Math Module 5 Overview
Module Title: Recognizing and Generating Equivalent Expressions
Grade Band: 6–9

In Module 5, participants develop a common understanding of recognizing and generating equivalent expressions.

In Session 1, participants deepen their knowledge of content related to the big idea of recognizing and generating equivalent expressions. Participants explore the coherence evident in the LSSM related to this big idea across grades 6–9.

Session 2 is a continuation to the *5 Practices for Orchestrating Productive Mathematics Discussions*, with a focus on Practices 3 and 4—selecting and sequencing student responses. Participants will learn how strategically selecting and sequencing students' responses to tasks can help build mathematical understanding.

In Session 3, participants gain clarity on how the content standards manifest in the secondary classroom and how they look when executed well in curriculum and instruction by experiencing a grade 7 EngageNY lesson. Participants unpack the structure of the EngageNY lesson connected to the mathematics learning experience and identify implications for planning and delivering high-quality, standards-aligned mathematics instruction.

In Session 4, participants revisit the Planning Guide to connect a foundational study of grade-level or course standards for the Module 5 focus content of recognizing and generating equivalent expressions and to plan a related EngageNY lesson for their grade-level or course.

Module 5 concludes with a Module 5 participant evaluation survey. This survey should be completed in the session.

Module 5 Key Understandings

As a result of Module 5, participants will develop an understanding of:

- How the standards introduce, reinforce, and extend properties of equality to recognize and generate equivalent expressions across grades 6–9.
- Math tasks and lessons from EngageNY and other Tier 1 resources that relate to the focus content of recognizing and generating equivalent expressions.
- How, when instruction using the EngageNY curriculum is executed well, the key shifts are evident.
- It is important to select student responses that highlight specific strategies or misconceptions and sequence responses in a way that help students to make connections and deepen mathematical understanding.
- A process for high-quality collaborative planning aligned to standards.
- The importance of intentional planning and attention to all of the EngageNY lesson components.

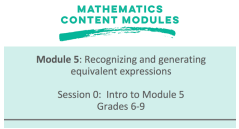
Module 5: Facilitation Recommendations	
Session Length	Six-hour module including: Session 0: Setting the Stage for Module 5 (5 min) Session 1: Deepening Mathematical Content Knowledge and Exploring Coherence in the LSSM (85 min) Session 2: Instructional Strategies to Improve Curriculum Implementation (90 min) Session 3: Key Shifts in Action Through an EngageNY Lesson (90 min) Session 4: Purposeful Planning of the EngageNY Curriculum (90 min) Plus: Module 5 Closing Slides and Participant Evaluation Survey (15 min)
Session Pairing Options	The recommended facilitation of Module 5 is to be done as a full six-hour day of professional learning, with all four sessions facilitated back to back. Facilitators should plan for participants to take the Module 5 participant evaluation survey in Session 5, preferably before leaving the session.
Time of Year	If possible, within four weeks of experiencing Module 4

Facilitation Recommendations	
Session Length	Six-hour module and additional 20 minutes for opening and closing slides.
Time of Year	If possible, within four weeks of experiencing Module 4

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:
• Print facilitator and participant handouts (see handout **M5_CL-01 Module 5 Poster and Handouts Guide**).
 	
Additional Supplies:
• Chart paper
• Markers
• Sticky notes
	Facilitator Pre-Work and Prep:
	• Create and hang the following posters:
	  ○ Parking Lot
	  ○ Group Norms

Time & Slide Thumbnail	Facilitator Notes Session 0	Materials


Slide 1
Time Allotted: 2 minutes
	Session 0: Setting the Stage for Module 5
	Slides 1–4: 5 minutes
	
	Critical Idea
	• It is important to set a positive tone for learning.
	
	Step-By-Step Instructions
	• Before the start of the session, use handout **CL-01_Module 5 Posters and Handouts Guide** to organize your preparation. It lists the posters and other materials you will need to prepare before the session as well as all handouts needed for this module.
	• As participants come in for the day, ask them to sit in mixed grade-level groups of 4.
	• Welcome the group to Module 5 and if necessary, introduce yourself.
	• Direct participants to handout **M5_P-00 Module 5 Presentation Slides**. Say, "Please use handout P-00 throughout each of the sessions in Module 4. You may use the handout to follow along with the presentation slides and as a place to record your notes and responses to specific activities and reflection questions."
	• Remind participants of the Parking Lot poster. This is a place where they can leave questions throughout the day. Explain to them that periodically throughout the day, you will also be answering any questions on the Parking Lot poster.
	• Take care of "housekeeping" items before beginning the day:
	  ○ Scheduled start and stop times
	  ○ Breaks
	  ○ Lunch
	  ○ Location of restrooms
	  ○ Silencing of cell phones
	  ○ Orienting participants to the handouts for the day, including the handout of the slides
	
	Words of Wisdom
	• N/A
		M5_CL-Module 5 Posters and Handouts Guide
		
		M5_P-00 Module 5 Presentation Slides

 Slide 2 Time Allotted: < 1 minute	***Critical Idea*** • For participants to buy into the project, it is important to provide them with 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	Materials
	Image Credit: Chad Baker/Jason Reed/Ryan McVay/Photodisc/Thinkstock (Item number AA014176)	

Slide 3
Time Allotted: 2 minutes
	Critical Point
	• Participants must agree to honor these norms, which will help provide an environment for professional conversation.
	
	Step-By-Step Instructions
	• Say,
	  ○ "In order 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 5."
	• As a way to encourage accountability, direct participants to tell their tablemates which norm they selected.
	
	Words of Wisdom
	• This slide sets the tone for how we will go about our work for the day.	

  Slide: 4 Time Allotted: 1 minute	***Critical Point*** • The lens for learning is beginning with the end in mind. ***Step-By-Step Instructions*** • Say, "Please quietly read the learning expectations for Module 5." • After participants have finished reading, say, "In Module 5, you will consider the standards related to recognizing and generating equivalent expressions and engage in tasks and a lesson from EngageNY related to this content. You will also explore how curricular resources can be used for purposeful planning to develop conceptual understanding, procedural skill and fluency, and application skills with your students." ***Words of Wisdom*** • This slide should be brief and is about clarifying the learning expectations of Module 5.	

Math Module 5, Session 1 Overview

Session Title: Deepening Mathematical Content Knowledge and Exploring Coherence in the LSSM

Grade Band: 6–9

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?*	
Participants engage in a deep study of grade-level standards related to recognizing and generating equivalent expressions by working on a rich task and identifying related standards. The discussion of the standards builds on the ideas introduced in the vertical alignment discussion from a previous module, but allows teachers to work in grade-level teams to dig deeper into their grade level's role in the alignment to ensure that teaching and learning are focused on the intended learning as described in the standards.	
Session Key Points *What are the 2-4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Participants will know… • Students' work with recognizing and generating equivalent algebraic expressions begins in grade 6 and the complexity of the expressions increases throughout middle school. • In 8th grade and Algebra I, the focus is on solving equations that make use of the work done with expressions in 6th and 7th grades.	• Ultimate Invaders Task handout • Summary of the vertical progression of recognizing and generating equivalent expressions from grade 6 through high school math

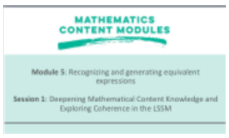
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will be able to… ● Describe the vertical progression of recognizing and generating equivalent expressions across grades. (CK) ● Articulate how their new understanding of the standards impacts instruction at their grade level. (CK, CP) CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	● Engage in Ultimate Invaders task. ● Study the standards. ● Discuss vertical progression of standards. ● Reflect on the session.

Facilitation Recommendations	
Session Length	85 minutes
Time of Year	If possible, within four weeks of experiencing Module 4.
Session Pairing Options	It is strongly recommended that this session be delivered in full in one session. If it is not possible to deliver in one session, it is important to have the split sessions in consecutive days. If necessary, you can split the session after Slide 7.

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: • Handout **M5_P-01 Ultimate Invaders** • Handout **M5_P-02 Recognizing and Generating Equivalent Expressions Across the Grades** **Additional Supplies:** • Square tiles, at least 30 per group (multiple colors if available) • Chart paper • Chart markers • Sticky notes	**Facilitator Pre-Work and Prep** • Study the Ultimate Invaders task using **M5_CL-02 Ultimate Invaders Answers.** • Make a poster showing the first three aliens in the Ultimate Invader task for participants to use when explaining their thinking to the large group. • Make a poster titled "Growth of the Ultimate Invaders."

Participant Pre-Work *What should participants bring to this session? What should they do or prepare in advance of this session?*	
Participants must bring: • LSSM standards	**Before this session, participants should:** • N/A

Time & Slide Thumbnail	Facilitator Notes Session 1	Materials


 	
Slide 5
Time Allotted: 1 minute
	Session 1: Deepening Mathematical Content Knowledge and Exploring Coherence in the LSSM
	Slides 5–10: 85 minutes
	
	Critical Idea
	• Introduce the session. Make sure participants are sitting in same grade-level groups.
	
	Step-By-Step Instructions
	• Say,
	  ○ "As you have noticed, each module focuses on a big idea in mathematics. In previous modules, you were introduced to processes to study the standards, see the coherence in the standards, and guide your planning so that instruction is aligned to the standards. In this module, we will study standards related to the big idea of recognizing and generating equivalent expressions and make use of the study and planning processes we experienced in earlier modules."
	  ○ "Session 1 is designed for the purpose of deepening your own mathematical knowledge for effective instruction. The EngageNY curriculum has similar math learning activities built into its lessons, although they may be spread across several lessons and not necessarily be presented in the same way we are about to experience. It is important to 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."
	
	Words of Wisdom
	• Reiterate throughout Module 5 that it is important for participants to abide by the pacing of the EngageNY curriculum, which is designed to be more developmentally appropriate for the students. The purpose of the opening math task is to get participants thinking about content related to the big idea of this module.	

