



3rd Grade Integrated ELD/Mathematics Three Phase Lesson

Conversation Norms

Use your think time

Use the language of the skill

Use your conversation voice

Listen respectfully

Take turns and build on each other's ideas

Constructive Conversation Skills

Create
• Sharing Our Ideas

Clarify
• Making Our Ideas Clearer

Fortify
• Supporting Our Ideas

Negotiate
• Making Our Ideas Stronger

Three Reads

Applying Constructive Conversation Skills

Read to understand the story.

Read to understand the math.

Read to make a plan.

What is happening in the problem?
What language do we need to clarify?
What do we need to find out?
What do the mathematical terms mean?
What do the numbers represent?
How do you know?
How will I approach the problem?
What strategy, representation, or tool will work best?
How do you know?

Math Interview

Applying Constructive Conversation Skills

Use your Constructive Conversation Skills to interview your partner and learn about their thinking.

Switch roles with your partner. Now, your partner interviews you.

Repeat the interview process with a new partner.

Time to reflect.

Did your thinking change? Why?
What strategy or tool is best? Why?
Will this strategy always work?
What new questions do you have?

Math Summit

Applying Constructive Conversation Skills

Use your think time to interpret the first solution.

Listen actively as your classmate explains and justifies her solution.

Analyze and discuss the first solution.

Repeat the process with one or two more solutions.

Compare and connect the solutions.

Summarize our learning.

What misconceptions surfaced? How did we clarify them?
What mathematical ideas can be drawn from all of the solutions presented?
How are the solutions related to your own thinking?



INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON
GRADE 3 – Eduardo's Soccer Uniform

PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING	
FOCUS QUESTION Foster Metacognition	How and when do I apply strategies involving the four operations to solve word problems?
TASK/PROBLEM	Eduardo's new soccer uniform costs \$42. He has \$10 saved up already. His mother said she will pay him \$4 per week to help her clean the kitchen. How many weeks will he have to clean the kitchen to earn enough money to purchase his new uniform? Show your thinking in more than one way using numbers, pictures, and words. 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 – <i>uniform, per week, earn, purchase, verb phrases (costs \$42, has \$10 saved up already, will pay him) adverbial phrases (to help her clean, to earn enough money)</i> • Understanding math vocabulary – <i>money, \$, subtract, total, factor, product, equation, represent, model, number line, array</i> • Identifying the question being asked. "How many weeks will he have to clean the kitchen to earn enough money to purchase his new uniform?" Explaining and justifying their thinking clearly and precisely (MP3 & MP6) See <i>Language Objective</i>, p. 2 and <i>Supports & Structures (Model Constructive Conversation)</i>, p. 6-7
MATH CONTENT STANDARD(S) Set disciplinary learning targets	3.OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.* * This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).



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PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING	
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., , <i>at the beginning/end, first/next</i>) to comprehending texts and writing texts with increasing cohesion.
MATH CONTENT OBJECTIVE Set disciplinary learning targets	Students will be able to solve two-step word problems applying and justifying strategies involving the four operations (addition, subtraction, multiplication, and division), and represent these problems using equations with a letter standing for the unknown quantity.
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 (subtract, total, factor, product, equation, represent, model, number line, array, etc.) in partner and whole group discussions.



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PLANNING THE LESSON:
DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

POSSIBLE SOLUTIONS
Monitor and Guide
Disciplinary Learning

Students might use Subtraction, then Division

STEP 1

Uniform Cost = \$42	
Amount Saved = \$10	Amount needed = ?

\$42.00 Total Uniform Cost
- \$10.00 Amount of Money Saved Up
\$32.00 Amount of Money Needed

STEP 2

$\$32 \div \$4.00 = \underline{\quad} \text{ wks.}$

AMOUNT NEEDED (TOTAL) AMOUNT EARNED PER WEEK (# OF OBJECTS) # OF WEEKS NEEDED TO WORK (# OF GROUPS)

8 wks. $\times$ \$4.00 = \$32

OF WEEKS NEEDED TO WORK (# OF GROUPS) AMOUNT EARNED PER WEEK (# OF OBJECTS) AMOUNT NEEDED (TOTAL)

Eduardo needs to help his mom 8 weeks to earn enough money to purchase his new uniform.

