# Foundations for Implementation – Session 3
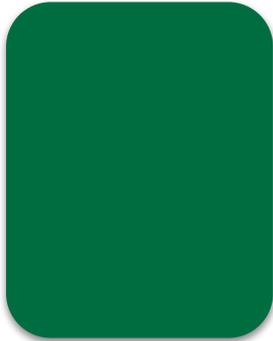
Rev 6/8/23 (ce)

# Welcome!

CPM Virtual Learning Series

HELLO my name is:
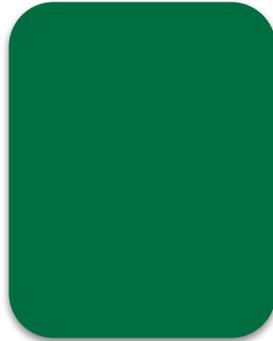
## Session Facilitators

*Name*

*Name*

*Name*

**Regional Professional Learning Coordinator**

# Tech Tip



Viewing Options

User list toggle
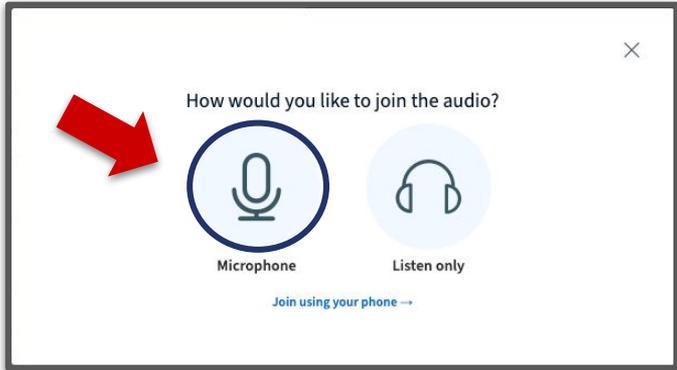
Make fullscreen

Settings

About

Help

Keyboard shortcuts

Leave meeting

Layouts

Custom

Smart layout

Focus on presentation

Focus on video

Styles

Layout Settings Modal

Cancel    Confirm

Slide 1

100%

# Tech Tip

Audio

Troubleshooting

How would you like to join the audio?

Microphone     Listen only

Join using your phone →

Microphones

Default - Virtual Desktop Mic (Virtual)
External Microphone (Built-in)
Virtual Desktop Mic (Virtual)
ZoomAudioDevice (Virtual)

Speakers

Default - Virtual Desktop Mic (Virtual)
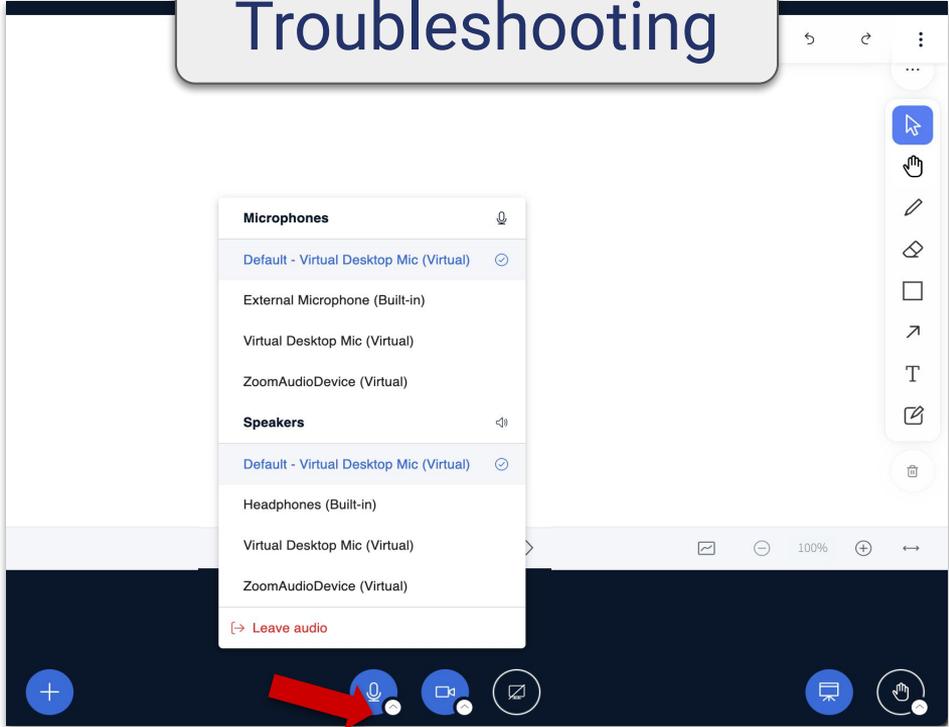Headphones (Built-in)
Virtual Desktop Mic (Virtual)
ZoomAudioDevice (Virtual)