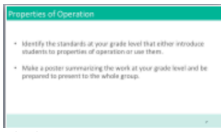
  Slide 6 Time Allotted: 33 minutes	***Critical Idea*** • Teachers will engage in a math task related to the big idea of recognizing and generating equivalent expressions. ***Step-By-Step Instructions*** • Verify that teachers are sitting in same grade-level groups of no more than 4. • Say, "To get you thinking about the big idea of this module, let's do some math! You will do a task related to the big idea. This task was modified from an Agile Mind middle school task and involves generating equivalent expressions." • Show **Agile Mind Mathematics 7 Topic 8 EX "Linear expressions and equations" page 1.** Use panel 1 of the animation to introduce participants to the alien family. • Distribute **M5_P-01 Ultimate Invaders** to participants and several square tiles. Give them 2-3 minutes to work as a group to build the 5th alien in this	**M5_P-01 Ultimate Invaders** **M5_CL-02 Ultimate Invaders Answers** Square tiles

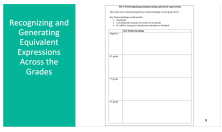
Time & Slide Thumbnail	Facilitator Notes Session 1	Materials

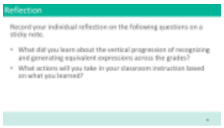
	family and complete questions 1 and 2 on their handouts. Play panel 2 of the animation to check their work.
	• Say, "Talk in your groups about how you see the aliens in this family growing. Use the space provided on your handout on questions 3, 4, and 5 to record different methods that your group discusses and the algebraic expressions or equations that reflect each way of thinking. Don't simplify the expressions that you write so that when you share out your expressions, you can connect the parts of the expression to the alien. You will have 10 minutes to come up with as many different expressions as you can."
	• Circulate around the room while participants are working, making sure that participants are finding different algebraic expressions based on their way of thinking about the alien's growth and are explicitly connecting the pictorial, verbal, and algebraic representations. Ask groups to explain their thinking and connect the different representations as you circulate to make sure that all groups are able to verbalize these connections.
	• Make sure that all participants are sharing ideas. If participants seem to finish early, keep challenging them to find a different expression or different way to think about the growth. The goal of this activity is not to find a single expression, but to find as many different expressions as possible and then evaluate their equivalence.
	• Title a piece of chart paper with "Growth of the Ultimate Invaders." Hang this poster and the poster of the first three aliens as teachers are working.
	• Ask each group to share one expression or equation describing the number of body parts for a particular invader number. Continue around the room until no new expressions or equations are given.
	• Say, "I have asked for expressions or equations. What is the difference between an expression and an equation? Where on our chart paper do you see examples of each? Is an expression or equation more appropriate for our question? Why?" Allow for participants to answer in the whole group. Key points to emerge:
	  ○ An equation sets two expressions equal to each other.
	  ○ The equations in our examples include two variables (y for the number of body parts and x for the invader number). But not all equations must have two variables.
	  ○ For this situation, either an expression or equation is appropriate. The equation just gives a variable name to the number of body parts.
	• Say, "For now, let's just look at the expressions describing the number of body parts. We have several written on our poster. They all look different, but they are all supposed to describe the number of body parts for a given Ultimate Invader. So, would the aliens look different in all of these cases? Why or why not?" Key point to emerge:
	  ○ Even though we thought about the alien growth in different ways, which led to different algebraic expressions, the aliens don't look different. The expressions are just different ways to describe the same alien.
	  ○ Different expressions can represent the same quantity.
	• Say, "Take a look at all of the different expressions on the poster. As a group, choose expressions from the poster that you did not submit and see if you can explain the thinking that led to that expression. Continue to do	

Time & Slide Thumbnail	Facilitator Notes Session 1	Materials
	this for all of the expressions on the poster. Remember, you can use your square tiles to help you explain parts of the expression." • As groups finish their work, ask, "Were you able to explain the thinking that led to all of the expressions listed?" • For any expressions that groups could not explain, ask a volunteer to explain the thinking using the poster of the first three aliens. Note that there might be different ways to explain a single expression. Allow these different methods to come out in this discussion. • If participants say they were able to explain all expressions, ask which ones they found particularly interesting and ask a volunteer to explain why. • Note: Panels 3, 4, and 5 of the Agile Mind animation present visual ways to think about this problem in three different ways. These panels should not be necessary to show since participants are providing these explanations for the group. If you find that the participants need help or did not come up with one of the methods shown in the animation, use the animation to provide the visual thinking. Panel 6 gives a summary of the three different methods of thinking presented. • Say, "Each of the different expressions generated the same alien for a given invader number. But the expressions look very different. Because they describe the same number of body parts for a particular invader number, these expressions must be equivalent. Equivalent expressions give the same value for a particular value of the variable. Talk at your tables about how you can use properties of operation to show that each of these expressions is equivalent to each other. Make note of what property you are using." • Circulate as participants are working. Look for use of the Distributive Property and combining like terms. Depending on the expressions generated by your group, other properties may present themselves as well. • Close this discussion, noting that all of the expressions on the poster simplify to $4x + 8$. Have participants reflect individually, and then to share with an elbow partner using the following question: "Why might an activity like this help students make sense of equivalent expressions?" ***Words of Wisdom*** • Push teachers to find as many different ways to think about the alien growth as possible. Don't be satisfied with one or two expressions describing the growth. Image credit: Agile Mind, Inc.	
 Slide 7 Time Allotted: 3 minutes	***Critical Idea*** • Exposing students to various ways to generate equivalent expressions helps them make sense of what equivalent expression mean. The connection between pictorial, verbal, and algebraic expressions give meaning to the expression. ***Step-By-Step Instructions*** • Have participants reflect individually, and then share with an elbow partner using the following question: "How might an activity like this help students make sense of equivalent expressions?"	

Time & Slide Thumbnail	Facilitator Notes Session 1	Materials
	• Solicit a few comments from the whole group. ***Words of Wisdom*** • Emphasize the importance of connecting different representations of algebraic expressions to students' conceptual understanding of equivalent expressions.	


Slide 8
Time Allotted: 18 minutes
	Critical Idea
	• It is important for teachers to understand how the math at their grade level fits into the development of a mathematical idea across grade levels. Teachers move from studying a task to looking at standards at their own grade level to see the coherence in the standards across grades.
	
	Step-By-Step Instructions
	• Participants will now study the standards related to properties of operations in same grade-level groups.
	• Say, "Now that you have generated some equivalent expressions and used properties of operations to show they are equivalent, let's look at how the standards prescribe how and when students are learning and using these properties across the grades."
	• Say, "In your groups, study your grade-level standards and identify those related to learning or applying properties of operations to recognize or generate equivalent expressions. Make a poster summarizing the work at your grade level. Your poster should include both the standard coding and summary statements that describe what students should know and be able to do with operations with rational numbers by the end of the year at your grade level. Be ready to present your findings to the whole group."
	• Give participants 15 minutes to study their standards and create their posters. As participants are working, pass out blank chart paper to each group.
	• Monitor groups as they work. Standards that teachers should find at each grade level are:
	  ○ Grade 6 – 6.NS.B.4, 6.EE.A.3, 6.EE.A.4
	  ○ Grade 7 – 7.EE.A.1, 7.EE.A.2
	  ○ Grade 8 – 8.EE.C.7b. Some teachers may also notice 8.EE.1 as important to recognizing equivalent expressions. Since this standard is numerical, some teachers may not choose to add it to their discussion. Either way is fine, but point out the possibilities. 8th grade should notice that they are applying knowledge from grades 6 and 7 and not learning new properties.
	  ○ Algebra I – There are several standards that deal with rewriting algebraic expressions in Algebra I. Again, students are applying their knowledge of the properties of operation to recognize and generate equivalent expressions. Groups may decide how they want to limit or not limit their discussion at this grade level. Standards to discuss include: A1: A-APR.A.1, A1: A-SSE.A.2, A1: A-SSE.B.3a-c, A1: A-REI.A.1, A1: A-REI.B.4a,b, A1: F-IF.C.8a.
	
	Words of Wisdom
		LSSM

Time & Slide Thumbnail	Facilitator Notes Session 1	Materials
	• Make sure that each poster summarizes the work done at each grade level. Teachers should not copy the standards verbatim. The clarity and quality of these posters will impact the next activity.	
 Slide 9 Time Allotted: 21 minutes	***Critical Idea*** • It is important for teachers to understand how the math at their grade level fits into the development of a mathematical idea across grade levels. ***Step-By-Step Instructions*** • Have groups post their posters in order from grades 6 to 9. If there are multiple groups per grade level, have them stack their posters vertically. Remind groups that they need a representative to present their groups' findings. • Distribute the handout **M5_P-02 Recognizing and Generating Equivalent Expressions.** • Say, "We will now hear presentations for each grade level so that we can come to a common understanding of the vertical progression of recognizing and generating equivalent expressions across grades 6–9. Use the handout P-02 to capture key understandings about the standards at each grade level as you listen to the group presentations." • After all posters are hung, have groups present from grades 6 to 9. Limit presentations to 2-3 minutes per grade level. ***Words of Wisdom*** • If you have multiple groups at each grade level, you need to carefully manage the time for presentations. Encourage duplicate grade level groups to just share ideas that have not yet been shared for their grade level. If you can save time in this section, you will have more time for discussion in the reflection activity in the next section.	**M5_P-02 Recognizing and Generating Equivalent Expressions**


Slide 10
Time Allotted: 9 minutes
	Critical Idea
	• Teachers need to reflect on their learning and consider how their new learning impacts instruction in their classroom.
	
