Math Module 6 Overview Plan
Module Title: Number and Operations—Fractions: Operations With Fractions
Grade Band: K–5

Module 6 explores the domain Number and Operations—Fractions with a focus on operations with fractions. Each session is designed to increase participant understanding of the operations with fractions standards and how these standards should be implemented in the elementary classroom.

In Session 1, participants experience part of an EngageNY lesson and analyze it for evidence of how students engage in the key shifts throughout the lesson.

Session 2 provides participants with an opportunity to study a set of standards from the domain of Number and Operations—Fractions and to explore coherence across the grade levels in the Louisiana Student Standards for Mathematics (LSSM), using a vertical alignment chart.

In Session 3, participants study using previous understanding of operations with whole numbers to solve operations with fractions by exploring the language of operations and how it influences our understanding of operations with fractions.

Session 4 acts as an introduction to the Standards for Mathematical Practice (SMPs). Participants explore the mathematical practice standards and do a deep study of how the standards manifest in the elementary classroom. Participants also explore how the practice standards are integrated into the components of the EngageNY curriculum.

Session 5 continues the Planning Guide process that teachers use to help facilitate productive collaborative planning sessions based on the standards—and determine the implications for teaching and learning.

Key Understandings

After Module 6, teachers will know:

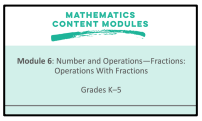
- The key shifts in the LSSM play a critical role in the standards' implementation:
  - *Focus*—by narrowing in on fewer topics in a lesson or unit to ensure teachers have adequate time to push students toward mastery of key mathematical concepts.
  - *Coherence*—by viewing the standards as interconnected across grade levels and across domains within a grade level, rather than as isolated events.
  - *Rigor*—by ensuring that conceptual understanding, procedural skills, and fluency drive the exploration of mathematical content at greater depths, culminating with the ability to apply mathematics to solve real-world problems.
- When instruction using the EngageNY curriculum is executed well, the standards' key shifts are evident and visible in every lesson.
- Understanding of models and strategies for operations of whole numbers can be used to develop understanding of operations with fractions.
- The practice standards are seamlessly integrated into the components of the EngageNY curriculum, to engage students in deep mathematical thinking.

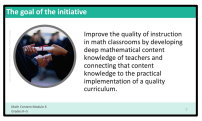
Module 6: Facilitation Recommendations	
Session Length	Six-hour module including: **Session 0: Introduction** to Module 6 (8 minutes) **Session 1: Key Shifts in Action**—Through an EngageNY Lesson (60 minutes) **Session 2: Exploring Coherence** in the Louisiana Student Standards for Mathematics (LSSM) (60 minutes) **Session 3: Deepening Mathematical Content Knowledge** for Effective Instruction (100 minutes) **Session 4: Instructional Strategies** to Improve Curriculum Implementation (80 minutes) **Session 5: Purposeful Planning** of the EngageNY Curriculum (60 minutes) **Closing Slides and Participant Evaluation Survey** (10 minutes)
Session Pairing Options	Recommended delivery: One full 6-hour day of professional learning, with all 5 sessions facilitated back to back. Facilitators should plan for participants to take the Module 6 evaluation immediately after Session 5, preferably before leaving the session.
Time of Year	Fourth quarter

Preparing to Facilitate *What materials and supplies are needed to facilitate this module?* *What must the facilitator do to prep for the actual module?*		
Session Materials		
Facilitator Handouts • **M6_CL-00** Math Module 6 Overview Plan: Module Title: Number and Operations—Fractions: Operations With Fractions • **M6_CL-01** Posters and Handouts Guide • **M6_CL-02** math-g5-m4-topic-e-lesson-13: "EngageNY Grade 5 Mathematics Module 4, Topic E, Lesson 13: Objective: Multiply unit fractions by unit fractions." • **M6_CL-03** Standards Cards for Vertical Alignment	**Participant Handouts** • **M6_P-00** Elementary Math Content Module 6 presentation slides (printed 2 slides to a page): • **M6_P-01** Looking for Evidence of Student Engagement in the Key Shifts • **M6_P-02** Vertical Alignment Chart • **M6_P-03** Number Lines • **M6_P-04** First Impressions: Standards for Mathematical Practice • **M6_P-05** Standards for Mathematical Practice: Commentary and Elaborations for K–5 • **M6_P-06** Standards for Mathematical Practice (SMPs) in EngageNY (in "How to Implement *A Story of Units*" • **M6_P-07** Planning Guide	**Additional Supplies** • Table supplies (markers, scissors, sticky notes, and glue sticks or tape) • Sheets of paper (4 sheets per participant) • Chart paper **Facilitator Pre-Work and Prep** • Print participant handouts (1 per participant) • Make a "Parking Lot" poster on chart paper • Prepare **M6_CL-03 Standards Cards for Vertical Alignment** — should be printed on cardstock and cut out in advance; 1 set of cards per each group of 4 participants)

Math Module 6, Session 0
Session Title: Introduction to Module 6

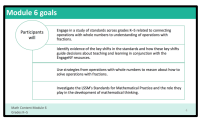
Time & Slide Thumbnail	Facilitator Notes Session 0: Introduction to Module 6	Materials


Slide 1:
Time Allotted:
1 minute
	Session 0: Introduction to Module 6: Number and Operations—Fractions: Operations with Fractions
	
	Time Allotted for Module: 6 hours
	
	Slides 1–4 Time Allotted: 8 minutes
	
	Critical Idea
	• It is important to set a positive tone for learning.
	
	Step-by-Step Instructions
	• Before each session, use handout **M6_CL-01 Posters and Handouts Guide** to organize your preparation.
	• As participants come in for the day, ask them to sit in mixed-grade-level groups of four.
	• Welcome the group. Say, "Throughout these sessions you are engaging in mathematics tasks and discussions designed to strengthen your understanding of the LSSM, and you are experiencing multiple opportunities to consider ways that you can continue to support students' learning of mathematics content through the high-quality curriculum."
	• Take care of "housekeeping" items prior to starting the session:
	  ○ Scheduled start and stop times
	  ○ Breaks
	  ○ Lunch
	  ○ Location of restrooms
	  ○ Silencing of cell phones
	  ○ Orienting participants to the handouts, including the handout of the slides.
	
	Words of Wisdom
	• If you perceive any resistance, the basic strategy is
	  ○ (1) acknowledge the resistance,
	  ○ (2) honor and validate it with a reason or two,
	  ○ (3) provide a rationale for engaging, and
	  ○ (4) tie it to the work of the session.
		M6_CL-01 Posters and Handouts Guide


Slide 2
Time Allotted:
2 minutes
	Critical Idea
	• For participants to buy in to the project, it is important to remind them of the goal and purpose.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Recall this slide from previous modules. The work in which you are engaged is part of a bigger picture.
	  ○ "The overarching goal of the initiative is to improve the quality of instruction in math classrooms by developing deep mathematical content knowledge of teachers and connecting that content knowledge to the practical implementation of a quality curriculum."
	
	Words of Wisdom
	• This slide provides participants with the goal of the three-year initiative.	

Time & Slide Thumbnail	Facilitator Notes Session 0: Introduction to Module 6	Materials

Slide 3
Time Allotted:
3 minutes
	Critical Idea
	• Being clear about how a group is expected to collaborate creates an environment that fosters intellectual risk-taking and reflection.
	
	Step-By-Step Instructions
	• Say,
	  ○ "To meet the goals and learning expectations of the initiative, we have group norms that will continue to guide our collaborative work."
	  ○ "Please independently read the slide and choose one of the norms you will pay particular attention to throughout Module 6."
	• As a way to encourage accountability, ask participants to tell their tablemates which norm they selected.
	
	Words of Wisdom
	• Norm-setting is an important step that sets the tone for professional learning. Allowing participants to share the norms they will focus on encourages ownership and buy-in.
	
	• These norms have been adapted from recommendations in a variety of sources, including:
	  ○ National Research Council. (2000). *How people learn: Brain, Mind, Experience, and School*. Washington, DC: The National Academies Press.
	  ○ The last norm ("Mistakes are expected, respected, and inspected") was shared by Jo Boaler in an early version of her online course. A current version, "How to Learn Math: For Teachers," is available here: http://scpd.stanford.edu/ppc/how-learn-math-teachers	

 Slide 4 Time Allotted: 2 minutes	***Critical Idea*** • The lens for learning is beginning with the end in mind. ***Step-by-Step Instructions*** • Ask participants to quietly read the Module 6 learning expectations. ***Words of Wisdom*** • This slide should be brief and is about clarifying the learning expectations for Module 6.	

Math Module 6, Session 1
Session Title: Key Shifts in Action—Through an EngageNY Lesson

Session Overview *What are the overarching goals of this session? Why are those goals important?* *How do they connect to what's come before and what will come after?*
The overarching goals of Session 1 are for participants to review the key shifts of the Louisiana Student Standards for Mathematics (LSSM) and to experience the key shifts in action by taking part in a portion of an EngageNY lesson. Participants should be able to document evidence of possible student engagement during the lesson, which will refine their understanding of the key shifts and how the key shifts manifest in the classroom. The EngageNY lessons in this session focus on standards within the Number and Operations—Fractions domain, and they will serve as an ongoing example through many of the other sessions in this module.

Session Key Points *What are the 2 to 4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Through Session 1, participants will know: • The key shifts play an integral role in the EngageNY curriculum. • The coherence of the standards can influence how intentional the teacher is in accessing and connecting to prior learning. • The intended elements of rigor for a lesson drive the facilitation of that lesson.	• During Session 1, participants will produce a document of student evidence that they experience during the EngageNY lesson.

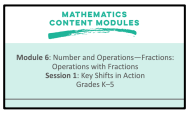
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will … • Look for evidence of the key shifts of *focus*, *coherence*, and *rigor* in the standards. (CP, CK) • Engage in mathematics learning experiences that help clarify math concepts related to operations with fractions. (CK, CP, CS) CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	• Engage in a review of the key shifts of *focus*, *coherence*, and *rigor* in the standards. • Experience math learning with a portion of an EngageNY lesson from Grade 5. • Analyze the lesson for evidence of student engagement in the key shifts.

