through the Lesson Protocol.

Special Thanks



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Click the Special Thanks button.

1.23 Thank you

Thank you!

Thanks to all the teachers who contributed to the field-testing of the second grade concept lesson:

Judy Arriaga

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Elaine LeDuff

LaBarbara Madison

Jill Manning

Vicky McNeely

Martha Mota

Dan Murphy

Dionne Patterson

Rafael Quintanilla

Lisa Rosenstein

Sheila Suarez

Carina Tsuneta

Lisa Ward

Charity Weber

Dina Williams



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(55 minutes)