

Summer Institute Agendas for Days 1–3

Summer Institute: Day 1

Meeting date, time, and location	Date Time Zoom meeting (or) Location of event City, State
Participants	
Objectives	<ul style="list-style-type: none"> • Increase teachers’ knowledge of computational thinking (CT) strategies and student-focused practices, and understand how this knowledge benefits students’ learning of middle school mathematics. • Increase teachers’ capacity to integrate CT strategies and student-focused practices into their mathematics instruction.

Time	Topic and description	Materials	Facilitator
10 minutes	Welcome and introductions The coaches will welcome participants and review the agenda.	Attendance list Name tags Slides 1–2	Coaches
10 minutes	ENACT overview Coaches will review the goals of the ENACT project: to support teachers in integrating CT strategies and student-focused practices into their mathematics instruction.	Slides 3–9	Coaches
20 minutes	Icebreaker A coach will facilitate an icebreaker activity in which coaches and participating teachers will share interesting facts about themselves to promote community and team building.	Slides 10 and 11	Coaches
45 minutes	Centering ourselves in the work: Who are you as a student learner? Coaches will lead participants through a process of identifying what type of learners they were in middle school and how those experiences might shape how they interact with their students. The coaches will use this discussion to introduce the four student-focused practices that teachers will explore across the school year: <ul style="list-style-type: none"> • Connect to student experiences • Support student choice by enabling multiple approaches 	Slides 12–17 Handout: student profiles Chart paper	Coaches

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Time	Topic and description	Materials	Facilitator
	<ul style="list-style-type: none"> Value student thinking and voice Promote student collaboration <p>This activity will support teachers in considering how they might think about developing student-focused teaching practices throughout the Summer Institute.</p>		
30 minutes	<p>Diving into computational thinking</p> <p>A coach will ask teachers to share their initial ideas about what CT is and how it could support math instruction. Teachers will use sticky notes to respond to the question, “What do you think of when you hear about computational thinking?” The coach will then facilitate a discussion with teachers about how CT can increase the emphasis on sensemaking in their mathematics instruction and why focusing on sensemaking could be beneficial.</p> <p>Finally, the coach will introduce five CT strategies: pattern recognition, abstraction, decomposition, debugging, and algorithms. The coach will explain that teachers will explore each strategy during the rest of the institute. Teachers will share their initial ideas about how each strategy relates to mathematics instruction and will continue to add ideas throughout the institute.</p>	<p>Slides 18–22</p> <p>Chart paper</p> <p>Sticky notes</p> <p>Handouts: CT definitions and CT bookmarks</p>	Coaches
15 minutes	Suggested break		
50 minutes	<p>Decomposition and mathematics</p> <p>A coach will facilitate a review of the CT strategy of decomposition. Teachers will be asked to solve a complex problem that involves placing fraction cards on an unlabeled clothesline number line, followed by a reflection on the strategies they used to break the problem into component parts to solve it. A coach will use this activity to introduce decomposition as a CT strategy and the student decomposition poster.</p> <p>Participants will reflect on how decomposition might be connected to student-focused practices.</p> <p>Coaches will ask participants to discuss with a neighbor the following questions about decomposition:</p> <ul style="list-style-type: none"> How could you connect decomposition to student experiences? When might they have decomposed tasks before? What might the benefits be for allowing students to choose how to decompose a task? 	<p>Slides 23–28</p> <p>String to create a number line</p> <p>Fraction cards</p> <p>Paper clips</p> <p>Sticky notes</p> <p>Chart paper</p> <p>Decomposition poster</p>	Coaches

