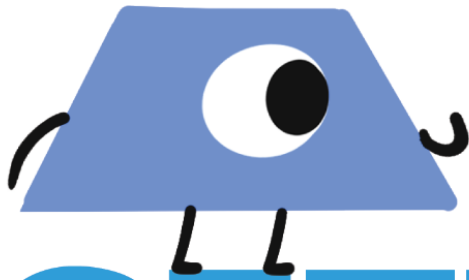




ST Math.
Summer Immersion



GETTING IMMERSED TEACHER GUIDE



Table of Contents

What Is ST Math Summer Immersion?	3
About ST Math Summer Immersion	3
Instructional Design Overview	3
Student Portfolio	3
Assessments and Quizzes	4
Celebrating Students' Growth and Development	4
What Makes ST Math Summer Immersion Unique?	5
The Science Behind the Learning	5
Perception-Action Cycle (PAC)	5
Academic Discourse	6
What Is an Asset-Based Approach?	6
What are Puzzle Talks?	7
Facilitating in Action	7
Engagement Strategies with Puzzle Talks	8
What Are Problem Solving Strategy Discussions?	9
Extending Student Discourse	9
Cultivating a Culture of Perseverance	9
Student Engagement	10
What Are Instructional Stations?	11
About Instructional Stations	11
Small Group Station	11
ST Math Puzzles Station	11
Table Games Station	12
Design Challenge Station	12
Focused Instructional Time	12
ST Math Activity Pages	12
Instructional Station Rotations	13
How Do We Monitor Students' Learning?	15
My Thinking Path	16
ST Math Puzzle Reflection	18
Exit Tickets	19
How Are the Lesson Plans Sectioned?	20
Module at a Glance	20
Daily Lessons	21

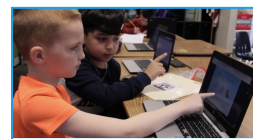
What Is ST Math Summer Immersion?

About ST Math Summer Immersion



ST Math Summer Immersion is an intensive program that combines ST Math with a math curriculum that creates a rich mathematical environment.

The content addresses common areas in which students struggle while providing opportunities for building their content knowledge, reasoning skills, and growth mindset. Grades K-2 focus on operations and algebraic thinking, and Grades 3-5 focus on fractions.



Check out this video to learn more about [ST Math Summer Immersion Overview](#).

ST Math Summer Immersion has been designed to accommodate a 4-day or a 5-day summer school schedule. These programs are identified as *4-Day ST Math Summer Immersion* or *5-Day ST Math Summer Immersion*.

Instructional Design Overview

The curriculum for each grade level is an extension of the grade level students just completed. For example, the Kindergarten lessons are designed for students who have just completed Kindergarten. The 25 lessons in each grade will extend students' learning from the previous school year and prepare them for the next grade level. This flexible curriculum is designed to be implemented in 60- to 120-minute blocks over four to six weeks.

The lesson plans are divided into three main sections: **Puzzle Talks**, **Problem Solving**, and **Instructional Stations**. Puzzle Talks are a whole class time of facilitation and discussion using the Problem Solving Process. The Problem Solving section allows students to work on the problems of the day. The Instructional Stations divide the classroom into smaller groups to work on different activities at each station.

Student Portfolio

The Student Portfolio is a compilation of academic work and other forms of educational evidence assembled for the purpose of the learning process. ST Math Summer Immersion helps students build strong schema around mathematics and develop perseverance, confidence, and agency as they engage in the lessons and activities.

One way we do this is through the **Problem Solving Journal**. It serves as an artifact to track, evaluate, synthesize, and communicate student thinking around the mathematics they are

learning. The Problem Solving Journal is designed for students to reflect upon their learning through My Thinking Path, Problem of the Day, Exit Tickets, and ST Math Puzzle Reflections.

Assessments and Quizzes

ST Math Summer Immersion has assessments that can be used optionally. During the program's first and last module, a pre/post assessment can be administered. There are also pre/post quizzes that could be used on the first and last days of each module. The purpose of these assessments is to monitor the progress of your students and help you make instructional decisions based on their results. Your team should decide whether or not you will administer these assessments and how you will use the results.

Celebrating Students' Growth and Development

Throughout ST Math Summer Immersion, give students encouraging notes. Celebrating students' successes helps motivate learners to achieve more while continuing to develop a growth mindset. As students engage in ST Math, they are not only building mathematical knowledge but developing self-regulatory skills that are essential to success.

Celebrating students

ST Math Summer Immersion concludes its program with the [Learning Showcase and Celebration](#) on the last day. In the lesson plan, you will find more information and instructions about it. Students will prepare and present their reflection posters and their math game.

We have also created a framework you can use to prepare for the Learning Showcase and Celebration. We recommend teachers extend an invitation to families, community members, district leaders, teachers, peers, and school board members to celebrate and hear from students about what they learned. Use our [Learning Showcase and Celebration Editable Invitation](#).

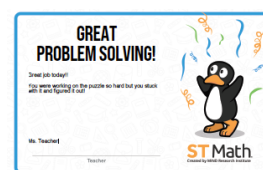
Creating a Reflection Poster

The reflection poster is a culmination of the thinking, learning, and growth that students experienced during the program. The students should review their Problem Solving Journal to help them make the reflection poster. Read more about the poster in the [Reflection Poster Guide](#).

Designing a Math Game

In 4-Day Summer Immersion, there is an optional mini-math game design activity that teachers can do with students. This activity involves having students redesign a game they know (e.g., any card game, Candy Land, Uno, etc.) and add mathematical components to the game.

