

Rolling Out

Building Fact Fluency

A Toolkit for Addition and Subtraction

by Graham Fletcher and Tracy Johnston Zager



Welcome to *Building Fact Fluency*!

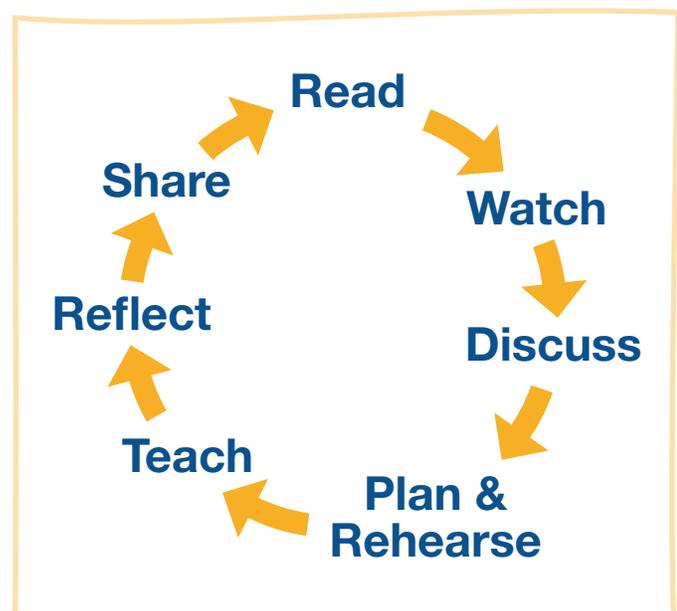
We've written this rollout guide for coaches, math lead teachers, administrators, PLC coordinators, and teaching specialists who are planning to launch and support implementation of the *Building Fact Fluency* toolkits in a team, school, or district. We've packed a lot of professional learning into the toolkits—way too much to take in all at once or frontload at the beginning! Instead, we hope educators will engage with the professional learning videos and *Facilitator's Guide* over time, while trying out the routines with students.

If you'd like to plan out a sequence of videos, readings, discussions, and action items, feel free to use or adapt the example guide below. Just please remember that it is only *one* of the many possible ways to sequence and pace the professional learning incorporated in your toolkit, and you should always feel free to make different choices that fit your needs.

Each of the modules below is scheduled for 90 minutes, assuming you might use them in a series of early-release or after-school sessions. Feel free to combine modules if you have longer chunks of time, such as half- or whole-day in-services or back-to-school professional learning days. Similarly, if you need to break modules into shorter chunks to fit them into weekly planning times, by all means go ahead. And rearrange as you see fit!

Overall, we recommend teachers read a bit, watch some professional learning videos, talk with colleagues, and plan upcoming lessons in each session. Rehearsing those plans in small groups can be invaluable—teachers can role-play being students and alternate taking the lead. Rehearsal is an ideal way to get a feel for routines and experiment with language and pacing in the safety of your professional learning community, so you'll be more prepared with students.

Between sessions, teachers can try *Building Fact Fluency* out in the classroom. Whenever possible, participants should come to the next session with an artifact from their teaching. Sharing and reflecting together on these artifacts (student work, a photo of the whiteboard, a short video or audio clip, etc.) is a wonderful way to start professional learning sessions and build the team's capacity and practice of collaboration. We are very excited about what *Building Fact Fluency* can do for students, but we are just as excited to provide a resource that can bring teachers together in the best sort of collective learning. All of us are smarter than one of us!



Module 1

Welcome and Orientation

Activities

Suggested Times

(Webcam suggestions for remote PD sessions only)

Unpack Your Box!

- **Read** through the Getting Started Guide and find all the materials described in the “What’s Inside” section.
- **Flip** through your *Facilitator’s Guide* to get a sense of it.
- **Flip** through the *Image Talks* and *Tool Talks* books.
- **Look** through the game boards to get a quick sense of what’s there.
- **Open** your cards and see what’s in each deck. Notice how they’re color-coded and labeled with letters for easy access and clean up!
- **Unpack** your dice and playing chips and put them in whatever classroom storage containers you’ll use.

25 minutes



Log In to the Companion Website

Find your unique access code on the inside of your box lid and use it to register your toolkit at www.buildingfactfluency.stenhouse.com.

- **Watch** the welcome page video (1:52).
- **Surf** the website for 15–20 minutes to see what’s there.

