



# Foundations for Implementation – Session 3

© CPM Educational Program. All rights reserved. [cpm.org](http://cpm.org)

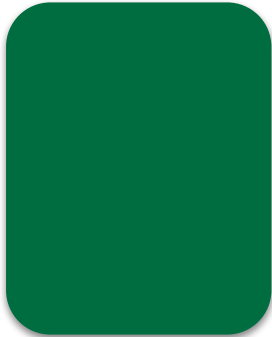
---

# Welcome!

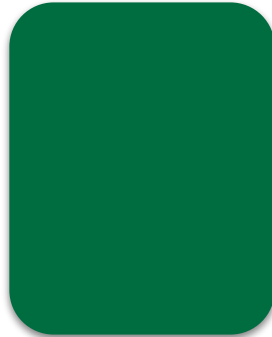
CPM Virtual Learning Series



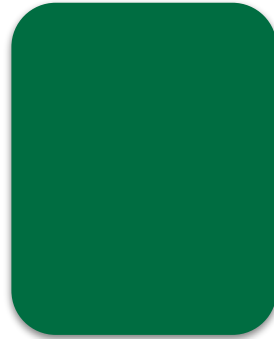
## Session Facilitators



*Name*



*Name*



*Name*

**Regional  
Professional  
Learning  
Coordinator**

# Tech Tip

## Viewing Options



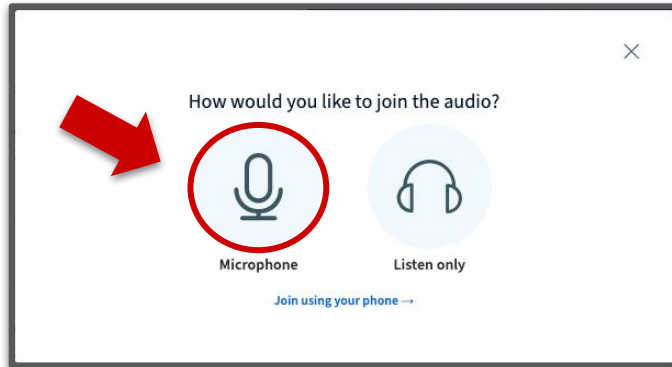
User list toggle

The screenshot shows a Zoom meeting interface with a dark blue background. At the top left, there is a back arrow and a user name 'Ashley Boyd'. A red arrow points from a callout box labeled 'User list toggle' to the user name. In the center, there is a video thumbnail of a man with brown hair and a brown jacket, waving. Below the video, there is a 'Layouts' dialog box with a white background and a red border. It contains four layout options: 'Custom', 'Smart layout', 'Focus on presentation', and 'Focus on video'. At the bottom of the dialog are 'Cancel' and 'Confirm' buttons. To the right of the video, there is a 'Styles' dropdown menu. In the top right corner, there is a signal strength icon, a battery icon, and a three-dot menu icon. A red circle highlights the three-dot menu icon, and a red arrow points from it to a 'Manage layout' option in a white menu with a red border. The menu also includes 'Fullscreen Application', 'Settings', 'About', 'Help', 'Keyboard shortcuts', and 'Leave meeting'. At the bottom of the screen, there is a navigation bar with a back arrow, 'Slide 1', a forward arrow, a mute icon, a video icon, a chat icon, and a zoom icon.