In the 5-Day ST Math Summer Immersion, students will be designing a more elaborate math game. They will engage in the Engineering Design Process, which is adapted from *Engineering is Elementary*® from the Museum of Science in Boston to create their game.



Give students an encouraging note like the one above. We have some already designed. See our refillable [celebration notes](#).

For more information on celebrating students, visit our [Focus On: Celebrating](#) page.

What Makes ST Math Summer Immersion Unique?

The Science Behind the Learning

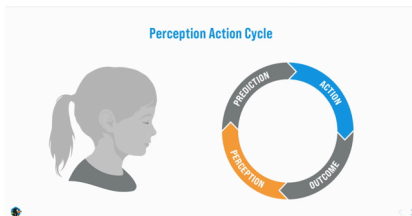
Building Schemas

Schemas are neural networks, our brain’s way of organizing our thoughts and experiences. The way those networks get created and connected ends up defining your concept or understanding of the topic. And when we talk about having a “deep conceptual understanding in math,” we’re talking about building schemas of mathematical concepts that give students the ability to solve problems they haven’t seen before.

The puzzles, activities, problem solving, and discussions in the ST Math Summer Immersion program support students in revising, extending, and building new schemas around mathematics concepts.

Perception-Action Cycle (PAC)

Brain research tells us students learn by doing. They need to be allowed to engage in meaningful content, make predictions, test those predictions, receive immediate and informative feedback as a result of their testing, and analyze that information to refine their thinking around the content.



The Cycle of Learning

This cycle of learning is known as the **Perception-Action Cycle (PAC)** and is the foundation of our award-winning ST Math program.

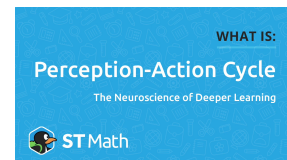
The Perception-Action Cycle is this continuous flow of information and action between the brain and the world around it. On and on it goes: sense, predict, act, adjust. Sense, predict, act, adjust. This PAC is embedded in our game-based learning design at MIND. ST Math puzzles take students through this cycle over and over, giving them a safe place to fail, providing new information through immediate and formative feedback, and inviting them to try again until they find the solution.



Check out this video to learn more about [schema](#).

Blogs on Schema:

- [Schemas Are Key to Deep Conceptual Understanding](#)
- [Mathematical Coherence with ST Math](#)



Watch and learn more about the [Perception-Action Cycle](#).

Blogs on PAC:

- [What the Perception-Action Cycle Teaches Us About How the Brain Learns](#)
- [Success and Failure How Growth Minds Can Change Education](#)

Academic Discourse

Effective Facilitation Strategies

Facilitation plays a pivotal role in creating a classroom rich with academic discourse. Effective facilitation promotes, deepens, and supports students' thinking as they grapple with concepts and build understanding. Students understand that they are accountable for their thinking, not just for writing correct answers. As teachers continue to engage students in focusing on what and how they are thinking, students will build confidence, increase their communication skills, and deepen their understanding of concepts.

Blogs on Facilitation:

- [How ST Math's Problem Solving Process Develops Social-Emotional Learning Skills](#)
- [Using the Art of Facilitation to Become a Better Math Teacher](#)

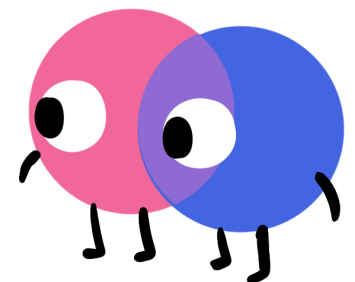
Problem Solving Process

ST Math Summer Immersion uses the Problem Solving Process designed to support teachers as facilitators and students as authors of their ideas and sense-makers of mathematics. It is aligned with the perception-action cycle and helps students develop skills that can be used outside of ST Math.



What Is an Asset-Based Approach?

ST Math Summer Immersion uses an asset-based approach to instruction through diversity, equity, and inclusion. An asset-based approach focuses on the student's strengths and talents instead of their deficits, which is crucial to bringing equity in education. It supports students in seeing how they think about and engage in math. It is essential that every student, teacher, administrator, family, and community see themselves in math.



For too many students, math has been a hurdle to overcome. They are either identified or self-identified as people who can or can't do math. This identification follows students throughout their journey and impacts their learning experiences. One of the goals of ST Math Summer Immersion is to help students build a positive math identity and instill confidence, joy, and wonder in their mathematics ability. It was designed to equip students with the agency to be a knower, a doer, and a sense-maker of math.

The curriculum supports students in developing the understanding that they are capable and confident problem solvers. The lessons provide opportunities for student voices to be heard. Through the sharing of strategies, thoughts, and perspectives, students are positioned to see each other as mathematical resources and build on each other's ideas.

The teacher’s role in ST Math Summer Immersion is to (1) facilitate student thinking, (2) position students as authors of their learning, and (3) support students in developing essential skills. Through this focus, teachers center student thinking instead of teaching the puzzle. In turn, students learn that they can construct their knowledge. They also learn that mistakes are not only okay but are expected and are part of the learning process. Having an asset-based approach helps students develop perseverance, resilience, a growth mindset, and self-motivation. These are strengths that students can carry into the school year.

What are Puzzle Talks?

Facilitating in Action

Puzzle Talks

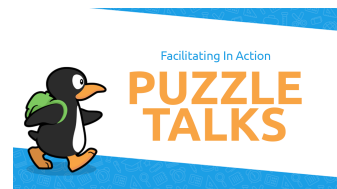
The use of ST Math puzzles to lead a whole group or small group short conversation is what we call Puzzle Talks. Similar to number talks or math talks, the goal is to get students to communicate and deepen their understanding of mathematics.