25 minutes



Why Fluency?

- **Read** Chapter 1: “Why Fluency?” (pages 1–11). As you read, choose a quote or an idea that you want to think about more and discuss with your colleagues.
- **Discuss** Chapter 1:
 - What quotes/ideas did you choose?
 - What did the chapter make you think about for your teaching practice? What is resonating with you?
 - How is *fact fluency* defined in the *Building Fact Fluency* toolkit?
 - How is this framing of fact fluency similar to or different from the ways we’ve thought about fluency and sensemaking in the past?

40 minutes



Cameras off during the video, cameras on for discussions

Module 2

Embedded Professional Learning and Getting Started with Image Talks

Activities	Suggested Times (Webcam suggestions for remote PD sessions only)
<p>Plan Your Professional Learning</p> <ul style="list-style-type: none">• Watch the “Jumping Right In” and “Embedded Professional Learning” chapters of Tracy’s Getting Started video (Implementation → Getting Started Videos → “Tracy on Jumping Right In; Embedded Professional Learning; and Planning, Pacing, and Sequencing”). STOP at 10:41, before “Pacing, Sequencing, and Planning.”• Discuss how you would prefer to engage over time in the professional learning that’s built into the toolkit. How can you plan to read, watch, try, and reflect together? How can you make sure you take the deeper dives into the teaching practice and assessment work later on, once your feet are wet? What sorts of structures do you want to put in place so you’ll collaborate with one another and help students have a coherent experience in your school?	<p>35 minutes</p> <p> </p> <p>Cameras off during the video, cameras on for discussions</p>
<p>Time to Jump In! Let’s Read, Watch, Try, Starting with Image Talks</p> <ul style="list-style-type: none">• Read pages 13–22 of your <i>Facilitator’s Guide</i> to learn about Lesson Strings and Image Talks.• Watch “Facilitating an Image Talk” (13:22) on the Companion Website to see Graham teach an Image Talk (Implementation → Lesson String Component Videos).• Plan in grade-level/school teams. Look at the Image Talk for Crayons, the first Lesson String (or a different one if teams have already taught Crayons). How might students see the objects? How might you record their thinking?• Rehearse together. If possible, one colleague can volunteer to lead the Image Talk so teachers can experience the routine from students’ point of view.	<p>50 minutes</p> <p> </p> <p>Cameras off to read and watch, cameras on to plan and rehearse</p>
<p>Prep for Your Next Meeting</p> <ul style="list-style-type: none">• Teach Crayons or another Image Talk before you meet again for the next session. Capture your representations (a photo of the board, chart paper, etc.).• Bring your representations to your next meeting.	<p>5 minutes</p> <p></p>

Module 3

Lesson Strings and Properties, and Getting Started with Tool Talks

Activities	Suggested Times (Webcam suggestions for remote PD sessions only)
<p>Reflect Together</p> <p>Share your recordings/representations from your Image Talk. How did it go? What was challenging about it? What went well? What might you do differently next time?</p>	10 minutes 
<p>Diving into Lesson Strings</p> <p>Watch the “What Is Fluency?” “Lesson Strings Routines,” and “Properties of Addition” chapters of Graham’s Getting Started video (Implementation → Getting Started Videos → “Graham on Fluency; the Lesson String Routines; the Properties of the Operations; and Assessment”). The first few chapters of this video will reground you in the why, and then give you an overview of all the tasks in the Lesson String.</p> <ul style="list-style-type: none">• START at the beginning and STOP at 41:30, after the properties section.• Discuss your questions and observations at suggested stopping points throughout the video.	55 minutes: 42 minutes for the video, plus discussion   Cameras off during the video, cameras on for discussions
<p>Plan Tool Talks</p> <p>Together, look at the next Tool Talk you’ll teach. If you have additional time (about 15 minutes), read the “Tool Talks” section of your <i>Facilitator’s Guide</i> (pages 29–31 and watch the Tool Talks video (Implementation → Lesson String Component Videos → “Facilitating a Tool Talk”). If you don’t have time to read and watch today, you can still take this chance to discuss the task with your colleagues and anticipate student responses.</p> <ul style="list-style-type: none">• Discuss how students might see the images.• Practice how you might record their thinking.• Rehearse together. If possible, one colleague can volunteer to lead the Tool Talk so teachers can experience the routine from students’ point of view.	10 minutes 
<p>Image Talks, Tool Talks, and Mathematical Properties</p> <p>Look at both the Image Talk artifact you brought and the Tool Talk you just planned. Think back to the last section of Graham’s video that you watched today. Do you see the commutative property, the associative property, or the identity property in the Image Talk you shared at the beginning, or the Tool Talk you just planned? Looking at these particular representations/arrangements of objects, what mathematical properties might emerge in the conversation? How might students talk about the properties, in kid language? What questions might you ask that encourage students to think about the properties without taking over their thinking?</p>	10 minutes 
<p>Prep for Your Next Meeting</p> <ul style="list-style-type: none">• Teach a Tool Talk before you meet again for the next session. Capture your representations (a photo of the board, chart paper, etc.).• Bring your representation to your next meeting.	5 minutes 

