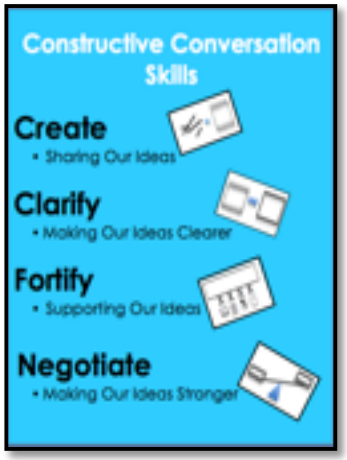
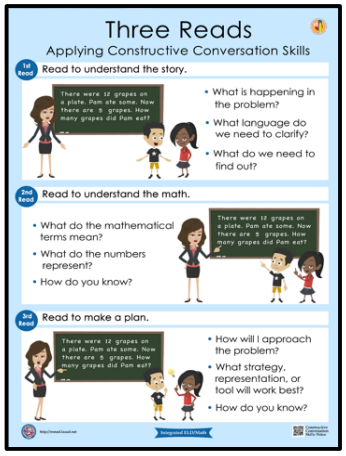
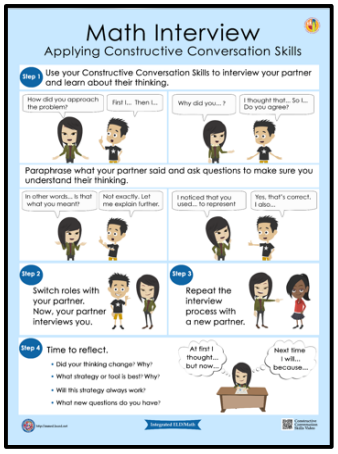
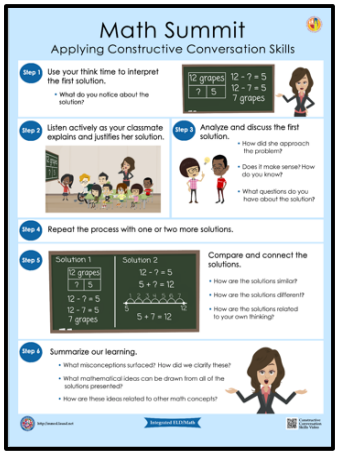
3rd Grade
Integrated ELD/Mathematics
Three Phase Lesson: Chorus Line-Up









INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING	
FOCUS QUESTION Foster Metacognition	How and when do I apply strategies to understand and explain how to solve word problems in situations involving equal groups?
TASK/PROBLEM	Mrs. Smith is preparing for the music show. She wants to line up the ___ children on the stage in equal rows. Show two ways to organize the children, using numbers, pictures, words and/or models to explain your thinking. (12) (32) (56) Extension: The honors chorus of 16 people is joining the children. Explain how you included the extra people using numbers, pictures, words and/or models. Be ready to explain to a partner using connecting words/phrases (first, then, next, afterward, finally, so, and, because, therefore, etc.) and math vocabulary (subtract, total, factor, product, equation, represent, model, number line, array, etc.)
LANGUAGE DEMANDS Monitor and Guide Disciplinary Learning	English Learners will need support with the following: Making sense of the problem **(MP1)** • Interpreting challenging language – *equal rows, chorus members, honors chorus* • Understanding math vocabulary *–, total, factor, product, equation, represent, model, number line, array* • Identifying the questions being asked. "Show two ways to organize the members," and "How do you include the 16 extras.." Explaining and justifying their thinking clearly and precisely **(MP3 & MP6)** See *Language Objective*, p. 2 and *Supports & Structures* (Model Constructive Conversation), p. 6-7

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING	
MATH CONTENT STANDARD(S) Set disciplinary learning targets	Focus Standard: 3. OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. Supporting Standard: 3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 divided by 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 divided by 8.
MATH PRACTICE STANDARD(S) Set disciplinary learning targets	**MP1: Make sense of problems and persevere in solving them** (FOCUS MP) MP2: Reason abstractly and quantitatively **MP3: Construct viable arguments and critique the reasoning of others** (FOCUS MP) MP4: Model with mathematics MP5: Use appropriate tools strategically MP6: Attend to precision MP7: Look for and make use of structure MP8: Look for and express regularity in repeated reasoning
CA ELD STANDARD(S) Set disciplinary learning targets	***Exchanging information/ideas* – ELD.PI.3.1.Ex** Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information. ***Reading/viewing closely* – ELD.PI.3.6.Ex** Describe ideas, phenomena (e.g., how cows digest food), and text elements (e.g., main idea, characters, events) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia with moderate support. ***Supporting opinions* – ELD.PI.3.11.Ex** Support opinions by providing good reasons and increasingly detailed textual evidence (e.g., providing examples from the text) or relevant background knowledge about the content. ***Understanding cohesion* – ELD.PII.3.2b. Ex** Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g. , *at the beginning/end, first/next*) to comprehending texts and writing texts with increasing cohesion.