	Step-By-Step Instructions
	• Give participants 2 minutes to reflect individually using the questions on the slide and record their reflections on sticky notes.
	• Have participants pair up to share their reflections. You can use an eye-contact, same-color shirt, or some other protocol to quickly pair up participants. Give pairs 2 minutes to share their individual reflections. Then repeat this process as time allows.
	• As time allows, ask participants to share with the whole group interesting comments they heard. Summarize the session making sure these key points emerge:
	  ○ Students are first introduced to the idea of a variable in grade 6.
	  ○ Students learn properties of operation that help them create equivalent expressions in grades 6 and 7.
	  ○ Students use what they learn in grade 6 and 7 as they solve equations in grade 8 and Algebra I.
	  ○ In Algebra I and other high school math, students rewrite linear and non-linear function rules to reveal key attributes of the functions. This	

Time & Slide Thumbnail	Facilitator Notes Session 1	Materials
	work depends on their understanding of equivalent expressions from middle school. • Post two sheets of chart paper, titled “New Learning” and “Action Items.” As participants finish this activity, ask them to post their sticky note reflections on the appropriate poster. ***Words of Wisdom*** • Teachers should pair up quickly so that they can have the benefit of talking with several partners during this reflection activity.	

Math Module 5, Session 2 Overview
Session Title: Instructional Strategies to Improve Curriculum Implementation
Grade Band: 6–9

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 goal of Session 2 is for participants to continue to explore the research for orchestrating productive mathematical discourse. In this session, the participants will review the *5 Practices for Orchestrating Productive Mathematics Discussions.* The focus for this session will be on Practices 3 and 4, selecting and sequencing student responses. The last of the 5 practices will be covered in Module 6. In this session, participants will analyze student work from the math task from Session 1 to identify strategies and misconceptions to be highlighted in order to deepen students' mathematical understanding. Participants will chart their proposed sequence for these selected responses in logical order to help students make connections between them.

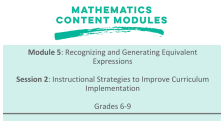
Session Key Points *What are the 2 to 4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Participants will know: • How to choose students to present because of the mathematics in their responses. • That it is important to plan in advance which types of responses to select, considering all strategies, including incorrect solutions, to illustrate a typical misconception. • It is important to purposefully order presentations so the mathematics is accessible to all students. • During anticipation of work, you should consider how possible student responses are mathematically related.	• A proposed sequence of student responses to a lesson in order to highlight connections that will help students deepen their mathematical understanding

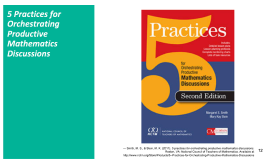
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will be able to… • Select and sequence student responses in order to build a mathematically coherent story line from prior knowledge to current grade-level standards. (CP, CS) CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	• Review the *5 Practices for Orchestrating Productive Mathematical Discussions*. • Select and sequence student responses. • Practice selecting and sequencing student responses by analyzing student responses to a task.

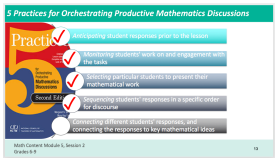
Facilitation Recommendations	
Session Length	60 minutes

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 • **M5_CL-03** Sample Student Work **Additional Supplies:** • Sticky notes	**Facilitator Pre-Work and Prep** • Print participant handouts (1 per participant). • Print one set of **M5_CL-03** Student Work for each table group.

Participant Pre-Work *What should participants bring to this session? What should they do or prepare in advance of this session?*	
Participants must bring: • N/A	**Before this session, participants should:** • Complete **M5_P-01** Ultimate Invaders from Session 1.

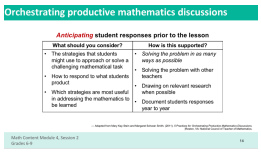
Time & Slide Thumbnail	Facilitator Notes Session 2	Materials
 Slide 11 Time Allotted: < 1 minute	**Session 2: Instructional Strategies to improve curriculum implementation** **Slides 11–22 Time Allotted: 90 minutes** ***Critical Idea*** • This slide is an introductory slide for Session 2. ***Step-By-Step 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 4.	

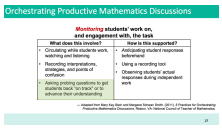
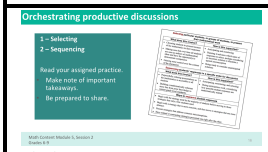

Slide 12
Time Allotted: 1 minute
	Critical Idea
	• Emphasize to participants that the purpose of this section is to take a deeper look at *5 Practices for Orchestrating Productive Mathematics Discussions,* with a focus on the third and fourth practice of **selecting and sequencing** student responses. The other four practices described in this book are explored in other modules.
	
	Step-By-Step Instructions
	• Say,
	  ○ "To promote productive student discourse in the mathematics classroom, we will continue to examine the '5 practices model' as originated by Margaret Smith and Mary Kay Stein. Smith and Stein's research laid out the framework as a process for using student thinking and student work as the launch pad for rich discussions that get at the heart of important learning."
	  ○ "The first iteration of this model was done with mathematics; later, the model was expanded to also address science discourse. We will use this resource as the foundation of our learning today."
	  ○ "The purpose of this section of learning today will be to review the 5 practices and to explore practices 3 and 4 in the model: **selecting and sequencing.**
	
	Words of Wisdom
	• The "5 practices model" is very rich; participants can become overwhelmed, so strive to keep the overview of the 5 practices brief.
	
	Citation: Smith, M. S., & Stein, M. K. (2011). *5 Practices for Orchestrating Productive Mathematics Discussions.* Reston, VA: National Council of Teachers of Mathematics. Available at http://www.nctm.org/Store/Products/5--Practices-for-Orchestrating-Productive-Mathematics-Discussions	

 Slide 13 Time Allotted: 3 minutes	***Critical Idea*** • Emphasize to participants that the purpose of this section is to give participants an overview of the model for facilitating mathematics discourse described in the resource *5 Practices for Orchestrating Productive Mathematics Discussions,* and to take a deeper look at Practices 3 and 4: **selecting and sequencing**. The other four practices described in this book are explored in other modules. ***Step-By-Step Instructions***	

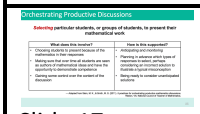
Time & Slide Thumbnail	Facilitator Notes Session 2	Materials

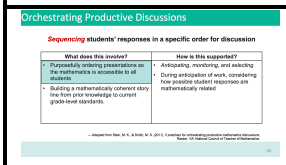
	• Say,
	  ○ "Remember that this visual is an overview of the 5 practices model for orchestrating productive mathematics discussions."
	  ○ "The 5 practices model is a process of planning and instruction that teachers can implement for promoting productive discussions in classrooms."
	  ○ "The EngageNY curriculum resource makes use of these 5 practices in many lessons."
	  ○ "By taking the time to understand the model fully, you should be able to better implement the EngageNY curriculum to its fullest intent."
	• **<u>Animate the slide for each step.</u>**
	• Say,
	  ○ "In the previous modules, we explored the practices of *anticipating* student responses and *monitoring* student work."
	  ○ "The focus of our session today will be on **Selecting particular students to present their mathematical work** and **Sequencing students' responses in a specific order for discourse**."
	
	Words of Wisdom
	• While EngageNY does make use of many of these practices, it does not identify any of them specifically. Therefore, it is important that teachers using the EngageNY curriculum understand how to recognize each of these practices in order to best meet the intent of the lesson.	


Slide 14
Time Allotted: 2 minutes
	Critical Idea
	• This is a quick review of the first practice, anticipating student responses.
	• The first practice, ***anticipating***, was shared in Module 2. Participants will apply this knowledge later in the session to ***anticipate*** and ***monitor*** student responses to the Ultimate Invaders task from Session 1.
	
	Step-By-Step Instructions
	• Do a brief refresh of the first practice, ***anticipating***. Say,
	  ○ "This slide is a summary of what you learned in Module 3."
	  ○ "Recall the first practice of ***anticipating*** student responses. Remember, there are three important aspects of ***anticipating***."
	  ○ "Teachers will need to consider how students might approach an instructional task. This consideration requires that teachers engage in the task or activity themselves and consider different ways it could be approached or interpreted. They should consider the various representations that students might use in answering questions and the common errors that students make. They should also consider:
	  ▪ how students might interpret a problem,
	  ▪ the strategies they may use, both correct or incorrect,
	  ▪ how their strategies might relate to the learning goal/s that have been established."
	  ○ "Teachers will need to consider how they will respond to the strategies that students choose and the answers they generate. By taking into consideration how students will work through a problem, teachers can begin to generate questions that can be used to help students deepen their thinking. This reduces the amount of time that teachers will need to spend reacting in the moment."	