Time	Topic and description	Materials	Facilitator
	<ul style="list-style-type: none"> • How could using decomposition support student thinking and promote student voice? • How can you use decomposition to facilitate collaboration? <p>This discussion will tie together decomposition and teachers' earlier explorations of how to center students in their teaching.</p> <p>Finally, a coach will ask teachers to add responses to this prompt to posters in the room: "In what other contexts might students use decomposition?" to support their continued brainstorming about how decomposition could fit into their mathematics instruction.</p> <p>Optional: Incorporate the introductory video for decomposition developed for the project to demonstrate what the strategy looks like in action.</p>		
60 minutes	Suggested break		
60 minutes	<p>Abstraction and mathematics</p> <p>A coach will provide a review of abstraction and how it relates to mathematics. Teachers will compare two representations of a word problem and reflect on the information represented in each. Teachers will then create their own representations of a different word problem and reflect on how their representations show important information from the problem.</p> <p>A coach will then discuss how teachers' interpretations of what was important may have differed and what kinds of information are important when solving mathematics problems. The discussion will also help teachers consider what supports students may need to identify and understand important information in problems.</p> <p>The coaches will use this activity to introduce abstraction as a strategy and the student poster on abstraction.</p> <p>Next, a coach will facilitate a reflection on how abstraction might be connected to student-focused practices.</p> <p>The coach will ask participants to discuss with a neighbor the following questions about abstraction:</p> <ul style="list-style-type: none"> • How could you connect abstraction to student experiences? When might they have abstracted important information before? • What might the benefits be for allowing students to choose what information to abstract and how to represent that information? 	<p>Slides 29–35</p> <p>Handout: Representing Important Information</p> <p>Sticky notes</p> <p>Chart paper</p> <p>Abstraction poster</p>	Coaches

Time	Topic and description	Materials	Facilitator
	<ul style="list-style-type: none"> How could using abstraction <i>support student thinking and promote student voice</i>? How can you use abstraction to <i>facilitate collaboration</i>? <p>This discussion will tie together abstraction and teachers’ earlier explorations of how to center students in their teaching. Teachers will then be asked to add sticky notes to the posters, responding to the following: “In what other contexts might students use abstraction?” to support their continued brainstorming about how abstraction could fit into their mathematics instruction.</p> <p>Optional: Incorporate the introductory video for abstraction developed for the project to demonstrate what it looks like in action.</p>		
15 minutes	Suggested break		
60 minutes	<p>Debugging and mathematics</p> <p>A coach will provide a review of debugging and how it relates to mathematics instruction. Teachers will reflect on how the concept of a “rough draft”—a term typically used in writing instruction—could be useful for supporting students in self-correcting their errors and reflecting on their work. Teachers will compare two mathematics tasks and discuss with a partner the differences they notice in terms of what student work on the task would reveal about student thinking. The coach will facilitate a brief discussion about how some tasks will make student thinking more visible, making catching and correcting mistakes much easier.</p> <p>Teachers will then choose an activity from their curriculum and imagine what they might ask students to produce if they thought of it as a rough draft instead of a final product. A coach will then facilitate a group discussion about how teachers thought about this process.</p> <p>The coach will use this activity to introduce debugging as a strategy and the student poster on debugging.</p> <p>Next, a coach will facilitate a reflection about how debugging might be connected to student-focused practices.</p> <p>The coach will ask participants to discuss with a neighbor the following questions about abstraction:</p>	<p>Slides 36–44</p> <p>Sample tasks from slides</p> <p>Lessons from teachers’ current math curriculum</p> <p>Sticky notes</p> <p>Chart paper</p> <p>Debugging poster</p>	Coaches

Time	Topic and description	Materials	Facilitator
	<ul style="list-style-type: none"> • How could you connect debugging to <i>student experiences</i>? When might they have debugged their thinking or work before? • What might the benefits be for allowing <i>students to choose</i> how to debug a task? • How could using debugging <i>support student thinking and promote student voice</i>? • How can you use debugging to <i>facilitate collaboration</i>? <p>This discussion will be used to tie together debugging and teachers' earlier explorations of how to center students in their teaching. Teachers will add sticky notes to the posters, responding to the following: "In what other contexts might students use debugging?" to support their continued brainstorming about how debugging could fit into their mathematics instruction.</p> <p>Optional: Incorporate the introductory video for debugging developed for the project to demonstrate what it looks like in action.</p>		
20 minutes	<p>Reflection</p> <p>A coach will invite teachers to reflect on what they learned during the session today, how it changed their thinking about CT, and whether they can identify additional areas in which they are already applying CT strategies in their math instruction. Teachers will participate in the following:</p> <ul style="list-style-type: none"> • Teachers will reflect on their understanding of CT strategies. • Teachers will write any changes on sticky notes and place them on the poster board. <p>The coach will facilitate a discussion on how teachers' understanding of CT has changed, including how their idea of CT has broadened, and whether participants had any previously unknown misconceptions of CT.</p>	<p>Slides 45 and 46</p> <p>Posters from "Introduction to CT" activity</p> <p>Sticky notes</p>	Coaches
20 minutes	<p>Coaching overview</p> <p>A coach will provide an overview of the ENACT approach to coaching sessions and foci, highlighting that the individual sessions will be informed by where teachers are with their implementation, and group sessions will focus on sharing experiences, reflections, and discussing how to implement the lessons.</p>	Slides 47–50	Coaches