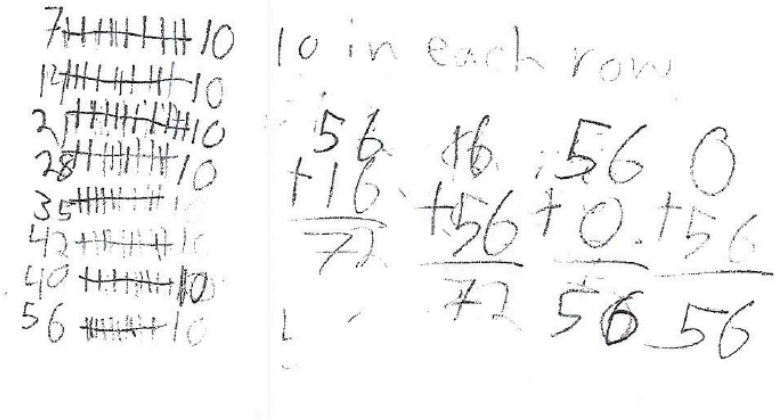
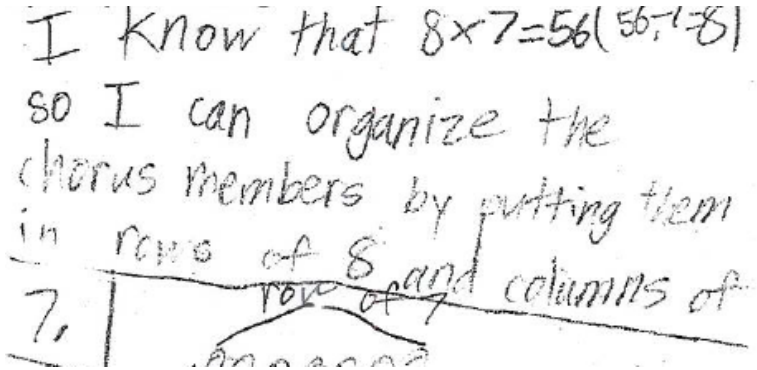
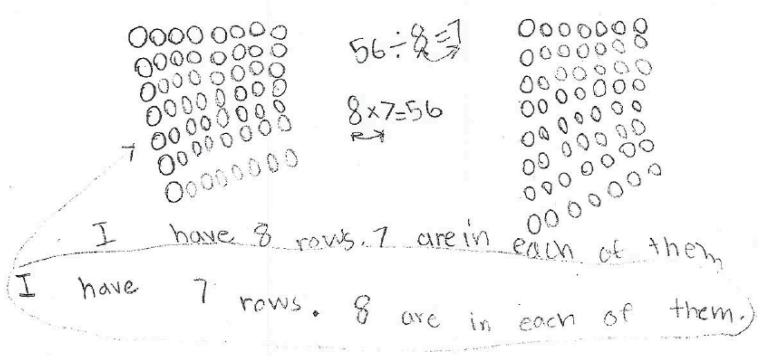
INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING	
MATH CONTENT OBJECTIVE Set disciplinary learning targets	**Students will be able to** make sense of of the problem, and explain and justify their thinking in solving word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
LANGUAGE OBJECTIVE Set disciplinary learning targets	**Students will be able to** explain and justify their solution using connecting words and phrases (first, then, next, afterward, finally, so, and, because, etc.) and math vocabulary (add, total, factor, product, equation, represent, model, number line, array, etc.) in partner and whole group discussions.

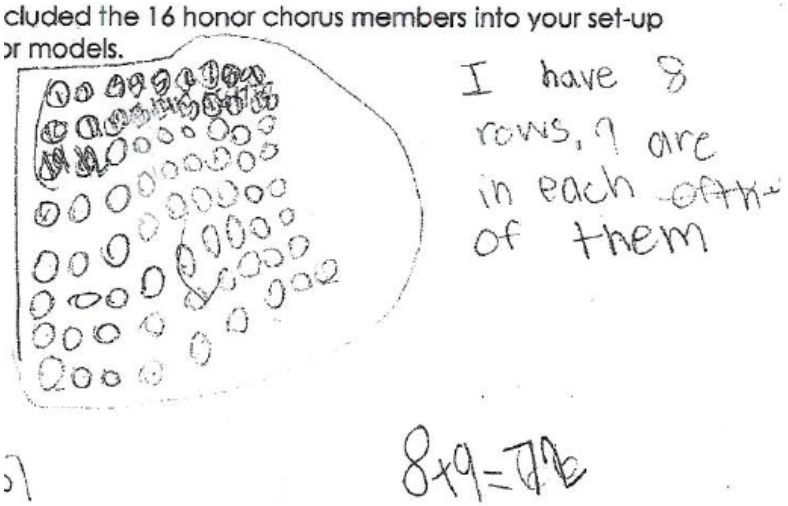
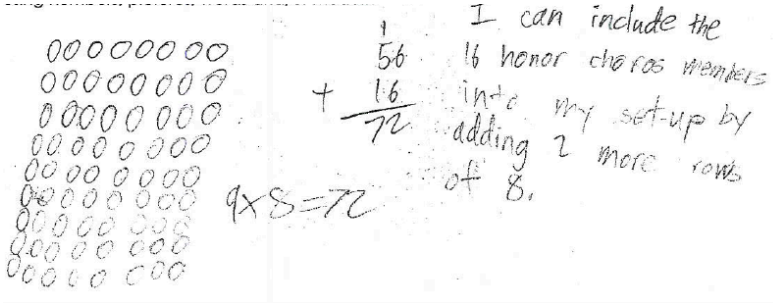
INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