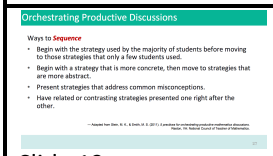
Time & Slide Thumbnail	Facilitator Notes Session 2	Materials
	○ "After ***anticipating*** is the second practice, ***monitoring*** student work. We will learn more about that now." ***Words of Wisdom*** • This slide is a quick refresher of the first practice of anticipating student responses. Keep this brief so participants have enough time to analyze the second practice of monitoring.	
 Slide 15 Time Allotted: 2 minutes	***Critical Idea*** • Actively monitoring students as they work on a task yields an abundance of data about students' current understanding of the mathematics within the task. This data are valuable for facilitating productive mathematical discourse. ***Step-By-Step Instructions*** • Do a brief refresh of the second practice, ***monitoring.*** Say, ○ "Recall the second process of ***monitoring*** student responses." ○ "This second process, ***monitoring***, happens while students are working on the task, either individually, in pairs, or in small groups." ○ "While ***monitoring*** students' work, the teacher should ask probing questions to keep students focused on and moving forward in their understanding of the task and the mathematics involved." ○ "Therefore, it is important to plan some of those questions ahead of time, keeping in mind the set of strategies that your team anticipates will be used by students." ***Words of Wisdom*** • Clarify for participants that monitoring students' work on a task happens in real-time in the classroom. However, monitoring is more effective if participants purposefully plan probing questions before the lesson, and in response to anticipated student strategies.	
 Slide 16 Time Allotted: 10 minutes	***Critical Idea*** • Participants will develop an initial understanding of ***selecting*** and ***sequencing*** student responses. ***Step-By-Step Instructions*** • Say, "The goal of this next activity is to come to a shared understanding of the practices 3 and 4, ***selecting*** and ***sequencing*** student responses." • Direct the participants to pair up and count off using the numbers 1 and 2. • Instruct the participants to read thoroughly the practice they were assigned using handout **M5_P-03 Practices for Orchestrating Productive Mathematics Discussions**. Participants should come to a detailed understanding of their assigned practice, taking notes and highlighting important parts as they read. • After 2 minutes of quiet reading time, instruct the participants to work with their partner and take turns discussing important takeaways from the reading. Participants should use this opportunity to return to P-03 and record important takeaways about the other practice. • Transition quickly through the next three slides to summarize the conversation.	**M5_P-03** Practices for Orchestrating Productive Mathematics Discussions

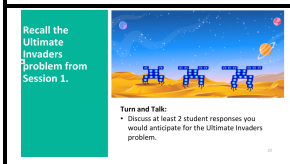
Time & Slide Thumbnail	Facilitator Notes Session 2	Materials
	Words of Wisdom • Circulate around the room to monitor conversations. Listen closely for the important takeaways to surface to help inform how much time will be needed to debrief the conversation and spend on Slides 31–34.	


Slide 17
Time Allotted: 5 minutes or less for slides 17-19
	Critical Idea
	• The practice of ***selecting*** is critical because it gives the teacher control over what the whole class will discuss, ensuring that the mathematics is at the heart of the lesson.
	
	Step-By-Step Instructions
	• If it has not surfaced already in the previous activity, share the following with participants:
	  ○ The third practice, ***selecting*** **particular students, or groups of students, to present their mathematical work**, happens after students have completed the task.
	  ○ ***Selecting*** is supported by anticipating possible responses, both correct and incorrect, beforehand and by monitoring students as they work on the task.
	  ○ This practice involves reflection on the part of the teacher. When selecting students to present their work, the teacher must think about what was observed during the task, what strategies, both correct and incorrect, individuals or groups used to complete the task, and what insights students might be able to share.
	  ○ Participants must also be cognizant of the fact that over time, ALL students, including special needs students, should have opportunities to share their thinking and demonstrate competence so that all students are seen as authors of mathematical ideas.
	
	Words of Wisdom
	• Slides 17–19 (three slides total) should be a quick review of important takeaways from the reading and small group discussion completed on the previous slide. It is not necessary to spend much time on this slide if the critical points have already surfaced in the previous discussion.	

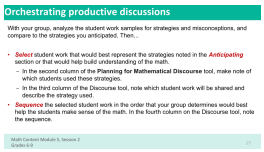

Slide 18
Time Allotted: 5 minutes or less for slides 17-19
	Critical Idea
	• The key to ***sequencing*** is to order student work in a way that makes the mathematics accessible to all students and to build a mathematically coherent storyline.
	
	Step-By-Step Instructions
	• If it has not surfaced already in the previous activity, share the following with participants about ***sequencing***:
	  ○ The fourth practice, ***sequencing*** **students' responses in a specific order for discussion**, also happens after students have completed the task.
	  ○ ***Sequencing*** is supported by anticipating possible responses beforehand, monitoring students as they work on the task, and taking time to reflect on students' work in order to select those who will present their work to the class.
	  ○ This practice also involves reflection on the part of the teacher.
	  ○ When selecting students to present their work, the teacher must think	

Time & Slide Thumbnail	Facilitator Notes Session 2	Materials
	about how to order student presentations so that a coherent "storyline" is created, which will make the mathematics accessible to all students and will build students' understanding of the mathematics. ***Words of Wisdom*** • Slides 17–19 (three slides total) should be a quick review of important takeaways from the reading and small group discussion. It is not necessary to spend much time on this slide if the critical points have already surfaced in the previous discussion.	


 	
Slide 19
Time Allotted: 5 minutes or less for slides 17-19
	Critical Idea
	• ***Sequencing*** students' responses for discussion is a critical step in developing student understanding of the mathematics. There are a number of ways participants can sequence students' responses.
	
	Step-By-Step Instructions
	• If it has not surfaced yet, tell participants there are a number of ways in which we can ***sequence*** the presentation of student work.
	• Give them a minute or two to read the information on the slide, and then provide clarification, if needed.
	• Share that the way in which responses are sequenced will depend on a number of factors, such as:
	  ○ The learning goal(s) for students,
	  ○ The mathematics involved, and
	  ○ Students' current level of understanding.
	
	Words of Wisdom
	• This slide is important. Clarify that one approach to sequencing solutions is by presenting the most commonly used strategy first. However, it may not always be the best approach to sequencing student responses.	

 Slide 20 Time Allotted: 15 minutes	***Critical Idea*** • The turn-and-talk conversation on this slide is related to the opening Smoothie task from Session 1. The list of anticipated strategies participants generate will be discussed on the next slide when participants select and sequence sample student work. ***Step-by-Step Instructions*** • Say, "Now that you have a complete picture of the first 4 practices, you will revisit the Ultimate Invaders task from Session 1." • Give participants 1 minute to locate handout **M5_P-01** Ultimate Invaders and refresh their memory of the Ultimate Invaders problem. • Before setting participants to work, **<u>animate the slide</u>**. • Read the Student Learning Goals for the Ultimate Invaders task to the group. ○ Students will understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities are related. • **<u>Animate the slide.</u>** • Give participants 2 minutes to complete the turn and talk and brainstorm at least 2 anticipated student strategies for the problem. Circulate around the room while they are working.	**M5_P-01** Ultimate Invaders **M5_P-04** Anticipating and Monitoring Student Responses

Time & Slide Thumbnail	Facilitator Notes Session 2	Materials
	• Tell participants to record at least 2 of the strategies they would anticipate students would respond with in class on handout **M5-P-04 Anticipating and Monitoring Student Responses**. Then, they should record possible probing questions for each of the anticipated strategies. These strategies will be revisited on the next slide. ***Words of Wisdom*** • Participants should be sitting in mixed grade-level groups for Session 2. This session will be more effective if participants are able to sit with other participants they have not worked with yet.	


Orchestrating productive discussions
With your group, analyze the student work samples for strategies and misconceptions, and compare to the strategies you anticipated. Then…
• ***Select*** student work that would best represent the strategies noted in the ***Anticipating*** section or that would help build understanding of the math.
– In the second column of the **Planning for Mathematical Discourse** tool, make note of which students used these strategies.
– In the third column of the Discourse tool, note which student work will be shared and describe the strategy used.
• ***Sequence*** the selected student work in the order that your group determines would best help the students make sense of the math. In the fourth column on the Discourse tool, note the sequence.
Math Content Module 5, Session 2
Grades 6-9
21
 	
Slide 21
Time Allotted:
40 minutes
	Critical Idea
	• Participants will apply their knowledge of the "5 practices" to select and sequence student responses to a math task.
	
	Step-By-Step Instructions
	• Hand out student work samples (1 set per group, handout **M5_CL-03 Student Work**).
	• Say,
	  ○ "These samples are taken from students who completed the Ultimate Invaders task from Session 1."
	  ○ "Each sample represents the final work for a student."
	  ○ "You are going to take on the role of the teacher and work with your group to analyze the student work for strategies and misconceptions."
	• **<u>Animate the slide</u>**.
	  ○ "Then, your group will select the student work that you feel would best represent the strategies that would help build understanding of the math."
	• **<u>Animate the slide</u>**.
	  ○ "You will also ***Sequence*** the selected student work in the order that your group determines would best help the students make sense of the math."
	• **<u>Animate the slide</u>**.
	  ○ "You will then work with your group to create a chart that illustrates your selected strategies in the sequence you would have them presented in your class to help students make sense of the math."
	  ○ "Remember, as you look at these samples, it is not about only showcasing the correct answers or successful strategies. Sometimes it is just as meaningful to students' understanding to look at strategies that didn't work. There is not one correct way to sequence these strategies—just be ready to explain why your group chose to sequence them the way that you did and how that sequencing will help with student understanding."
	• Give groups time to ***Select*** and ***Sequence*** student work as they plan for mathematical discourse.
	• Have groups hang their charted strategies as they finish.
	• If there is time, have participants share out some of their thinking for their charts.
	
	Words of Wisdom
		M5_CL-03 Sample Student Work
		
		Chart paper
		
		Markers

Time & Slide Thumbnail	Facilitator Notes Session 2	Materials
	• Remember that these are the 3rd and 4th steps in the process of facilitating meaningful mathematical discourse. Before completing these steps, you would have anticipated student responses and monitored students as they worked, asking probing questions as you monitored.	

Slide 22
Time Allotted:
11 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 in planning for mathematical discourse."
	  ○ "Take a moment to read the prompts on the slide."
	• Give participants individual time to think about the questions on the slide. Encourage them to jot down their thinking on **M5_P-00** Module 5 Presentation Slides.
	• After a few minutes, direct 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 three minutes for participants to share.
	• Call on a few participants to share what they discussed with the whole group. If it has not surfaced yet, summarize the learning to include the following points:
	  ○ The role of the classroom environment is critical in ensuring all students openly engage in meaningful discourse. Participants need support from one another as they consider ways to support students as they engage in meaningful discourse.
	