Puzzle Talks are a whole class time of facilitation and discussion that combines the ST Math Puzzles with the Problem Solving Process. They leverage the power of the visual models inherent in ST Math and use facilitation questions to promote classroom discourse and enhance the learning experience. As teachers deliver Puzzle Talks, they are supporting students in developing mathematical habits of mind, problem solving skills, and deepening their understanding of math concepts.

The facilitation of Puzzle Talks has been intentionally designed to develop students’ identity and agency as mathematics thinkers. Puzzle Talks are a way to get students thinking about and solving ST Math puzzles as a group and are a key component of ST Math Summer Immersion.

Puzzle Talks focus on supporting student strategies and thinking about concepts presented in ST Math puzzles. The goal is **NOT** to teach the puzzle, but rather to uncover, discuss, and stretch the thinking of the students. The lessons in ST Math Summer Immersion are built around Puzzle Talks. In the lesson plan overview, you will find the ST Math puzzles associated with the Puzzle Talks in the module.

Puzzle Talks promote rich discussions around math concepts and strategies. It is possible to extend a Puzzle Talk over several days as you discuss, compare, evaluate strategies, and make connections. It is also one of the most flexible areas in the program, which allows you to reduce or increase the amount of time to allow students to go through the Problem Solving Process. In



If you would like more information on Puzzle Talks and how to do them remotely, visit **Focus On: Puzzle Talks** on our ST Math Academy site.

combination with the [Problem Solving Facilitation Bookmark](#), we have included some engagement strategies that can be helpful during Puzzle Talks.

Game in a Minute Videos located in the ST Math Summer Immersion site has been designed to give teachers an overview of the ST Math puzzles that will be used during the Puzzle Talks. These under-a-minute videos also have a quick brief explanation of the puzzle's objective and some facilitating questions at the end.

Engagement Strategies with Puzzle Talks

Partner Talk

Have students discuss with a partner. After each partner shares their thoughts, they can compare their ideas. Challenge students to try to convince their partner to adopt their idea. This gives them time to summarize, reflect, evaluate, justify, and revise their thinking.

Voting

Have students share strategies and ideas and vote on which ones they would like to try. Have students share why they think the strategy they voted for is best. This allows them to rate, justify their rating, and discuss the outcome.

Strategy Compare

Have students share their strategies with a partner or small group. After sharing strategies, students can make comparisons, ask clarifying questions, and determine which strategy is best for the situation and why. This allows them to extend their thinking and evaluate others' strategies.

Popcorn Share

The teacher poses a question and calls on a student to share. That student answers and then picks another student to pass it to. They continue popcorning around answering questions, adding thoughts, and responding to their classmates. This provides an opportunity to connect and extend student thinking.

Think Pair Share

The Teacher asks questions and provides individual thinking time for students. Students share their thoughts with a partner. Engage the students in a whole group sharing. This allows them to share perspectives and ideas.

Say Something Write Something

Pause during the discussion and suddenly say, “*Say Something or Write Something!*” Have students summarize learning, ask a question, make a comment, or share a new idea/strategy verbally or in writing. This provides a quick check on student understanding.

What Are Problem Solving Strategy Discussions?

Extending Student Discourse

Facilitation focused on the Problem Solving Process allows for students and teachers to co-lead the learning. Students develop agency and accountability because they understand that their thinking is important. It is what will lead them to a deeper understanding. Facilitation is thinking-driven, not answer-driven.

Focus discussion on

- Strategy sharing and exploration
- Visual to symbolic connections (including word problems)
- Making connections between and among concepts
- Vocabulary connections

Use engagement strategies to promote student-to-student discourse to create an atmosphere that fosters rich math conversations.

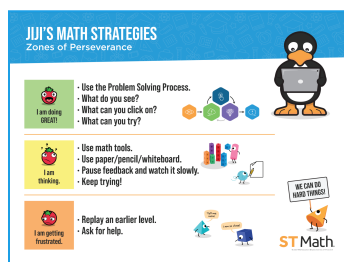


Problem Solving Resources

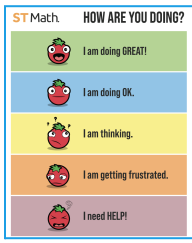
- [Problem Solving Strategy Discussions](#)
- [Problem Solving Facilitation Bookmark](#)

Cultivating a Culture of Perseverance

One of the essential skills ST Math Immersion focuses on is helping students develop perseverance and build the confidence that they can problem solve the most challenging tasks. As students engage in ST Math, they may encounter puzzles that they struggle to solve.



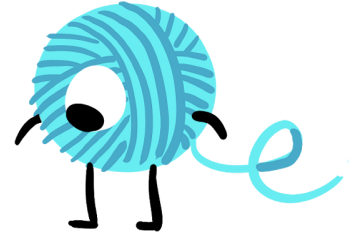
If a student gets stuck, they can start by using the Problem Solving Process on the student bookmark. This helps give them the language they need to reflect and communicate their thinking. Another resource to help students who are struggling is [Jiji's Math Strategies Poster](#). It focuses on building perseverance and agency. Students are encouraged to recognize what point of struggle they are experiencing. It also provides strategies to support them. This keeps students engaged in a productive struggle.



In addition, there are [How Are You Doing Cards](#) that can be used in class to help you keep tabs on how students are doing as they go through the curriculum and activities. Having students use these cards and place a clip or clothespin to indicate how they are feeling alerts the teacher as to when their struggle is becoming unproductive.