PLANNING THE LESSON: **DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING**		
POSSIBLE SOLUTIONS Monitor and Guide Disciplinary Learning	**Student attempts to count out the rows using friendly numbers, but doesn't know how to keep track of the running total. Student attempts to skip count by 7's, but skip counting doesn't match the drawing.** 	**Student knows the multiplication fact and can model the array to match.**  **Student models the array, using the inverse for the second solution.** 

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

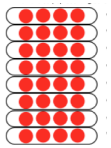
GRADE 3 – Chorus Line-Up

PLANNING THE LESSON: **DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING**		
POSSIBLE SOLUTIONS Monitor and Guide Disciplinary Learning	**Student shows the additional honors chorus members by adding two people to each of the eight rows.** 	**Student adds the additional honors chorus members and adds two more rows of 8 people to the original array.** 

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING			
POSSIBLE MISCONCEPTIONS Monitor and Guide Disciplinary Learning	Numbers in the equation/drawing don't match the problem, redirect back to the problem.	Model for the second part does not match the first part, redirect back to the problem, add to the first drawing.	Student makes a counting error, how might they check their work? What is another way to count the model/array?

QUESTIONS TO FOCUS, ASSESS, OR ADVANCE STUDENT THINKING Monitor and Guide Disciplinary Learning	**STUDENT STRATEGIES**	**FOCUSING QUESTIONS**	**ASSESSING QUESTIONS**	**ADVANCING QUESTIONS**
	Starts to pull out math manipulatives to attempt to solve the problem 	How can you represent what is happening in the problem?		What other models or representations would be a more efficient way to solve the problem?
	Uses a number line to count out groups of ? 		Does your strategy make sense? Why?	How could you represent this solution with an equation?
	Uses an array to show the equal rows 		Did you use the most efficient way to solve the problem? How do you know?	What patterns do you see? Is there an equation you could use to represent this pattern?
	Uses repeated subtraction, or addition	What does the 56 and 16 represent in the problem? How can you show that in your solution?	What strategy did you use? How did you know this strategy would work?	What factors might the numbers have in common?

DISCIPLINARY DISCUSSION FOCUS	**Targeted Constructive Conversation Skill(s)** ☐ CREATE ☒ CLARIFY ☒ FORTIFY ☐ NEGOTIATE

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

PLANNING THE LESSON:
DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

SUPPORTS & STRUCTURES

Substantial/Moderate/ Light Supports

MODEL CONSTRUCTIVE CONVERSATION

Prompt Starters:

- How did you approach the problem?
- Can you elaborate on that idea?
- Why did you …?
- How do you know your thinking makes sense?
- How does your model show…?

Response Starters:

- To solve the problem, first …
- For my next step …therefore …
- Afterward … because …
- Finally, …
- I thought that … so I …
- I used … to represent … Does that make sense?

Visual of Solution Discussed in the Model Constructive Conversation:

Rationale:

The purpose of the Model Constructive Conversation is to provide students with an explicit model of what their own conversation should sound like. The conversation should exemplify how to apply academic language to address the prompt. Models may be crafted to surface misconceptions as well as correct solution pathways.

In this lesson, the visual highlights one possible representation for solving this problem. This Model Constructive Conversation focuses on the skills of CLARIFYING and FORTIFYING.

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING	
SUPPORTS & STRUCTURES Substantial/Moderate/ Light Supports	**Conversation Prompt:** Use your Constructive Conversation Skills to interview your partner about their approach for solving the problem. Focus on Clarifying and Fortifying each other's ideas. A: How did you approach the problem? B: First, I took my time to understand the problem. Doing that helped me realize that the rows needed to have the same number of people. I decided to divide by 2. Does that make sense? **(MP1, MP3, MP5)** A: So what you're saying is that you don't want anyone standing by themselves at the end, so the rows need to have the same number of people in them. Is that right? B: Yes. I chose to use 12 as the number of people. I used the cubes to represent the people. First, I counted out 12 cubes for 12 people. Second, I put the cubes into two rows, with six cubes in each row. So in the problem, that would mean two rows of people, with six people in each row. Next, I drew a picture, using dots to represent each person. Then I wrote 12 divided by 2 is 6. What other questions do you have? **(MP1, MP3, MP4)** A: In addition to writing a division number sentence, I notice that you also wrote 2 X 3 = 6. Can you elaborate on that idea? B: Yes, I chose this operation, multiplication, because I could use the inverse operation to explain the array model, too. I wrote 2 X 6 = 12. Finally, I wrote it as a sentence: Mrs. Smith can line up the children in two rows with 6 children in each row. What are your thoughts about my approach? **(MP1, MP3, MP4)** A: If I understand you correctly, you can use multiplication or division to explain the array. How do you know your thinking addresses the problem? **(MP3)** B: I know my array is correct because I'm doing an equal-group problem. What I need to find out is how many groups do I need and how many in each group, without having any leftover. Does that make sense? **(MP1, MP2. MP3, MP4, MP5, MP6)** A: That all makes sense, however I am wondering one more thing. Is there more than one way to solve the problem? B: Yes, there is more than one way to solve the problem. I'd like to hear how you solved the problem.