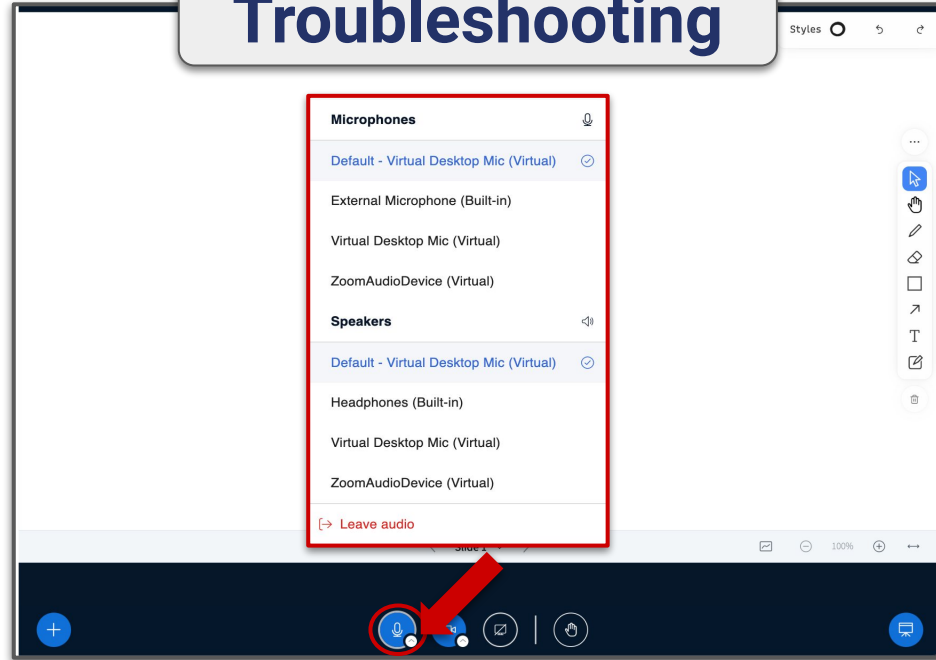
# Tech Tip



## Audio



## Troubleshooting



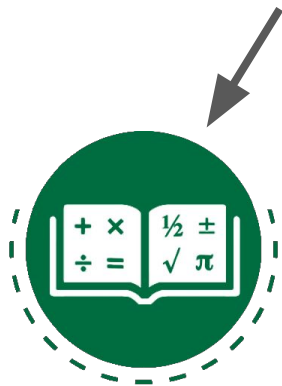
---

# Opening

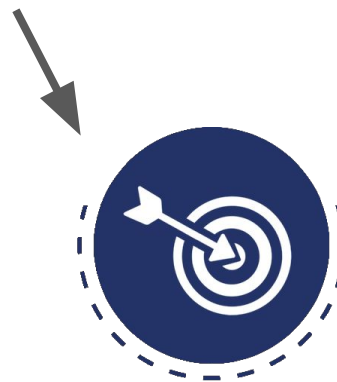
Foundations for Implementations



## CPM's Professional Learning On-Demand



Content Modules



Instructional Modules

# Opening

## Professional Learning Checklist



	Summer Session	Fall Semester	Spring Semester
<b>Live Learning Events</b>	<input type="checkbox"/> Register and attend: In-Person Days 1-3 <b>or</b> Virtual Sessions 1-6	<input type="checkbox"/> Register and attend: In-Person Follow Up Day 1 <b>or</b> Virtual Follow Up Sessions 1 and 2	<input type="checkbox"/> Register and attend: In-Person Follow Up Day 2 <b>or</b> Virtual Follow Up Sessions 3 and 4
<b>Content Modules</b> (On-Demand)	<input type="checkbox"/> Chapter 1  <input type="checkbox"/> Chapter 2	<input type="checkbox"/> Chapter 3  <input type="checkbox"/> Chapter _____	<input type="checkbox"/> Chapter _____  <input type="checkbox"/> Chapter _____
<b>Instructional Modules*</b> (On-Demand)	<input type="checkbox"/> 1 - Closure and Team Assessments <input type="checkbox"/> 2 - Review & Preview <input type="checkbox"/> 3 - Intentional Planning	<input type="checkbox"/> 4 - Supporting Productive Struggle	<input type="checkbox"/> 5 - Assessment Practices

\* Instructional Modules 1–5 will be opened and available upon completion of the Introduction to Foundations Module.  
If you support special education or intervention, Inclusion Modules may be completed in place of the Instructional Modules.

---

# Opening

## Outcomes



### Participants will:

- + Become familiar with the research behind the design of CPM courses.
- + Learn how the Launch-Explore-Closure lesson structure supports Problem-Based Learning.
- + Collaborate and learn with other teachers.