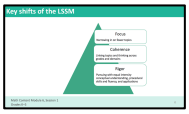
Facilitation Recommendations	
Session Length	60 minutes

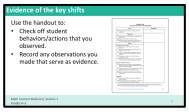
Preparing to Facilitate *What materials and supplies are needed to facilitate this session?* *What must the facilitator do to prep for the actual session?*	

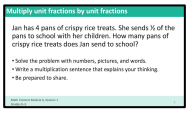
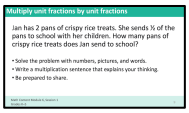
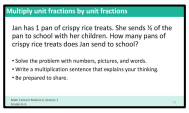
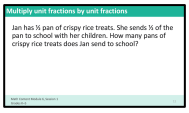
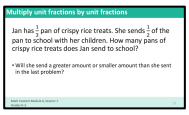
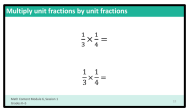
Session Materials
 	
• **Participant Handout**
  ○ **M6_P-01** Looking for Evidence of Student Engagement in the Key Shifts
 	
• **Facilitator Handout**
  ○ **M6_CL-02** math-g5-m4-topic-e-lesson-13: EngageNY Grade 5 Mathematics Module 4, Topic E, Lesson 13: Objective: Multiply unit fractions by unit fractions
 	
• **Additional Supplies**
  ○ Chart paper
  ○ Markers
  ○ Sticky notes
  ○ Sheets of paper
	Facilitator Pre-Work and Prep
	
	• Print participant handouts (1 per participant)
	• Study EngageNY lesson handout
	  ○ **M6_CL-02** math-g5-m4-topic-e-lesson-13: EngageNY Grade 5 Mathematics Module 4, Topic E, Lesson 13: Objective: Multiply unit fractions by unit fractions

Participant Pre-Work *What should participants bring to this session? What should they do or prepare in advance of this session?*	
Participants must bring: • Not applicable	**Before this session, participants should:** • Not applicable

Time & Slide Thumbnail	Facilitator Notes Session 1: Key Shifts in Action—Through an EngageNY Lesson	Materials
 Slide 5 Time Allotted: < 1 minute	**Session 1: Key Shifts in Action—Through an EngageNY Lesson** **Slides 5–15 Time Allotted: 60 minutes** ***Critical Idea*** • This slide introduces Session 1. ***Step-By-Step Instructions*** • Say, ○ "Let's transition into Session 1, which focuses on understanding mathematics content through task analysis." **Words of Wisdom:** • For Session 1, participants should be sitting in mixed-grade-level groups of four.	


 	
Slide 6
Time Allotted:
2 minutes
	Critical Idea
	• The key shifts are what make the LSSM different from previous standards. These key shifts should guide decisions about teaching and learning.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Earlier, we defined the 3 key shifts of the LSSM and identified evidence of *focus*, *coherence*, and *rigor* in the standards.
	  ○ "For this session, it is important to think about how these key shifts surface in the classroom."
	  ○ "To ground our thinking, please revisit the definitions of the key shifts on the slide."
	
	Words of Wisdom
	• Keep this slide simple and brief.	


 	
Slide 7
Time Allotted:
5 minutes
	Critical Idea
	• The key shifts are what make the LSSM different from previous standards. These key shifts should guide decisions about teaching and learning.
	
	Step-By-Step Instructions
	• Say,
	  ○ "We are going to engage in a portion of a mathematics lesson from EngageNY to give you an opportunity to observe how the key shifts come to life in the classroom while students engage in the mathematics content."
	  ○ "It is important to note that though the task may not be aligned to the grade level you teach, the experience is intended to surface ways in which you can connect the EngageNY lessons to inform your teaching and learning. By the end of this module, you should have experienced a variety of lessons across grades K–5."
	  ○ "To help you with this experience, we will continue to use the **Looking for Evidence of Student Engagement in the Key Shifts** tool that you used in previous modules to help you look for and document evidence of the key shifts."
	• Ask participants to locate handout **M6_P-01 Looking for Evidence of Student Engagement in the Key Shifts**.
	• Say,
	  ○ "Remember, the left-hand column in this tool has descriptors of the key shifts. Next to each descriptor is a box you can use to check off any student actions that you observe in the lesson."
		M6_P-01
		Looking for Evidence of Student Engagement in the Key Shifts

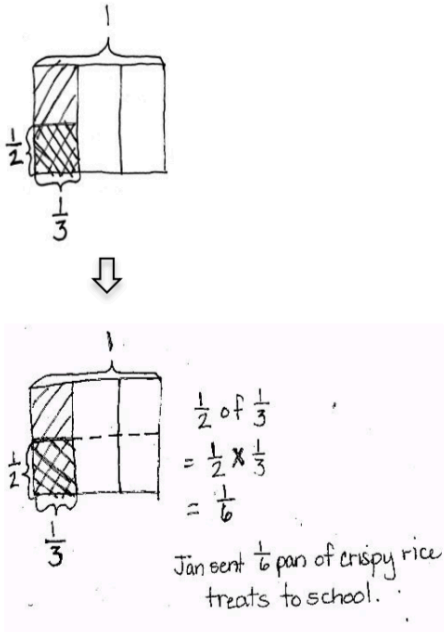
Time & Slide Thumbnail	Facilitator Notes Session 1: Key Shifts in Action—Through an EngageNY Lesson	Materials
	○ "You can use the right-hand column to document observations of any specific actions that can be used as evidence for the descriptors that you checked off in the left-hand column." • Give participants time to refamiliarize themselves with the handout and to ask questions if they need further clarification. ***Words of Wisdom*** • Make sure all participants have an opportunity to read through the document to refamiliarize themselves with the descriptors of the key shifts. Participants will use these descriptors to make observations while they engage in the math lesson. • During this lesson, participants may make connections and have "ah-ha" moments related to the content. It is important for participants to understand that these connections may not happen as quickly with their students. The EngageNY curriculum is designed for students to make these connections across multiple lessons.	
      Slides 8–13 Time Allotted: 33 minutes	***Critical Idea*** • The key shifts are what make the LSSM different from previous standards. These key shifts should guide decisions about teaching and learning. ***Step-By-Step Instructions*** • Display the question on the slide. • Say, ○ "To observe how students would engage in the key shifts in the classroom, we will experience part of an EngageNY lesson." ○ "As you engage in the lesson, use **M6_P-01 Looking for Evidence of Student Engagement in the Key Shifts** to document evidence of the key shifts." ○ "Remember, the purpose of experiencing this lesson is to get a clearer understanding of how students should engage in the mathematics as described in the key shifts." ○ "In addition, while you should engage in the math lesson as if you were the students, you should also look for and document evidence of engagement in the mathematics through the key shifts." ○ "Take a minute to read the question on the slide." • **<u>Animate slide</u>** to display directions. • Say, ○ "Work with your elbow partner to solve the problem, using pictures, numbers, and words. Write a multiplication sentence that explains your thinking. Be prepared to share your work." • Give no more than 3 minutes for participants to complete the problem. • While participants are working, walk around and choose strategies that you want to highlight to the whole group. • Call on the groups with the strategies you want to show. • Note: this activity is intended as an opportunity for you as facilitator to model using the "5 Practices for Orchestrating Productive Mathematics Discussions"—as participants have experienced in previous modules. • After hearing a few strategies, ask participants to talk through the understanding of multiplying by a fraction by saying, ○ "What fraction of the pans did Jan send to school?" *(½)* ○ "How many pans of crispy rice treats did Jan have at first?" *(4 pans)* ○ "What is one half of 4 pans?" *(2 pans)* • Write the statement "½ of 4 pans" on a sheet of chart paper.	**M6_P-01** Looking for Evidence of Student Engagement in the Key Shifts Chart paper Markers Sheets of paper

Time & Slide Thumbnail	Facilitator Notes Session 1: Key Shifts in Action—Through an EngageNY Lesson	Materials

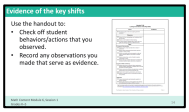
	• Say,
	  ○ "Remember when we were studying multiplication earlier in the year, and we discussed that when you read the multiplication symbol in a sentence, it reads as the word 'of'?
	  ○ "For example, 3 x 5 would read as '3 groups OF 5.'"
	  ○ "So if we look at the statement 'one half of 4 pans,' we can also represent that statement with the multiplication sentence of ½ x 4 = 2 or 4 x ½ = 2."
	• Transition to the next slide and say,
	  ○ "Imagine that Jan has only 2 pans of treats. If she still sends half of the pans to school, how many pans will she send?
	  ○ "Solve this problem with numbers, pictures, and words. Then write a multiplication sentence to show your thinking."
	• Give participants a minute to complete the problem. Then ask,
	  ○ "What is the multiplication sentence you came up with that shows the solution to the problem?"
	• Ask participants to share out.
	• Write on your chart paper for the whole group to see: "½ of 2 pans." Then write the equations
	  ○ "½ x 2 = 1 or
	  ○ "2 x ½ = 1".
	• Transition to the next slide and say,
	  ○ "What if Jan had only one pan of crispy rice treats, and she still needs to send half to school? How many pans will she send?"
	• Give participants a minute to come up with a multiplication sentence to show the solution Then ask,
	  ○ "What is the multiplication sentence you came up with that shows the solution to the problem?"
	• Ask participants to share out.
	• Write "½ of 1 pan" on your poster, and write the equations
	  ○ "½ x 1 = ½ or
	  ○ "1 x ½ = ½".
	• Transition to the next slide and say,
	  ○ "What if Jan has only half a pan and wants to send half of it to school? What is different about this problem?"
	  – *There is only half of a pan instead of a whole pan.*
	  – *Jan is still sending half of the treats to school, but now she is sending half of a half instead of half of a whole.*
	  – *The amount we are starting with is less than a whole.*
	• Hand out sheets of paper to each pair of participants.
	• Say,
	  ○ "Let's say that your piece of paper represents the pan of treats. Work with your partner and figure out how you can use your rectangular sheet of paper to find out what fraction of the whole pan of treats Jan sent to school."
	• Give participants a few minutes to work. Walk around and look for strategies you can use to make connections.
	• Call participants' attention back to the whole group and discuss some of the strategies you saw.
	• Possible discussion:
	  ○ *Many of you folded your paper in half and then partitioned those halves into halves as well, like so* (demonstrate with your own paper).
	  ○ *We now have two different-sized units represented in our model. I can see the half*	