Time	Topic and description	Materials	Facilitator
10 minutes	<p>Questions and preview of day 2</p> <p>Teachers will have an opportunity to ask any questions about the material presented. A coach will provide a preview of the second day of the Summer Institute.</p>	Slides 51–53	Coaches
Adjourn			

Summer Institute: Day 2

Meeting date, time, and location	Date Time Zoom meeting (or) Location of event City, State
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Participants

Objectives	<ul style="list-style-type: none"> • Increase teachers’ knowledge of CT strategies and student-focused practices, and understand how this knowledge benefits students’ mathematics learning. • Increase teachers’ capacity to integrate CT strategies and student-focused practices into their mathematics instruction. • Familiarize teachers with project resources.
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Time	Topic and description	Materials	Facilitator
20 minutes	<p>Welcome, agenda, and warm-up activity</p> <p>A coach will welcome teachers.</p> <p>Teachers will participate in a warm-up activity that involves thinking about their own experiences and learning about the experiences of others in the group. Participants will have 10 minutes to walk around and talk to others to fill in the bingo card handout. Participants will write the names of other participants and notes about their responses to the questions in the bingo squares. At the end of the activity, participants will share highlights from the activity.</p>	<p>Slides 1–3</p> <p>Slides 4 and 5</p> <p>Handout: Bingo card</p>	Coaches
10 minutes	<p>Diving back into computational thinking</p> <p>A coach will facilitate a discussion to help teachers recall what they learned about CT on the first day of the institute, including the definition of CT and the three strategies they had explored: decomposition, abstraction, and debugging. The coach will introduce the PRADDA acronym (pattern recognition, abstraction, decomposition, debugging, algorithms) to help teachers remember the five practices and recall the ones they will explore that day: pattern recognition and algorithms.</p>	Slides 6 and 7	Coaches
60 minutes	<p>Pattern recognition and mathematics</p> <p>A coach will facilitate an activity to deepen teachers’ knowledge of pattern recognition and how it relates to mathematics. Teachers will be asked to solve fraction multiplication problems through visual representation and look for patterns across problems (noticing patterns). They will then be asked to explain the meaning of the patterns through reference to their visual representation (explaining patterns). Next, they will consider how</p>	<p>Slides 8–14</p> <p>Construction paper, manipulatives, markers, sticky notes</p>	Coaches

Time	Topic and description	Materials	Facilitator
	<p>the patterns they noticed could be applied to other problems (generalizing and applying patterns). The coach will ask teachers to reflect on which aspects of noticing, explaining, generalizing, and applying patterns might be the most challenging for students.</p> <p>The coach will use this activity to introduce pattern recognition as a strategy and will review the student poster on pattern recognition.</p> <p>The coach will facilitate a reflection on how pattern recognition might be connected to student-focused practices.</p> <p>The coach will ask teachers to discuss the following questions:</p> <ul style="list-style-type: none"> • How could you connect pattern recognition <i>to student experiences and identities</i>? When might they have noticed and applied patterns before? • What might the benefits be for allowing <i>students to choose</i> how to find and use patterns? • How could using pattern recognition <i>support student thinking and promote student voice</i>? • How can you use pattern recognition to <i>facilitate collaboration and community</i>? <p>This discussion will be used to tie together pattern recognition and teachers’ earlier explorations of how to center students in their teaching. Teachers will then be asked to add sticky notes to the posters, responding to the following: “In what other contexts might students use pattern recognition?” to support their continued brainstorming about how pattern recognition could fit into their mathematics instruction.</p> <ul style="list-style-type: none"> • Incorporate the video for pattern recognition developed for the project to demonstrate what it looks like in action. 		
15 minutes	Break		
45 minutes	<p>Algorithms and mathematics</p> <p>A coach will facilitate an activity that will deepen teachers’ knowledge of algorithms and how it relates to mathematics.</p> <p>Teachers will partner to share their experiences about what tends to go wrong when students use mathematics algorithms, such as the surface area model. They will then be asked to share highlights with the group.</p> <p>A coach will facilitate discussion about several examples of applying the surface area algorithm. The coach will also facilitate</p>	<p>Slides 15–22</p> <p>Sticky notes</p> <p>Algorithms poster</p>	Coaches