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

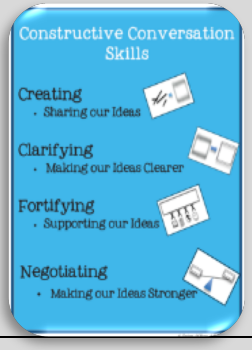
INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON: DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

OPENING

1. Introduce focus question and objectives of the lesson
2. Review Norms of Interaction and Constructive Conversation Skills



(5:00)

Say: *Today's math lesson will help us add to our understanding around our focus question.*

> Focus Question: How and when do I apply strategies involving multiplication and division within 100 to solve word problems in situations involving equal groups?

Say: *At the end of the lesson, we will come back to this question to see if we learned any new ideas that help us understand how and when we can use different strategies to solve word problems.*

Refer to Focus Math Practices – MP1 and MP3 written in student friendly language.

Say: *Today we will work as mathematicians as we solve the problem. Let's review our Math Practice goals.*

> MP1 – I can make sense of the problem
> MP3 – I can explain my thinking and listen and ask questions to understand others

Say: *We are going to be doing a lot of talking today. During our conversation let's make sure we use our Conversation Norms and our Constructive Conversation Skills (point to posters). Since we are going to explain our math thinking, we are going focus on the skills of Clarifying and Fortifying. You may use the prompt and response starters to help you if you need them.*

Say: *Let's review our language objective*

> Language Objective:
> Today I will…
> - explain my thinking to a partner
> - use connecting words/phrases
> - Use math vocabulary

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

BEFORE PHASE

1. Activate prior knowledge
2. Pose the problem
3. Read to clarify language from the problem
4. Ensure that students understand the task and have a plan to begin solving

Scaffolds:

- ✓ Notice & Wonderings
- ✓ Three Reads
- ✓ Think Aloud
- ✓ Constructive Conversation Skills
- ✓ Prompt & Response Starters

- **OPTIONAL: ACTIVATE PRIOR KNOWLEDGE WITH NOTICE AND WONDERINGS**

Show the picture to students that supports the context of the problem (Do not give the image on paper to the students.)

Say: *What do you notice?*

Have students share out. Make sure to surface the following:

- ✓ Students might say they notice children holding books
- ✓ Students might recognize the chorus and connect to the choir at school
- ✓ Students might notice rows

Say: *What do you wonder? How might this connect to math?*

Have students discuss with a partner. Select one or two volunteers to share their ideas with the class.

Students might come up with different wonderings that require them to use mathematics.
For example:

- ✓ Students might wonder how many children there are
- ✓ Students might wonder how many songs they are singing
- ✓ Students might wonder how often the chorus sings

- **BEGIN THE LESSON: POSE THE PROBLEM**
  Present the problem to students. Either project it, have it charted, or typed out on paper so that every student is able to see the problem by the second read.

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON: DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

THREE READS PROTOCOL (10:00)

Say: *We will use our Three Reads Protocol to take time to make sense of the problem and persevere to solve it as Mathematicians do. Why would we want to read the problem several times? How will this help us?* **(MP1)** (Have one or two students share out)

- **FIRST READ – READ TO UNDERSTAND THE STORY (CLARIFY CONTEXTUAL LANGUAGE) (MP1, MP2)**

Say: *For our first read we will focus on understanding the story. Listen as I read it to you and try to visualize what's happening in the problem. (Read the first part of the problem, not the extension).*

Say: *Now that we've read the problem, have a Constructive Conversation with your partner to discuss the following questions: What is happening in the problem? What are we trying to find out? How do you know?*

Listen to students' conversations. Then, have a one or two students share out with the class. Use questioning to clarify any unfamiliar language and ensure students understand the following:

- ✓ Mrs. Smith needs to set up the students on the stage for a music show.
- ✓ The students need to be in equal rows.
- ✓ There is no question mark. The question we are trying to answer is "Show two ways to organize the members" – Might the answer to the problem be a drawing, numbers? How do you know?
- ✓ Does "show two ways" mean two different answers?
- ✓ Extension Then another group of people join the group on stage and need to be in rows, too. How will these people fit?