	Words of Wisdom
	• Participants need time to think about and discuss the role of the classroom environment in providing students with opportunities to engage in meaningful discussion.
		M5_P-00 Module 5 Presentation Slides

Math Module 5, Session 3 Overview

Session Title: Key Shifts in Action through an EngageNY Lesson

Grade Band: 6–9

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?*
Session 3 explores the essential question, "How can EngageNY lessons attend to the components of rigor through engagement of the standards?" Participants experience a grade 7 EngageNY lesson from a student perspective. Intentional teacher moves will support mathematical discourse that builds conceptual understanding and application related to the focus content of recognizing and generating equivalent expressions. The EngageNY lesson focuses on standards within the Expressions and Equations domain to deepen participants' content knowledge. Immediately following the lesson, participants unpack the EngageNY lesson related to the learning experience. By analyzing the components of the EngageNY lesson and considering intentional instructional strategies that were used in the facilitation, teachers identify implications for their own planning. A major goal of this session is for teachers to understand how to use the EngageNY lessons to guide their instruction to foster conceptual understanding, procedural skill and fluency, and application skills with students. Teachers consider how mathematical discourse and perseverance in solving problems is used to illuminate the mathematics content. This session sets the stage for Sessions 3 and 4. As teachers identify implications for teaching and learning, it will bring to the surface the need for close analysis of the high-quality curriculum during purposeful planning.

Session Key Points *What are the 2-4* most *important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Participants will know… • The EngageNY teacher materials provide information about standards, including focus standards, foundational standards, and Standards for Mathematical Practice. • How the key shifts in the standards of focus, coherence, and rigor are evident in an EngageNY lesson. • that intentional teacher moves support focus, coherence, and rigor around the mathematics content.	• Recorded evidence of focus, coherence, and rigor in an EngageNY lesson using handout **M5_P-06 Looking for Evidence of Student Engagement in the Key Shifts** ○ Engagement in the classwork and exercises sections of an EngageNY lesson on handout **M5_P-07 ENY G7 M3, TA, L3 Student**.

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… • Gain clarity on how the mathematics standards manifest in the secondary classroom when executed well in curriculum instruction. (CK, CP) • Provide evidence of focus, coherence, and rigor in a model lesson. (CP, CK) • See effective instructional strategies in action that can be implemented directly in their classrooms. (CP)	• Experience EngageNY lesson. • Analyze EngageNY lesson components. • Identify focus content and practice standards identified in the EngageNY lesson plan. • Connect EngageNY lesson plan to the mathematics learning experience. • Identify evidence of the key shifts. • Reflect on the session.

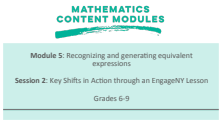
• Identify implications for delivering high-quality, standards-aligned mathematics instruction using the EngageNY resources. (CK, CP) CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	

Facilitation Recommendations	
Session Length	90 minutes
Time of Year	
Session Pairing Options	

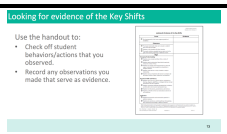
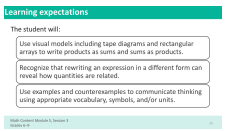
Preparing to Facilitate *What materials and supplies are needed to facilitate this session? What must the facilitator do to prep for the actual session?*	

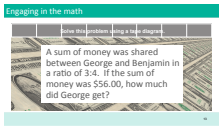
Session Materials:
• Handout **M5_P-00 Module 5 Presentation Slides**
• Handout **M5_P-05 ENY G7 Module 3 Overview**
• Handout **M5_P-06 Looking for Evidence of Student Engagement in the Key Shifts**
• Handout **M5_P-07 ENY G7 M3, TA, L3 Student**
• Handout **M5_P-08 ENY G7 M3, TA, L3 Teacher**
• Handout **M5_P-09 Diamond Reflection: Unpacking the ENY Lesson**
 	
Additional Supplies:
• Chart paper
• Markers
• Sticky notes
	Facilitator Pre-Work and Prep:
	• Create poster with the following learning expectations:
	  ○ *Use visual models including tape diagrams and rectangular arrays to write products as sums and sums as products.*
	  ○ *Recognize that rewriting an expression in a different form can reveal how quantities are related.*
	  ○ *Use examples and counterexamples to communicate thinking using appropriate vocabulary, symbols, and/or units.*
	• Print participant handouts (1 per participant).
	• Study EngageNY lesson handout **M5_P-08 ENY G7 M3, TA, L3 Teacher**

Participant Pre-Work *What should participants bring to this session? What should they do or prepare in advance of this session?*	
Participants must bring: • N/A	**Before this session, participants should:** • N/A

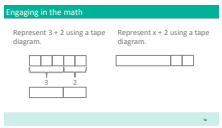
Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
 Slide 23 Time Allotted: 1 minute	**Session 3: Key Shifts in Action Through an EngageNY lesson** **Slides: 23–37: 90 minutes** ***Critical Point*** • This slide is an introductory slide for Session 3. • The EngageNY lesson participants experience in this session ties directly with the standards they studied in the vertical alignment conversation during Session 1. ***Step-By-Step Instructions*** • Say, "We will now transition into Session 3. As mentioned at the beginning of Module 2, this session is designed for the purpose of deepening your own mathematical knowledge for effective instruction. It is important to keep in mind that you may experience some a-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 designed lead students to the same ah-ha moment over the course of multiple lessons, not a single lesson." ***Words of Wisdom*** • Direct participants to sit in mixed grade-level groups of no more than 4. • Reiterate throughout the session that it is important for participants to abide by the pacing of the EngageNY curriculum, which is designed to be more developmentally appropriate for the students.	

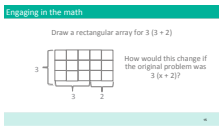
Slide 24
Time Allotted: 6 minutes
	Critical Point
	• The EngageNY Module Overview contains important information to orient teachers to the flow of lessons across the module. It also identifies focus standards, foundational standards from prior grades, and links to standards for mathematical practice.
	
	Step-By-Step Instructions
	• Pass out handout **M5_P-05_ENY G7 Module 3 Overview**.
	• Say, "Recall from Module 4 that each module in EngageNY has a Module Overview that provides important information as you prepare to teach."
	• Give participants 1 minute to review the handout and the components of the Module Overview, listed on this slide.
	• Say,
	  ○ "As you scanned the Module Overview document, you should see a connection to the work we did in Session 1. Notice this overview helps identify key content and practice standards. It also provides a look at foundational standards from prior grades. Some of these standards are on the vertical alignment study you completed in Session 1."
	  ○ "The EngageNY lesson you will experience today is the third of six lessons about using properties of operations to generate equivalent expressions in Topic A of Module 3 in 7th grade. Please take 1 minute to read the Module Overview to help situate the lesson in the flow of the entire module."
	• After participants read the Module Overview, call on several participants to share important takeaways. Some possible responses could include:
		M5_P-05 ENY G7 Module 3 Overview

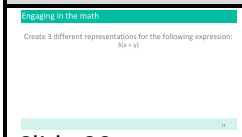
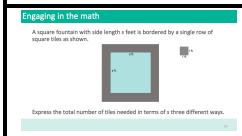
Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
	○ The first paragraph indicates that this work began in 6th grade. Today's lesson will build on this learning. ○ The first and second paragraphs indicate properties of operations play a big role in this section. Properties of operations were learned in earlier grades. ○ Students will be using models including area models and tape diagrams to illustrate the distributive property and identity properties, and the existence of additive inverses. ***Words of Wisdom*** • Stay focused on the connection to standards in the Module Overview. • Encourage participants to explore the rest of the Module Overview on their own time.	
 Slide 25 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, ○ "You are going to experience 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." ○ "In order to help you with this experience, recall the tool we used in previous modules that will help you look for and document evidence of the key shifts." • Tell participants to locate handout **M5_P-06 Looking for Evidence of the Key Shifts**. • **<u>Animate the slide.</u>** • Direct participants to read the directions on the slide and then orient them to the handout. Say, ○ "The left-hand column contains descriptors of the key shifts. Next to each descriptor is a box that can be used to check off any of the student actions that you observe in the lesson. ○ **"**The right-hand column should be used to document observations of specific actions that can be used as evidence for the descriptors that have been checked off in the left-hand column. • Ensure there are no additional questions. ***Words of Wisdom*** • Make sure all participants have an opportunity to read through the document to familiarize themselves with the descriptors of the key shifts. They will use these descriptors to make observations while they experience the math lesson.	**M5_P-06 Looking for Evidence of the Key Shifts**
 Slide 26 Time Allotted: 1	***Critical Idea*** • This slide clarifies the learning expectations of the lesson and opens by connecting to prior knowledge required for the lesson. ***Step-By-Step Instructions*** • Say,	

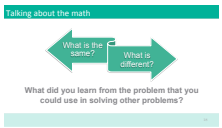
Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
minutes	○ "Session 3 is about experiencing the lesson as a student. After, you will have a chance to unpack the lesson and make connections to the standards." ○ "The lesson is a 7th grade lesson related to equivalent expressions. Although it may be tempting to discuss the lesson or talk about instructional changes to consider, I encourage you to stay in the learner role so you can get the most out of the experience." ○ "Today's lesson will bring together your work with recognizing and generating equivalent expressions up to this point." • Review the learning expectations for the day on the slide. ○ Use visual models including tape diagrams and rectangular arrays to write products as sums and sums as products. ○ Recognize that rewriting an expression in a different form can reveal how quantities are related. ○ Use examples and counterexamples to communicate thinking using appropriate vocabulary, symbols, and/or units. ***Words of Wisdom*** • The third learning expectation relates to SMP 3 and SMP 6. This could surface again on Slide 34 when participants share evidence of student engagement in the key shifts, specifically in building conceptual understanding and procedural skills and fluency.	
 Slide 27 Time Allotted: 5 minutes	***Critical Idea*** • Participants take on the student perspective to experience an EngageNY lesson related to the big idea studied in Session 1. • This slide opens the lesson by connecting to prior knowledge required for the lesson. ***Step-By-Step Instructions*** • Pass out the student version of the EngageNY lesson to students. This is handout **M5_P-07 ENY G7 M3, TA, L3 Student**. • **<u>Animate the slide</u>**. Read the prompt on the screen and give participants 2 minutes to respond on handout M5_P-07. • Ask, "What does each rectangle represent? Convince us why you think so!" • Call on 1 or 2 volunteers to share their responses. • Say, "In today's lesson, you will create different forms of the same expressions. These expressions are used to shed light on different aspects of the original expression." ***Words of Wisdom*** • Tape diagrams are used primarily in elementary school. Students will be familiar with these tools, but sometimes teachers are not. If the teachers have difficulty with the idea of a "tape diagram," ask them to represent this in a different way (perhaps with pictures). Then, when a participant correctly depicts the answer in a tape diagram form, give the participants a moment to see how this representation compares with their own representation. By sharing in this manner, it will allow more entry points to the conversation.	Facilitators should study and prepare to teach the EngageNY lesson before the session using handout **M5_P-08 ENY G7 M3, TA, L3 Teacher.** Create an anchor chart with the key terms from the EngageNY module (see terms identified on Session 2 overview page). **M5_P-07 ENY G7 M3, TA, L3 Student** *Image credit: geralt/pixabay.com*