Leave audio

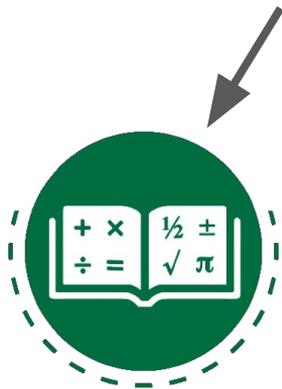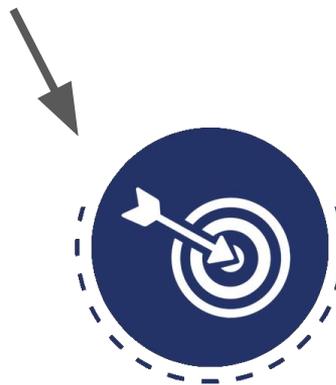4

# Opening

Foundations for Implementations

## CPM's Professional Learning On-Demand

Content Modules

Instructional Modules

# Opening
## Professional Learning Checklist

| | Summer Session | Fall Semester | Spring Semester |
|---|---|---|---|
| **Live Learning Events** | ☐ Register and attend:<br>In-Person Days 1-3 **or**<br>Virtual Sessions 1-6 | ☐ Register and attend:<br>In-Person Day 4 **or**<br>Virtual Sessions 7-8 | ☐ Register and attend:<br>In-Person Day 5 **or**<br>Virtual Sessions 9-10 |
| **Content Modules** (On-Demand) | ☐ Chapter 1<br><br>☐ Chapter 2 | ☐ Chapter 3<br><br>☐ Chapter _____ | ☐ Chapter _____<br><br>☐ Chapter _____ |
| **Instructional Modules*** (On-Demand) | ☐ 1 - Closure and Team Assessments<br>☐ 2 - Review & Preview<br>☐ 3 - Intentional Planning | ☐ 4 - Supporting Productive Struggle | ☐ 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

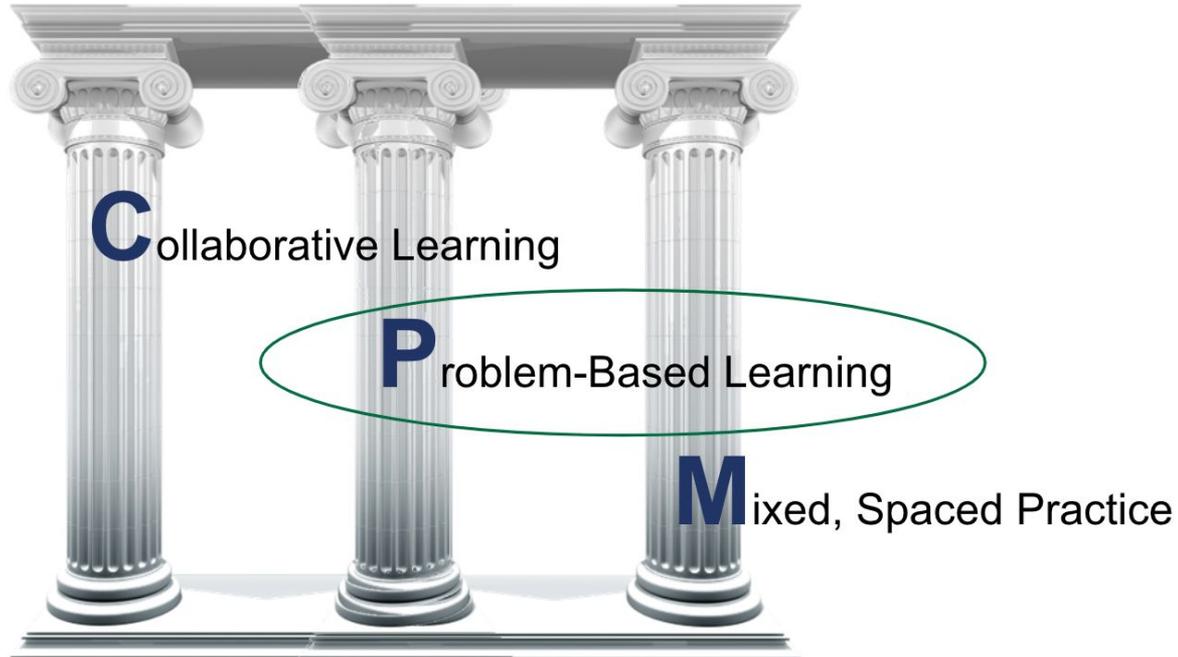**Focus:** Problem-Based Learning

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

## Three Pillars of CPM

**C**ollaborative Learning

**P**roblem-Based Learning

**M**ixed, Spaced Practice

# 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 your name 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

Student

# 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 – Why?

# Synthesis of Research
# Problem-Based Learning

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.