Students might use base-ten blocks to skip count

Eduardo needs a total of \$42 to purchase his new soccer uniform.

1 orange block represents \$1

Week 1: \$14 (Now he has \$14)
Week 2: \$18 (Now he has \$18)
Week 3: \$22 (Now he has \$22)
Week 4: \$26 (Now he has \$26)
Week 5: \$30 (Now he has \$30)
Week 6: \$34 (Now he has \$34)
Week 7: \$38 (Now he has \$38)
Week 8: \$42 (Now he has \$42)

Eduardo needs to help his mom 8 weeks to earn enough money to purchase his new uniform.

Students might use subtraction, then an array to divide

STEP 1

Uniform Cost = \$42	
Amount Saved = \$10	Amount needed = ?

\$42.00 Total Uniform Cost
- \$10.00 Amount of Money Saved Up
\$32.00 Amount of Money Needed

STEP 2

32 circles (representing dollars Eduardo still needs)

Week 1 \$4
Week 2 \$4
Week 3 \$4
Week 4 \$4
Week 5 \$4
Week 6 \$4
Week 7 \$4
Week 8 \$4

Eduardo needs to help his mom 8 weeks to earn enough money to purchase his new uniform.

Students might use subtraction, then a number line to skip count forward

STEP 1

Uniform Cost = \$42	
Amount Saved = \$10	Amount needed = ?

\$42.00 Total Uniform Cost
- \$10.00 Amount of Money Saved Up
\$32.00 Amount of Money Needed

Step 2

Number line: \$0 to \$32 in increments of \$4.

1 wk: \$4, 2 wk: \$8, 3 wk: \$12, 4 wk: \$16, 5 wk: \$20, 6 wk: \$24, 7 wk: \$28, 8 wk: \$32

Eduardo needs to help his mom 8 weeks to earn enough money to purchase his new uniform.



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PLANNING THE LESSON:

DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

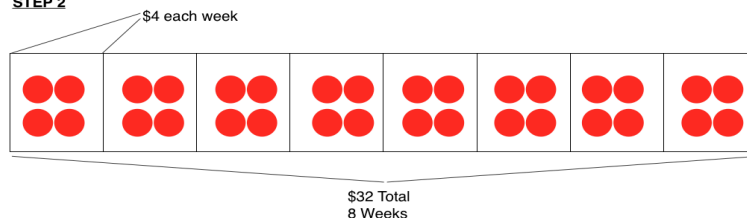
Students might use subtraction, then a tape diagram

STEP 1

Uniform Cost = \$42	
Amount Saved = \$10	Amount needed = ?

\$42.00 Total Uniform Cost
- \$10.00 Amount of Money Saved Up
\$32.00 Amount of Money Needed

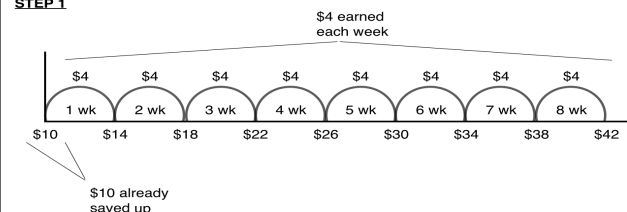
STEP 2



Eduardo needs to help his mom 8 weeks to earn enough money to purchase his new uniform.

Students might use skip counting on a number line starting from the amount already saved.

STEP 1



Students might use subtraction, then repeated subtraction

STEP 1

Uniform Cost = \$42	
Amount Saved = \$10	Amount needed = ?

\$42.00 Total Uniform Cost
- \$10.00 Amount of Money Saved Up
\$32.00 Amount of Money Needed

STEP 2

\$32.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 1
\$28.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 2
\$24.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 3
\$20.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 4
\$16.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 5
\$12.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 6
\$8.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 7
\$4.00 Amount Still Needed for Uniform
- \$4.00 Amount Earned Week 8
\$0.00 Amount Still Needed for Uniform

Eduardo needs to help his mom 8 weeks to earn enough money to purchase his new uniform.