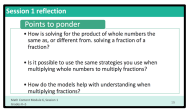
Time & Slide Thumbnail	Facilitator Notes Session 1: Key Shifts in Action—Through an EngageNY Lesson	Materials
	of a pan that represents the amount of treats Jan has, and I can see the half of that half that represents the amount of treats Jan sent to school. ○ *We all agree that this piece represents our answer for how many treats Jan sent to school.* (Point to one corner of the folded paper.) ○ *To name this part, we must define its value by considering how many of these units fit into the whole pan.* ○ *How many units of this size do we have in the whole pan? (4)* ○ *So, what is the value of this piece? (one-fourth)* ○ *This means we can say that half of a half equals a fourth.* ○ *Let me record that.* – Write "½ of ½ a pan" on the poster, followed by the equation – "½ x ½ = ¼." • Transition to the next slide and say, ○ "Let's imagine that Jan has only one-third of a pan of crispy rice treats. She still wants to send half the treats to school." ○ "Will she be sending a greater amount or a smaller amount than she sent in the last situation?" ○ "How do you know? Please turn and discuss with your partner." • Give partners a minute to discuss, and then ask a few to share out. • Possible responses: ○ *It will be a smaller part of the whole pan, because Jan had half a pan before. Now, she only has one-third of a pan.* ○ *One-third of a pan is smaller than half a pan, so half of a third will be smaller than half of a half.* • Hand out another sheet of paper to each pair of participants. • Say, ○ "We need to find one half of one-third of a pan." (Write *1/2 of 1/3* on the chart paper.) ○ "I am going to draw a rectangular fraction model to represent this problem, while you use your paper to model it." (Draw a rectangle on the chart paper.) ○ "This rectangle shows one whole pan." (Label "1" above the rectangle.) • Say, ○ "Fold your paper, and then shade it to show how much of this one pan Jan has at first and then how much she sent to school." • Give participants a few minutes to fold and shade their paper. • Ask a few participants to share their solutions. • As participants share their solutions, draw their strategies, using your rectangle on the poster (as shown in the image below).	

Time & Slide Thumbnail	Facilitator Notes Session 1: Key Shifts in Action—Through an EngageNY Lesson	Materials

	
	• Transition to the next slide, and say,
	  ○ "Let's compare finding one-fourth of one-third with finding one-third of one-fourth."
	  ○ "What do you notice about these problems?"
	
	• Possible responses:
	  ○ *They both have one fourth and one third, but they're flip-flopped.*
	  ○ *They have the same factors, but they are in a different order.*
	• Say,
	  ○ "Will the order of the factors affect the size of the product?"
	  ○ "Draw 2 rectangular fractions models to solve the equations to see if the size of the product is affected."
	• Give participants a few minutes to draw models, then ask a few participants to share out their solutions.
	• Say,
	  ○ "Both of these equations result in one twelfth, but each model has a slightly different shape."
	  ○ "How do you know that the twelve equal pieces in both models are the same size, even though they are not the same shape?"
	  – *They are twelve equal parts of the same whole.*
	
	Words of Wisdom
	• If participants do not answer questions in the way that is indicated in these notes, use probing questions to get them to draw the intended conclusions.	

Time & Slide Thumbnail	Facilitator Notes Session 1: Key Shifts in Action—Through an EngageNY Lesson	Materials


 	
Slide 14
Time Allotted:
10 minutes
	Critical Idea
	• Intentional teacher moves support focus, coherence, and rigor around the mathematics content.
	
	Step-By-Step Instructions
	• Say,
	  ○ "During the lessons, you were asked to use handout **M6_P-01 Looking for Evidence of Student Engagement in the Key Shifts** to check off student behaviors/actions observed in the lesson."
	  ○ "Please take 3 minutes of independent think time to record specific evidence of the descriptors in the right-hand column of the page."
	• Allow 5 minutes for participants to work with their groups to complete their handouts.
	• Once participants are done, ask a few participants to share out specific evidence they documented from the lesson.
	• Ask,
	  ○ "What component of rigor did the students engage in the most throughout this lesson?"
	• Be prepared for participants to say any of the three components of rigor.
	• If necessary, remind participants that they were documenting evidence as learners.
	• Students may engage with all three components of rigor at any time during a lesson.
	• What is important is that the teacher approaches the delivery of the lesson from the lens of the intended component of rigor as identified in the Louisiana rigor document.
	• Transition to the next slide.
	
	Words of Wisdom
	• Not applicable
		M6_P-01
		Looking for Evidence of Student Engagement in the Key Shifts

 Slide 15 Time Allotted: 10 minutes	***Critical Idea*** • Adults do not learn from experience but rather from reflecting on experience. ***Step-By-Step Instructions*** • Say, ○ "It is essential that we take a deliberate pause in our work to reflect on this experience." • Display the reflection questions, and ask participants to turn over handout **M6_P-01 Looking for Evidence of Student Engagement in the Key Shifts**, and take a few minutes write down some individual reflections on these questions. • Ask participants to make eye contact with someone in the room who they haven't worked with thus far, then share their reflection with that person. • Solicit comments from the group for each reflection question. ***Words of Wisdom*** • Don't rush this conversation. Participants need time to think about, reflect on, and share their thoughts on what they observed in the lesson. • Remember to focus conversations on how the key shifts enable students to engage in mathematics in meaningful ways, which can lead to a deeper understanding of math as students develop mathematical thinking and perseverance.	**M6_P-01** Looking for Evidence of Student Engagement in the Key Shifts

Math Module 6, Session 2
Session Title: Exploring Coherence in the LSSM

Session Overview *What are the overarching goals of this session? Why are those goals important?* *How do they connect to what's come before and what will come after?*
The overarching goal of Session 2 is for participants to understand their specific grade level's place in the larger picture of *A Story of Units*. Teachers will explore coherence among the K–5 continuum, focusing on the big idea of *Using Previous Understanding of Operations with Whole Numbers to Solve Operations With Fractions* by analyzing each grade level's standards and identifying when concepts are introduced, when concepts develop or change, and when they become more complex as they progress through the grades. This conversation is pivotal to building participants' understanding of the importance of the foundational skills and understanding in their grade levels and how these skills affect subsequent grade levels.

Session Key Points *What are the 2 to 4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Through Session 2, participants will know: • Each grade builds on the prior work in the grades before and is the foundation of work to come in future grades, illustrating the coherence of the standards. • Studying the standards in a vertical team is necessary to understand how specific grade-level expectations fit into the development of a big idea across grades, which has implications for grade-level teaching.	During Session 2, participants will produce a vertical alignment chart for the big idea of Using Previous Understanding of Operations with Whole Numbers to Solve Operations With Fractions. Participants will discuss how the standards change from grade to grade, and they will identify the implications for instruction as a result of their study of the standards.

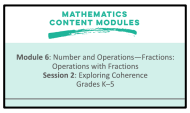
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will… • Engage in a study of standards across grades K–5—related to using previous understanding of operations with whole numbers to solve operations with fractions—to see how this idea develops across the grades. (CK) • Revise and refine their thinking on what the big idea means. (CK) • Reflect on their study of the standards and how their instruction may be affected by their new knowledge. (CP) CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	• Explore the big idea of using previous understanding of operations with whole numbers to solve operations with fractions. • Align standards based on what students should know and be able to do. • Identify changes in skills, expectations, and understandings in the standards from one grade to the next. • Reflect on how a study of vertical alignment helps with understanding of the key shifts.

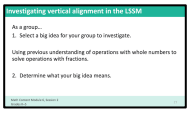
Facilitation Recommendations	
Session Length	60 minutes

Preparing to Facilitate *What materials and supplies are needed to facilitate this session?* *What must the facilitator do to prep for the actual session?*	

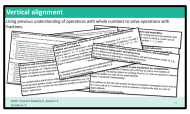
Session Materials
 	
• **Participant Handout**
  ○ **M6_P-02** Vertical Alignment Chart
 	
• **Facilitator Handout**
  ○ **M6_CL-03** Standards Cards for Vertical Alignment (printed and cut out prior to session; 1 set per each group of 4 participants)
 	
• **Additional Supplies**
  ○ Chart paper (1 sheet for every 4 participants)
  ○ Markers
  ○ Tape
  ○ Sticky notes
	Facilitator Pre-Work and Prep
	• Print on cardstock and cut out handout **M6_CL-03** Standards Cards for Vertical Alignment (1 set of cards per each group of 4 participants)
	• Print participant handouts (1 per participant)

Participant Pre-Work *What should participants bring to this session? What should they do or prepare in advance of this session?*	
Participants must bring: • Not applicable	**Before this session, participants should:** • Not applicable

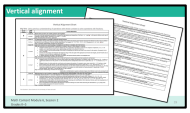
Time & Slide Thumbnail	Facilitator Notes Session 2: Exploring Coherence in the LSSM	Materials
 Slide 16 Time Allotted: < 1 minute	**Session 2: Exploring Coherence in the LSSM** **Slides 16–21 Time Allotted: 60 minutes** ***Critical Idea*** • This slide introduces Session 2. ***Step-By-Step Instructions*** • Tell participants that we will transition into Session 2. ***Words of Wisdom*** • For Session 2, participants should be sitting in mixed-grade-level groups of four.	


 	
Slide 17
Time Allotted:
10 minutes
	Critical Idea
	• The power of the vertical alignment process and tool is the collaborative conversation. It is not about just filling out the chart. The purpose of the chart is to capture common understandings that result from the collaborative conversations.
	
	Step-By-Step Instructions
	• Say,
	  ○ "We are going to engage in a process to investigate vertical alignment in the LSSM."
	  ○ "This vertical alignment process is designed to be used a few times a year, preferably with a group of K–5, K–8, or K–12 educators, to study standards that relate to a *big idea*."
	  ○ "This process is NOT designed to be a 'divide and conquer' activity. The power of this process is in the collaborative conversations that lead to a common understanding of how a big idea develops across a number of grade levels."
	• **<u>Animate Step 1 and Step 2</u>.**
	  ○ "With that in mind, let's revisit the first two steps of this process, as described on the slide." *(**Note:** Participants should complete Step 1 and Step 2 before getting the materials to complete the vertical alignment):*
	• **<u>Step 1</u>:**
	• Say,
	  ○ "The big idea we will be studying during this session is ***using previous understanding of operations with whole numbers to solve operations with fractions.***"
	  ○ "The instructions say to select a big idea, but today we have preselected it so we can work on this module's focus domain: Number and Operations—Fractions."
	  ○ "A *big idea* is a concept that takes time to develop across grade levels, yet is narrow enough to support a focused conversation involving just a few standards at each grade level."
	• **<u>Step 2</u>**:
	• Say,
	  ○ "Work with your small groups to determine the meaning of the big idea."
	  ○ "To determine what the big idea means, discuss
	  – How understanding operations with whole numbers will help with understanding operations with fractions,
	  – How conceptual understanding is developed, and
	  – What are the foundational math concepts that support the development of understanding in operations with fractions."
	  ○ "Think in terms of what students need to know and be able to do to demonstrate understanding and proficiency."
		M6_CL-03
		Standards Cards for Vertical Alignment
		
		These standards strips should have been printed (ideally, on cardstock) and cut out prior to the session.

