4th Grade
Integrated ELD/Mathematics
Three Phase Lesson

Conversation Norms

Use your think time
Use the language of the skill
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.
- What happened in the problem?
- What language do we need to identify?
- What do we need to find out?

Read to understand the math.
- What do the mathematical terms mean?
- What do the numbers represent?
- What do you know?

Read to make a plan.
- How will you approach the problem?
- What strategies, representations, or tools will work best?
- How do you know?

Math Interview
Applying Constructive Conversation Skills

Paraphrase what your partner said and ask questions to make sure you understand their thinking.

Math Summit
Applying Constructive Conversation Skills

- Summarize our learning
- Share our understanding
- Make our ideas clear
## INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

### GRADE 4 – Pedometer Problem

### PLANNING THE LESSON:
DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

<table>
<thead>
<tr>
<th>FOCUS QUESTION</th>
<th>How are fractions and decimals related?</th>
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<tbody>
<tr>
<td>Foster Metacognition</td>
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### TASK/PROBLEM
Sujin and Dan decide to have a race to see who can run the farthest distance in 10 minutes. The pedometers below show how far they each ran after 10 minutes. Dan said he ran farther than Sujin. Is he correct? Show how you know using models, numbers, symbols (\(<\), \(>\), or \(=\)), and words.

Be ready to explain your thinking to a partner using connecting words/phrases (so, therefore, because, etc.) and math vocabulary (fraction, decimal, tenths, hundredths, equivalent, 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 – distance, mile, pedometer, comparatives/superlatives (farthest, farther than), embedded clauses (eg. to see who can run, show how far they each, etc.)
- Understanding math vocabulary – tenths, hundredths, (\(<\), \(>\), or \(=\))
- Identifying what is being asked. “Dan said he ran farther than Sujin. Is he correct?” (indefinite pronoun)

Explaining and justifying their thinking clearly and precisely (MP3 & MP6)
- See Language Objective, p. 3 and Supports & Structures (Model Constructive Conversation), p. 6-7
## INTEGRATED ELD/MATHEMATICS THREE PHASE LESSON

**GRADE 4 – Pedometer Problem**

### PLANNING THE LESSON:
**DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING**

<table>
<thead>
<tr>
<th>MATH CONTENT STANDARD(S)</th>
<th>Set Disciplinary Learning Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>4.NF.2</strong> Compare two fractions with different numerators and different denominators, e.g. by creating common denominators or numerators, or by comparing to a benchmark fraction such as ½. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols &gt;, =, or &lt;, and justify with conclusions, e.g., by using a visual fraction model.</td>
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<td></td>
<td><strong>4.NF.6</strong> Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.</td>
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<tr>
<td></td>
<td><strong>4.NF.7</strong> Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole, record the results of comparisons with the symbols &gt;, =, or &lt;, and justify the conclusions, e.g., by using a visual model.</td>
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<table>
<thead>
<tr>
<th>MATH PRACTICE STANDARD(S)</th>
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<tbody>
<tr>
<td></td>
<td><strong>MP1:</strong> Make sense of problems and persevere in solving them (FOCUS MP)</td>
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<tr>
<td></td>
<td><strong>MP2:</strong> Reason abstractly and quantitatively</td>
</tr>
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<td></td>
<td><strong>MP3:</strong> Construct viable arguments and critique the reasoning of others (FOCUS MP)</td>
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<td><strong>MP4:</strong> Model with mathematics</td>
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<td></td>
<td><strong>MP5:</strong> Use appropriate tools strategically</td>
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<td></td>
<td><strong>MP6:</strong> Attend to precision</td>
</tr>
<tr>
<td></td>
<td><strong>MP7:</strong> Look for and make use of structure</td>
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<td><strong>MP8:</strong> Look for and express regularity in repeated reasoning</td>
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<table>
<thead>
<tr>
<th>CA ELD STANDARD(S)</th>
<th>Set Disciplinary Learning Targets</th>
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</thead>
<tbody>
<tr>
<td><strong>Exchanging information/ideas – ELD.PI.4.1. Ex</strong> Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.</td>
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<tr>
<td><strong>Listening actively – ELD.PI.4.5. Ex</strong> Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions with occasional prompting and moderate support.</td>
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</tr>
<tr>
<td><strong>Supporting opinions – ELD.PI.4.11a. Ex</strong> Support opinions or persuade others by expressing appropriate/accurate reasons using some textual evidence or relevant background knowledge about content with moderate support.</td>
<td></td>
</tr>
<tr>
<td><strong>Understanding cohesion – ELD.PI.II.4.2b. Ex</strong> Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases to comprehending texts and writing texts with increasing cohesion.</td>
<td></td>
</tr>
</tbody>
</table>
PLANNING THE LESSON:
DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