Time	Topic and description	Materials	Facilitator
	<p>discussion during the problem examples about the kinds of thinking required to develop algorithms and apply them thoughtfully.</p> <p>The coach will use this activity to introduce algorithms as a strategy, and the student poster on algorithms.</p> <p>Next, the Coach will facilitate a reflection about how algorithms might be connected to student-focused practices. The Coach will ask teachers to discuss the following questions:</p> <ul style="list-style-type: none"> • How could you connect algorithms to student experiences and identities? When might they have used algorithms before? • What might the benefits be for allowing students to choose which algorithm to use? • How could using algorithms support student thinking and promote student voice? • How can you use algorithms to facilitate collaboration and community? <p>This discussion will be used to tie together algorithms and teachers' earlier explorations of how to center students in their teaching. Teachers will then be asked to add sticky notes to the posters, responding to the following: "In what other contexts might students use algorithms?" to support their continued brainstorming about how algorithms could fit into their mathematics instruction.</p> <ul style="list-style-type: none"> • Incorporate the video for algorithms developed for the project to demonstrate what it looks like in action. 		
Break			
70 minutes	<p>How do our lived experiences impact how we approach teaching math?</p> <p>A coach will lead teachers to reflect on how their lived experiences impact how they teach. The coach will explain that by thinking about their lived experiences and the roles and positions they have in society, teachers can better connect to the experiences of their students and reflect on how their own experiences might shape their math CT lessons. Participants will begin by reflecting on who they are in society, such as the roles they play in their lives. They will then reflect on who they are as teachers; for example, the characteristics they think they embody</p>	<p>Slides 23–30</p> <p>Chart paper</p>	Coach

Time	Topic and description	Materials	Facilitator
	<p>as teachers. They will record responses to each prompt on chart paper.</p> <p>They will then spend 10 minutes sharing their reflections with a partner and thinking about how those experiences, characteristics, and roles might inform their teaching. They will share key highlights with the group.</p>		
25 minutes	<p>Exploring ENACT resources</p> <p>The coach will introduce the ENACT resources, which will support teachers in designing and implementing their mathematics lessons using the ENACT framework (CT strategies coupled with student-focused practices). The resources include classroom posters, introductory activities for the first week of school, and 20 lesson videos with viewing guides.</p> <p>The coach will describe the CT implementation strategies modeled in each set of ENACT coaching videos: videos 1–5 for modeling CT strategies for students, videos 6–10 for creating structured opportunities for students to engage in CT, and videos 11–15 for taking advantage of spontaneous opportunities to encourage CT through prompting and pointing out when students use CT. The coach will discuss how this implementation progression is designed to promote student ownership of CT strategies and that the coaching sessions will help teachers decide when students are ready for each strategy.</p> <p>In the remaining time, teachers will explore the ENACT resources.</p> <p>*If time permits, teachers can be provided time to begin planning their first few CT-integrated lessons, although there will be more time for detailed planning on Day 3 of the institute. The coach should support teachers as they explore the ENACT resources and begin to plan their lessons.</p>	<p>Slides 31–37</p> <p>Printed classroom posters</p> <p>ENACT coaching videos</p> <p>Handouts: Introduction to Abstraction and Pattern Recognition; Introduction to Debugging, Decomposition, and Algorithms</p> <p>ENACT coaching videos 1–15</p> <p>Viewing guides for coaching videos</p>	Coach
10 minutes	<p>Questions and preview of day 3</p> <p>Teachers will have an opportunity to ask any questions they may have based on the material presented. The coach will provide a preview of the third day of the Summer Institute.</p>	Slides 38–40	Coach
	<p>Adjourn</p>		