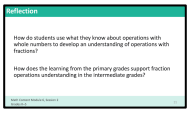
Time & Slide Thumbnail	Facilitator Notes Session 2: Exploring Coherence in the LSSM	Materials
	• Provide a few minutes for participants to discuss the meaning of the big idea with their groups. Then ask a few groups to share their thinking. • As participants work, distribute the standards strips from **M6_CL-03 Standards Cards for Vertical Alignment,** one set per group. ***Words of Wisdom*** • ***Do not let groups divide and conquer***. Groups need to work together through each step for the standard(s) for each grade level.	


 	
Slide 18
Time Allotted:
15 minutes
	Critical Idea
	• The power of this activity is the collaborative conversation about carefully selected standards connected to a big idea.
	
	Step-By-Step Instructions
	• Remind the participants of the vertical alignment process.
	• Say,
	  ○ "When discussing the vertical alignment of an idea across grade levels, you need to study the standards from each grade level that are related to the big idea and discuss how the idea develops and changes. You do not necessarily need to study every standard at each grade level that relates to the big idea."
	  ○ "For our work today, the standards have already been chosen and cut into strips. Each group has a set of the selected standards strips; each strip has the actual language of one or more of the standards from kindergarten through Grade 6."
	  ○ "When you look at your strips, you will notice that the grade-level standard coding is not included."
	  ○ "For the first part of this activity, you will read each of the standard strips with your table group and determine the sequence of the standards, from kindergarten to Grade 6, based on your experiences and how your group thinks the big idea develops."
	• As participants read and discuss the standards statements, ask them to think about how the language describes skills increasing in complexity and how this language affects their group's sequencing of the standards strips.
	• Give groups 10 minutes to work together to sequence their standards strips and to think about the question "How does the language of the standards affect your group's sequencing of the strips?"
	• As groups are working, walk around and give each group one sheet of chart paper, chart markers, and a strip of tape about 1 to 1.5 feet long.
	• When it looks like groups have completed the task, call participants back to the whole group.
	• Ask,
	  ○ "How did the language of the standards help you to sequence the standards strips into a progression?"
	• Ask participants to share a few specific examples of language from the standards that helped them to determine their progressions.
	• Transition to the next slide to reveal the actual order of the standards, from kindergarten to Grade 6.
	
	Words of Wisdom
	• Move around groups, monitoring conversations, answering questions, and prompting discussions around the mathematics in the standards.
		Sets of **M6_CL-03** Standards Cards for Vertical Alignment, printed on cardstock**,** cut out, and placed into bags or envelopes. One set per table.
		
		Chart paper
		
		Tape
		
		Markers

Time & Slide Thumbnail	Facilitator Notes Session 2: Exploring Coherence in the LSSM	Materials


 	
Slides 19
Time Allotted:
5 minutes
	Critical Idea
	• The power of this activity is the collaborative conversation about carefully selected standards connected to a big idea.
	
	Step-By-Step Instructions
	• Have participants locate handout **M6_P-02 Vertical Alignment Chart**, and ask the groups to compare their sequencing of the standards to the actual order of the standards.
	• Give groups 2 to 3 minutes to check the order of their standards strips and to re-sequence them if necessary.
	• Debrief questions to ask:
	  ○ "Were there any standards that you thought were intended for one grade level but then had to move to a different grade level?"
	  ○ "What language in that standard do you think makes it fit with its intended grade level?"
	
	Words of Wisdom
	• Not applicable
		M6_P-02
		Vertical Alignment Chart

Slide 20
Time Allotted:
20 minutes
	Critical Idea
	• The power of the vertical alignment process is the collaborative conversation. It is not about just placing the standards in order or filling out the chart. The process is intended to capture the conversations and common understandings.
	
	Step-By-Step Instructions
	• At this point, explain the remainder of the vertical alignment process.
	• Say,
	  ○ "Please tape your strips to your poster, in order beginning with kindergarten at the bottom. Write the title of the big idea at the top of the chart paper and the standard coding for each strip to the left of each strip."
	  ○ "When you discuss the changes that occur from grade to grade, please chart your conversation on the right-hand side of the poster."
	• Participants should use the guiding questions on this slide to:
	  ○ Discuss the changes that occur from one grade to the next,
	  ○ Determine where concepts are introduced, developed and finalized, and
	  ○ Describe where and how ideas get more complex.
	• Give 15 minutes for groups to create their charts and to document the changes from grade to grade, using the questions on the slide as a guide.
	  ○ If you find that groups are struggling, you may want to model the changes from kindergarten to Grade 1 with the whole group.
	• Circulate around the room as groups are working, encouraging them to use the guiding questions to focus their conversations.
	• When groups finish their work, ask them to hang their posters.
	• If there is time, ask table groups to share a few of their findings with the whole group. Some prompts may include:
	  ○ "What are some of the important findings your group made?"
	  ○ "Was there anything that surprised you about the standards?"
	  ○ "Was there anything that was an ah-ha for you or your group?"
	
	Words of Wisdom
	• The purpose of the vertical alignment process is to capture conversations and ideas around focus and coherence. It is not about completing the chart.
		M6_P-02
		Vertical Alignment Chart

Time & Slide Thumbnail	Facilitator Notes Session 2: Exploring Coherence in the LSSM	Materials
 Slide 21 Time Allotted: 10 minutes	***Critical Idea*** • Adults do not learn from experience but rather from reflecting on experience. ***Step-By-Step Instructions*** • Remind the group that it is essential that we take a deliberate pause in our work to reflect on this experience. • Display the reflection questions and ask participants to take a minute and individually reflect on these questions on a scrap piece of paper or a sticky note. • After their individual reflection, have participants discuss their answers at their table groups. • Call on participants to share something they heard a colleague say for each of the questions. • Close out this session by asking participants what happens if a teacher decides not to teach the standards? Popcorn some responses. • Possible response: ○ *The power of understanding the coherence of the standards is that teachers can remediate gaps in student learning that may directly influence the current content being taught as opposed to spending more time on the new learning than is necessary.* ***Words of Wisdom*** • Not applicable	Sticky notes

Math Module 6, Session 3
Session Title: Deepening Mathematical Content Knowledge for Effective Instruction

Session Overview *What are the overarching goals of this session? Why are those goals important?* *How do they connect to what's come before and what will come after?*
The overarching goal of Session 3 is for participants to do a deep study of fraction operations concepts. Participants will explore strategies used to solve operations with whole numbers and make connections to solving operations with fractions.

Session Key Points *What are the 2 to 4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Through Session 3, participants will know: • The use of contexts, models, and strategies for operations with whole numbers can help build understanding of operations with fractions. • The goal is for students to be able to select efficient strategies for solving operations with fractions, not to simply memorize an algorithmic method for finding the correct answer.	• In Session 3, participants will complete several activities related to making sense of operations with fractions.

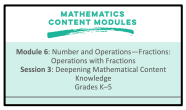
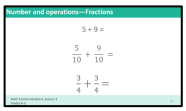
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will … • Engage in a study and collegial conversation around how operations with whole numbers can help develop understanding with operations of fractions. CK, CS CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	• Engage in a variety of models and strategies to solve operations involving fractions. • Explore the relationships of operations with whole numbers and operations with fractions.

Facilitation Recommendations	
Session Length	100 minutes

Preparing to Facilitate *What materials and supplies are needed to facilitate this session?* *What must the facilitator do to prep for the actual session?*	

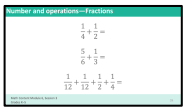
Session Materials
 	
• **Participant Handout**
  ○ **M6_P-03** Number Lines
 	
• **Additional Supplies**
  ○ Sticky notes
	Facilitator Pre-Work and Prep
	
	• Print participant handouts (1 per participant)

Participant Pre-Work *What should participants bring to this session?* *What should they do or prepare in advance of this session?*	
Participants must bring: • Not applicable	**Before this session, participants should:** • Not applicable

Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials
 Slide 22 Time Allotted: < 1 minute	**Session 3: Deepening Mathematical Content Knowledge** for effective instruction **Slides 22–28 Time Allotted: 100 minutes** ***Critical Idea*** • This slide introduces Session 3. ***Step-by-Step Instructions*** • Say, ○ "We will now transition into Session 3." ○ "This session is designed to deepen your mathematical knowledge for effective instruction." ○ "The activities in this session are not necessarily designed for student use. The EngageNY curriculum has similar math learning activities built into its lessons, though the activities may be spread across several lessons and are not necessarily presented in the same way we are about to experience in this session." ○ "Keep in mind that you may experience some ah-ha moments in this section that will not come as quickly and as easily to your students, so it is important to abide by the pacing of the EngageNY curriculum, which is designed to be more developmentally appropriate for the students." ***Words of Wisdom*** • For Session 3, participants should be sitting in mixed-grade-level groups of four.	
 Slide 23 Time Allotted: 10 minutes	***Critical Idea*** • Instruction involving operations with fractions should always begin with making connections to strategies used in operations with whole numbers. ***Step-By-Step Instructions*** • Say, ○ "We will engage in some math learning experiences in the domain of Number and Operations—Fractions." ○ "Individually, look at the equation on the slide and think about what strategies you could use to solve this problem." • After a few seconds, ask a few participants to share their strategies for solving the problem. • Possible strategies: ○ *I decomposed the 5 to make 4 + 1 and moved the 1 over to the 9 to make a 10. Then I added 4 + 10 to get 14.* ○ *I decomposed the 9 to make 4 + 5 and moved the 5 over to the other 5 to make a doubles fact, which also makes a 10. Then I added 10 + 4 to get 14.* • As participants share their strategies, write them on a sheet of chart paper. • Say, ○ "There are many strategies we use to make adding whole numbers easier." ○ "I wonder if we can use similar strategies to add fractions?" • **<u>Animate slide.</u>** ○ "Take a minute to discuss with your shoulder partner what strategies you could use to solve this next equation." • Give one or two minutes for participants to discuss possible strategies for solving this problem and then have some share out.	Chart paper Markers