<table>
<thead>
<tr>
<th>MATH CONTENT OBJECTIVE</th>
<th>Students will be able to compare two fractions/decimals referring to the same whole, record the results, and justify their conclusions with a model.</th>
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<tbody>
<tr>
<td>LANGUAGE OBJECTIVE(S)</td>
<td>Students will be able to explain and justify their solution using connecting words and phrases (so, therefore, because, etc.) and math vocabulary (fraction, decimal, greater than, equal to, less than etc.) in a conversation with a partner.</td>
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</tbody>
</table>

POSSIBLE SOLUTIONS
Monitor and Guide Disciplinary Learning

Students might use a decimal place value chart to convert the decimal into a fraction and then compare the two fractions using cubes, rods, flats, and units.

<table>
<thead>
<tr>
<th>Sujin</th>
<th>Dan</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>60</td>
</tr>
<tr>
<td>0.6</td>
<td>60</td>
</tr>
</tbody>
</table>

6 rods for six-tenths of a mile   60 units for sixty-hundredths of a mile

Students might convert the decimal into a fraction and find equivalent denominators to compare.

<table>
<thead>
<tr>
<th>Sujin</th>
<th>Dan</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/10</td>
<td>60/100</td>
</tr>
</tbody>
</table>

Dan is not correct. They both ran the same distance.

Note: Identity property allows us to rename fractions by multiplying them by different values of one whole.
### Planning the Lesson:
**Designing Instruction for Disciplinary Thinking and Learning**

#### Possible Solutions

**Monitor and Guide Disciplinary Learning**

- Students might plot the values on a number line.

- Students might use graph paper.

#### Note:
Area models using base ten blocks or drawn on graph paper can be rearranged linearly to show the relationship to a number line.
## Planning the Lesson:
### Designing Instruction for Disciplinary Thinking and Learning

### Possible Misconceptions
- Monitor and Guide Disciplinary Learning

<table>
<thead>
<tr>
<th>Possible Misconceptions</th>
<th>Planning the Lesson: Designing Instruction for Disciplinary Thinking and Learning</th>
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<tbody>
<tr>
<td>Students MAY not understand that they are comparing the same whole (mile).</td>
<td>Students MAY not understand the relationship between decimals and fractions.</td>
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</table>

### Questions to Focus, Assess, or Advance Student Thinking
- Monitor and Guide Disciplinary Learning

<table>
<thead>
<tr>
<th>Student Strategies</th>
<th>Focusing Questions</th>
<th>Assessing Questions</th>
<th>Advancing Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starts to pull out the cubes, flats, rods, and units to attempt to solve the problem</td>
<td>How could you show the values from the task?</td>
<td>Why did you decide to use this strategy?</td>
<td>What other ways can you solve the problem?</td>
</tr>
<tr>
<td>Sets up an inequality, but doesn’t know how to continue</td>
<td>How could you create a model to find a solution?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses graph paper to show the decimal or fraction, but doesn’t answer the question.</td>
<td>What are we trying to find in the problem?</td>
<td>Does your strategy make sense? Why or why not?</td>
<td></td>
</tr>
<tr>
<td>Using a number line to compare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a place value chart</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ones</th>
<th>Tenths</th>
<th>Hundredths</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

| Using a place value chart | | | |
|---------------------------|--------|------------|
| 0 | 0.6 | 0.06 |

How can you justify your response is correct? How could you explain your thinking to a partner? What would happen if the numbers were different? Would your method work?
### PLANING THE LESSON:
**DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING**

<table>
<thead>
<tr>
<th>DISCIPLINARY DISCUSSION FOCUS</th>
<th>Targeted Constructive Conversation Skill(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☑ CREATE ☑ CLARIFY ☑ FORTIFY ☐ NEGOTIATE</td>
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#### MODEL CONSTRUCTIVE CONVERSATION

**Prompt Starters:**
- How did you approach the problem?
- How does your model show...?
- Can you elaborate on that idea?
- Why did you ...?
- How do you know your thinking makes sense?