Students might use subtraction, then repeated addition

STEP 1

Uniform Cost = \$42	
Amount Saved = \$10	Amount needed = ?

\$42.00 Total Uniform Cost
- \$10.00 Amount of Money Saved Up
\$32.00 Amount of Money Needed

STEP 2

\$0.00 Amount Earned for Uniform
+ \$4.00 Amount Earned Week 1
\$28.00 Amount Still Needed for Uniform
+ \$4.00 Amount Earned Week 2
\$24.00 Amount Still Needed for Uniform
+ \$4.00 Amount Earned Week 3
\$20.00 Amount Still Needed for Uniform
+ \$4.00 Amount Earned Week 4
\$16.00 Amount Still Needed for Uniform
+ \$4.00 Amount Earned Week 5
\$12.00 Amount Still Needed for Uniform
+ \$4.00 Amount Earned Week 6
\$8.00 Amount Still Needed for Uniform
+ \$4.00 Amount Earned Week 7
\$4.00 Amount Still Needed for Uniform
+ \$4.00 Amount Earned Week 8
\$0.00 Amount Still Needed for Uniform

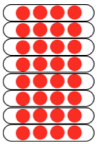
Eduardo needs to help his mom 8 weeks to earn enough money to purchase his new uniform.

POSSIBLE SOLUTIONS

Monitor and Guide
Disciplinary Learning



INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON
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PLANNING THE LESSON: DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING				
POSSIBLE MISCONCEPTIONS Monitor and Guide Disciplinary Learning	Students MAY not realize they are solving a two-step problem, omit the \$10 that is already part of the total, and end up making 10 groups of \$4 with \$2 left over.	Students MAY count the initial amount of \$10 as one of the groups they make and count 9 weeks.	Students MAY not know what mathematical operation to use and may attempt to add \$42 and \$10, then divide giving them 13 groups of \$4.	
QUESTIONS TO FOCUS, ASSESS, OR ADVANCE STUDENT THINKING Monitor and Guide Disciplinary Learning	STUDENT STRATEGIES Starts to pull out math manipulatives to attempt to solve the problem 	FOCUSING QUESTIONS How can you represent what is happening in the problem?	ASSESSING QUESTIONS	ADVANCING QUESTIONS What other models or representations would be a more efficient way to solve the problem?
	Uses a number line to count out groups of 4 (# of weeks) 		Does your strategy make sense? Why?	How could you represent this solution with an equation?
	Uses an array to show the amount of money needed 		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, but student gets 10 groups of \$4 with \$2 left over and a final answer of 10 weeks. 	What does the \$42 and \$10 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?	



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PLANNING THE LESSON:
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**DISCIPLINARY
DISCUSSION FOCUS**

Targeted Constructive Conversation Skill(s)

☐ CREATE ☒ CLARIFY ☒ FORTIFY ☐ NEGOTIATE

**SUPPORTS &
STRUCTURES**

Substantial/Moderate/
Light Supports

MODEL CONSTRUCTIVE CONVERSATION

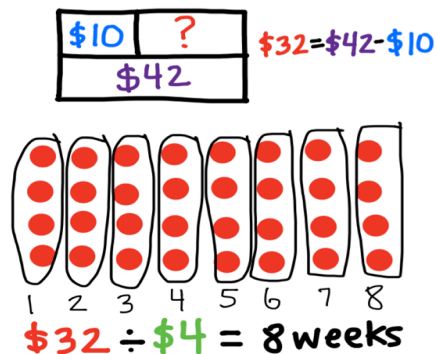
Prompt Starters:

- 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 two-step problem using a tape diagram and an array along with equations. This Model Constructive Conversation focuses on the skills of CLARIFYING and FORTIFYING.