Student Engagement

Engaging students in discussions around problem solving activities is a great way to explore connections, expand perspectives, and have students check and challenge each other. Problem solving activities provide a great opportunity to facilitate classroom discussions around student work. When you do a Problem of the Day, it is important to plan your goals and outcomes for the discussion before posing the problem to students.



Planning for the Discussion

Before students begin working on the problem solving activity, think about what your students might do to solve the problem and what mathematics you would want to point out and discuss.

Monitoring During Problem Solving

As students are working during Problem Solving time, walk around and ask students questions to facilitate their thinking and select students' work to share as a whole class.

See the [Problem Solving Facilitation Bookmark](#) for sample questions.

Promoting Classroom Discussion Using Student Work

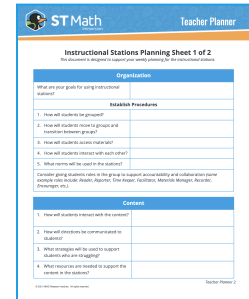
Order the work you selected to share from least sophisticated to most sophisticated. Include some work that has misconceptions and/or errors in reasoning.

Ask students questions that engage them in discussions around both correct and incorrect reasoning. It is important for the teacher to remain in the role of facilitator and ask students questions to help them construct knowledge.

What Are Instructional Stations?

About Instructional Stations

The **Instructional Stations** are a key element in ST Math Summer Immersion. They provide a great model to engage students to learn collaboratively, to build student agency and accountability, and to provide opportunities for personalized intervention. In 4-Day Summer Immersion, there are three instructional stations: small group instruction, table games, and ST Math puzzles. 5-Day Summer Immersion has four instructional stations: small group instruction, table games, ST Math puzzles, and a design challenge. Familiarize yourself with the instructional stations by reviewing the first module's lesson plan overview section. It is very important that you set expectations for each instructional station.



Instructional Station Planner

The Problem Solving Journal will be used during the instructional stations as a place for students to share their learning. Students will complete Exit Tickets after playing table games and puzzle reflections after playing ST Math puzzles. In the 5-Day Summer Immersion, students will use the Design Challenge Student Booklet at the design challenge station.

Set expectations for the instructional stations by using the optional **Instructional Station Planner** found in the **Teacher Planner**. Learn more about the breakdown of the instructional stations, assigning student roles, facilitating questions, and best practices on our **Instructional Station Overview**.

Small Group Station

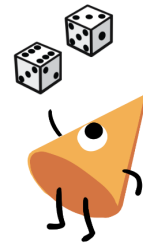
The Small Group Station is an opportunity to focus on meeting students' needs. This station is teacher-led and focuses on engaging students in math discourse to promote understanding. Share a problem with students that is similar to the Problem of the Day. Allow the students time to solve that problem. As they solve the problem, have them talk about the process of finding the solution. Students should discuss their strategies and defend their points of view for different solutions. There is a **Small Group Intervention Planner** in the teacher planner you may want to use to help organize your groups; however, there are instructions and ideas for your small group station in the lesson plan to make it easy.

ST Math Puzzles Station

The ST Math Puzzles Station is where students will each individually play ST Math Puzzles in their small groups. You have the option to assign them the entire ST Math Summer Immersion objective, have them continue their grade-level journey from the previous school year, or assign them specific puzzles. Students can set their own minutes and puzzle goals using the **Accomplishment Log** and record what they did that day.

Table Games Station

The Table Games Station features games during which students explore math concepts, engage in strategic thinking, apply their knowledge, challenge each other, and have fun with mathematics. All of the games in this station focus on number sense. They are also easily replicated for play at home. The game materials are located in the lesson resources for each module. There is time built into the last day of each module for you to teach your students how to play the game.



Design Challenge Station

The Design Challenge Station is only found in the 5-Day ST Math Summer Immersion. The key to implementing the **Design Challenge Station** is in Module 1. ST Math Summer Immersion is about problem solving and using creativity to find solutions. Students will be tasked with a math challenge that involves designing a math game using the engineering design process. Students will work in small groups and complete tasks outlined in the Design Challenge Student Booklet, which serves as a student guide that helps students use the engineering **design process**.

DESIGN PROCESS



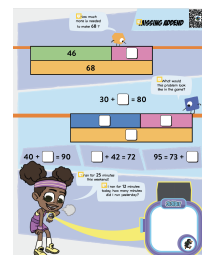
The **Design Process** encourages students to evaluate the feedback from their classmates and make improvements to their design. This process nurtures students' abilities to create innovative solutions and work collaboratively.

Focused Instructional Time

Focused Instructional Time is built in on the last instructional day of every module in 5-Day ST Math Summer Immersion only. Use this time to personalize instruction for students. Identify areas to intervene based on student performance, divide the students into four groups, and assign them to the instructional station that will be most beneficial to meet their needs. Use the **Small Group Intervention Planner** to identify students who need more time.

ST Math Activity Pages

ST Math Activity Pages are an optional student activity booklet that can be found on the ST Math Summer Immersion website. It is based on an ST Math Puzzle and was designed to be fun and engaging for students. Teacher directions are written in the lesson plans, and it's recommended to be done as a whole class, but they can be done individually.



Use **Problem Solving Strategies** to stimulate discussion amongst your students. Apply the Problem Solving Process, and have students make connections to the games. Review the **ST Math Activity Introduction** to help you get started.

Instructional Station Rotations

4-Day ST Math Summer Immersion Instructional Stations

Students should be divided into three groups with four to six students each. Beginning in Module 2, students will visit two instructional stations per day for about 20 minutes at each station on Days 1–3. Students will visit each station twice during the module.

On Day 4, there are no instructional stations. Students will engage in several different activities such as My Thinking Path, Puzzle Talk, Problem Solving, and Table Games Introduction. There are other optional activities such as ST Math Activity Pages and Pre/Post Quizzes.