- **SECOND READ – READ TO UNDERSTAND THE MATH (CLARIFY CONTENT LANGUAGE) (MP1, MP2)**

Say: *For our second read our focus is to understand the math. You will echo read each sentence after I read it. Visualize the quantities and how they are related. The numbers at the bottom of the page are the number choices from which you can choose. Everyone will do the first choice (12), and then you can try other numbers after that.*

Say: *Now that we've read the problem a second time, have a Constructive Conversation with your partner to discuss the following questions: What does each number in the problem represent? How*

TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

will these numbers help us solve the problem?

Listen to students' conversations. Then, have a one or two students share out with the class. Use questioning to clarify any unfamiliar language and ensure students understand the following:

- ✓ Mrs. Smith needs to set up __ people on the stage in rows that are of the same number of people. Show two ways to organize the people.
- ✓ There are two or more correct answers.

- **THIRD READ – READ TO MAKE A PLAN (FOSTER METACOGNITION) (MP1, MP2, MP5)**

Say: *For our third read our focus is to begin thinking of a plan to solve this problem. We will read chorally in one voice. As we read, think about all the important information that will help you solve the problem. Visualize possible ways to begin solving the problem.*

Say: *Now that we've read the problem a third time, I want you to use your think time to begin planning your approach to this problem.*

Give students think time, then do a "Think Aloud" to model how to think of a plan to solve.

Say: *I'm thinking of similar problems that we've solved in the past that might help me. I know I have to represent the problem somehow so I can find out how to organize the rows of people on the stage. Hmmm… what models or strategies should I use? Perhaps since I know the number of people, I can use cubes to represent the people. Or an array can help me visualize the information I need to find out. Or maybe I could use a number line, or a tape diagram to model the number people by skip counting. An equation could work also. What strategy would be the most beneficial for this situation? I think I will begin by…*

Say: *Mathematicians take their time to make sense of the problem and then make a plan to approach the problem, just as we did right now. This is especially important to do when a problem is challenging. Now we are ready to begin solving the problem.*

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

DURING PHASE

1. Let go! Allow for productive struggle time
2. Circulate as students work independently first
3. Ask questions to focus, assess, and advance student thinking
4. Circulate as students work in pairs or in groups
5. Collect a language sample
6. Decide which solutions will be selected for sharing.

Scaffolds:

- ✓ Math Interview
- ✓ Model Constructive Conversation
- ✓ Constructive Conversation Skills
- ✓ Prompt & Response Starters
- ✓ Fishbowl

- **STUDENTS SOLVE THE PROBLEM (MP1, MP2, MP4, MP5) (15:00 total: 5:00 independently, 10:00 with partners or table group)**

  Hand out materials (paper, manipulatives, etc.) and provide students with 5-10 minutes of independent struggle time to solve the problem and represent their solutions.

  Say: *Now that we've made sense of the problem and thought of a plan to solve it, each of you will work on solving the problem independently. Remember to show your thinking using numbers, pictures, and words. Everyone is expected to solve the first part of the problem before our constructive conversation, and if you have time, start working on extension.*

- **TEACHER CIRCULATES AS STUDENTS WORK INDEPENDENTLY**

  Circulate and provide individual students with support as needed; prioritize students who need help with an entry point into the problem. A good starting point with any student is to say, "Tell me about what you did here" as you point to their work.

  Please refer to the "Planning the Lesson" section of this lesson plan for examples of questions to FOCUS, ASSESS, OR ADVANCE student thinking.

  When most students have completed the first part of the problem, launch the model conversation

- **TEACHER DISPLAYS VISUAL OF SOLUTION AS STUDENTS LISTEN TO THE MODEL CONSTRUCTIVE CONVERSATION (3:00)**

  Introduce the Model Constructive Conversation. See p. 6-7.
  Say: *Let's come back together. Some of you may be finished and others may not be finished; that's fine. What is most important is that you are making sense of the problem and have begun trying to solve it. Now, we will share our thinking with a partner to learn about different ways to solve this problem. Let's review what we need to do as we discuss our thinking with each other.*

  Review the LANGUAGE OBJECTIVE with students and present the model.
  Say: *Let's review the language objective* (point to charted language objective as students read it). *I want you to all listen carefully to this conversation and listen for the parts where the students Clarify or Fortify their thinking. Use your hand signals when you hear language for Clarifying or Fortifying.*

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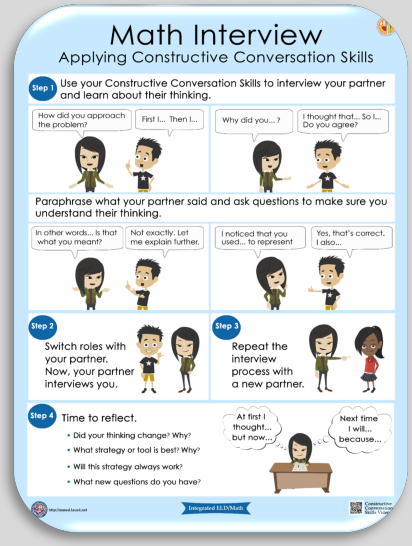
GRADE 3 – Chorus Line-Up

TEACHING THE LESSON: DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING



Use one of the following options to present the Model Constructive Conversation:

- ✓ The teacher and a student each read a part
- ✓ A student and another student each read a part
- ✓ The teacher uses puppets to read each part
- ✓ The teacher and another adult each read a part
- ✓ Pre-recorded audio of a male and female each reading a part

Repeat portions of the Model as needed to highlight CLARIFYING and FORTIFYING Language.