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**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 Eduardo already had \$10 and I needed to find out how much more money he needs to earn. Next, I drew a tape diagram to help me with that idea. **Does that make sense?** (MP1, MP3, MP5)

A: **So what you're saying is** that you knew you had to find out the missing part. That is why you used a tape diagram. **Is that right?**

B: Yes. Then, I wrote the number sentence next to it. **This shows how** I subtracted \$10 from \$42 to learn the amount of money Eduardo still needs is \$32. **What other questions do you have?** (MP1, MP3, MP4)

A: In addition to writing a subtraction number sentence I notice that you also wrote a division number sentence. **Can you elaborate on that idea?**

B: Yes. **I chose this operation because** at this point I knew he still needed \$32. And 32 divided by 4 equals 8, so he needs to work 8 weeks. **What are your thoughts about my approach?** (MP1, MP3, MP4)

A: **If I understand you correctly,** you used division. I'm not sure that operation applies. **How do you know your thinking addresses the problem?** (MP3)

B: **I know division is correct because** Eduardo still needs \$32. **What I need to find out is** how many weeks he needs to work to earn the \$32. **I used** dots **to represent** each dollar. **Because** Eduardo earns \$4 per week, I drew dots in groups of 4 by counting up from 1 to 32. I stopped drawing dots once I reached 32 because he only needs \$32. Next, I drew a black ring around each group of 4. Finally, I counted the groups to find out how many weeks he needs to work. **This model shows that** I divided by 4, **so I then** wrote the equation \$32 divided by \$4 = 8 weeks. **Does that make sense?** (MP1, MP2, MP3, MP4, MP5, MP6)

A: **In other words,** you represented \$32 with 32 red dots and then you drew a black ring around groups of 4 red dots to show how you divided by \$4 per week. Your model reminds me of an array. **Why did you** draw it that way?

B: I thought it was important to model my thinking clearly. **Therefore,** I decided to draw the 32 dots in groups of 4. **This way my model would visibly show** the \$4 he earns each week. I realize now, that this is an array, **which makes sense because** \$4 per week multiplied by 8 weeks equals \$32. (MP3, MP4, MP7)

A: That all makes sense, however I am wondering one more thing. **How do you think you could represent your solution using** an equation?

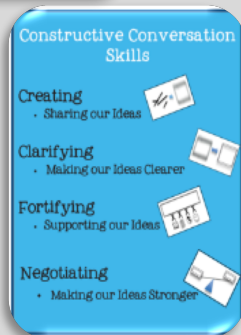


INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON
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TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

OPENING

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



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 the four operations to solve word problems?

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



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TEACHING THE LESSON:
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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

• **ACTIVATE PRIOR KNOWLEDGE WITH NOTICE AND WONDERINGS**

Show pictures to students that support the context of the problem

Say: *What do you notice?*

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

- ✓ Students might say they notice kids playing "soccer". Highlights that the kids are wearing a "soccer uniform".
- ✓ Students might recognize the calendar. Students need to understand the concept of a "week".
- ✓ Students might notice the boy wiping the refrigerator. Tell students this is what "cleaning the kitchen" might look like.

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 chores the boy will have to do before he can play soccer.
- ✓ Students might wonder how many soccer goals the kids make in a month.
- ✓ Students might wonder how often the team gets to play soccer in any given season.

• **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.





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TEACHING THE LESSON:
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The graphic illustrates the Three Reads Protocol with three stages: 1st Read (Read to understand the story), 2nd Read (Read to understand the math), and 3rd Read (Read to make a plan). Each stage includes a cartoon illustration of a teacher and students, a sample math problem about grapes, and a list of guiding questions. The problem is: 'There were 12 grapes on a plate. Pam ate some. Now there are 5 grapes. How many grapes did Pam eat?' The questions for the 1st Read are: 'What is happening in the problem?', 'What language do we need to clarify?', and 'What do we need to find out?'. The questions for the 2nd Read are: 'What do the mathematical terms mean?', 'What do the numbers represent?', and 'How do you know?'. The questions for the 3rd Read are: 'How will I approach the problem?', 'What strategy, representation, or tool will work best?', and 'How do you know?'. The graphic also includes the URL 'http://www.eld.com' and the text 'Integrated ELD/Math'.

THREE READS PROTOCOL

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.

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:

- ✓ Eduardo needs some money to purchase a new soccer uniform.
- ✓ Eduardo has money saved up already? - What does "saved up already" mean?
- ✓ Eduardo will need to help his mother clean the kitchen in order to earn money for his new soccer uniform.
- ✓ The question we are trying to answer is "How many weeks will Eduardo need to help his mother clean the kitchen to earn enough money to purchase his new soccer uniform?" – Should our answer to the problem be in dollars or in weeks? How do you know?