7 : 00

# Problem-Based Learning

Problem-Based Learning

**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 |

Teacher

# Agenda

**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

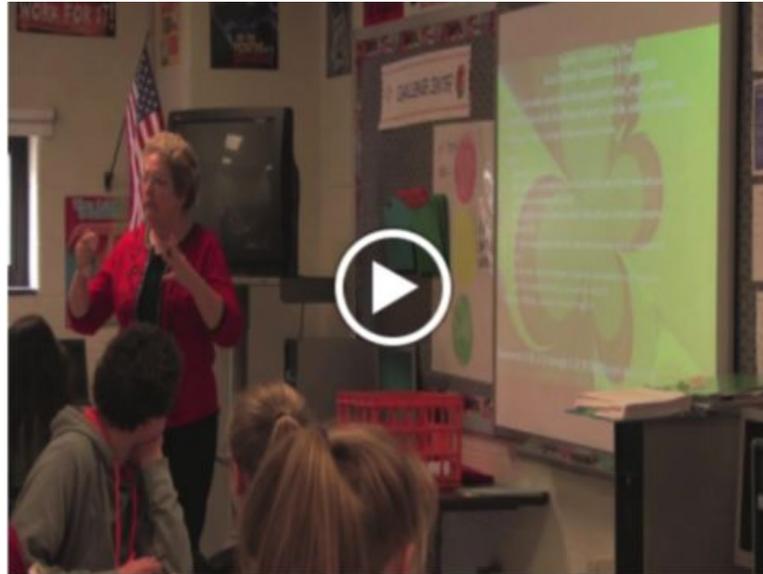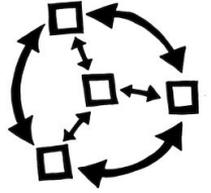# Problem-Based Learning

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**

**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*.
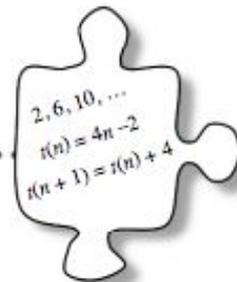
## Lesson Launch Support
STUDENT BOOK – CCA LESSON 5.2.2

Teacher

**5.2.2** ★ How do arithmetic sequences work?

2, 6, 10, ...

$t(n) = 4n - 2$

$t(n + 1) = t(n) + 4$

★ 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
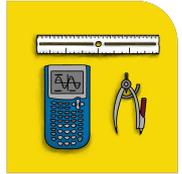- ☐ Closure

# Math Thread

Team Agreements and Roles

**T**ogether, work to learn mathematics.

**E**xplain and give reasons.

**A**sk questions and share ideas.

**M**embers of your team are your first resource.

**S**trive for understanding.
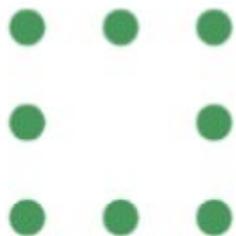
Figure 1          Figure 2                    Figure 3

# Math Thread

CC3 Lesson 1.1.2
Finding and Generalizing Patterns
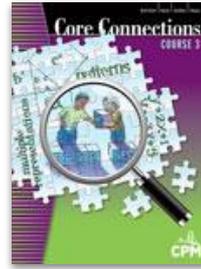
**Math goal:**
Recognize change in patterns and make predictions.

**Team goal:**
Collaborate and work effectively with your study team.

# Math Thread

## Closure
CC3 Lesson 1.1.3

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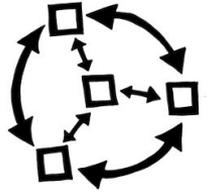
- ☑ Icebreaker
- ☑ Problem-Based Learning
- ☑ Lesson Launch
- ☑ Math Thread
- ☐ Lesson Closure
- ☐ Closure