Module 4

The *Building Fact Fluency* Warm-Ups: Relationships Among Image Talks, Tool Talks, and Number Talks

Activities	Suggested Times (Webcam suggestions for remote PD sessions only)
<p>Reflect Together</p> <p>Share your recordings/representations from your first Tool Talk. How did it go? What was challenging about it? What went well? What might you do differently next time?</p>	10 minutes 
<p>Plan Image Talks, Tool Talks, and Number Talks</p> <p>Take this time to read and watch the materials around Image Talks, Tool Talks, and Number Talks. Plan those components of your upcoming Lesson String and look for connections among them. Guiding question: <i>What connections and relationships do you see across the Image, Tool, and Number Talk routines?</i></p> <ul style="list-style-type: none">• Watch “Extending an Image Talk” (8:18) (Implementation → Lesson String Component Videos).• Discuss how Graham’s questioning encouraged students to think about mathematical properties, look for relationships, and construct general arguments.• Read “Tool Talks,” pages 29–31, if you haven’t read it yet.• Watch “Facilitating a Tool Talk” (9:38) (Implementation → Lesson String Component Videos) if you haven’t watched it yet.• Discuss what you notice about the relationship between the Image and Tool Talks.• Read “Number Talks,” pages 36–37.• Watch “Facilitating a Number Talk” (8:24) (Implementation → Lesson String Component Videos).• Discuss the progression of the warm-ups. How might starting with a contextualized Image Talk, following with a Tool Talk, and finally ending with a Number Talk affect who talks and how during these routines? How can you leverage the sequence of these routines to widen participation and increase students’ access to the mathematics?	55 minutes   Cameras off to read and watch videos, cameras on to discuss
<p>Plan the Image Talk, Tool Talk, and Number Talk of Your Next Lesson String</p> <ul style="list-style-type: none">• Explore the Image Talk, Tool Talk, and Number Talk of your next Lesson String. What connections and relationships do you notice? What mathematical properties do you see? What questions might you ask to encourage students to look for patterns, explore properties, and construct general arguments?• Rehearse together. If possible, try facilitating these problems with each other so you can practice teaching and also experience the routine from students’ point of view.	20 minutes 
<p>Prep for Your Next Meeting</p> <ul style="list-style-type: none">• Teach the warm-ups of a Lesson String before you meet again for the next session. Capture an artifact from an Image Talk, Tool Talk, or Number Talk (video, audio, the questions you asked, a photo of the board, chart paper, etc.).• Bring your artifacts to your next meeting.	5 minutes 

Module 5

The Problem-Based Routines: Anchor Problems, Contextualized Practice Problems, and 3-Act Math Tasks