• **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.

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 will these numbers help us solve the problem?



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TEACHING THE LESSON:
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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:

- ✓ Eduardo needs a total of \$42 dollars to purchase his new soccer uniform.
- ✓ Eduardo already has saved up \$10 dollars to purchase his soccer uniform.
- ✓ Eduardo is earning \$4 per week helping his mom clean the kitchen. What does "\$4 per week" mean?
- ✓ The number of weeks Eduardo needs to help his mom cleaning the kitchen is unknown.

• **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 many weeks Eduardo has to help his mom. Hmm... what models or strategies should I use? Perhaps since I know the total amount of money he needs, an array can help me visualize the information I need to find out. Then maybe I could use a number line, or a tape diagram to model the number of weeks he needs to work 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.



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GRADE 3 – Eduardo's Soccer Uniform

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)**

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.*

• **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.

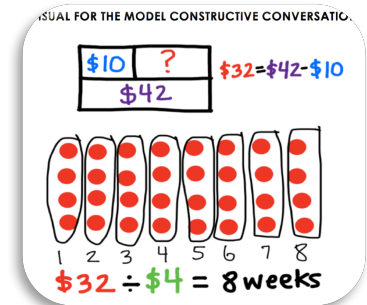
• **TEACHER DISPLAYS VISUAL OF SOLUTION AS STUDENTS LISTEN TO THE MODEL CONSTRUCTIVE CONVERSATION**

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.*





INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

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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 DEBRIEF 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

• ROUND 1 – ONE STUDENT INTERVIEWS THE OTHER, THEN STUDENTS SWITCH ROLES (MP1, MP3, MP6) (COLLECT A LANGUAGE SAMPLE)

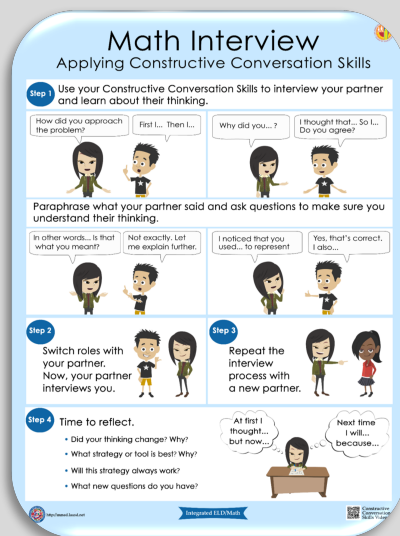
Say: *Now, it's time to begin our "Math Interview". Remember some of you will interview your partner first and some of you will be explaining your thinking and answering questions first. Then you will switch roles and go through the process again.*

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.





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- **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 REFLECT**

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?*

You may have students:

- ✓ Share their reflection with a partner
- ✓ Write in their math journal
- ✓ Write on a post it



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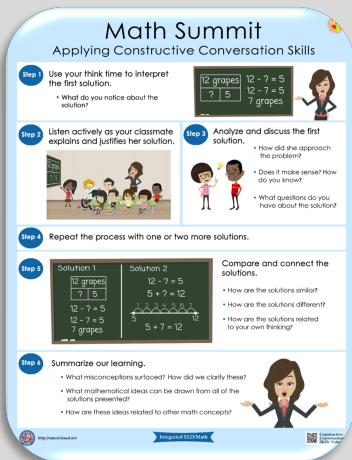
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AFTER PHASE

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)

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



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

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.
- ✓ Sometimes there are parts of problems that mathematicians must solve before solving the question stated directly in the 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 two-step word problems and a letter can represent the unknown quantity in the equation.



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**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)
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...*



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ADDITIONAL RESOURCES

TASK/PROBLEM:

Eduardo's new soccer uniform costs \$42. He has \$10 save up already. His mother said she will pay him \$4 per week to help her clean the kitchen. How many weeks will he have to clean the kitchen to earn enough money to purchase his new uniform?



Show your thinking in more than one way using numbers, pictures, and words. Be ready to explain to a partner using connecting words and phrases (so, and, because, therefore, afterward, finally) and math vocabulary.