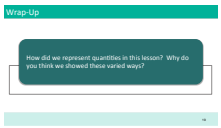
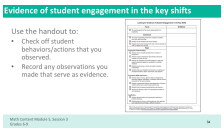
Time & Slide Thumbnail	Facilitator Notes Session 3	Materials


Slide 28
Time Allotted: 2 minutes
	Critical Idea
	• It is important to understand the difference between a number and a variable when working with strip diagrams.
	
	Step-By-Step Instructions
	• Give participants 1 minute of quiet time to individually work the problem displayed on the slide. Participants should show work on handout **M5_P-07 ENY G7 M3, TA, L3 Student** to justify their reasoning.
	• **Animate the slide.**
	• Debrief the task. Say, "What was required for you to answer the question?"
	  ○ Possible response: To represent the problem, you had to represent 3 units and 2 units together.
	• **Animate the slide.** Direct participants to represent x+2 using a tape diagram. Then, determine how this problem is the same and different from 3+2.
	• **Animate the slide.** Debrief by asking participants to identify the similarities and differences between the two problems. Possible responses:
	  ○ Since it is an unknown variable, the x can be any size.
	  ○ It is important to make sure the units are the same size when drawing the known 2 units.
	
	Words of Wisdom
	• It is important for participants not to make assumptions about the length of the figure. X is arbitrary and represents an unknown value.
		M5_P-07 ENY G7 M3, TA, L3 Student

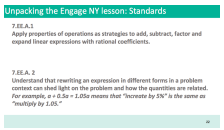

Slide 29
Time Allotted: 3 minutes
	Critical Idea
	• Tape diagrams and area models are two different models that can be used to develop conceptual understanding of important mathematical ideas.
	
	Step-By-Step Instructions
	• Give participants quiet time to individually work the problem displayed on the slide. Participants should show work on handout **M5_P-07 ENY G7 M3, TA, L3 Student** to justify their reasoning.
	• Circulate around the room while participants are working, make note of any different methods of solving the problem.
	• Debrief the task by asking participants the same questions as before:
	  ○ "What given information was important? Why?"
	  ○ "What was required for you to answer the question?"
	• If it has not surfaced already, say, "The problems are similar since you can draw a rectangular array for 3 (3+2) and a similar array for 3 (x+2). The difference is the representation of the unknown, x."
	• **Animate the slide** to show the solution. If you found others that had different methods, give them an opportunity to share.
	• Ask, "How are area models like tape diagrams? How are they different?"
	• **Animate the slide.** Discuss the final question. Ask for 2 or 3 volunteers to share their responses.
	
	Words of Wisdom
	• It is important that participants understand the "x" is unknown, so it could represent any size. Do not allow participants to make conjectures about what "x" is since it is unknown.
		M5_P-07 ENY G7 M3, TA, L3 Student

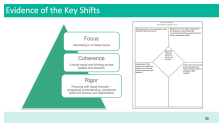
Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
 Slide 30 Time Allotted: 5 minutes	***Critical Idea*** • The problem on the slide is laying the foundation for participants to recognize there are different (yet equivalent) ways to represent expressions. ***Step-By-Step Instructions*** • **<u>Animate the slide.</u>** • Give participants 2 minutes to individually work the problem displayed on the slide. Participants should show work on handout **M5_P-07 ENY G7 M3, TA, L3 Student** and justify their reasoning. • **<u>Animate the slide four times to show the sample solutions</u>**. ○ Allow participants with different representations than the samples shown to share and justify how their models represents 3 (x+y). ***Words of Wisdom*** • Drawing models is a great entry point into the conversation and should not be dismissed. Be sure to link these representations to the expressions they represent and discuss how the model and expressions are related.	**M5_P-07 ENY G7 M3, TA, L3 Student**
 Slide 31 Time Allotted: 15 minutes	***Critical Idea*** • Intentional teacher moves support focus, coherence, and rigor around the mathematics content. ***Step-By-Step Instructions*** • Before animating the slide, pick up one square tile and direct participants to do the same. • Say,"This square tile represents a tile that is 1 foot by 1 foot. If this is a fountain, how many square feet are in this fountain?" [1 square foot] • Say, "How could you convince us of your reasoning?" [If the dimensions are 1 foot by 1 foot, then the area of the fountain would be 1 square foot. We could use one of the tiles to verify this assumption] • Put the square tile (fountain) down. Say, "Today you will take on the role of a tile layer. Your task is to lay 1 foot tiles around this fountain." • Direct participants to do so with their set of square tiles. • Ask, "How many tiles did it take to create a tiled walkway around your fountain?" [8 tiles; if participants respond with 4 tiles, ask them to support their response by using the square tiles. Without giving it away, ask participants to consider if the entire walkway has been represented. They should see the corners need to be tiled as well, which will add 4 additional tiles to the walkway.] • Direct participants to record the number of tiles on the workspace provided on handout **M5_P-07 ENY G7 M3, TA, L3 Student.** • Pick up 4 tiles. Direct participants to do the same. • Say, "Lay these 4 tiles down to represent a square fountain. What are the dimensions?" [2 ft x 2 ft – It is the only way to make a square with 4 tiles]. • Say, "Now, lay the tiles around this fountain." • Ask, "How many tiles did it take to create a tiled walkway around this fountain?" [12 tiles – direct the participants to write this down in the same area as the last data.] • **<u>Animate the slide.</u>** Read the problem aloud. Before giving participants time to solve the problem, ask,	**M5_P-05 ENY G7 M3, TA, L3 Student** ENY Lesson poster strips (created prior to facilitating this session). Square tiles (they must be all squares of the same size, though the actual size does not matter) or square post-it notes. Chart paper with gridlines. Markers

Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
	○ "How is this similar to and different from the first two tiled areas we just created?" [It is still a square with a boundary around it, but this time the sides of the square are unspecified]. • Say, "As a tile layer, you can't always bring an unlimited amount of tile to lay a walkway. You need to create a rule so that you know how much tile to bring when you are given a job." • Give participants 3 minutes of quiet think time. Then put participants in groups of 3 to 4. • Say, "For the next 10 minutes, work with your group to develop a way to express the number of tiles needed for a fountain with a side length of s feet. Once you have identified at least one solution, you will complete a poster strip to show at least 3 representations for your solution. You must create a verbal and algebraic representation for your solution, but you may choose the third representation with your group. The third representation may include a pictorial, tabular or graphical representation." • As groups are working, walk around the room monitoring the different strategies used. As you identify different methods, begin to select and sequence the posters in a way that will allow participants to make important mathematical connections. Use this opportunity as a way to model the *5 Practices for Orchestrating Productive Discussions*. If groups finish early, ask them to create the graphical representation of their solution. • After 10 minutes, direct the groups to put their posters side by side on the wall using the sequence you created while monitoring the group work (during the previous bullet). The posters will be referenced on the next slide, so no discussion is necessary. ***Words of Wisdom*** • If participants get stuck in the process, help them get started by making a table of values on their paper, or using multiple colors as they create and draw the tiles. • The posters created on the last bullet will be referenced on the next slide, so no discussion is necessary at this point in the lesson. • The question on the slide asks for three ways to represent the situation. As long as the class as a whole has created at least three ways to solve the problem, participants can make connections between different expressions.	
 Slide 32 Time Allotted: 15 minutes	***Critical Idea*** • It is important to sum up the learning for this lesson with a whole group discussion to allow all participants to see and hear others ideas and to make connections to their own thinking, especially for participants that were unable to create more than one expression for the given situation. ***Step-By-Step Instructions*** • Direct the reporter from each group to share with the class how their expression represents the given situation. ○ See sample responses on handout **M5_P-08 ENY G7 M3, TA, L3 Teacher.** • After all groups have shared, ask, "Can you identify parts that are the same in each of these expressions? Can you identify differences?" • Give the participants 4 minutes to think of both similarities and differences.	**M5_P-08 ENY G7 M3, TA, L3 Teacher**