Schedule Sample (Day 1–3)

Time	Activity	Group Configuration
5-10 min.	My Thinking Path	Individual/Whole Group
20-25 min.	Puzzle Talk	Whole Group
20-25 min.	Problem Solving	Individual/Whole Group
40 min.	Instructional Stations	Small Group

	Small Group		ST Math Puzzles		Table Games	
	Rotation 1	Rotation 2	Rotation 1	Rotation 2	Rotation 1	Rotation 2
Day 1	Group A	Group B	Group C	Group A	Group B	Group C
Day 2	Group B	Group C	Group A	Group B	Group C	Group A
Day 3	Group C	Group A	Group B	Group C	Group A	Group B
Day 4	No Instructional Stations					

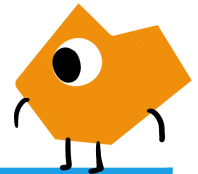
Schedule Sample (Day 4) - No Instructional Stations

Time	Activity	Group Configuration
5-10 min.	My Thinking Path	Whole Group
20-25 min.	Puzzle Talk	Whole Group
20-25 min.	Problem Solving	Individual/Whole Group
15-20 min.	Table Game Introduction	Whole Group
15 min.	ST Math Activity Page	Individual/Whole Group
10 min.	Closing	Whole Group

5-Day ST Math Summer Immersion Instructional Stations

Students should be divided into smaller groups to rotate through the different stations. There should be three to four students in each group. Beginning in Module 2, students will visit two instructional stations per day for about 20 minutes at each station on Days 1–4. Day 1 and Day 2 instructional stations are the same, as are Day 3 and Day 4 stations. This allows students to visit all four stations within the two-day time frame.

On Day 5, students will attend one instructional station during Focused Instructional Time at the discretion of the teacher. This is an opportunity for the student to have additional instructional time with the teacher or at a specific instructional station.



Schedule Sample (Days 1-4)

Time	Activity	Group Configuration
5-10 min.	My Thinking Path	Individual/Whole Group
20-25 min.	Puzzle Talk	Whole Group
20-25 min.	Problem Solving	Individual/Whole Group
40 min.	Instructional Stations	Small Group

5-Day ST Math Summer Immersion Instructional Stations

	Day 1 & Day 3		Day 2 & Day 4	
	Rotation 1	Rotation 2	Rotation 1	Rotation 2
	Small Group Instruction	Group A	Group B	Group C
ST Math Puzzles	Group D	Group A	Group B	Group C
Table Games	Group C	Group D	Group A	Group B
Design Challenge	Group B	Group C	Group D	Group A

Schedule Sample (Day 5)

Time	Activity	Group Configuration
25-30 min.	Design Challenge	Whole Group
15-20 min.	Table Games	Whole Group
20 min.	Focused Instructional Time	Small Group/Whole Group
15 min.	ST Math Activity Page	Whole Group
10 min.	Closing	Whole Group
Focused Instructional Time		
	<p>During this instructional station time, students do not rotate. They can either be assigned to a station or allowed to choose which one to go to.</p> <p>This is an excellent opportunity to pull students who need additional support to Station 1: Small Group Instruction, where they can work with the teacher on concepts they are struggling with. Use the Small Group Intervention Planner to help target this time with students.</p>	
Small Group Instruction	Teacher Intervention Group	
ST Math Puzzles	Teacher choice or Student choice	
Table Games	Teacher choice or Student choice	
Design Challenge	Teacher choice or Student choice	

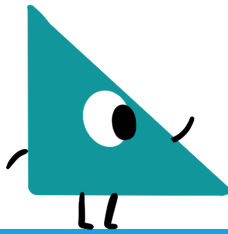
How Do We Monitor Students' Learning?

We have designed monitoring tools to help track the growth of student learning during ST Math Summer Immersion. In the Problem Solving Journal, you will find My Thinking Path, ST Math Puzzle Reflection, and Exit Tickets. These graphic organizers encourage students to think about their learning and schema. The Problems of the Day can also be used to monitor students' learning by reviewing their answers. In addition, assessments can be used as a measure of student learning. There are Pre/Post Quizzes for each module. The quizzes are optional but can be used to monitor student learning.

My Thinking Path

What are things I already know about this topic?

Goal/Purpose	Support Student Thinking Prompts	Look for
<p>Students show they are beginning to unpack this new idea. They are engaging with the topic and trying to find connections to it. If they can find an access point to the topic, they will have more success understanding it.</p>	<ul style="list-style-type: none"> • Could what we did yesterday help you with this topic? • Does this make you think of a game or activity you've done? • Are there math tools you think you could use to help you with this topic? • Where have you seen something like this outside of school? • What words/parts of this topic do you know and which are ones you don't? • Can you draw a picture of what this makes you think of? 	<ul style="list-style-type: none"> • Recall of previous day(s) lessons • Mathematical operations they may use • "It looks like when we did ____." • Real-world connections • Highlighting words that sound familiar • "I think it has to do with ____, but I'm not sure." • Drawings of situations it could be used in or related to math strategies • Examples using the topic



What are some questions I have about this topic?

Goal/Purpose	Support Student Thinking Prompts	Look for
<p>Students identify things they have questions about, allowing them to address any confusion that comes up as they work through the topic.</p>	<ul style="list-style-type: none"> • Are there words here you have never heard? • Do you know when you would use this? • What about this topic seems confusing? 	<ul style="list-style-type: none"> • "Does it have to do with [previous topic]?" • "What does ____ mean?" • "Could this help me when I need to ____?" • Questions about how/when to use it

This also prepares students to be able to answer their own questions as they learn more about the topic.