---

# Opening

## Agenda



## **Focus:** Problem-Based Learning

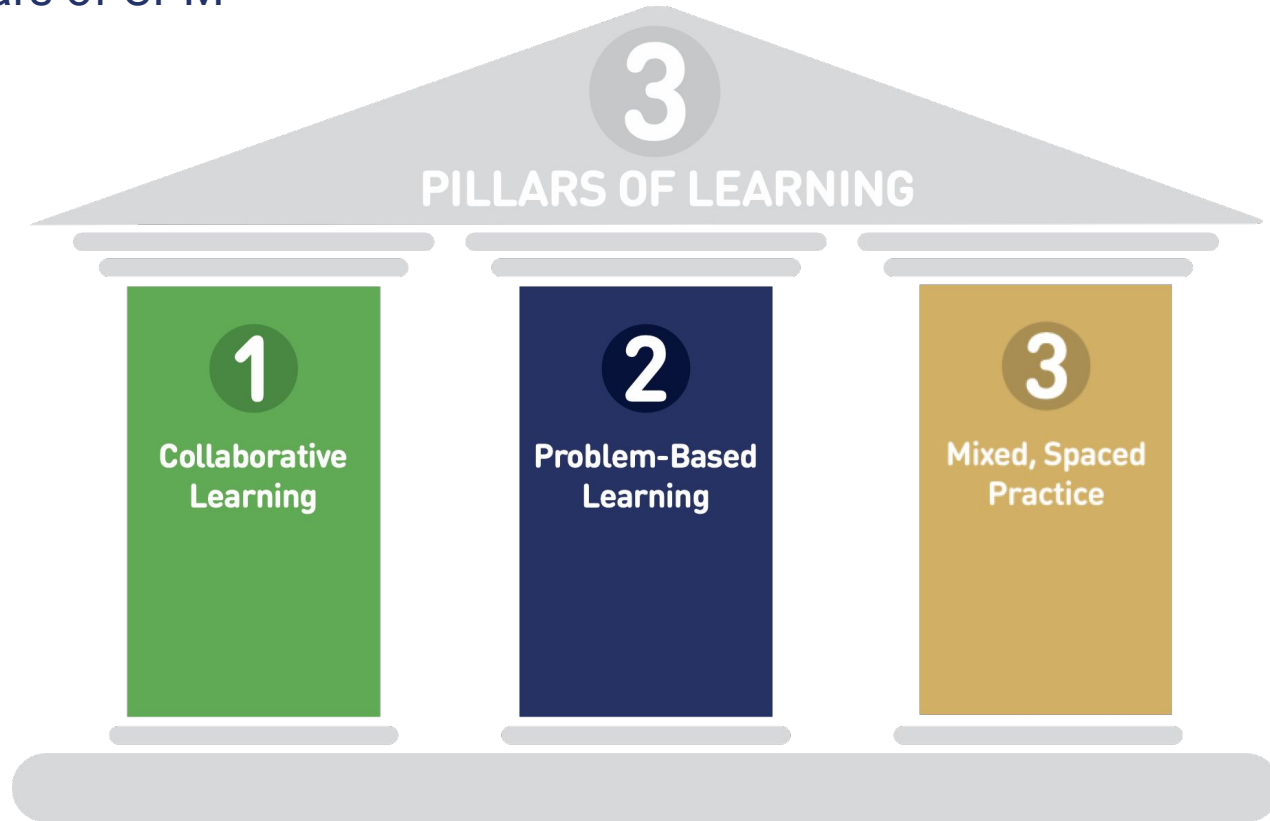
- Icebreaker
- Problem-Based Learning
- Lesson Launch
- Math Thread
- Lesson Closure
- Closure



---

# Opening

## Three Pillars of CPM



# Guiding Principles

## CPM's Guiding Principles



Students deepen their mathematical understanding when they are engaged with concepts over time.