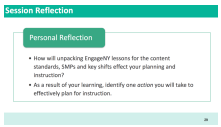
Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
	• Direct participants to share their responses using the following sentence stem for 3 to 5 rounds of sharing: ○ "One similarity I see is that they all have the letter "*s*" in them. What do you see (insert student name here)." ***Words of Wisdom*** • It is important the participants come to the realization that there are many ways to represent the given situation, and each of the expressions are equivalent.	
 Slide 33 Time Allotted: 6 minutes	***Critical Idea*** • This lesson wrap-up question is critical to developing conceptual understanding and needs to be addressed. ***Step-By-Step Instructions*** • Give participants 2 minutes of quiet think time. Participants should record responses on handout **M5_P-00 Module 5 Presentation Slides.** • Conduct a "brain dump" of participant responses. As participants call out different ways quantities were represented in the lesson, record their responses on the board or on a piece of chart paper. • Ask, "Why do we have many ways to illustrate the same situation?" [There are many ways to represent equivalent expressions. Different representations will highlight different parts of an expression.] ***Words of Wisdom*** • The purpose of the wrap-up is for participants to realize that different representations highlight different parts of an expression. It is not necessary to find multiple expressions for every situation, but it is critical that participants recognize there are multiple ways to represent a given situation. The expression used for a given context should be most useful in solving the problem.	**M5_P-00 Module 5 Presentation Slides** Chart paper and markers
 Slide 34 Time Allotted: 10 minutes	***Critical Idea*** • Intentional teacher moves support focus, coherence, and rigor around the mathematics content. ***Step-By-Step Instructions*** • Say, "It is essential that we take a deliberate pause in our work to reflect on this experience. During the lesson, you were asked to use handout **M5_P-06 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." • Once participants are done, say, "Please look over the evidence you just recorded on handout M4_P-04. Which key shift did you engage in the most?" • Direct the participants to find someone in the room they have not worked with in this session and share their responses. • After all pairs have the opportunity to share, call on 2 or 3 participants to summarize their discussions. • Summarize the learning experience. Say, "Now that you have experienced an EngageNY lesson from start to finish and made connections between the learning experience and the key shifts of the LSSM, we will unpack the	**M5_P-06 Looking for Evidence of Student Engagement in the Key Shifts**

Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
	structure of the EngageNY lesson and discuss implications for planning and instruction. " ***Words of Wisdom*** • Facilitator should designate each corner of the room as A-B-C-D ahead of time. • Don't rush this conversation. Participants need time to think about, reflect on, and share their observations of what they observed in the lesson.	


Slide 35
Time Allotted: 1 minute
	Critical Idea
	• A strong understanding of the LSSM is critical for teachers to implement the Tier 1 resources with fidelity and integrity. Teachers must be able to use the language of the standards to guide high-quality, standards-aligned teaching and learning.
	
	Step-By-Step Instructions
	• **<u>Animate the slide.</u>** Display the content standard addressed by this lesson.
	• Say,
	  ○ "When planning with any resource, it is important that we consider how the lesson, task, or activity aligns with the standards."
	  ○ "Only when we truly understand how the standards manifest in the lesson can we ensure that our instruction will align with the full intent of the standards."
	  ○ "On the slide, you will find the standard this lesson was intended to address."
	
	Words of Wisdom
	• Keep this slide brief. Participants will have the opportunity to look at how the standards manifest as they debrief the lesson further.	


Slide 36
Time Allotted: 15 minutes
	Critical Idea
	• Participants should be able to identify evidence of each of the three key shifts in the EngageNY lesson.
	
	Step-By-Step Instructions
	• Direct participants to the following handouts: **M5_P-08 ENY G7 M3, TA, L3 Teacher** and **M5_P-09 Diamond Reflection: Unpacking the ENY Lesson**.
	• Say,
	  ○ "With your table groups, unpack the lesson using handout **M5_P-09 Diamond Reflection: Unpacking the ENY Lesson**. Discuss the questions and record your responses on the paper."
	  ○ "Be prepared to share specific places in the lesson that you see each of the key shifts being addressed."
	  ○ "Remember, when looking for evidence of rigor, you will first need to discuss which aspect of rigor (conceptual understanding, procedural skills and fluency, or application) is addressed with this standard."
	• Give participants time to analyze and discuss the lesson and to look for evidence of the key shifts.
	• Have 2 or 3 groups share what they discussed as evidence for each shift.
	
	Words of Wisdom
	• The time to unpack the lesson is shorter than in previous sessions. Please be
		M5_P-08 ENY G7 M3, TA, L3 Teacher
		
		M5_P-09 Diamond Reflection: Unpacking the ENY Lesson

Time & Slide Thumbnail	Facilitator Notes Session 3	Materials
	quick to remind the participants what this document is used for and direct them to begin working immediately.	


 	
Slide 37
Time Allotted: 3 minutes
	Critical Idea
	• Reflecting on our learning is important to solidifying understanding and making progress toward accomplishing the goals of the initiative.
	
	Step-By-Step Instructions
	• Direct participants to reflect on Session 3 and record their responses on handout **P-00 Module 5 Presentation slides** for the slide that matches the screen.
	• Once participants have completed their reflections, call on 2 or 3 participants to share their responses. Then, close the session. Say,
	  ○ "The goals of Session 3 were to experience an EngageNY lesson as a learner, identify evidence of the key shifts, and examine teacher resources related to
	  the EngageNY lesson. "
	  ○ "Your experience as a learner and your collaborative conversations with colleagues in this session helped identify implications for teaching and learning."
	  ○ "In Session 4, we will use tools for purposeful planning to align teaching and learning of the EngageNY curriculum to the intent of the standards and to meet the needs of all students."
	• If participants have any lingering questions after the session, direct them to place the questions on the Parking Lot poster before they leave the session. If necessary, address the questions in Session 4.
	
	Words of Wisdom
	• This is an opportunity for participants to reflect on and share their learning from Session 2.
		P-00 Module 5 Presentation Slides

Math Module 5, Session 4 Overview

Session Title: Purposeful Planning of the EngageNY Curriculum

Grade Band: 6–9

Session Overview *What are the overarching goals of this module? Why are those goals important? How do they connect to what's come before and what will come after?*
In Session 4, participants review and apply the process for collaborative planning conversations to connect foundational study of the standards to the EngageNY resource materials. In this session, participants use the Planning Guide along with the Louisiana Teacher Resources to study standards and analyze EngageNY lessons for an upcoming unit of study. Participants apply learning from Session 2 to plan for mathematical discourse for an upcoming lesson, with a focus on anticipating and monitoring student responses. In Module 6, participants will continue to use the Planning Guide to plan lessons for an upcoming unit of study.

Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Participants will be able to… • Use the Louisiana Teacher Resources to investigate standards related to an upcoming unit of study. (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	• Completed Planning Guide for standards and EngageNY lessons related to an upcoming unit of study
Session Key Points *What are the 2-4* most *important takeaways from this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*

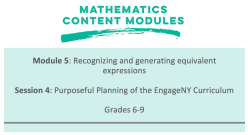
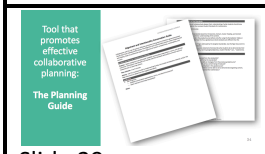
Participants will know:
• Collaborative planning is:
  ○ Working and learning together to plan instruction (including lessons, units, assessments, and activities) focused on building the intended learnings described by the standards.
  ○ Discussing, interpreting, and refining curriculum resource materials together in order 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.
  ○ Consider and use instructional strategies and resources that will best build on students' current understanding and connect to the intended learning.
	• Do a quick review:
	  ○ Planning Guide process
	  ○ Foundational Study of the Standards
	  ○ Bridge to Lesson Planning
	• Do independent practice: Complete a Planning Guide Conversation to plan for an upcoming unit of study.
	• Reflect on purposeful planning.

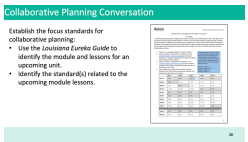
Facilitation Recommendations	
Session Length	60 minutes
Time of Year	

Materials	

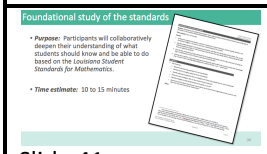
Session Materials:
• Handout **M5_P-10 Planning Guide**
• Handout **M5_P-11 Purposeful Planning: Anticipating and Monitoring Student Responses**
 	
Additional Supplies:
• N/A
	Facilitator Pre-Work and Prep:
	• Print participant handouts (1 per participant).
	• Ensure internet access is available.
	• Practice navigating to the Louisiana Believes K-12 planning resources website:
	  ○ Louisiana Guide to Implementing Eureka
	  ○ Remediation Guide
	  ○ Companion Document
	  ○ Louisiana Student Standards for Mathematics

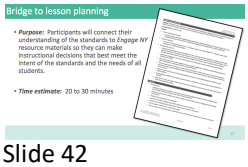
Participant Pre-Work	
Participants must bring: • Laptop or device with internet capability	**Participants:** • N/A

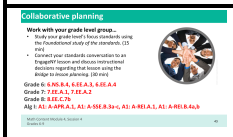
Time & Slide Thumbnail	Facilitator Notes Session 4	Materials
 Slide 38 Time Allotted: < 1 minute	**Session 4 Purposeful Planning of the EngageNY Curriculum** **Slides 38–45: 90 minutes** **Critical Idea:** • This slide is an introductory slide for Session 4. • We will work toward implementing structured collaboration for planning instruction. **Step-by-Step Instructions:** • Tell participants that we will transition into Session 4. **Words of Wisdom:** • For Session 4, participants should be sitting in grade-level groups.	
 Slide 39 Time Allotted: 3 minutes	**Critical Idea:** • This tool is helpful for grade level teams to stay focused on studying standards and planning aligned instruction together. ***Step-By-Step Instructions*** • Say, "In the previous modules, we introduced you to the Planning Guide, which is a tool used to establish an ongoing collaborative planning process that will help plan instruction in grade-level teams that is aligned to the standards." • Direct participants to handout **M5_P-10 Planning Guide**. • Say, "Remember 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 2 minutes with a partner to re-familiarize themselves with the Planning Guide. ***Words of Wisdom*** • This is a quick re-introduction to the Planning Guide. Do not take too much time here.	**M5_P-10 Planning Guide**

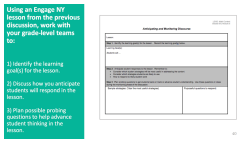

Slide 40
Time Allotted: 2 minutes
	Critical Idea
	• This tool is helpful for grade level teams to stay focused on studying standards and planning aligned instruction together.
	