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What do you notice?
What do you wonder?





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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 Eduardo already had \$10 and I needed to find out how much more money he needs to earn. Next, I drew a tape diagram to help me with that idea. Does that make sense?

A: So what you're saying is that you knew you had to find out the missing part. That is why you used a tape diagram. Is that right?

B: Yes. Then, I wrote the number sentence next to it. This shows how I subtracted \$10 from \$42 to learn the amount of money Eduardo still needs is \$32. What other questions do you have?

A: In addition to writing a subtraction number sentence I notice that you also wrote a division number sentence. Can you elaborate on that idea?

B: Yes. I chose this operation because at this point I knew he still needed \$32. And 32 divided by 4 equals 8, so he needs to work 8 weeks. What are your thoughts about my approach?

A: If I understand you correctly, you used division. I'm not sure that operation applies. How do you know your thinking addresses the problem?

B: I know division is correct because Eduardo still needs \$32. What I need to find out is how many weeks he needs to work to earn the \$32. I used dots to represent each dollar. Because Eduardo earns \$4 per week, I drew dots in groups of 4 by counting up from 1 to 32. I stopped drawing dots once I reached 32 because he only needs \$32. Next, I drew a black ring around each group of 4. Finally, I counted the groups to find out how many weeks he needs to work. This model shows that 32 divided by 4, so I then wrote the equation $\$32 \text{ divided by } \$4 = 8 \text{ weeks}$. Does that make sense?

A: In other words, you represented \$32 with 32 red dots and then you drew a black ring around groups of 4 red dots to show how you divided by \$4 per week. Your model reminds me of an array. Why did you draw it that way?

B: I thought it was important to model my thinking clearly. Therefore, I decided to draw the 32 dots in groups of 4. This way my model would visibly show the \$4 he earns each week. I realize now, that this is an array, which makes sense because \$4 per week multiplied by 8 weeks equals \$32.

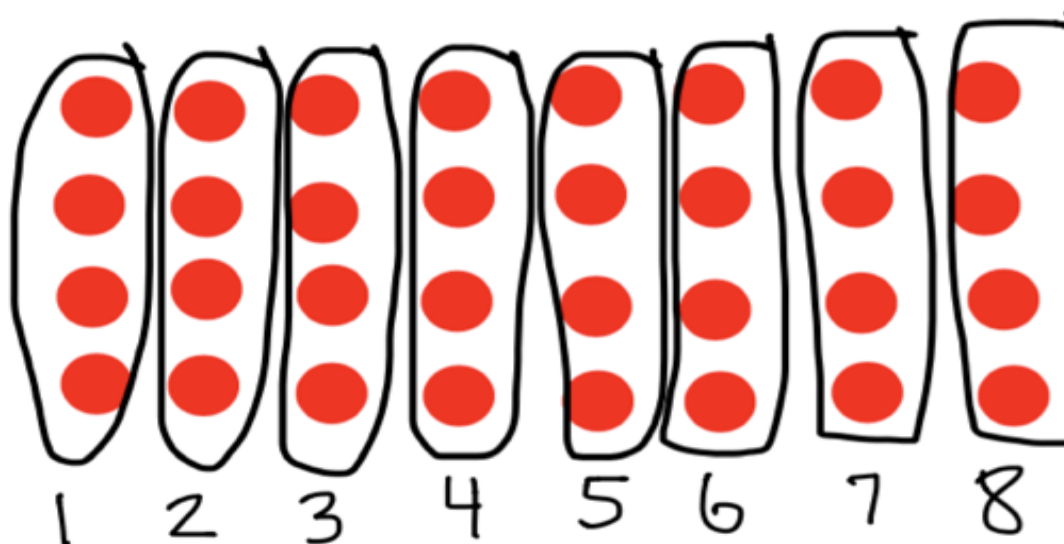
A: That all makes sense, however I am wondering one more thing. How do you think you could represent your solution using an equation?



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VISUAL FOR THE MODEL CONSTRUCTIVE CONVERSATION



$$\text{\$32} \div \text{\$4} = 8 \text{ weeks}$$



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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?