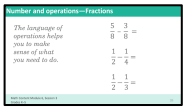
Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials
	• Possible strategies: ○ *I did it the same way as we did the whole numbers, I decomposed* $\frac{5}{10}$ *to make* $\frac{1}{10}+\frac{4}{10}$*. I then moved the* $\frac{1}{10}$ *to the* $\frac{9}{10}$ *to make* $\frac{10}{10}$*. Then I added* $\frac{4}{10}+\frac{10}{10}$ *to get* $\frac{14}{10}$*, which is equal to* $1\frac{4}{10}$*.* ○ *I decomposed* $\frac{9}{10}$ *to make* $\frac{4}{10}+\frac{5}{10}$*. I then moved the* $\frac{5}{10}$ *to the other* $\frac{5}{10}$ *to make 1 whole. Then I added* $1+\frac{4}{10}$ *to get* $1\frac{4}{10}$*.* • As participants share strategies, chart them on your poster paper. • Say, ○ "So, what you are telling me is that for adding fractions, we can use strategies similar to strategies we use for adding whole numbers." ○ "One difference I did hear was that instead of making a 10, it may be easier to decompose fractions to try to make a whole." ○ "Let's try one more and see how many different strategies we can use to help us solve this problem." • **<u>Animate slide.</u>** ○ "Work with your partner to discuss all the possible strategies you can find for solving this problem." • Allow another couple of minutes for the participants to discuss the various strategies for solving the problem. • When time is up, ask participants to share out possible strategies. As participants share, chart the strategies on your poster. • Possible strategies: ○ *I decomposed one of the* $\frac{3}{4}$ *to make* $\frac{1}{4}+\frac{2}{4}$*. I then moved the* $\frac{1}{4}$ *to the other* $\frac{3}{4}$ *to make 1 whole. Then I added* $1+\frac{2}{4}$ *to get* $1\frac{2}{4}$*.* ○ *I decomposed one of the* $\frac{3}{4}$ *to make* $\frac{1}{4}+\frac{1}{2}$*. I then moved the* $\frac{1}{4}$ *to the other* $\frac{3}{4}$ *to make 1 whole. Then I added* $1+\frac{1}{2}$ *to get* $1\frac{1}{2}$*.* ○ *I decomposed both of the* $\frac{3}{4}$ *to make* $\frac{1}{4}+\frac{1}{2}$*. I knew that* $\frac{1}{2}+\frac{1}{2}=1$ *and that* $\frac{1}{4}+\frac{1}{4}=\frac{2}{4}=\frac{1}{2}$*. Then I added* $1+\frac{1}{2}$ *to get* $1\frac{1}{2}$*.* ○ *I added* $\frac{3}{4}+\frac{3}{4}$ *to get* $\frac{6}{4}$*. Then I knew* $\frac{6}{4}$ *would make 1 whole with* $\frac{2}{4}$ *left over. Then I added* $1+\frac{2}{4}$ *to get* $1\frac{2}{4}=1\frac{1}{2}$*.* • **<u>Transition to the next slide by saying</u>**, ○ "We can see that strategies work when adding fractions with like denominators. Let's see if we can use some strategies to help us when adding unlike denominators."	

Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials
	Words of Wisdom • Not applicable	


 	
Slide 24
Time Allotted:
15 minutes
	Critical Idea
	• Instruction involving operations with fractions should always begin with making connections to strategies used in operations with whole numbers.
	
	Step-By-Step Instructions
	• Have participants locate handout **M6_P-03 Number Lines.**
	• Say,
	  ○ "We are going to use the number line as a tool to help us solve the next set of problems."
	• **<u>Animate slide.</u>**
	  ○ "Using the number line, work with your partner to see if you can solve the problem. I should be able to tell what strategy you used by looking at your number line."
	• Allow up to two minutes for participants to solve and discuss the problem using their number lines.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	
	• Possible strategies:
	  ○ *I used the commutative property to first jump from 0 to ½. I then marked half of the remaining half to make fourths and jumped the remaining ¼. This put me on the ¾ spot on the number line. So, ½ + ¼ = ¾.*
	  ○ *I marked my number line to show fourths. I then jumped from 0 to ¼. I knew ½ was equal to 2/4, so I jumped an additional 2 fourths to land on ¾. So, ¼ + ½ = ¾.*
	
	• If it doesn't come up, point out the strategy of using the commutative property to switch the numbers in the problem in order to make it easier to solve.
	• Say,
	  ○ "Properties such as the *commutative property* are also good strategies we can use to solve problems. Let's try another problem to see if these strategies continue to work."
	• **<u>Animate slide</u>**.
	• Allow up to two minutes for participants to solve and discuss the problem using their number lines.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	
	• Possible strategies:
	  ○ *I marked my number line to show sixths. I then jumped 5 sixths on the number line. I knew 1/3 was equal to 2/6, so I jumped an additional 2 sixths. This put me 1 sixth past the 1 whole mark so my total was 1 and 1/6.*
	  ○ *I knew 1/3 was equal to 2/6, so I decomposed the 1/3 to make 1/6 + 1/6. I then added 1/6 to my 5/6 to make 1 whole. On my number line, I jumped from the 0 to 1 whole and then jumped the remaining 1/6 to land on 1 and 1/6.*
	  ○ *I marked my number line to show thirds. I then used the commutative property to first jump the 1/3. I then went back and marked my number line to show sixths. From the 1/3 line, I jumped the remaining 5 sixths to land on 1 and 1/6.*
	
	• If it does not come up naturally, be sure to point out the possible use of the ***commutative property*** and the strategy of ***decomposing*** the numbers to make a whole.
		M6_P-03
		Number Lines

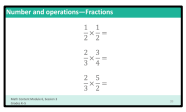
Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials

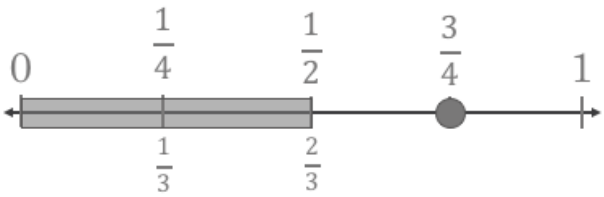
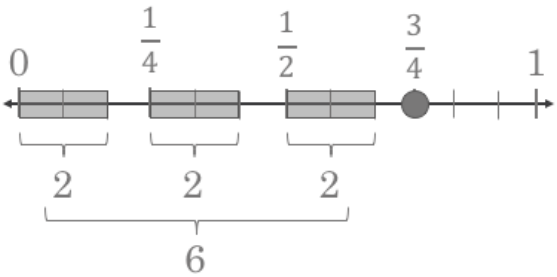
	• Say,
	  ○ "One thing you should notice is that we can make sense of adding fractions with unlike denominators even if we don't have a firm understanding of how to find a common denominator.
	  ○ Using our reasoning skills and a tool such as a number line helps us build our conceptual understanding of what it means to find a common denominator."
	  ○ "By teaching it this way, we are also using strategies and tools that the students are familiar with from adding and subtracting whole numbers—which will help students when reasoning with fractions."
	  ○ "Let's try one more addition problem using our number line."
	• **Animate slide**.
	• Allow up to two minutes for participants to solve and discuss the problem using their number lines.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	• Possible strategies:
	  ○ *I used the commutative property to first jump ½ on my number line. I then marked half way between the remaining half to make fourths, so I could jump my 1 fourth. I then had to go back and mark twelfths on my number line so I could jump my remaining 2 twelfths. This action landed me on 11/12.*
	  ○ *I first marked twelfths on my number line. Then I knew that ½ was equal to 6/12 and ¼ was equal to 3/12. So, I first jumped my 2 twelfths, then I jumped 6 twelfths, and finally I jumped the remaining 3 twelfths, which landed me on 11/12.*
	• **Transition to the next slide**.
	
	Words of Wisdom
	• Not applicable	


 	
Slide 25
Time Allotted:
15 minutes
	Critical Idea
	• Instruction involving operations with fractions should always begin with making connections to strategies used in operations with whole numbers.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Let's see if we can use similar strategies to solve subtraction problems."
	• **Animate slide**.
	  ○ "Use your number line to discuss with your partner how you might solve this problem."
	• Allow up to two minutes for participants to solve and discuss the problem using their number lines.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	• Possible strategies:
	  ○ *I marked eighths on my number line. Then I started at the 5/8 mark. I then jumped backwards 3 eighths. This landed me on the 2/8 mark. So, 5/8 – 3/8 = 2/8.*
	• Say,
	  ○ "This approach differs slightly from the approach we used in the addition problems."
	  ○ "What is different about it?"
	  – *With addition, we are starting with an amount and then counting forward, or making jumps, to add to that amount.*
	  – *With subtraction, we are starting with an amount and counting backward to take away a certain amount.*	

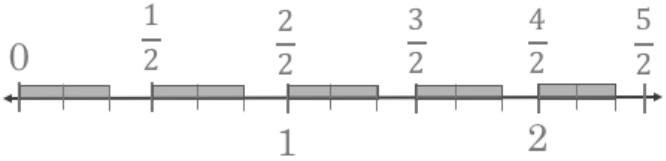
Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials

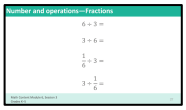
	• Allow a few participants to answer the question.
	• No matter what, discuss the language of *"add to"* for addition and "*take away or difference"* for subtraction.
	• **Animate slide** to reveal quotation.
	• Say,
	  ○ "When we talk about operations, the language we use is very important."
	  ○ "How we talk to students about what *operations* means greatly influences their understanding."
	  ○ "What you are noticing here is that ***the same language we use for operations with whole numbers still applies to operations with fractions.***"
	  ○ "As teachers, we often make the mistake of treating fraction number sense as something entirely different from number sense for whole numbers."
	  ○ "If we approach fraction number sense the same way we approach whole number understanding, we can help ensure fraction number sense does not feel like a foreign language."
	  ○ "Let's try another problem with that in mind."
	• **Animate slide**.
	• Allow up to two minutes for participants to solve and discuss the problem using their number lines.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	• Possible strategies:
	  ○ *I marked fourths on my number line and started at the ½ mark, which is also the 2/4 mark. I then jumped backwards 1 fourth and landed on the ¼ mark.*
	• Say,
	  ○ "Using a number line in this way helps students easily see equivalent fractions."
	  ○ "This strategy can help a student who didn't know that one half is equal to two fourths to see the equivalence while solving the problem."
	  ○ "Sometimes, though, it is not so easy to see. Let's try another problem to show what I mean."
	• **Animate slide**.
	• Allow up to two minutes for participants to solve and discuss the problem using their number lines.
	• Ask,
	  ○ "What makes this problem so much more difficult to solve on a number line than the previous one? Discuss this with your partner."
	• Allow participants a minute to discuss and then have a few share out.
	• Possible response:
	  ○ *When I divide my number line into halves and thirds, there is no immediate common denominator. This fact makes it difficult to jump backwards from ½ by a third, since there is no line to indicate where I would land.*
	• Say,
	  ○ "A problem like this will require a little more reasoning for a student to solve. What you described shows that you understand what the problem means and what to do, you're just stuck because the model is not doing the work for you."
	  ○ "What reasoning do you think a student could use to help them figure out what to do? Discuss with your partner."
	• After participants have had a minute to discuss, ask a few to share out.
	• Possible responses:
	  ○ *A student might know that both one half and one third have equivalent fractions with sixths, so they could convert both into sixths and then solve.*	

Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials
	○ *A student can look at the number line and see that the ½ mark falls exactly halfway between one of the thirds. This finding could indicate that if they divide all the thirds in half, they will be able to show equivalent fractions of sixths, which can help them solve the problem.* (Discuss this reasoning even if it does not come up naturally.) • Say, ○ "Problems like this are why we need to provide students with opportunities to struggle and reason in math." ○ "The problem itself looks simple, but when the model fails to provide the answer, the last thing we want is for our students to just give up." ○ "Allowing them to reason through and make sense of the math will build stronger mathematical thinkers, which is our ultimate goal." • **<u>Transition to the next slide</u>**. ***Words of Wisdom*** • Not applicable	
 Slide 26 Time Allotted: 20 minutes	***Critical Idea*** • Instruction involving operations with fractions should always begin with making connections to strategies used in operations with whole numbers. ***Step-By-Step Instructions*** • Have participants continue to use handout **M6_P-03 Number Lines.** • Say, ○ "Think about the language of multiplication we have been using. How could we illustrate our understanding of this problem on the number line?" • **<u>Animate slide</u>**. ○ "Work with your partner to solve this problem on the number line." • Allow up to two minutes for participants to solve the problem on the number line. • Have a few participants share out their solutions as you draw their description on chart paper. • Possible response: ○ *On my number line I found ½. I then found one half of that half by marking the spot halfway between them. I know this mark indicates ¼, so ½ of ½ or ½ x ½ = ¼.* • Say, ○ "This understanding of the *language of operations*—in addition to our understanding of *number sense with fractions*—leads us to be able to solve complex problems like multiplication of fractions." ○ "This is done without even teaching students the algorithm for multiplying fractions, which most students don't understand anyway." ○ "Let's see if this strategy works with unlike denominators." • **<u>Animate slide</u>**. ○ "Work with your partner to solve this problem on the number line." • Allow up to 2 minutes for participants to solve the problem on the number line. • Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.	**M6_P-03** Number Lines

Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials
	• Possible responses: ○ *I started by marking fourths on my number line, and then I found ¾. I noticed that when I looked at the number line from 0 to ¾, it had 3 sections. This meant that my ¾ was already split into thirds. I then found that 2 of those thirds landed on the ½ mark. So, 2/3 of ¾ = ½.*  ○ *I started by marking fourths on my number line, and then found ¾. I then went back and divided each of those fourths into thirds. I then shaded 2 of each of the 1/3 sections inside of each fourth. When I counted them all up, I had 6 sections shaded. I then counted how many sections of this size I had in my whole, which was 12. So, 2/3 of ¾ is 6/12, which is the same as ½.*  • **If these two illustrations do not surface on their own, be sure to demonstrate both on your chart paper.** • Say, ○ "We just demonstrated two different ways of thinking about the same problem. – In one way, we are looking at 2/3 of the entire ¾. – In the other way, we are looking at 2/3 of each of the 3 fourths. ○ Both ways result in the same product." ○ "This is a good discussion for students to have, because there are times when one way of thinking makes more sense than the other." ○ "Let's look at another problem and see which method you are drawn to when solving." • **<u>Animate slide</u>**. • Allow up to 2 minutes for participants to solve the problem on the number line. • Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.	

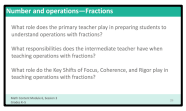
Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials

	• Possible response:
	  ○ *I started by marking 5 halves on my number line, which is the same as having 2 and 1 half. I then divided each half into thirds, and I shaded 2 of the thirds within each half. When I counted them, I had 10 total shaded sections. There are 6 sections this size in each whole, so 2/3 of 5/2 is 10/6 or 1 and 4/6.*
	 
	
	• Say,
	  ○ "You can see that the thirds were not as easily defined when looking at the entire 5 halves so it made more sense to divide each 1 half section into thirds to find the answer."
	  ○ "Importantly, all this was done without ever needing the algorithm."
	  ○ "We need to keep in mind that **algorithms should only be taught once the students have achieved a conceptual understanding** of what the math means."
	• **Transition to the next slide**.
	
	Words of Wisdom
	• Not applicable	


Slide 27
Time Allotted:
15 minutes
	Critical Idea
	• Instruction involving operations with fractions should always begin with making connections to strategies used in operations with whole numbers.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Let's set aside our number line models as we think about this new set of problems."
	• **Animate slide**.
	  ○ "Work with your partner to quickly draw a visual showing the solution to this problem."
	• Allow participants up to two minutes to complete the problem.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	• Ask,
	  ○ "How did you know that this is what you were supposed to do to solve this problem? How did the language of the operation help you?"
	• Have a few participants share.
	• Be sure to surface that the language of division is more than just saying "divided by." It's about how many objects you have and HOW you are dividing them up. For example, I have 6 objects and I am dividing them into 3 groups (OR groups of 3).
	• **Animate slide**.
	  ○ "Work with your partner to quickly draw a visual showing the solution to this problem."
	• Allow participants up to two minutes to complete the problem.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.	

Time & Slide Thumbnail	Facilitator Notes Session 3: Deepening Mathematical Content Knowledge	Materials

	• Ask,
	  ○ "What was the difference in how you approached each of these problems?"
	• Have a few participants share out.
	• Say,
	  ○ "Thinking about the visuals you just used, try solving the next problem."
	• **<u>Animate slide</u>**.
	  ○ "Work with your partner to quickly draw a visual showing the solution to this problem."
	• Give participants up to two minutes to complete the problem.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	• Ask,
	  ○ "How did your visual models with the whole numbers help you to solve the problem with the fraction?"
	• Have a few participants share out.
	• **<u>Animate slide</u>**.
	  ○ "Work with your partner to quickly draw a visual showing the solution to this problem."
	• Give participants up to two minutes to complete the problem.
	• Ask a few participants to share their strategy. As they share, illustrate on your poster paper what they describe.
	• Ask,
	  ○ "How is the language we use when talking about division helping you to make sense of all these various division problems?"
	• Have a few participants share out.
	• **<u>Transition to next slide</u>**.
	
	Words of Wisdom
	• This slide leads to reflection on participants' learning.	


Slide 28
Time Allotted:
10 minutes
	Critical Idea
	• Adults do not learn from experience but rather from reflecting on experience.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Let's take some time to pause and reflect on our experience."
	  ○ "Take a moment to read the questions on the slide."
	• Give participants individual time to think about the questions on the slide. Encourage them to jot down their thinking on a piece of scrap paper or a sticky note.
	• After a few minutes, ask participants to make eye contact with someone they haven't worked with today and move to meet them in the room to share their reflections.
	• Allow a couple minutes for participants to share.
	
	Words of Wisdom
	• Participants deepen and connect their learning by writing down their reflections.	

Math Module 6, Session 4 Overview
Session Title: Instructional Strategies to Improve Curriculum Implementation

Session Overview *What are the overarching goals of this session? Why are those goals important?* *How do they connect to what's come before and what will come after?*
The overarching goal of Session 4 is for the participants to gain a deeper understanding of the Standards for Mathematical Practice (SMPs) and the role these standards play in developing student understanding in mathematics. Participants will engage in a deep study of the practice standards and investigate how they manifest themselves in an elementary classroom. They will also investigate how the practice standards are integrated into the EngageNY curriculum.

Session Key Points *What are the 2 to 4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Through Session 4, participants will know: • The Standards for Mathematical Practice, like the instructional shifts, are embedded into *A Story of Units* to engage students in deep mathematical thinking. • The Standards for Mathematical Practice (SMPs) are integrated seamlessly into the components of each lesson of the EngageNY curriculum.	During Session 4, participants will record their initial thoughts on the meaning of the Standards for Mathematical Practice and will add notes as they deepen their understanding of the standards. Participants will also generate a series of posters for each of the practice standards that show how students and teachers implement them in the math classroom.

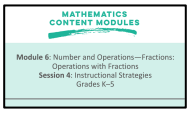
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will … • Explore the Standards for Mathematical Practice and recognize the critical role the SMPs play in the development of mathematical thinking. (CK, CP) • Explain how the practice standards are integrated into the EngageNY curriculum. (CS) CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	• Engage in a study of the Standards for Mathematical Practice. • Investigate ways that the practice standards are integrated into the components of the EngageNY curriculum.

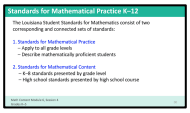
Facilitation Recommendations	
Session Length	80 minutes

Preparing to Facilitate *What materials and supplies are needed to facilitate this session?* *What must the facilitator do to prep for the actual session?*	

Session Materials
 	
• **Participant Handouts**
  ○ **M6_P-04** First Impressions: Standards for Mathematical Practice
  ○ **M6_P-05** Standards for Mathematical Practice: Commentary and Elaborations for K–5
  ○ **M6_P-06** Standards for Mathematical Practice (SMPs) in EngageNY (from "How to Implement *A Story of Units*")
	Facilitator Pre-Work and Prep
	
	• Print participant handouts (1 per participant)
	  ○ **M6_P-04** First Impressions: Standards for Mathematical Practice
	  ○ **M6_P-05** Standards for Mathematical Practice: Commentary and Elaborations for K–5
	  ○ **M6_P-06** Standards for Mathematical Practice (SMPs) in EngageNY (from "How to Implement *A Story of Units*")

Participant Pre-Work *What should participants bring to this session?* *What should they do or prepare in advance of this session?*	
Participants must bring: • Not applicable	**Before this session, participants should:** • Not applicable

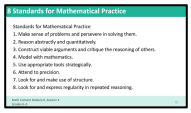
Time & Slide Thumbnail	Facilitator Notes Session 4: Instructional Strategies	Materials
 Slide 29 Time Allotted: < 1 minute	**Session 4: Instructional Strategies** to improve curriculum implementation **Slides 29–34 Time Allotted: 80 minutes** ***Critical Idea*** • This slide introduces Session 4. ***Step-By-Step Instructions*** • Tell participants that we will transition into Session 4. ***Words of Wisdom*** • For Session 4, participants should be sitting in mixed-grade-level groups of four.	