How are the puzzles connected to what I already know?

Goal/Purpose	Support Student Thinking Prompts	Look for
Students are practicing transferring concepts to new situations. They are accessing their schema to figure out ways to use previous skills in a new context.	<ul style="list-style-type: none"> Does this make you think of a game or activity you've done? Have you seen the images in these puzzles before? What math operations have you used before? 	<ul style="list-style-type: none"> Mathematical operations they may use "It looks like when we did ___." Real-world connections Other ST Math puzzles Math games they have played Math problems from previous lessons



What new things did I learn in playing the puzzles? Did the puzzles make me think of anything differently?

Goal/Purpose	Support Student Thinking Prompts	Look for
Encourage students to think metacognitively as they are solving ST Math puzzles. Since they know they will be asked about what they learned, they will be thinking about it and aware of it as they play.	<ul style="list-style-type: none"> What was different in this puzzle from other ones you have played? Did you have to think about something in a new way from the other puzzles? What did you try that didn't work? What did you do instead? If you had to help someone else solve this puzzle, what might you tell them? 	<ul style="list-style-type: none"> Operations used in the lesson Terms for operations (joining, separating, taking away, fraction words) Example problems Tips they would give to help someone solve Situations/context the math could be used Organization/soft skills

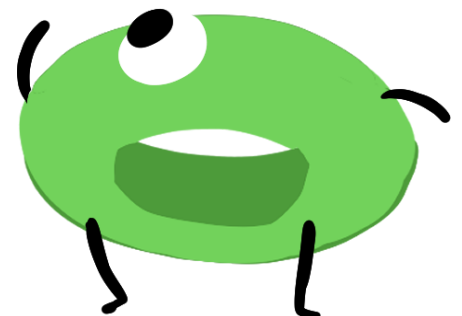
What challenges am I having/questions I still have about this topic?

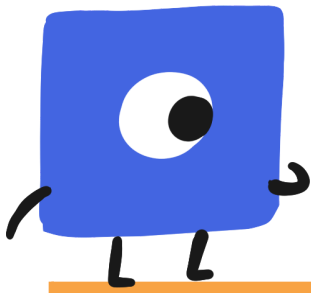
Goal/Purpose	Support Student Thinking Prompts	Look for
Build the idea that our learning doesn't end and there is always more to know. It is also important for students to be okay with having lingering questions and become comfortable with not fully understanding something. This is what pushes us to grow.	<ul style="list-style-type: none"> What parts of the game still seemed hard on the last level? What questions do you think you need more practice with? What are you curious about? What do you want to know that the game/teacher didn't show you today? Did you get a question correct and you don't know why? Do you think there are other ways to solve these types of problems? Did your strategy today feel efficient? Do you want to try something new? 	<ul style="list-style-type: none"> Examples of problems they got stuck on/solved incorrectly "Where can I use this in the real world?" "Why was I correct when I did ___?" "I want someone to explain this part to me again: ___." A picture of a tricky part of the puzzle "What would I do if I was given this situation: ___?" "Could I also use a different strategy?" "How could I make this problem easier to solve?"

ST Math Puzzle Reflection

The ST Math Puzzle Reflection allows students to have a 1:1 experience with the ST Math puzzles. It captures their ST Math quantitative data and qualitative data. It asks students to show what they learned while playing the ST Math puzzles. It is up to the teacher to decide the content they want students to engage in during ST Math Summer Immersion.

	Goal/Purpose	Support Student Thinking Prompts	Look for
Top Data Points	Students will be able to associate these numbers with their progress. This way they can hold themselves accountable as the numbers grow/decrease.	<ul style="list-style-type: none"> • What do [levels/percent/minutes/puzzles] tell us? • Why do you think we should write these numbers down each day? • How has it changed from the last module? • What do you want to change in the next module? 	<ul style="list-style-type: none"> • Correct input of data • Understanding the difference between each piece of data • Recognizing this shows us how we are 'growing our brains' each day
Open-Ended Questions	Reinforce student learning. Having them put new ideas into their own words or pictures will help the new understanding 'stick.' Students can also refer back to this when stuck on a problem in the future or to remind them of their growth and build their confidence.	<ul style="list-style-type: none"> • Tell me about the problem we did together on the carpet. • What did you tell Jiji to do in the ST math puzzle? • What did you have to do to try and win the ST Math puzzle you played at your station? • When would you use the math we did today? • What other kinds of problems could it help with? • What did you do today that made solving math easier? • What part of today's lesson made you feel proud? • What part of the lesson was hard at first? 	<ul style="list-style-type: none"> • Operations used in the lesson • Terms for operations such as joining, separating, taking away, or fraction words • Example problems • Situations/context in which the math could be used • Organization/soft skills





Exit Tickets

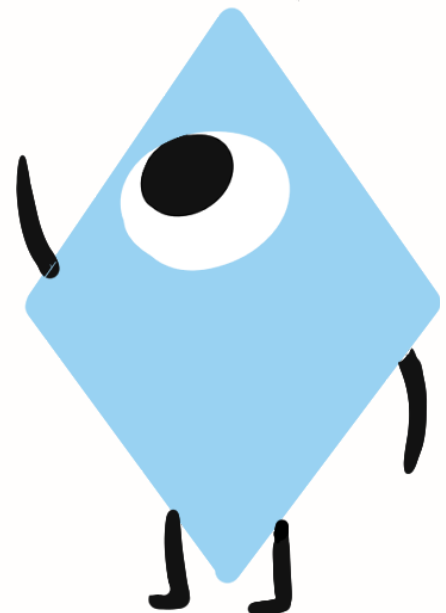
Exit Tickets allow students to represent their learning in a different, more novel way (note to a friend, freeform brain dump, as a discovery, etc.). Many of these are the same look-fors and prompts as the My Thinking Path and ST Math Puzzle Reflection.