# 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

**Teacher**

**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.

**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?

3:00

# CPM's Principles of Assessment
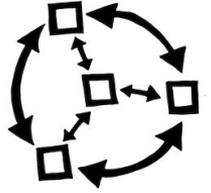Lesson Closure & Formative Assessment

**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
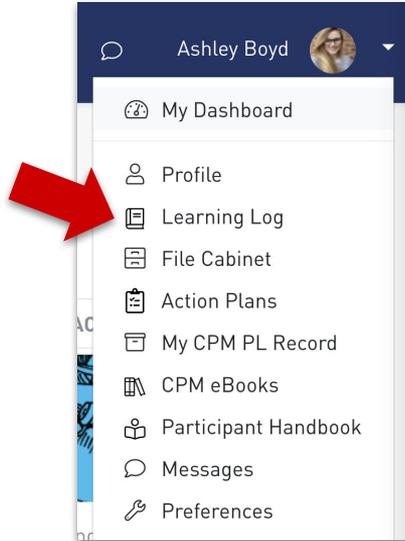## Teacher Tips



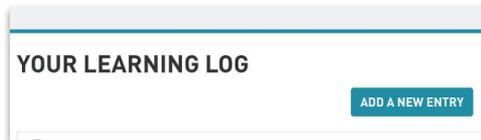esson closure.

# Learning Log
## Steps to access

**4:00**

**1.**

Ashley Boyd ▾

- 💬 My Dashboard
- 👤 Profile
- 📑 Learning Log
- 🗄 File Cabinet
- 📋 Action Plans
- 🗓 My CPM PL Record
- 📚 CPM eBooks
- 👥 Participant Handbook
- 💬 Messages
- 🔧 Preferences

**2.**

**YOUR LEARNING LOG**

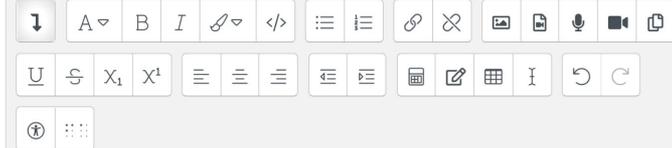ADD A NEW ENTRY

**3.**

## LEARNING LOGS: ADD A NEW ENTRY

▾ Collapse all

▾ General

Entry title ⓘ  *Lesson Structure*

Learning Log entry ⓘ
body

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

*—I want to remember ____ about Lesson Launch and Closurre.*

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# 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 | **Pairs Check (Pairs Chat)** | Red Light, Green Light | **Think- Pair- Share** |
| Carousel: Index Card | **Gallery Walk** | **Jigsaw: 4 Corners** | **Participation Quiz** | 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 | **Teammates Consult** | **Whiparound** |

# Closure
## Three Research Pillars



**C**ollaborative Learning

**P**roblem-Based Learning

**M**ixed, Spaced Practice
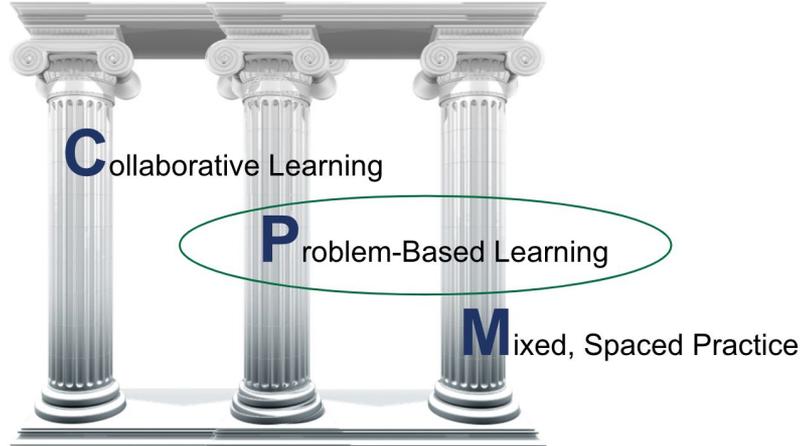
**SECTION ONE:** The pillars that represent necessary first steps in any implementation.

| Collaborative Learning | Problem-Based Learning | Mixed, Spaced Practice |
|---|---|---|
| Students and teachers are aware of the purpose for and value of working in teams, and are familiar with team norms and roles. | Students and teachers share math authority as they value and engage in productive struggle. Teachers guide without taking over the thinking. | Both individual lessons and chapters are followed, using suggested pacing. Review & Preview problems are assigned and valued as an essential part of learning. |

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## 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

HOUSEKEEPING

ANCHOR PAGE

WELCOME

PUZZLE

TEAM GOAL

TEACHER LENS

LEARNING LOG

THREAD

CONTENT MODULE

MATH GOAL

STUDENT LENS

EQUITY LENS

ASSESSMENT

PRODUCTIVE STRUGGLE

RESEARCH PILLARS

MSP

COLLABORATIVE LEARNING

PBL

STUDY TEAMS

LEARNING TARGET

TASK CARD

TEAM ROLES ALL

RESOURCE MANAGER

TASK MANAGER

REPORTER RECORDER

FACILITATOR

IMPLEMENTATION ACTION PLAN

TEAM ROOMS

IMPLEMENTATION PROGRESS TOOL

STTS