Students have significantly better retention of mathematics when concepts are grounded in context.



Students' involvement in effective study teams increases their ability to learn mathematics.



Effective study teams are guided, supported, and summarized by a reflective, knowledgeable teacher.



Assessing what students understand requires more than one method and more than one opportunity.



When students and stakeholders embrace a growth mindset, they understand that mastery takes time, effort, and support.

---

# Opening

## Working Agreements



- + Be willing to take **risks**.
- + Have a **visionary** mindset.
- + Stay **engaged**.
- + Explore and reflect on our **beliefs**.
- + Give **grace** to others and ourselves.

**Change takes time, effort, and support!**

Click on the emoji icon at the bottom of the screen and set your status to thumbs up if you are ready to begin.



---

# Agenda

## Session Three



## **Focus:** Problem-Based Learning

- Icebreaker**
- Problem-Based Learning
- Lesson Launch
- Math Thread
- Lesson Closure
- Closure

---

# Icebreaker



## The Art of Compromise

On a piece of paper, write down your answers to the following three questions:

1. What is your favorite ice cream flavor?
2. What is your favorite genre of movie?
3. Where do you like to go on vacation?



You will finish this Icebreaker in your team room.

---

# Agenda

## Session Three



### Focus: Problem-Based Learning

Icebreaker

**Problem-Based Learning**

Lesson Launch

Math Thread

Lesson Closure

Closure

---

# Problem-Based Learning

Problem-Based Learning – Why?



## CPM's 2023 Research Base

### Executive Summary

### Problem-Based Learning

#### eBook:

Click on the **Teacher Tab** on the left side

Next choose **Program Description**

Select the tab **Research2: PBL**

**OR**



use the link in the Public Chat



---

# Problem-Based Learning

## Reading Protocol

### Go-Around One



**Read** the article.

**Identify** a sentence or idea from the article to share with your team that answers the question: ***What is math authority, and why is it important in problem-based learning?***

**Feel like a lot to read?**

Focus on the **blue boxes**: "*CPM infers from this research that...*"

7:00



---

# Problem-Based Learning

## Problem-Based Learning – How?



**How** do we create and support an environment for effective problem-based learning?

Team Roles

Collaborative  
Learning  
Agreements

Circulation/  
Team  
interactions

Further  
Guidance

STTS

Non-routine  
team worthy  
problems

Purposeful  
questioning

Purposeful  
Lesson  
Launch and  
Closure

---

# Agenda

## Session Three



### Focus: Problem-Based Learning

- Icebreaker
- Problem-Based Learning
- Lesson Launch**
- Math Thread
- Lesson Closure
- Closure

---

# Lesson Plan Structure

Supporting Problem-Based Learning



The **Launch-Explore-Closure (LEC)** lesson structure is an essential part of implementing effective CPM lessons and sharing math authority with students.