 	
Slide 30
Time Allotted:
2 minutes
	Critical Idea
	• The Louisiana Student Standards for Mathematics (LSSM) are composed of two equally important sets of corresponding and connected standards—content standards and practice standards.
	
	Step-By-Step Instructions
	• Say,
	  ○ "The Louisiana Student Standards for Mathematics (LSSM) should be understood as a **set** of corresponding and connected standards."
	  ○ "The Standards for Mathematical Practice describe how the Standards for Mathematical Content should be approached."
	  ○ "The Standards for Mathematical Practice are about **student** actions—how students engage in the mathematics—and how students act as mathematicians in the classroom."
	  ○ "The Standards for Mathematical Content, on the other hand, define what students should understand and be able to do."
	• **<u>As you transition to next slide</u>**, say,
	  ○ "We are going to begin to study the Standards for Mathematical Practice."
	  ○ "Though the content standards change grade by grade, the Standards for Mathematical Practice are the same for grades K–12. "
	
	Words of Wisdom
	• Keep it simple and brief.	

Slide 31
Time Allotted:
5 minutes
	Critical Idea
	• The Standards for Mathematical Practice can be dense and complicated. Their meaning cannot be determined by the title alone!
	
	Step-By-Step Instructions
	• Ask participants to locate handout **M6_P-04 First Impressions: Standards for Mathematical Practice.**
	• Say,
	  ○ "Take a look at the First Impressions handout. The left column has been filled in for you. These are the names of the 8 Standards for Mathematical Practice."
	  ○ "We are going to go through the Standards for Mathematical Practice, looking first ONLY at the names of those standards."
	  ○ "Why would we do this?"
	• Possible response:
	  ○ *To uncover misconceptions around looking at just these names. There is more depth when reading the actual description of each Standard for Mathematical Practice.*
		M6_P-04 First Impressions: Standards for Mathematical Practice

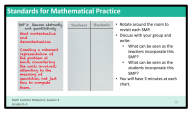
Time & Slide Thumbnail	Facilitator Notes Session 4: Instructional Strategies	Materials

	• Say,
	  ○ "You will begin a 3-minute free-write about your first impression of the title, based only on the names. There are no wrong answers, and you will get more time to dive into these standards soon."
	  ○ "Read the standard titles, and quickly write your first impressions in the next column. You have 3 minutes."
	
	Words of Wisdom
	• Not applicable	


Slide 32
Time Allotted:
30 minutes
	Critical Idea
	• The Standards for Mathematical Practice are the same for grades K through 12, making it hard to interpret how the secondary examples apply to the elementary grades.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Now that we have captured our first impressions of the SMPs, we are going to do a deeper dive into these standards and what they actually mean."
	  ○ "The goal of this activity for all participants come to a shared understanding of what the SMPs mean and how students and teachers manifest these practices in the classroom."
	• Have participants locate handout **M6_P-05 Standards for Mathematical Practice: Commentary and Elaborations for K–5.**
	• Say,
	  ○ "The SMPs are dense, and some of us may struggle with some of the ideas, vocabulary, and examples. Some of this struggle is due to the fact that the SMPs are the same for grades K through 12, so it can be challenging to interpret how the secondary examples apply to the elementary grades."
	  ○ "The writers of the Progressions understand this struggle, so they have developed a Progression for the SMPs specifically for the elementary grades. We will use this progression to help deepen our understanding so we can be more intentional in integrating the practice and content standards in our instruction."
	  ○ "If you look at the *Commentary and Elaborations* document, you will notice that it provides two different ways of adapting the language of the practice standards to the K–5 setting."
	  ○ "The *annotated* version of the *Commentary and Elaborations* provides additional interpretation of the standards appropriate for K–5 classrooms. This version is intended for people who want to see how the original language of the standards applies in K–5. The K–5 annotations can be found in the margin, and they are connected to the original language by dots found in the standards."
	  ○ "The *elaborations* version consists of narrative descriptions that integrate the annotations and provide a coherent description of how the practice standards play out in the K–5 classroom."
	  ○ "Both versions are valuable for different purposes, but really it is a matter of preference on which version you read."
	• Ask the participants to number off 1 through 8.
	• Say,
	  ○ "You will read thoroughly the SMP you have assigned. You should read the material in either the *annotated* or the *elaborations* section of the document. Be sure to take notes and highlight important parts as you read. Your goal is to come to a detailed understanding of your assigned SMP."
	• After 3 to 5 minutes of quiet reading and studying time, you as facilitator should ask
		M6_P-05 Standards for Mathematical Practice: Commentary and Elaborations for K–5
		
		Chart paper
		
		Markers
		
		M6_P-04 First Impressions: Standards for Mathematical Practice

Time & Slide Thumbnail	Facilitator Notes Session 4: Instructional Strategies	Materials

	the participants to get into groups according to the number (one through eight) that they were assigned. Indicate a meeting area for each practice standard group. Give participants a minute to get into their groups.
	• Say,
	  ○ "With your assigned SMP group, discuss what each member recorded as they studied. Choose one recorder for the group to capture your group's important takeaways on a piece of chart paper. Write the title of your SMP at the top."
	• After about 10 minutes of detailed discussion, reconfigure participants into new groups. This time, create groups of 8; each group should have one representative for each of the 8 Standards for Mathematical Practice.
	• Have participants hang their chart paper around the room as they move to their new groups
	• Tell participants that in their new "all 8 SMPs" groups, they should each share the important takeaways from each SMP group's discussion. For example, the SMP 1 representative should share the most important takeaways from their SMP 1 group's discussion.
	• Tell participants,
	  ○ "As others share, you should use this opportunity to return to the 'first impressions page' and record in the second column any important take-aways from each of the SMPs."
	• Some important points to surface. (This is for your reference as facilitator. It is not a complete list; participants' language may vary.)
	  ○ **SMP 1:** Make sense of problems and persevere in solving them.
	  – Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution.
	  – Students make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt.
	  – Students ask, "Does this make sense?"
	  ○ **SMP 2**: Reason abstractly and quantitatively.
	  – Students must contextualize and decontextualize.
	  – Students create a coherent representation of the problem at hand; they consider the units involved and attend to the meaning of quantities—not just how to compute them.
	  ○ **SMP 3**: Construct viable arguments and critique the reasoning of others.
	  – Students break problems into cases, and can recognize and use counterexamples.
	  – Students at all grades can listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
	  ○ **SMP 4**: Model with mathematics.
	  Be sure to get to:
	  – Use mathematics in problems outside the math classroom.
	  – Students can work with than "word problems"; they are "problem solvers."
	  – Students apply mathematics to everyday life.
	  – Students make assumptions and approximations comfortably.
	  – Students identify important quantities.
	  – Students analyze representations and see the context.
	  – Students recognize limitations.
	  ○ **SMP 5**: Use appropriate tools strategically.
	  Reminder that this is where technology fits in.
	  – Students consider available tools and make sound decisions on which tool(s)	

Time & Slide Thumbnail	Facilitator Notes Session 4: Instructional Strategies	Materials
	are most helpful. – Students understand various tools' limitations. – Students make connections between tools and modeling. – Students use tools to explore and deepen their understanding. ○ **SMP 6**: Attend to precision. – Students use clear definitions in discussion with others and in their own reasoning. – Students examine claims and make explicit use of definitions. ○ **SMP 7**: Look for and make use of structure. – Students identify patterns and use these patterns. – Students discern a pattern or structure. – Students see an overview and shift perspective. – Students see complicated things as single objects. ○ **SMP 8**: Look for and express regularity in repeated reasoning. – Students develop shortcuts/general methods to solve. – Teachers do not give students PEMDAS[1] or little songs to sing; rather, as students work problems, they start to see the relationships and create the rules on their own. – Repeated reasoning and generalizing take SMP 7 to SMP 8, solidifying the shortcuts. – Students notice if calculations are repeated and begin to surmise that there are general methods and/or shortcuts – Students maintain oversight of the process—while attending to details. – Students continually evaluate the reasonableness of their intermediate results. • As participants are discussing, place a sheet of chart paper to the side of each standard description chart. • You as facilitator should pre-draw a T-chart on these new sheets of chart paper. The T-chart should have the word *Teachers* on the left and the word *Students* on the right as depicted on the next slide. ***Words of Wisdom***: • Be sure to keep an eye on the time.	
 Slide 33 Time Allotted: 33 minutes	***Critical Idea*** • Teachers must provide opportunities for students to make use of the Standards for Mathematical Practice in each lesson**.** ***Step-By-Step Instructions*** • Say, ○ "With your group, you will now rotate (or "carousel") around the room to revisit each SMP. With each stop at a SMP, you will find a new piece of chart paper with a T-chart labeled *Teachers* and *Students*. ○ "Each of you will need a marker for this activity. Though you circulate as a group, I invite each of you individually to add descriptions to the T-charts during this activity." ○ "Your goal is – To create 'word pictures' (specific descriptions that paint a picture) on the LEFT	Chart paper Markers

[1] PEMDAS is a mnemonic device acronym for the words *parenthesis*, *exponents*, *multiplication*, *division*, *addition*, and *subtraction*.