Activities	Suggested Times (Webcam suggestions for remote PD sessions only)
<p>Reflect Together</p> <p>Share your Image Talk, Tool Talk, and Number Talk artifacts. What did you notice? What was challenging? What went well? What might you do differently next time? As the routines become established, what might shift?</p>	15 minutes 
<p>Explore Anchor Problems, Contextualized Practice Problems, and 3-Act Math Tasks</p> <p>Take this time to read and watch the materials around problem-based story problems, and then talk with your colleagues. (Facilitator's note: Anchor Problems and Contextualized Practice Problems will be more familiar to teachers who have been trained in Cognitively Guided Instruction.) Guiding question: <i>How does problem-solving work relate to fact fluency?</i></p> <ul style="list-style-type: none">• Read pages 23–28, “Anchor Problems.”• Watch “Facilitating an Anchor Problem” (10:37) (Implementation → Lesson String Component Videos).• Read pages 32–35, “Contextualized Practice Problems.”• Watch “Facilitating Contextualized Practice Problems” (7:21) (Implementation → Lesson String Component Videos).• Discuss facilitating Anchor and Contextualized Practice Problems. Within an upcoming Lesson String, navigate to the interactive Contextualized Practice Problem chart and discuss how you might select problems and facilitate them. How might children approach the different problem types differently? How will you teach children to choose numbers to work with?• Read pages 42–43, “3-Act Math Tasks.”• Watch “Facilitating a 3-Act Math Task” (8:31) (Implementation → Lesson String Component Videos).• Discuss how you might use the 3-Act Math Tasks. Where in the Lesson String?• Rehearse if possible. Try facilitating these problems on each other so you can practice teaching them and also experience the routine from students’ point of view.• Plan a problem-based lesson from your next Lesson String. How does today’s discussion influence how you might select and facilitate it?	70 minutes   Cameras off to read and watch videos, cameras on to discuss
<p>Prep for Your Next Meeting</p> <ul style="list-style-type: none">• Teach a problem-based lesson (Anchor Problem, Contextualized Practice Problem, 3-Act Math Task).• Bring artifacts from this lesson (student work, chart paper, audio, video, etc.) to your next session.	5 minutes 

Module 6

Planning and Pacing

Activities

Suggested Times

(Webcam suggestions for remote PD sessions only)

Reflect Together

Share your artifacts. What did you notice? What was challenging? What went well? What might you do differently next time? As the routines become established, what might shift?

15 minutes



Planning and Pacing

- **Watch** the “Planning, Pacing, and Sequencing” chapters of Tracy’s Getting Started video (Implementation → Getting Started Videos → “Tracy on Jumping Right In; Embedded Professional Learning; and Planning, Pacing, and Sequencing”). **START** at 10:41 and **STOP** at 31:33.
- **Read** Chapter 3: “Who, When, Where, and How Often? Flexible Implementation Ideas,” pages 45-55.
- **Explore** your pacing guide on the Companion Website (Implementation → Pacing Guides). If your district/school has selected a pacing guide sequence, take this time to study the pacing guide you are using and begin mapping it onto your calendar. If your district/school has *not* determined year-over-year pacing, take this time to look through the pacing guides and think about what might be the best fit for this year, and then for future years.
- **Discuss Pacing:**
 - If you haven’t yet made a team-based decision on pacing guide selection, come to consensus and choose a planning guide that everyone agrees on. That coherence will be essential for next year’s teachers.
 - If you were told which pacing guide your school or district is following, discuss how that pacing will support students’ understanding and fluency.
 - Within the pacing guide, how might you schedule the routines across your weeks? Are there opportunities to collaborate with your colleagues across core instruction? Can you coordinate with educators who provide additional supports, such as intervention, special education, Title 1 math, English language instruction, and so on, so that you’re teaching different routines in the same Lesson String?

70 minutes



Cameras off to read and watch videos, cameras on to discuss

Prep for Your Next Meeting

- **Plan** to discuss your schedules in the next session: think about how you’ll capture and share out what you’re noticing about lesson cadence, timing, and scheduling. For example, jot a brief schedule that shows how you taught the routines in one Lesson String (Monday–Image Talk during snack, ten minutes; Tuesday . . .).
- **Bring** your notes and come to the next meeting ready to talk about planning, pacing, and scheduling.