**Launch** – Lesson Opening

**Explore** – Structured Problem-Based Learning

**Closure** – Lesson Closure

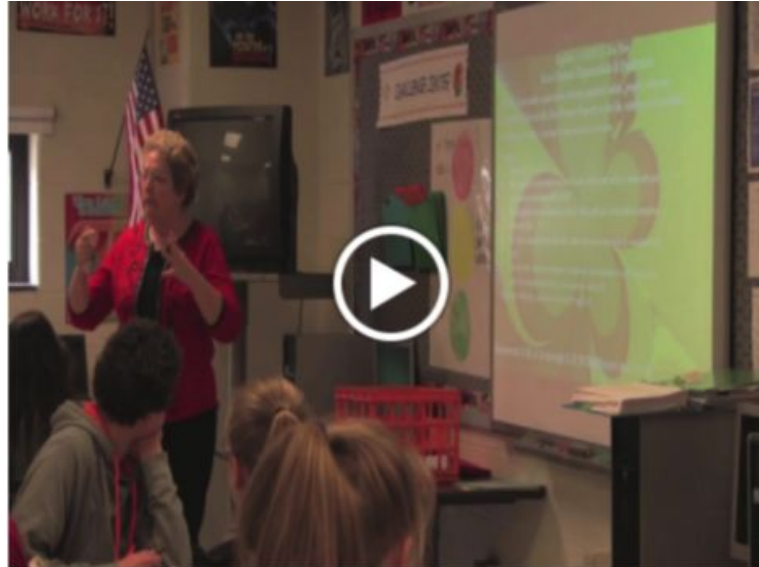
---

# Problem-Based Learning

## Classroom Connection



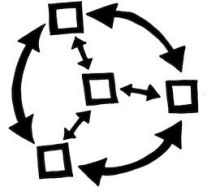
## Notice and Wonder



---

# Problem-Based Learning – How?

## Lesson Plan Structure



## An effective Lesson Launch

**Activates  
prior  
knowledge**

**Has a clear  
math goal**

**Establishes  
clear learning  
expectations**

---

# Problem-Based Learning – How?

## Lesson Launch Support

### TEACHER NOTES – CCA LESSON 5.2.2



**Suggested Lesson Activity:**

When you introduce today’s lesson, focus on the fact that the students’ task is to identify and share strategies for finding equations for arithmetic sequences. As they work in their study teams, they should both articulate their own strategies and listen for the strategies that others are using. As you observe teams choosing different strategies, you may decide to interrupt their work to ask students to present to the entire class, or you may leave this until the end of the day as closure.

Consider starting the class with **Reciprocal Teaching**, where one partner explains what they know about an *arithmetic sequence* and the other partner then explains what they know about a *geometric sequence*.

# Problem-Based Learning – How?

## Lesson Launch Support

### STUDENT BOOK – CCA LESSON 5.2.2



## 5.2.2★ How do arithmetic sequences work?

### ★ Generalizing Arithmetic Sequences



In Lesson 5.2.1, you learned how to identify arithmetic and geometric sequences. Today you will solve problems involving arithmetic sequences. Use the questions below to help your team stay focused and start mathematical conversations.

What type of sequence is this? How do we know?

How can we find the equation?

Is there another way to see it?

---

# Problem-Based Learning – How?

## Lesson Launch



What is one thing you want  
to remember about the  
Lesson Launch?





---

# Problem-Based Learning – How?

## Lesson Launch



The Lesson Launch should connect to prior learning, have a clear math goal, and establish clear learning expectations for students.



---

# Agenda

## Session Three



### Focus: Problem-Based Learning

- Icebreaker
- Problem-Based Learning
- Lesson Launch
- Math Thread**
- Lesson Closure
- Closure

---

# Math Thread

## Team Agreements and Roles



**Resource Manager**

**Facilitator**

**Task Manager**

**Recorder/Reporter**

**Together, work to learn mathematics**

**Explain and give reasons**

**Ask questions and share ideas**

**Members of your team are your first resource**

**Strive for understanding**

---

# Math Thread

Lesson Launch

CC1 Lesson 1.1.3



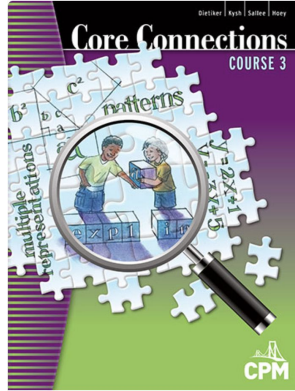
Figure 1



Figure 2



Figure 3



## Lesson 3.1.3

What is a graph and how is it useful?

**Core Connections, Course 3**  
(8th grade)

**Thread:** Multiple Representation



**Math goal:**  
Graph data points from a pattern and make connections.



**Team goal:**  
Support each other in understanding the connections.

---

# Math Thread

## Closure



Insert screenshots

---

# Brain Break

## Snap Wink



1. Stand up.
2. Wink your left eye and snap your right hand index finger and thumb at the same time.
3. Wink your right eye and snap your left hand index finger and thumb at the same time.
4. Switch back and forth as fast as you can.



### How to participate?

Stand up and follow along with the Facilitators.