**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?

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#### SUPPORTS & STRUCTURES

- Substantial/Moderate/Light Supports

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**Visual of Solution:**

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 a misconception that students might have. The Model Constructive Conversation focuses on the skills of CLARIFYING and FORTIFYING.
PLANNING THE LESSON:
DESIGNING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

**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: One way to think about this is to create a model of the tenths and hundredths. To solve the problem, first I showed the distance Sujin ran which was 6 tenths of a mile. I used a square grid to represent 1 whole mile and then I divided it up into 10 equal parts because I needed to show that there are 10 tenths in 1 whole mile. I used shading to show the 6 tenths of a mile that Sujin ran, so I only shaded 6 sections yellow. **Does that make sense?** *(MP3, MP4)*

A: Yes. I heard you say that you knew Sujin ran 6 tenths of a mile. Therefore, you shaded 6 bars in your diagram because each bar represents 1 tenth. I notice you created a similar representation for Dan. **Can you elaborate on that idea?**

B: In order to compare both distances, I created a similar model to show how far Dan ran. In the problem it says Dan ran 60 hundredths of a mile, so I knew the representation should be in hundredths. I thought that I could make the same square grid as Sujin’s, but I made 10 columns down and 10 rows across to make 100 squares since it’s hundredths. For my next step, I needed to show the 60 hundredths, so I shaded 60 of them green to represent the distance Dan ran. *(MP4)*

A: In other words, you created a model of both distances in order to compare them. **If you look back at the problem,** the question is “is he correct?”. **On your paper you indicated** that Dan is correct, which means you think he ran farther. **How do you know your thinking makes sense?** *(MP3)*

B: **When I compare the models I drew,** it looks like Dan has more space shaded, which means he is correct, because that means he ran farther than Sujin. What are your thoughts? *(MP3, MP4)*

A: I’m not sure I agree. I think your model is not drawn accurately. In order to compare the two distances, the models need to represent the same whole—1 mile—which means both square grids need to be the same size. Your grids are different sizes, which makes it difficult for you to compare the two values precisely. **How can you revise your model to ensure an accurate comparison?** *(MP6)*

B: I think I will use graph paper to make sure each grid is equal in size in order to represent the same whole, which is one mile. It might also be helpful to draw one grid above the other. This will make it easier to compare the shaded amounts. What do you think? *(MP5)*
### OPENING

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

### TEACHING THE LESSON:
DELIVERING INSTRUCTION FOR DISCIPLINARY THINKING AND LEARNING

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

**Focus Question:**
How are fractions and decimals related?

**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 fractions and decimals are related.

**Refer to Focus Math Practices – MP1 and MP3**

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

<table>
<thead>
<tr>
<th>MP1 – I can make sense of the problem</th>
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</thead>
<tbody>
<tr>
<td>MP3 – I can explain my thinking and listen/ask questions to understand others</td>
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</table>

**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
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? What do you wonder?

  Have students share out. Make sure to surface the following:
  ✓ Students might say “stopwatch” but a stopwatch is used to measure
time not distance
  ✓ Students need to know that this is a pedometer. It is measuring distance
  in miles.

  Have students discuss with a partner. Select one or two volunteers to share their ideas with the class.
  Say: How might this connect to math?

• 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.

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)
  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:
  ✓ Sujin and Dan had a race with their friends
  ✓ They want to know who ran the farthest distance—What does farthest mean?
  ✓ Dan says he ran farther than Sujin?—What does “farther than” mean?
  ✓ The question they are trying to answer is, “Is he correct?”—Who is “he” referring to?
SECOND READ – READ TO UNDERSTAND THE MATH (CLARIFY CONTENT LANGUAGE)
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? (MP1, MP2)

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:
 ✓ Sujin ran a distance of .6 of a mile; presented as (tenths) in decimal form
 ✓ Dan ran a distance of 60/100 of a mile; presented as (hundredths) in fraction form
 ✓ These two values need to be compared to determine if Dan ran farther than Sujin
 ✓ They need to use models, numbers, symbols (> , =, or <), and words

THIRD READ – READ TO MAKE A PLAN (FOSTER METACOGNITION)
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 remember some of the strategies we’ve used to compare fractions and decimals and I might use one of those strategies. I know I have to model or represent the distances each person ran. Hmmm…what tool should I use? Perhaps a number line, or maybe I can use base ten blocks, or a tape diagram. What tool would be the most helpful for this situation? I think I will begin by… (MP1, MP5)

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.
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
  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, symbols, and words. (MP1, MP2, MP4)

• 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. 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.
  