5 minutes



Module 7

Games and Assessment Part 1

Activities	Suggested Times (Webcam suggestions for remote PD sessions only)
Reflect Together Share your calendars/schedules/planners. What did you learn from talking about how you paced out the routines in one Lesson String? What might you try differently in the next Lesson String?	15 minutes 
Explore Games! Games are a crucial component of the <i>Building Fact Fluency</i> toolkits. <ul style="list-style-type: none">• Discuss how game play can help students develop fluency.• Read pages 39–41, “Games.”• Watch “Launching a New Game” (8:17) (Implementation → Lesson String Component Videos).• Play a game! Navigate to the Games menu and choose a game from an upcoming Lesson String. Watch the how-to-play video and then play the game. (If remote, you can share a screen and mark it up on Zoom or set up a document camera. Games will be more fun in person, but you’ll get a sense of the strategy this way.)• Discuss what mathematics came up during this game play.	40 minutes   Cameras off to read and watch videos, cameras on to discuss
Assessment During Games <ul style="list-style-type: none">• Watch “Formative Assessment: Learning About Student Thinking During Game Play” (6:57) (Implementation → Assessment Videos & Downloads).• Discuss what you noticed about Graham’s role during game play. What can we learn by listening in while students play games?	15 minutes   Cameras off to watch videos, cameras on to discuss
Mixed Practice Games <ul style="list-style-type: none">• Choose a Mixed Practice game to explore together (Games → The BFF Games → Mixed Practice).• Discuss what strategies students might use during this game.• Discuss the benefits of the Mixed Practice games. How and when might you use them?• Choose the games you’ll introduce in the next Lesson String—either one game that emphasizes the strategy of the Lesson String or one game from that Lesson String AND one Mixed Practice game. Share your choices.	15 minutes 
Prep for Your Next Meeting <ul style="list-style-type: none">• Teach some games and listen in as students play.• Bring an artifact (audio, video, your notes) that shows what you learned about student thinking.	5 minutes 

Module 8

Assessment Part 2

Activities	Suggested Times <small>(Webcam suggestions for remote PD sessions only)</small>
<p>Reflect Together</p> <p>Share your notes from game play. What did you learn about students' thinking by eavesdropping or conferring during game play?</p>	<p>15 minutes</p> <p style="text-align: center;"></p>
<p>Assessment and Problem-Based Lessons</p> <ul style="list-style-type: none"> • Discuss what we can learn from observing and conferring with students while they work, and from looking at student work. • Watch “Formative Assessment: Questioning During Problem Solving” (8:57) (Implementation → Assessment Videos & Downloads). • Watch “Formative Assessment: Probing Student Thinking About Problem Solving” (3:37) (Implementation → Assessment Videos & Downloads). • Discuss what you noticed about Graham’s questioning during problem solving. • Record what questions you might have in your back pocket during problem-based lessons. 	<p>30 minutes</p> <p style="text-align: center;"> </p> <p>Cameras off to watch videos, cameras on to discuss</p>
<p>Assessment in Building Fact Fluency</p> <ul style="list-style-type: none"> • Read Chapter 4: “How Should We Assess Fluency?” (pages 57–67). • Watch “The Quick-Fact Conference” (7:20) (Implementation → Assessment Videos & Downloads). • Watch “Formative Assessment: Student Reflection” (7:09) (Implementation → Assessment Videos & Downloads). • Discuss what these shifts in assessment strategies would mean for your team. 	<p>30 minutes</p> <p style="text-align: center;"> </p> <p>Cameras off to read and watch videos, cameras on to discuss</p>
<p>Family Communicaiton</p> <ul style="list-style-type: none"> • Read the “Family/Caregiver Letter” (Implementation → “Family/Caregiver Letter” in both English and Spanish). • Discuss how you might communicate with families about these shifts. 	<p>10 minutes</p> <p style="text-align: center;"> </p> <p>Cameras off for reading, cameras on for discussion</p>
<p>Prep for Your Next Meeting</p> <ul style="list-style-type: none"> • Teach using at least one of these assessment techniques (questioning during problem solving, quick-fact conference, reflection, looking at student work, etc.) between now and the next session. • Bring an artifact (audio, video, your notes) that shows what you learned about student learning and thinking and about mathematics teaching. 	<p>5 minutes</p> <p style="text-align: center;"></p>

Module 9

Taking a Deeper Dive into Problem-Based Facilitation with the 5 Practices (a somewhat longer session—break up as needed)