Prompts

- Tell me about the problem we did together on the carpet.
- What did you tell Jiji to do in the ST math puzzle?
- What did you have to do to try and win the game you played at the table games station?
- When would you use the math we did today?
- What other kinds of problems could it help with?
- What did you do today that made solving math easier?
- What part of today's lesson made you feel proud?
- What part of the lesson was hard at first?
- What was different in this puzzle from other ones you have played?
- Did you have to think about something in a new way from the other puzzles?
- What did you try that didn't work? What did you do instead?
- If you had to help someone else solve this puzzle, what might you tell them?

Look for

- Operations used in the lesson
- Terms for operations, such as joining, separating, and taking away fraction words
- Example problems
- Tips they would give to help someone solve
- Situations/contexts in the math could be used
- Organization/soft skills
- Examples of problems they got stuck on/solved incorrectly
- "Why was I correct when I did ___?"
- A picture of a tricky part of the puzzle
- "Could I also use a different strategy?"
- "How could I make this problem easier to solve?"



How Are the Lesson Plans Sectioned?

Module at a Glance

Module at a Glance, which can be found in the lesson plan in blue, gives you an overview of what you'll encounter. Here is a breakdown of what you will see.

STMath Summer Immersion

Kindergarten | Module 2

1 Topic: Adding Numbers up to 10 Module 2 Resources

Students develop their understanding of addition up to 10 to solve problems. Students use strategies involving situations of adding to, taking from, putting together, taking apart, and comparing unknowns in different positions. Students will find missing addends; decompose numbers to make adding easier and practice adding one-digit and two-digit whole numbers. Students will represent situations with equations.

3 Module 2 at a Glance

Printed Resources

- **Posters**
 - Problem Solving Process Poster
 - Design Process Poster
- **K-2 Games**
 - Addition War
 - Pyramid Make Ten
 - Number Kicker (optional)
 - Make Ten Concentration (optional)
 - Tic-Tac-Ten (Day 5)
 - Number Path Race (Day 5)
- **Mats**
 - Push Box Game Mat
 - One Empty Ten Frame Math Mat
 - Two Empty Ten Frame Math Mat
 - 0–10 Number Line Math Mat

Immersion Slide Deck (slides 21–35)

- The Immersion Slide Deck is intended to be projected to the class in a whole-group setting.

Literature Connection (optional)

- *What Do You Do with an Idea?* by Kobi Yamada

2 **QR Code & Hyperlink**

4 My Thinking Path

- This module, students reflect on adding numbers up to 10.

5 ST Math Puzzle Talks

- Push Box Addition to 5
- Push Box Addition to 10
- Ten Frame

6 Problem Solving

Day 1:

- **Problem Solving Slide Deck** - Jüli ate some fish for lunch and dinner. Jüli had 2 fish for lunch. At dinner Jüli ate 6 more fish. How many fish did Jüli eat altogether?
- **Problem Solving Journal**- Students solve a similar Jüli fish problem.

Day 2:

- **Problem Solving Slide Deck** - Jüli had some cookies. There were 4 cookies on the plate and 4 cookies left in the bag. How many cookies does Jüli have altogether?
- **Problem Solving Journal**- Students solve a similar cookie problem.

Day 3:

- **Problem Solving Slide Deck** - Part 1: Jose's had a box of 2 different kinds of chocolates. Some were caramel, and some were milk chocolate. How many could be caramel, and how many could be milk chocolate? Draw pictures to show the amount of each kind of candy Jose could have. Show two different ways he could have 10 chocolates.
- **Problem Solving Journal**- Students solve a similar problem, but with cars instead of chocolate.

Day 4:

- **Problem Solving Slide Deck** - Part 2: Jose's box of chocolates from Day 3. Write number sentences or equations to represent your pictures of Jose's chocolates.
- **Problem Solving Journal**- Students write equations using the problem from Day 3.

7 Instructional Stations

On Days 1–4, each student will visit two stations a day for 20 minutes each. On Day 5, students do not rotate. They can either be assigned to a station or allowed to choose which one to go to. Consider assigning students who need additional support to Station 1 to work with the teacher on concepts they are struggling with.

Station 1: Small Group Instruction <ul style="list-style-type: none">• Days 1 & 2: Give students problems similar to the Problem of the Day and puzzle problems. Have students solve the problems.• Days 3 & 4: Give students problems with different situations. Discuss the journal questions.	Station 2: ST Math Puzzles <ul style="list-style-type: none">• Have students sign in and play ST Math puzzles.• Remind students to use manipulatives and/or paper and pencil to help them solve problems.• With 5 minutes left, have students stop playing and complete their Puzzle Reflection and Accomplishments Log.
Station 3: Table Games <ul style="list-style-type: none">• Select Addition War or Pyramid Make Ten.• Have students play that game.• Ask students to complete an Exit Ticket during the final 5 minutes.	Station 4: Design Challenge <ul style="list-style-type: none">• Days 1 & 2: Students write or draw their ideas for a math game on page 7 of their Design Challenge Booklet.• Days 3 & 4: Students start to plan their game. Have students complete page 8 in their Design Challenge Booklet.

Day 5: Design Challenge (whole group)

- Optional Literature Connection: Read the book *What Do You Do with an Idea?* by Kobi Yamada
- Discuss with students the ideas they came up with.
- Discuss information needed to play a game, such as directions, number of people, understanding how to win, etc.
- Talk to students about a game like Tic-Tac-Toe or one of the games they played in the games station. Have the students explain the directions for playing the game.