---

# Agenda

## Session Three



### **Focus:** Problem-Based Learning

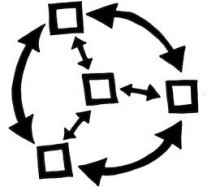
- Icebreaker
- Problem-Based Learning
- Lesson Launch
- Math Thread
- Lesson Closure**
- Closure



---

# Problem-Based Learning – How?

## Lesson Plan Structure



## An Effective Lesson Closure

**Provides  
active  
student  
reflection**

**Connects to  
the math goal**

**Provides  
feedback to  
both the  
student and  
teacher**

# Problem-Based Learning – How?

## Lesson Closure Support TEACHER NOTES – EXAMPLES



### CCA Lesson 5.2.2

**Closure:**  
(10 minutes)

Bring the class together and have teams share strategies for finding equations for arithmetic sequences based on multiple representations. Consider asking questions such as “*How could you use a table to find the equation for an arithmetic sequence?*”, “*Did any team use an equation? How?*”, and “*How could you use a graph?*” This could be done as a **Walk and Talk.**

### CCA Lesson 5.1.1

**Closure:**  
(10 minutes)

The **Learning Log** entry in problem [5-5](#) allows students to summarize what they have learned about the kind of pattern they have modeled and generalized. Because students will continue to build an understanding of the patterns and connections among different representations of exponential functions, it is not necessary for them to have an exhaustive definition or explanation in their Learning Logs at this point.

---

# Problem-Based Learning – How?

## Lesson Closure Support STUDENT BOOK – EXAMPLES



### 5-5. LEARNING LOG

To represent the growth in number of rabbits in problems 5-1 and 5-3, you discovered a new function family that is not linear. Functions in this new family are called exponential functions. Throughout this chapter and later in Chapter 7, you will learn more about this special family of functions.

Write a Learning Log entry to record what you have learned so far about exponential functions. For example, what do their graphs look like? What patterns do you observe in their tables? Title this entry “Exponential Functions” and include today’s date.



---

# Problem-Based Learning – How?

## Lesson Closure



### **Focus Question:**

How does the Lesson Closure provide opportunities for teachers to formatively assess students?

---

# CPM's Principles of Assessment



- 1 Teachers need to be involved in the crafting of assessments.
- 2 Teachers need to read and work through all test problems.
- 3 Students should be assessed only on content with which they have been meaningfully engaged.
- 4 Formative assessment is a learning experience for students and teachers.
- 5 While teachers are required to evaluate and assign grades, grading should be flexible.

---

# CPM's Principles of Assessment

## Closure & Formative Assessment



**Read** the opening paragraph and principle #4.

**Reflect** on the following question:



How does Lesson Closure provide opportunities for teachers to formatively assess students?

---

# CPM's Principles of Assessment

## Lesson Closure & Formative Assessment



**Respond** in the Public Chat:

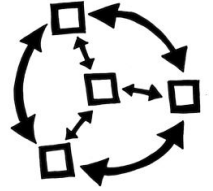
How does Lesson Closure provide opportunities for teachers to formatively assess students?



---

# Lesson Closure

## Closure & Formative Assessment



Lesson Closure should be a reflection of the math goal and should give students the opportunity to actively reflect.





---

# Agenda

## Session Three



### **Focus: Problem-Based Learning**

- Icebreaker
- Problem-Based Learning
- Lesson Launch
- Math Thread
- Lesson Closure
- Closure**

# Lesson Closure

## Teacher Tips



Lesson closure.



# Learning Log

## Steps to access



1.

- Profile
- Learning Log
- File Cabinet
- Action Plans
- My CPM PL Record
- CPM eBooks
- Inspiring Connections
- Participant Handbook
- Preferences
- Log out

2.

YOUR LEARNING LOG

ADD A NEW ENTRY

3.

## LEARNING LOGS: ADD A NEW ENTRY

▼ Collapse all

### ▼ General

Entry title



*Lesson Structure*

Learning Log entry



body

Rich text editor toolbar with icons for bold, italic, underline, link, unlink, list, table, and other text formatting options.