Activities	Suggested Times (Webcam suggestions for remote PD sessions only)
Reflect Together Share what you learned through formative assessment about students' thinking. What did you try? How did it go? What will you try next in your practice?	10 minutes 
Choose a Focus Problem In grade-level/school teams, choose an upcoming problem-based lesson (Anchor Problem, Contextualized Practice Problem, or 3-Act Math Task) to ground today's work. Please come to consensus so you can work on one problem together.	5 minutes 
Begin Planning: Do the Math and Anticipate Student Strategies <ul style="list-style-type: none">• Solve the math problem yourself, individually. What mathematics came up?• Generate as many possible solution paths as you can.• Think about what representations, tools, and reasons students might use as part of their work.• Discuss your solutions as a team—record any ideas you learn from your colleagues.• Reread pages 25–28 to review the facilitation of a problem-based lesson.• Watch “Managing the Flow of a Problem-Based Lesson: Using the 5 Practices to Facilitate an Anchor Problem (Planning and Anticipating)” (10:42) (Implementation → Teaching Technique Videos).• Revisit your list of strategies and see if you need to add anything.• Record your strategies in the first column of this planning guide (the same one Graham uses in the video). Begin thinking about how you might draw connections among these strategies.	25 minutes   Cameras off to read and watch videos, cameras on to discuss
Plan the Launch <ul style="list-style-type: none">• Watch “Managing the Flow of a Problem-Based Lesson: Launching a Task” (4:24) (Implementation → Teaching Technique Videos).• Discuss your launch. What is just enough activation so students can get started on the problem? Where will you stop so you don't reduce or remove the cognitive lift from the problem or over-scaffold the reasoning?• Rehearse if possible. Try facilitating your launches with each other so you can practice teaching and also experience the routine from students' point of view.	15 minutes   Cameras off to watch videos, cameras on to discuss
Plan Your Monitoring, Selecting, Sequencing, and Connecting <ul style="list-style-type: none">• Watch “Managing the Flow of a Problem-Based Lesson: Using the 5 Practices to Facilitate a 3-Act Math Task (Monitor, Select, Sequence, Connect)” (6:35) (Implementation → Teaching Technique Videos).• Discuss this video. What did you notice about how Graham selected and looked for connections among students' solutions? How do you imagine the share-out might have gone (in contrast with calling on raised hands, for example)?• Revisit your planning guide. What strategies will you monitor for, and what are some ways you might sequence and connect them? What are the storylines you might pull out of the whole-class discussion? Discuss as a team.• Plan your back-pocket questions. What assessing questions will you ask as students are working? What advancing questions will you ask to encourage students to go deeper in their thinking? What just-in-time questions might you have for students who need support? What extensions might you consider for students who are ready?• Watch “Managing the Flow of a Whole-Class Discussion: Turn and Talks” (4:26) (Implementation → Teaching Technique Videos).• Discuss how you might use this discourse move in your whole-class discussion about the selected strategies. What talk or discourse moves can you make so the discussion remains open and accessible to all students rather than devolving into a forum for just a handful of students to discuss their own work?	35 minutes   Cameras off to watch videos, cameras on to discuss
Plan Your Timing <ul style="list-style-type: none">• Plan your launch, student work time, and closing conversation. How much time do you anticipate you and your students will need for each part?	5 minutes 
Prep for Your Next Session <ul style="list-style-type: none">• Teach this lesson and take note of how you used your plans to improvise on the spot.• Bring your reflections, notes, or artifacts from this lesson to your next session.	5 minutes 

Module 10

5 Practices Debrief, Standards Alignment, and Next Steps

Activities

Suggested Times

(Webcam suggestions for remote PD sessions only)

Reflect Together

Share your artifacts from your problem-based lessons. What did you learn? How did you use your plans to improvise on the spot? Did you see the solutions you anticipated? Did any solutions surprise you? How did you choose to select, sequence, and connect the work? What *other* possible storylines might you have chosen? What are the pros and cons of each storyline? What 5 Practices facilitation moves do you want to work on for future problem-based lessons?

20 minutes



Standards Alignments

Now that you're familiar with the routines of *Building Fact Fluency*, spend some time analyzing your grade-level math standards to see where *Building Fact Fluency* aligns. Note that the Companion Website lists standards alignments for several states (e.g., Texas TEKS, Florida B.E.S.T., and Indiana), along with the Common Core State Standards (Implementation → Standards Alignments). These documents may be helpful. Make sure to have your state standards handy, as well as your core curriculum scope and sequence.

- **Discuss** the practice and process standards—for example, the Standards for Mathematical Practice in the Common Core State Standards. How does *Building Fact Fluency* align?
- **Discuss** your content standards. Which standards will you address thoroughly using *Building Fact Fluency*? Which standards does your core curriculum address? Do you see any excessive redundancy or any missing standards?
- **Discuss** any adjustments you want to make to the planning and pacing of *Building Fact Fluency*, your core curriculum, and any other supplemental resources based on your conversation.

50 minutes



Reflect and Plan for the Future

How can you keep going, as a PLC, to work on your practice together? What has it been like to work together? Where might you go next? For example, can you plan to visit one another's classrooms during *Building Fact Fluency* to keep learning together?

20 minutes