SECTIONS

1. **Topic** - highlights the math focus for that module and the content students will be exploring.
2. **QR Code & Hyperlink** - links to that particular module's resources.
3. **Module at a Glance** - lists documents that need to be printed, slides from the slide deck that will be projected, and any manipulatives necessary for the module.
4. **My Thinking Path** - tracks the student's thinking around the module's topic in a graphic organizer found in the Problem Solving Journal.
5. **ST Math Puzzle Talks** - specifies the puzzles used during Puzzle Talks (use a QR code/link to locate these).
6. **Problem Solving** - features the Problem of the Day included in the Problem Solving Journal and on the Problem Solving Slide Deck. These are used to explore connections and have students check and challenge each other.
7. **Instructional Stations** - organizes students into small groups to work on various activities at a particular designated rotating station.

Daily Lessons

Daily Lessons, which can be found in the lesson plan in green, give you specific lesson plans for the day. Here is a breakdown of what you will see on most days. The last day of the module is slightly different.

ST Math Summer Immersion
Kindergarten | Module 2 | Day 1

1 My Thinking Path (5-10 minutes)

- Introduce the My Thinking Path document to students. Have them write in the topic, "Adding numbers up to 10."
- Have students begin working on the first two boxes.
- Discuss their ideas, and allow students to add to their paper any additional thoughts they have.
- From now on, each of Days 1-4 begins with time for students to reflect on their learning and prepare for the day.
- Have students complete the Pre-Quiz (optional).

2 Puzzle Talk: Push Box Addition to 5 (20-25 minutes)

- Focus on student thinking and developing problem solving skills using the Problem Solving Process.
- Provide students with a [Push Box Game Mat](#) and whiteboards/dry-erase markers.

3 Notice and Wonder

- Display the first puzzle in Level 1. Ask: "What do you notice? What do you wonder? What can you click on?" Allow a few students to share out.

Predict and Justify

- Have students think-pair-share their strategy and why they think their strategy can be used to solve this puzzle.
- Ask students to share out and try one of the students' ideas. Ask the students if they agree or disagree with the strategy and why. Is their strategy similar or different?
- Pay attention to the counting strategies students are using (counting on vs. counting all; recognizing doubles and doubles plus one; known facts).

Test and Observe

- Watch the feedback together and discuss what they saw.
- Ask students: "What did you learn from the feedback? Were we correct? Was this strategy similar to or different from yours?"

Analyze and Learn

- While playing different puzzles, try strategies that work and those that don't. Analyze the feedback in both correct and incorrect solutions.
- Give students the Push Box Game Mat to represent the puzzles. Discuss how they used the game mat to help them solve this puzzle.
- Show a puzzle from Level 3. Have students discuss what they notice about this level.
 - How is it like/different from the previous levels?
 - Will they change their strategies to solve this puzzle? Why or why not?

Connect and Extend

- Select another puzzle, and ask the students to think about what this puzzle would look like with numbers.
- Have them write an equation to show the problem and/or have them model the problems on their game mat.

4 How does the student:

- understand what is happening in the puzzle?
- combine the two stacks of blocks?
- represent the puzzle with an equation?
- understand what each number in the equation represents?
- understand the relationship between addition and subtraction? Do they see them as opposites?

5 Problem Solving (20-25 minutes)

Engage students in problem solving discussions. Read and discuss the problem, share student work, compare strategies, and make connections.

Problem Solving Slide Deck (slides 28-29)

- Juli had some cookies. There were 4 cookies on the plate and 4 cookies left in the bag. How many cookies does Juli have altogether?

Problem Solving Journal (page 9, bottom)

- Students will complete the Problem of the Day independently. Provide guidance as needed.
- Students solve a similar cookie problem.

6 Instructional Stations (40 minutes)

Students will visit two stations today (20 minutes in each station). They will visit the other two tomorrow.

Station 1: Small Group Instruction <ul style="list-style-type: none">Work with students using a ten frame.Use the Problem Solving Process to discuss the use of a ten frame with the group.Have students tell stories that can be modeled on the ten frame.	Station 2: ST Math Puzzles <ul style="list-style-type: none">Have students sign in and play ST Math puzzles.Remind students to use manipulatives and/or paper and pencil to help them solve problems.With 5 minutes left, have students stop playing and complete their Puzzle Reflection and Accomplishments Log.
Station 3: Table Games <ul style="list-style-type: none">Select Addition War or Pyramid Make Ten.Have students play that game.Ask students to complete an Exit Ticket during the final 5 minutes.	Station 4: Design Challenge <ul style="list-style-type: none">Have students complete page 7 in their Design Challenge Booklet.Students will think about all that they have learned about games and what they know about math. They will write or draw their ideas for games.After writing/drawing their ideas, have students share them with their team.The team will discuss the idea they want to use for their game.

SECTIONS

- My Thinking Path** - provides direction on how to get students thinking about the topic of the module.
- Puzzle Talks** - brings ST Math which engages students to practice mathematical discourse and problem solving.
- Problem Solving Process** - integrates the Problem Solving Process to engage students in mathematical discourse and to develop problem solving skills.
- Check for Understanding** - determines the level of understanding of the day's lesson using questions.
- Problem Solving** - features the Problem of the Day included in the Problem Solving Journal and on the Problem Solving Slide Deck. These are used to explore connections and have students check and challenge each other.
- Instructional Stations** - provides details on the activities students will be working on in small groups at a particular designated rotating station.

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