- **TEACHER DEBRIEFS THE MODEL CONSTRUCTIVE CONVERSATION**

Say: *Let's think about the conversation we just heard.*
Pose the following questions pausing to have one or two students share out for each.

- ✓ What specific language did we use to explain our thinking?
- ✓ What specific language did we use to make our ideas clearer?
- ✓ What specific language did we use to support our ideas with evidence?

MATH INTERVIEW (8:00 for two interviews)

- **ROUND 1 – ONE STUDENT INTERVIEWS THE OTHER, THEN STUDENTS SWITCH ROLES (MP1, MP3, MP6)**

(COLLECT A LANGUAGE SAMPLE)

Say: *Now, it's time to begin our "Math Interview". Remember some of you will interview your partner first and some of you will be explaining your thinking and answering questions first. Then you will switch roles and go through the process again.*

Say: *Don't forget to focus on clarifying and fortifying ideas during your conversation. I will also be listening to your conversations to see who is* (refer to language objective) *using connecting words and phrases and math vocabulary. Remember to use your Prompt and Response Starters to assist you if you need to use them during your interview. Take some time to review them with your partner.*

Call on one or two students to share one prompt starter they might use and which response starter would be useful for a reply.

Say: *I will come around and listen to some of your conversations. I might also be asking you and your partner some questions to understand your thinking. You may begin.*

Circulate and select one pair of students to COLLECT A LANGUAGE SAMPLE. Bring class back together after most students have interviewed each other.

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

- **FISHBOWL OF STUDENT INTERVIEW (MP1, MP3, MP6)**
  Invite a pair of students to come demonstrate how they Interviewed each other.

  Say: *I heard_____ and _____doing their best to Clarify and Fortify their ideas during their math interview. Let's listen to their conversation and try to learn from their exchange.*

  Have a student pair demonstrate a few exchanges as the rest of the class listens. Provide positive feedback that may include the following:
  - ✓ Making ideas clearer
  - ✓ Supporting ideas with evidence
  - ✓ Use of academic language

- **ROUND 2 – STUDENTS INTERVIEW ANOTHER PARTNER, THEN SWITCH ROLES (MP1, MP3, MP6)**
  (DECIDE WHICH SOLUTIONS TO SHARE IN THE AFTER PHASE)

  Say: *Now, it's time to begin our second round of "Math Interview". Remember some of you will interview your partner first and some of you will be explaining your thinking and answering questions first. Then you will switch roles and go through the process again.*

  Say: *I will come around and listen to some of your conversations. I might also be asking you and your partner some questions to understand your thinking. You may begin.*

  As you circulate, consider which solutions (two or three) you will select for your targeted whole-class discussion (MATH SUMMIT) in the After Phase. Make sure to select solutions based on the objectives of the lesson and the students' instructional needs.

- **STUDENTS TAKE TIME TO REVISE THEIR THINKING AND FINISH THE TASK (5:00)**
  Say: *Mathematicians revise their work when they get new ideas. Continue to work on the task, including new information that you heard from your partners. If you haven't finished the task, now is the time to do it.*

- **STUDENTS TAKE TIME TO REFLECT (2:00)**

  Say: *As mathematicians we know how important it is to explain our thinking and try to understand the thinking of others* **(MP1, MP3)**. *This helps us really learn and understand important math ideas. I want you to take some time to reflect after going through the math interview process. Use your think time to consider the following questions: What did you learn? What new questions might you have?*

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON: **DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING**	
	You may have students: ✓ Share their reflection with a partner ✓ Write in their math journal ✓ Write on a post it ✓ Revise their work ✓ Complete the second half of the problem

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

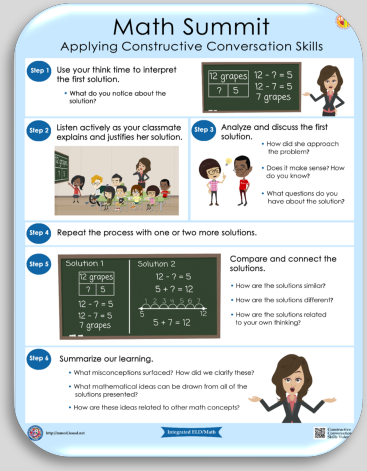
TEACHING THE LESSON: DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

AFTER PHASE

1. Order selected solutions strategically
2. Facilitate the sharing of two or more solution paths
3. Ask questions to facilitate a student centered discussion
4. Identify patterns and make mathematical generalizations
5. Formalize the main ideas
6. Identify next steps and future problems.