	Step-By-Step Instructions
	• Say,
	  ○ "If you recall, the first step in the process is to choose focus standards to study. When you are using the tool with your team you might choose standards that are coming up in the next lesson or unit, you might choose standards that the team typically sees students struggle with . . . Whatever way you decide, make sure the team agrees to generally 1-3 standards to study."
	  ○ "Today, you will use the Planning Guide to guide your planning for an upcoming module. Use the Louisiana Eureka Guide for your grade level to identify the module and lessons for an upcoming unit of study. Once you have identified the module and lesson, identify the standard(s) related to the upcoming module lessons. These standards will serve as the focus for collaborative planning today."
		M5_P-10 Planning Guide
		
		Internet access so participants can access the Louisiana Guide to Implementing Eureka for their grade-level or course: https://www.louisianabelieves.com/resources/library/k-12-

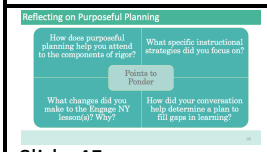
Time & Slide Thumbnail	Facilitator Notes Session 4	Materials
	• Have each group take note of the standards they will study today on the first page of their Planning Guide. ***Words of Wisdom*** • Walk around to groups throughout this process to monitor progress, and ask questions/prompt groups to maintain progress.	math-year-long-planning


Slide 41
Time Allotted: 2 minutes
	Critical Idea
	• This tool is helpful for grade level teams to stay focused on studying standards and planning aligned instruction together.
	
	Step-By-Step Instructions
	• Say,
	  ○ "Since I guided you through this process step by step in the last module, this time I am going to quickly review the process and then release you 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 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. This section should only take about 15 minutes to complete, once you get used to the process."
	  ○ "There is a set of specific 'look-fors' listed on your page to help guide the conversation."
	
	Words of Wisdom
	• Slides 35–38 serve as a quick review of the Planning Guide.
		M5_P-10 Planning Guide
		
		Laptop with internet access


Slide 42
Time Allotted: 3 minutes
	Critical Idea
	• This tool is helpful for grade level teams to stay focused on 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 the last module."
	  ○ "Remember the purpose of this section is to connect your understanding of the standards to the EngageNY resource materials."
	  ○ "You will recall this part of the collaborative planning conversation takes the most time, about 20 to 30 minutes."
	
	Words of Wisdom
	• Slides 35–38 serve as a quick review of the Planning Guide.
		M5_P-10 Planning Guide

 Slide 43 Time Allotted: 45 minutes	***Critical Idea*** • It is important to apply a deep study of the standards to the implications for instruction to make informed decisions about resource materials that are used in classrooms. ***Step-By-Step Instructions*** • Say, ○ "You will now work in grade-level groups to work through the entire planning process laid out in the Planning Guide. Use the grade-level standards you	**M5_P-10 Planning Guide** Laptops with internet access Image credit: Creatas

Time & Slide Thumbnail	Facilitator Notes Session 4	Materials
	discussed in Session 1 to guide your discussion. These standards are displayed on the screen." ○ "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 resources available to you on the Louisiana Believes site to help you with your discussion and to help you 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*** • Circulate around the room and assist groups as needed.	Images/Creatas /Thinkstock
 Slide 44 Time Allotted: 25 minutes	***Critical Point*** • Participants should use one of the EngageNY lessons discussed in the Bridge to Lesson Planning portion of the Planning Guide (on the previous slide) to plan for a math discussion within the identified lesson. • Participants will use this time to ***anticipate*** and ***monitor*** student responses. ***Step-By-Step Instructions*** • Direct participants to handout **M5_P-11 Purposeful Planning: Anticipating and Monitoring Student Responses.** • **<u>Animate the slide.</u>** Say, ○ "Now, you will extend your planning conversation to plan for a mathematical discourse within one of the EngageNY lessons discussed in your Bridge to Lesson Planning conversation." ○ "Use the next 20 minutes and apply what you learned in Session 3 to practice the ***anticipating*** and ***monitoring*** stages of the 5 practices for orchestrating productive mathematics discussions." • **<u>Animate the slide.</u>** Say, ○ "First, revisit the EngageNY lesson you just discussed and identify the standards-aligned learning goal(s) for the lesson. Remember to be specific in your learning goals, and clarify what will count as evidence of student learning." ○ "Second, identify an appropriate place(s) in the lesson to incorporate mathematical discussion. Look for a particular exercise or example that you anticipate as a 'hot spot' for students." ○ "Next, use handout M5_P-11 to record 3 or 4 possible strategies you anticipate students will use to solve this problem." ○ "Then, identify which solutions are most useful in addressing the content and goals of the task." ○ "Finally, brainstorm at least 3-5 purposeful questions you might use in response to the sample strategies that can support and advance student thinking towards the learning goal. Record your responses on handout M5_P-11." • Clarify questions and give participants 20 minutes to complete the conversation and record on handout M5_P-11. • After time is up, debrief as a whole group. Call on 2 or 3 participants to share any successes or challenges they encountered in this process. If time permits, address any lingering questions or direct participants to place them on the Parking Lot	**M5_P-11 Purposeful Planning: Anticipating and Monitoring Student Responses**

Time & Slide Thumbnail	Facilitator Notes Session 4	Materials
	poster to address at a later time. ***Words of Wisdom*** • Encourage grade-level teams to have a manageable goal of no more than 3 to 4 strategies documented. Looking for more strategies than that can be difficult to manage while monitoring student work.	
 Slide 45 Time Allotted: 10 minutes	***Critical Idea*** • It is important to apply 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 individually reflect on a sticky note." • Give participants 2 minutes to individually reflect and write down their thinking on a sticky note. • Give participants 5 minutes to discuss the questions with those in their group. • After, ask participants to share out a few of their conversation points. • Summarize by reminding participants that it is our job as teachers 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 5 Closing Slides

Grade Band: 6–9

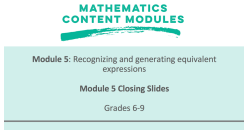
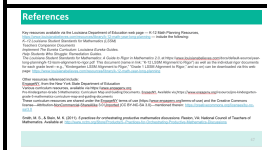
Session Overview *What are the overarching goals of this session? Why are those goals important? How do they connect to what's come before and what will come after?*	
Participants reflect on their learning in Module 5 and complete a participant evaluation survey.	
Session Key Points *What are the 2-4 most important takeaways from this session?*	**Session Products** *What will participants produce during the session? Immediately following the session?*
Participants will know: • Content to be covered in Module 6. CK: Content Knowledge CP: Content Pedagogy CS: Curriculum Skills	• Complete session evaluation survey

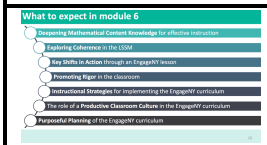
Session Objectives *What will participants know, believe, and be able to do as a result of this session?*	**Session Agenda at a Glance** *What is the overall flow of this session?*
Participants will be able to… • Summarize learning from Module 5.	• Quick review: What to expect in Module 6 • Module 5 participant evaluation survey

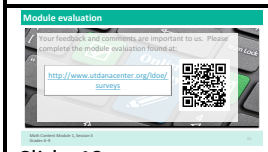
Facilitation Recommendations	
Session Length	15 minutes

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: • Computer or device with internet access **Additional Supplies:** • N/A	**Facilitator Pre-Work and Prep:** • N/A

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 or device with internet access	**Before this session, participants should:** • Experience Module 5

Time & Slide Thumbnail	Facilitator Notes Module 5 Closing Slides	Materials
 Slide 46 Time Allotted: < 1 minute	**Module 5 Closing Slides: Reflecting on Learning** **Slides 46–49: 15 minutes** ***Critical Idea*** • This slide is an introductory slide for the Module 5 closing slides. ***Step-by-Step Instructions*** • Say, "We will conclude Module 5 and preview what is to come in Module 6." ***Words of Wisdom*** • Participants should have a laptop or device with internet capability to complete the participant evaluation survey.	
 Slide 47 Time Allotted: N/A	***Critical Idea*** • This slide provides references for Module 5. ***Step-By-Step Instructions*** • Say, "These are the references for Module 5." ***Words of Wisdom*** • This slide should be brief.	


Slide 48
Time Allotted: < 1 minute
	Critical Idea
	• This slide provides participants with an overview of the content in Modules 4–6.
	
	Step-By-Step Instructions
	• Say, "Before we conclude Module 5, we will remind you of the content and structure of Module 6. Just as in Modules 1-5, the learning sessions in future Modules will include mathematics tasks and discussions designed to strengthen your understanding of the LSSM to support students' learning of mathematics content through the high-quality curriculum."
	• **<u>Animate the slide one bullet at a time.</u>**
	• As each bullet animates, say, "In each module, we will…"
	  ○ "Analyze the major work of grades 6–9 to **Deepen Mathematical Content Knowledge** for effective instruction."
	  ○ "**Explore Coherence** between and within the grade-level standards in the LSSM."
	  ○ "See the **Key Shifts in Action** through an EngageNY lesson related to the major work of grades 6–9**.**"
	  ○ "Study the Standards for Mathematical Practice to **Promote Rigor** in the classroom."
	  ○ "Identify the role of a **Productive Classroom Culture** in the EngageNY curriculum."
	  ○ "Apply knowledge of the LSSM to guide **Purposeful Planning** of the EngageNY curriculum."
	• Summarize the slide. Say, "Please keep at the forefront of your mind that the work in which you are engaged is part of a bigger picture, and this module builds on the foundation from Modules 1-4.
	• Thank the participants for their time and effort in Module 5.	

Time & Slide Thumbnail	Facilitator Notes Module 5 Closing Slides	Materials
	Words of Wisdom • This slide should be brief and is about clarifying the learning expectations of Module 6. It is a review from Modules 1–4.	
 Slide 49 Time Allotted: 12 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