Summer Institute: Day 3

Meeting date, time, and location	Date Time Zoom meeting (or) Location of Event City, State
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Participants

Objectives	<ul style="list-style-type: none"> Utilize CT strategies and student-focused practices to plan and present a microteaching lesson. Increase teachers' capacity to integrate CT strategies and student-focused practices into their mathematics instruction. Support teachers in brainstorming and planning their first CT lessons.
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Time	Topic and description	Materials	Facilitator
5 minutes	Welcome, agenda, and warm-up activity	Slides 1–3	Coach
15 minutes	<p>The coach will welcome participants and review the agenda for the day.</p> <p>As a warm-up activity, the coach will introduce the idea of connecting classroom routines to CT. To spur teachers' thinking and support the development of a common understanding of the meaning of "classroom routine," the coach will share a few examples, such as beginning a class by connecting to prior learning or using think-pair-share. The coach will ask teachers to share, on sticky notes placed in a common location, some classroom routines they use in their math teaching.</p> <p>Next, the coach will invite teachers to choose one of the routines on the sticky notes and consider how they could connect CT to that routine. Teachers will also consider how connecting CT to a familiar routine might support students in becoming more comfortable with CT. Teachers will share ideas with a partner and then with the whole group.</p>	Slides 4–6	
50 minutes for CT lesson creation 50 minutes for presenting	<p>Microteaching</p> <p>The coach will explain the purpose of the microteaching activity: to give teachers the opportunity to practice parts of their plans and receive feedback from the coach and their peers. The coach will explain that teachers will take turns microteaching. The coach will provide an overview of the process for microteaching:</p> <ul style="list-style-type: none"> The teacher gives context for their lesson. The teacher microteaches the lesson while coaches and peers pose as students. The teacher provides their initial thoughts. The coaches and peers provide feedback. 	Slides 7–16 Handout: student profiles Handout: ENACT observational tool	Coach

Time	Topic and description	Materials	Facilitator
	<p>The coach will explain the expectations for what participants will do in each role (teacher or student). While teaching, participants should practice both explaining ideas to students and interacting with students. While posing as students, participants will be encouraged to think about what might be clear or confusing to a middle school student. Participants will be encouraged to draw on the student profiles handout used on Day 1 of the institute. The coach will encourage participants to focus their feedback on the clarity of the CT strategy presentation and how the teacher used one or more of the student-focused practices in the ENACT observational tool.</p> <p>In the final 10 minutes, the coach will lead a facilitated discussion around the following questions:</p> <ul style="list-style-type: none"> • How did you feel as you practiced modeling a CT strategy? • What went well? • What was challenging? • What questions do you have? • What will you do to continue to prepare? 		
15 minutes	<p>Share out</p> <p>The coach will facilitate a group discussion of teachers’ initial plans for implementing CT strategies and student-focused practices. Through this discussion, teachers will be encouraged to build off each other’s ideas and brainstorm solutions to challenges.</p>	Slides 17 and 18	Coaches
40 minutes	<p>Planning time</p> <p>The coach will facilitate planning time for teachers and provide one-on-one support as needed. Teachers will:</p> <ul style="list-style-type: none"> • Choose the math lessons in which they will introduce and model each of the five CT strategies. • Choose which of the lessons they would like their coach to support during Coaching Session 1. • Schedule their first individual coaching session. • Plan the details of each lesson, as time permits. 	<p>Slides 19–22</p> <p>ENACT coaching videos</p> <p>Handouts: viewing guides for coaching videos</p> <p>ENACT observational tool</p>	Coaches

Time	Topic and description	Materials	Facilitator
5 minutes	<p>Closing</p> <p>The coach will answer any remaining questions about the project and thank teachers for their participation. Teachers will be reminded to complete the Stakeholder Feedback Survey.</p>	<p>Slides 23 and 24</p> <p>Stakeholder Feedback Survey</p>	Coaches
Adjourn			