  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 (MP3, MP6)
• ROUND 1 – ONE STUDENT INTERVIEWS THE OTHER, THEN STUDENTS SWITCH ROLES (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 using connecting words/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.

• FISHBOWL OF STUDENT INTERVIEW
  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 (referring to model/representation)
  ✓ Use of academic language
• **ROUND 2 – STUDENTS INTERVIEW ANOTHER PARTNER, THEN SWITCH ROLES**  (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 *(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
### 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

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**MATH SUMMIT (MP1, 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**
  - 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**
  - 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**
  - 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.
### Integrated ELD/Matematics Three Phase Lesson

**Grade 4 – Pedometer Problem**

<table>
<thead>
<tr>
<th>WRAP-UP &amp; NEXT STEPS</th>
<th>• STUDENTS REVISE OR ADD TO THEIR SOLUTIONS AND SUMMARIZE THEIR LEARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Review focus question and lesson objectives</td>
<td></td>
</tr>
<tr>
<td>2. Allow for students to self-assess and monitor progress toward lesson objectives</td>
<td></td>
</tr>
<tr>
<td>3. Give feedback to students on objectives that will move their learning forward</td>
<td></td>
</tr>
<tr>
<td>4. Close lesson and introduce topic for next lesson</td>
<td></td>
</tr>
<tr>
<td>• REVIEW FOCUS QUESTION AND LESSON OBJECTIVES (should be charted/posted on the board)</td>
<td></td>
</tr>
</tbody>
</table>

**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 your partner.

Have one or two students share out and make sure to highlight one or two of the following key mathematical ideas:

- You can represent a fraction as a decimal and a decimal as a fraction
- You can compare two decimals/fractions by reasoning about their size
- Comparisons are valid only when the two decimals/fractions refer to the same whole
- You can record the results of comparisons with the symbols >, =, or <
- You can justify the conclusions by using a visual model such as a number line

**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…
**TASK/PROBLEM:**
Sujin and Dan decide to have a race to see who can run the farthest distance in 10 minutes. The pedometers below show how far they each ran after 10 minutes. Dan said he ran farther than Sujin. Is he correct? Show how you know using models, numbers, symbols (<?, >, or =), and words.

![Pedometer Images]

Be ready to explain your thinking to a partner using connecting words/phrases (so, therefore, because etc.) and math vocabulary.
What do you notice?
What do you wonder?
VISUAL OF SOLUTION FOR MODEL CONSTRUCTIVE CONVERSATION

Sujin: .6 miles

Pan: \( \frac{60}{100} \) miles

Dan is correct.
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: One way to think about this is to create a model of the tenths and hundredths. To solve the problem, first I showed the distance Sujin ran which was 6 tenths of a mile. I used a square grid to represent 1 whole mile and then I divided it up into 10 equal parts because I needed to show that there are 10 tenths in 1 whole mile. I used shading to show the 6 tenths of a mile that Sujin ran, so I only shaded 6 sections yellow. Does that make sense?

A: Yes. I heard you say that you knew Sujin ran 6 tenths of a mile. Therefore, you shaded 6 bars in your diagram because each bar represents 1 tenth. I notice you created a similar representation for Dan. Can you elaborate on that idea?

B: In order to compare both distances, I created a similar model to show how far Dan ran. In the problem it says Dan ran 60 hundredths of a mile, so I knew the representation should be in hundredths. I thought that I could make the same square grid as Sujin’s, but I made 10 columns down and 10 rows across to make 100 squares since it’s hundredths. For my next step, I needed to show the 60 hundredths, so I shaded 60 of them green to represent the distance Dan ran.

A: In other words, you created a model of both distances in order to compare them. If you look back at the problem, the question is “is he correct?”. On your paper you indicated that Dan is correct, which means you think he ran farther. How do you know your thinking makes sense?

B: When I compare the models I drew, it looks like Dan has more space shaded, which means he is correct, because that means he ran farther than Sujin. What are your thoughts?

A: I’m not sure I agree. I think your model is not drawn accurately. In order to compare the two distances, the models need to represent the same whole—1 mile—which means both square grids need to be the same size. Your grids are different sizes, which makes it difficult for you to compare the two values precisely. How can you revise your model to ensure an accurate comparison?

B: I think I will use graph paper to make sure each grid is equal in size in order to represent the same whole, which is one mile. It might also be helpful to draw one grid above the other. This will make it easier to compare the shaded amounts. What do you think?
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?

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?