*—Using the lesson structure is important to Problem-Based learning because \_\_\_\_.*

*—I want to remember \_\_\_\_ about Lesson Launch and Closure.*

---

# Closure

## Outcomes

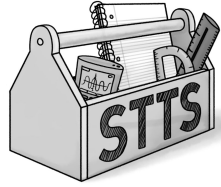


## Participants will:

- + Become familiar with the research behind the design of CPM courses.
- + Learn how the Launch-Explore-Closure lesson structure supports Problem-Based Learning.
- + Collaborate and learn with other teachers.

# Closure

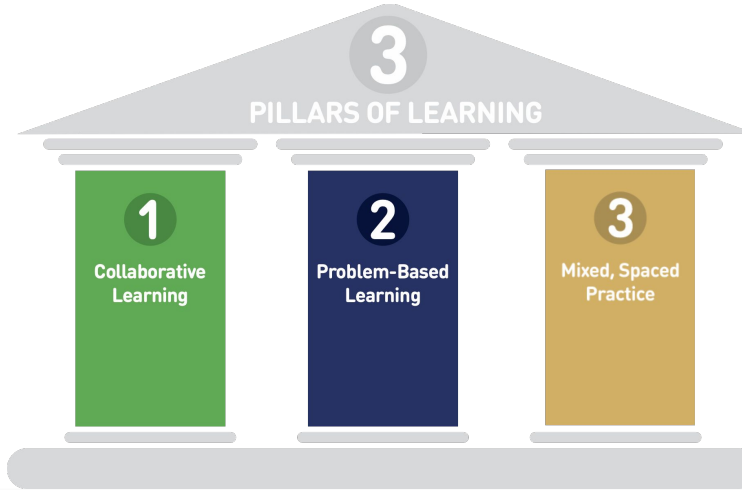
## Study Team and Teaching Strategies



Ambassador	Fishbowl	Huddle	Notice & Wonder	Reciprocal Teach	Think-Ink-Pair-Share (T.I.P.S)
Carousel: Around the world	Fortune Cookie	I Spy	<b>Pairs Check (Pairs Chat)</b>	Red Light, Green Light	<b>Think- Pair- Share</b>
Carousel: Index Card	<b>Gallery Walk</b>	<b>Jigsaw: 4 Corners</b>	<b>Participation Quiz</b>	Silent Appointment	Traveling Salesman
Carousel: Station Rotation	Give One, Get One	Listening Post	Peer Edit	Silent Debate	Tuning Protocol
Dyad	Hot Potato	Numbered Heads	Pick Three	Swapmeet	Walk and Talk
Elevator Talk	Hot Seat	Math Chat	Proximity Partner	<b>Teammates Consult</b>	<b>Whiparound</b>

# Closure

## Three Research Pillars



**SECTION ONE:** The pillars that represent necessary first steps in any implementation.

### Collaborative Learning

Students and teachers are aware of the purpose for and value of working in teams, and are familiar with team norms and roles.

### Problem-Based Learning

Students and teachers share math authority as they value and engage in productive struggle. Teachers guide without taking over the thinking.

### Mixed, Spaced Practice

Both individual lessons and chapters are followed, using suggested pacing. Review & Preview problems are assigned and valued as an essential part of learning.



---

# Closure

## Teacher Tips



# Teacher Actions That Support Implementation

Use the Teacher Notes as intended.

Work all the problems in the lesson ahead of time, including the Review & Preview problems.

Create purposeful lesson plans.

---

# Closure



- + **Parking Lot**

- + **Attendance & Feedback**

Either scan the QR code  
**OR**

Enter passcode in the portal  
**XXXXXX**

- + **Next Steps:**

- Finish Introductions to Foundations Module.
- Before the start of the school year:
  - Finish Instructional Modules 1 through 3.
  - Complete Content Modules 1 & 2.



@CPMEducationalprogram



@CPMmath



@CPMmath