Scaffolds:

- ✓ Math Summit
- ✓ Constructive Conversation Skills
- ✓ Prompt & Response Starters



MATH SUMMIT (MP2, MP3, MP4, MP6) (10:00)

Say: *Mathematicians, let's begin our Math Summit. Who can remind us what we do during our Math Summit and why?* (Have one or two students share out.)

Say: *That's right. Math Summit is our opportunity to focus on one or two solutions and try to understand the math together. Do your best to use academic language throughout our discussion and to use your prompt and response starters if you need them.*

- **STUDENTS INTERPRET THE FIRST SOLUTION (MP2, MP3, MP4, MP6)**

Present the first solution for students to interpret quietly to themselves.

Say: *Here is one solution. Use your think time. What do you notice about the solution? Turn and talk.*

Invite the student to come up to explain her/his solution to the class.

Say: *This is actually _____'s solution. Please come up to explain your thinking. As the audience, the rest of us will listen carefully and try to understand your classmate's explanation. Be ready to ask questions and discuss. How did you approach the problem? What is the first step you took?*

Use guiding questions to provide the student support as s/he explains her/his solution to the class.

Say: *So, how did _____ solve the problem? What was her/his approach? Turn and talk to your partner.* (Have one or two students share out)

Have one or two students ask questions of the presenting student.

Say: *Does anyone have any questions for _____?*

- **STUDENTS INTERPRET THE SECOND AND/OR THIRD SOLUTION (MP2, MP3, MP4, MP6)**

Repeat the process with a second and/or third solution:

- ✓ Students interpret the solution
- ✓ Students discuss what they notice about the solution
- ✓ Student comes up to explain her/his approach while teacher provides guidance
- ✓ Students discuss what they understood about her/his explanation
- ✓ A few students share out their understanding of the explanation
- ✓ A few students ask questions of the presenting student

- **STUDENTS COMPARE AND CONNECT SOLUTIONS (MP2, MP3, MP4, MP6)**

TEACHING THE LESSON: **DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING**	
	Facilitate a discussion where students compare and connect solutions shared. Make sure to identify similarities and differences across the solutions to highlight key mathematical ideas for the lesson. ***Say:*** *Mathematicians, how are these two solutions similar or different? Turn and talk to your partner.* Have a few students share out; accept multiple responses. • **STUDENTS REVISE OR ADD TO THEIR SOLUTIONS AND SUMMARIZE THEIR LEARNING** ***Say:*** *Take a few minutes to consider what you learned from the other mathematicians in the room today, and either revise or add to your original solution using a pen. Don't erase your original thinking.* (Circulate and support students as needed while they revise or add to their solutions.) ***Say:*** *Let's summarize what we have learned from our lesson today. We saw two different strategies for solving this problem. Which solution path did you prefer? Why? Talk to you partner.* Have one or two students share out and make sure to highlight one or two of the following key mathematical ideas: ✓ Some word problems require mathematicians to use more than one step, and more than one type of mathematical operation (addition, subtraction, multiplication, or division) to solve it. ✓ Multiple solution paths can be used to solve the same problem. ✓ Good mathematicians use various models to help them solve problems and justify their thinking. Some methods can be more efficient. ✓ An equation can represent word problems and a letter can represent the unknown quantity in the equation.

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

WRAP-UP & NEXT STEPS

1. Review focus question and lesson objectives
2. Allow for students to self-assess and monitor progress toward lesson objectives
3. Give feedback to students on objectives that will move their learning forward
4. Close lesson and introduce topic for next lesson

- **REVIEW FOCUS QUESTION AND LESSON OBJECTIVES** (should be charted/posted on the board) (2:00)

Say: *Let's go back to our focus question. How did our learning today add to our understanding about decimals and fractions? Let's add these ideas to our chart.*

Allow for students to self-assess and monitor progress toward lesson objectives

Say: *As we review our lesson objectives out-loud, give me a thumbs-up signal if you feel you did this today during our math lesson.*

Read each objective out-loud and watch for student self-assessment. Then give feedback to students so students know what they did well and what areas need improvement.

Say: *I noticed many of you were… Now I want you to think of one thing you will try to improve on for next time. Who would like to share?*

Close the lesson and introduce the topic for the next lesson.

Say: *Based on our learning today, our next steps will be to work on…*

ADDITIONAL RESOURCES

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

TASK/PROBLEM:

Chorus Line-up Task

Mrs. Smith is preparing for the music show. She wants to line up the ___ children on the stage in equal rows. Show two ways to organize the children, using numbers, pictures, words and/or models to explain your thinking.

Number Choices: (12) (32) (56)

Extension: The honors chorus of 16 people is joining the children. Explain how you included the extra people using numbers, pictures, words and/or models.

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

What do you notice?

What do you wonder?

Conversation Prompt: Use your Constructive Conversation Skills to interview your partner about their approach for solving the problem. Focus on Clarifying and Fortifying each other's ideas.

A: How did you approach the problem?