Time & Slide Thumbnail	Facilitator Notes Session 4: Instructional Strategies	Materials
	side, indicating what TEACHERS would need to do to ensure that this practice is implemented in the classroom (i.e., what would teachers be doing; planning; saying?) – And, on the RIGHT side, to indicate what STUDENTS would need to do in class to ensure that they engaging with this SMP (i.e., what would students be doing; saying; interacting with?)." ○ "You will have 3 minutes at each SMP." ○ "If you see a comment you strongly agree with, instead of writing it a second time, feel free to put a checkmark or smiley face next to it." • Give participants time to rotate around the room, discussing each SMP and adding notes to each T-chart. • Use a timer to keep participants on track—allow about 3 minutes per chart. Let the participants know when to switch. • Continue until all participants have rotated through each SMP. • Ask participants to return to their table groups and debrief by quickly reading off some highlights from each chart (no more than 5 minutes). ***Words of Wisdom*** • Move participants to a new SMP every 3 minutes.	
 Slide 34 Time Allotted: 10 minutes	***Critical Idea*** • EngageNY seamlessly integrates the Standards for Mathematical Practice into every lesson. ***Step-By-Step Instructions*** • Have participants locate handout **M6_P-06 Standards for Mathematical Practice (SMPs) in EngageNY (from "How to Implement A Story of Units").** • Give the participants 5 minutes to read the handout and reflect on the questions. • After a few minutes, ask participants to make eye contact with someone they haven't worked with today and move to meet them in the room to share their reflections. • Allow a couple minutes for participants to share. • Say before closing, "We must understand the Standards for Mathematical Practice because they are the lens through which students access the content standards."	**M6_P-06** Standards for Mathematical Practice (SMPs) in EngageNY (from "How to Implement A Story of Units")

Math Module 6, Session 5
Session Title: Purposeful Planning of the EngageNY Curriculum

Session Overview *What are the overarching goals of this session? Why are those goals important?* *How do they connect to what's come before and what will come after?*
The overarching goal of Session 5 is for participants to practice a process for collaborative planning conversations that will enable them to make connections from the standards to their resource materials. In this session, participants will use the Planning Guide, a tool for focusing planning conversations around the standards and making instructional decisions around resource materials.

Session Key Points *What are the 2 to 4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*

Through Session 5, participants will know:
• Collaborative planning is:
  ○ Working and learning together to plan instruction (including lessons, units, assessments, and activities) focused on building the intended learnings described by the standards.
  ○ Discussing, interpreting, and refining curriculum resource materials together to use them to best meet our students' needs in their learning.
• Focusing planning conversations around the standards in order to make informed instructional decisions will:
  ○ Build a shared understanding of the math content described in the standards and what that content looks like in teaching and learning.
  ○ Help us consider and use instructional strategies and resources that will best build on students' current understanding and connect to the intended learning.
	• After Session 5, participants should be able to produce well informed conversations and planning notes around their standards using the Planning Guide.

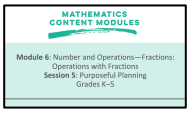
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will … • Investigate select standards from the domain of Number and Operations—Fractions to determine how fraction operations concepts progress across K–5. (CK, CS) • Develop and use a common understanding of grade-level standards to align teaching and learning. (CK, CS) CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	• Review the Planning Guide. • Practice conducting collaborative conversations around the standards.

Facilitation Recommendations	
Session Length	60 minutes

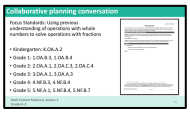
Preparing to Facilitate *What materials and supplies are needed to facilitate this session?* *What must the facilitator do to prep for the actual session?*	

Session Materials
• **Participant Handouts**
  ○ **M6_P-07** Planning Guide
• **Additional Supplies**
  ○ Sticky notes
	Facilitator Pre-Work and Prep
	• Print participant handouts (1 per participant)

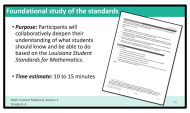
Participant Pre-Work *What should participants bring to this session?* *What should they do or prepare in advance of this session?*	
Participants must bring: • Computer	**Before this session, participants should:** • Not applicable

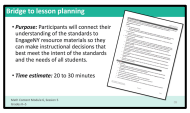
Time & Slide Thumbnail	Facilitator Notes Session 5: Purposeful Planning of the EngageNY Curriculum	Materials
 Slide 35 Time Allotted: 1 minute	**Session 5: Purposeful Planning** of the EngageNY curriculum **Slides 35–41 Time Allotted: 60 minutes** ***Critical Idea*** • This slide introduces Session 5. • We will work toward implementing structured collaboration for planning instruction. ***Step-By-Step Instructions*** • Tell participants that we will transition into Session 5. ***Words of Wisdom*** • For Session 5, participants should be sitting in grade-level groups.	

Slide 36
Time Allotted:
3 minutes
	Critical Idea
	• This tool helps grade-level teams stay focused when studying standards and planning aligned instruction together.
	
	Step-By-Step Instructions
	• Say,
	  ○ "In previous modules, we introduced you to the Planning Guide, a tool for establishing a regular, ongoing collaborative planning process that helps grade-level teams plan instruction aligned to the standards."
	• Give each participant a copy of **M6_P-07 Planning Guide**.
	• Say,
	  ○ "Remember that this tool is designed to be completed within a 45-minute collaborative planning period. This tool guides the discussion, keeping the team focused on understanding the content and what it looks like in instruction, and then considering the best use of strategies and resources for instruction."
	• Give participants two minutes with a partner to refamiliarize themselves with the *Planning Guide*.
	• Transition to the next slide.
	
	Words of Wisdom
	• This is a quick re-introduction to the Planning Guide. Do not take too much time here.
		M6_P-07
		Planning Guide


 	
Slide 37
Time Allotted:
2 minutes
	Critical Idea
	• This tool helps grade-level teams stay focused when studying standards and planning aligned instruction together.
	
	Step-By-Step Instructions
	• Say,
	  ○ "If you recall, the first step in the process is to choose focus standards to study. When you are using the tool with your team, you might choose standards that are coming up in the next lesson or unit, standards that the team typically sees students struggle with, and so on. Whatever way you decide, make sure the team generally agrees to 1 to 3 standards to study."
	  ○ "As previously, since our current focus is the big idea 'Using previous understanding of operations with whole numbers to solve operations with fractions' we will use the standards from that big idea for today's discussion."
	• Have each group jot down the standards they will study today on the first page of their Planning Guide.
		M6_P-07
		Planning Guide

Time & Slide Thumbnail	Facilitator Notes Session 5: Purposeful Planning of the EngageNY Curriculum	Materials
	Words of Wisdom • Walk around to groups throughout this process to monitor progress, and ask questions/prompt groups to maintain progress.	


 	
Slide 38
Time Allotted:
2 minutes
	Critical Idea
	• This tool helps grade-level teams stay focused when studying standards and planning aligned instruction together.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Since we guided you through this process step-by-step in a previous module, this time we are going to quickly review the process, and then you will be released to do it on your own in your grade-level groups."
	  ○ "If you look at the next page of the Planning Guide, you will see the section called Foundational Study of the Standards."
	  ○ "Remember that the purpose of this section is to collaboratively deepen your understanding of what students should know and be able to do based on the standards. Once you get used to the process, this section should take only about 15 minutes to complete."
	  ○ "The page includes a set of specific "look-fors" to help guide you in this conversation."
	• Transition to the next slide.
	
	Words of Wisdom
	• These slides serve as a quick review of the Planning Guide.
		Computer
		
		M6_P-07
		Planning Guide

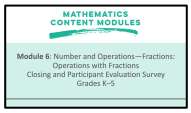

 	
Slide 39
Time Allotted:
3 minutes
	Critical Idea
	• This tool helps grade-level teams stay focused when studying standards and planning aligned instruction together.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Locate the third page of the Planning Guide. This section is called the Bridge to Lesson Planning. We did a deep dive into this section in an earlier module."
	  ○ "Remember that the purpose of this section is to connect your understanding of the standards to the EngageNY resource materials."
	  ○ "You will recall that this part of the collaborative planning conversation takes the most time, about 20 to 30 minutes."
	• Transition to next slide.
	
	Words of Wisdom
	• These slides serve as a quick review of the Planning Guide.
		M6_P-07
		Planning Guide

Time & Slide Thumbnail	Facilitator Notes Session 5: Purposeful Planning of the EngageNY Curriculum	Materials

Slide 40
Time Allotted:
45 minutes
	Critical Idea
	• It is important to connect our deep study of the standards to the implications for instruction to help us make informed decisions about the resource materials that we use in our classrooms.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Now your grade-level groups are going to work through the entire planning process laid out in the Planning Guide."
	  ○ "You will have 45 minutes to complete the whole process—15 minutes for the study of the standards and 30 minutes for the bridge to lesson planning."
	  ○ "Remember to use all the resources available to you on the Louisiana Believes website to help you with your discussion and in choosing a lesson from EngageNY."
	  ○ "I will be walking around the entire time to make myself available if you need any help or have any questions."
	• Allow 45 minutes for participants to plan.
	
	Words of Wisdom
	• Walk around and assist groups as needed.
		Computers
		
		M6_P-07
		Planning Guide

   Slide 41 Time Allotted: 5 minutes	***Critical Idea*** • It is important to connect our deep study of the standards to the implications for instruction to help us make informed decisions about the resource materials that we use in our classrooms. ***Step-By-Step Instructions*** • Say, ○ "Take a few moments to read the questions on the slide and jot down your individual reflections on a sticky note." • Give participants a minute to individually reflect and write down their thinking on a sticky note. • Then give them a few minutes to discuss the questions with those in their group. • After 3 minutes, ask participants to share out a few of their conversation points. • Summarize by reminding participants that it is our job as educators to provide students with rich learning experiences that give them opportunities to engage in meaningful mathematics and that help prepare them for college and career. • Ask participants to return to their original seats. ***Words of Wisdom*** • Don't rush this conversation—it is pivotal.	Sticky notes

Math Module 6, Closing Slides and Participant Evaluation Survey

Time & Slide Thumbnail	Facilitator Notes Closing Slides and Participant Evaluation Survey	Materials
 Slide 42 Time Allotted: <1 minutes	**Module 6 Closing and Participant Evaluation Survey** **Slides 42–44 Time Allotted: 10 minutes** ***Critical Idea*** • Slides 42–44 serve as closing slides for Module 6. ***Step-By-Step Instructions*** • Not applicable. ***Words of Wisdom*** • Not applicable	
  Slide 43 Time Allotted: <1 minute	***Critical Idea*** • This slide provides references for Module 6. ***Step-By-Step Instructions*** • Say, "These are the references for Module 6." • Transition to the next slide. ***Words of Wisdom*** • This slide should be brief.	
  Slide 44 Time Allotted: 10 minutes	***Critical Idea*** • Participant feedback is highly valued and is critical in informing future learning sessions. ***Step-By-Step Instructions*** • Say, "In order to gather feedback of your learning experience, you will take a module evaluation survey. Your responses are very important, so you will use the next 10 minutes to complete the survey." ***Words of Wisdom*** • Participants should complete the evaluation survey during the session.	http://www.utdanacenter.org/ldoe/surveys