B: First, I took my time to understand the problem. Doing that helped me realize that the rows needed to have the same number of people. I decided to divide by 2. Does that make sense? **(MP1, MP3, MP5)**

A: So what you're saying is that you don't want anyone standing by themselves at the end, so the rows need to have the same number of people in them. Is that right?

B: Yes. I chose to use 12 as the number of people. I used the cubes to represent the people. First, I counted out 12 cubes for 12 people. Second, I put the cubes into two rows, with six cube in each row. So in the problem, that would mean two rows of people, with six people in each row. Next, I drew a picture, using dots to represent each person. Then I wrote 12 divided by 2 is 6. What other questions do you have? **(MP1, MP3, MP4)**

A: In addition to writing a division number sentence, I notice that you also wrote 2 X 3 = 6. Can you elaborate on that idea?

B: Yes, I chose this operation, multiplication, because I could use the inverse operation to explain the array model, too. I wrote 2 X 6 = 12. Finally, I wrote it as a sentence: Mrs. Smith can line up the children in two rows with 6 children in each row. What are your thoughts about my approach? **(MP1, MP3, MP4)**

A: If I understand you correctly, you can use multiplication or division to explain the array. How do you know your thinking addresses the problem? **(MP3)**

B: I know my array is correct because I'm doing an equal-group problem. What I need to find out is how many groups do I need and how many in each group, without having any leftover. Does that make sense? **(MP1, MP2. MP3, MP4, MP5, MP6)**

A: That all makes sense, however I am wondering one more thing. Is there more than one way to solve the problem?
B: Yes, there is more than one way to solve the problem. I'd like to hear how you solved the problem.

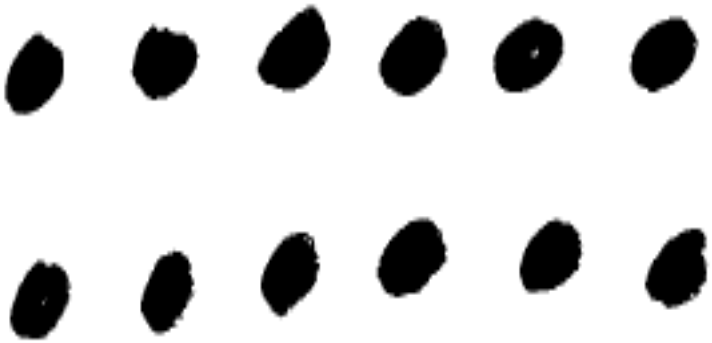
INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up

VISUALS FOR THE MODEL CONSTRUCTIVE CONVERSATION

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up



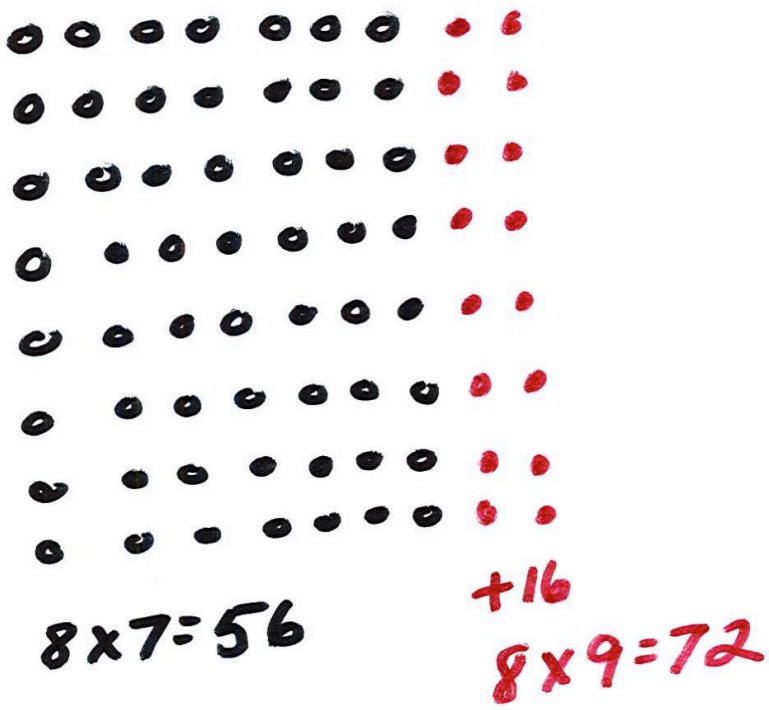
$12 \div 2 = 6$

$2 \times 6 = 12$

Mrs. Smith can line up the children in 2 rows with 6 children in each row.

INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

GRADE 3 – Chorus Line-Up



Prompt Starters:	**Response Starters:**
• How did you approach the problem? • Can you elaborate on that idea? • Why did you …? • How do you know your thinking makes sense? • How does your model show …?	• To solve the problem, first… • For my next step… therefore… • Afterward… because… • Finally, … • I thought that… so I… • I used… to represent… Does that make sense?

Mrs. Smith is preparing for the music show. She wants to line up the ___ children on the stage in equal rows. Show two ways to organize the children, using numbers, pictures, words and/or models to explain your thinking.