

# Using Routine Rehearsals to Transform Teaching Practices

Grace Kelemanik



FOSTERING  
**MATH**  
PRACTICES



I will post  
Powerpoints  
here after the  
session under  
Resources tab.

[www.fosteringmathpractices.com](http://www.fosteringmathpractices.com)




# Share...Discuss...Reflect...





- #FosteringMPs
- @GraceKelemanik

- #CMCMath
- @CAMathCouncil



STAY CONNECTED WITH CMC



Like Us On  facebook

 FOLLOW US ON twitter

@CAMathCouncil



[www.facebook.com/CAMathCouncil](http://www.facebook.com/CAMathCouncil)

[www.cmc-math.org](http://www.cmc-math.org)

#cmcmath

The complex block is a promotional graphic for the California Math Council (CMC). It features a blue and white color scheme. At the top, it says "STAY CONNECTED WITH CMC". Below this, there are icons for Facebook and Twitter, along with the CMC logo (a stylized "CMC" in blue and yellow). Text prompts include "Like Us On facebook" and "FOLLOW US ON twitter". The Twitter handle "@CAMathCouncil" is prominently displayed. There are also small images of social media posts. At the bottom, the website "www.cmc-math.org" and the hashtag "#cmcmath" are provided.

# Session Goal



Learn how to leverage rehearsals of instructional routines to develop effective math teaching practices.

# Agenda

This session is brought to you by the letter “**R**”.

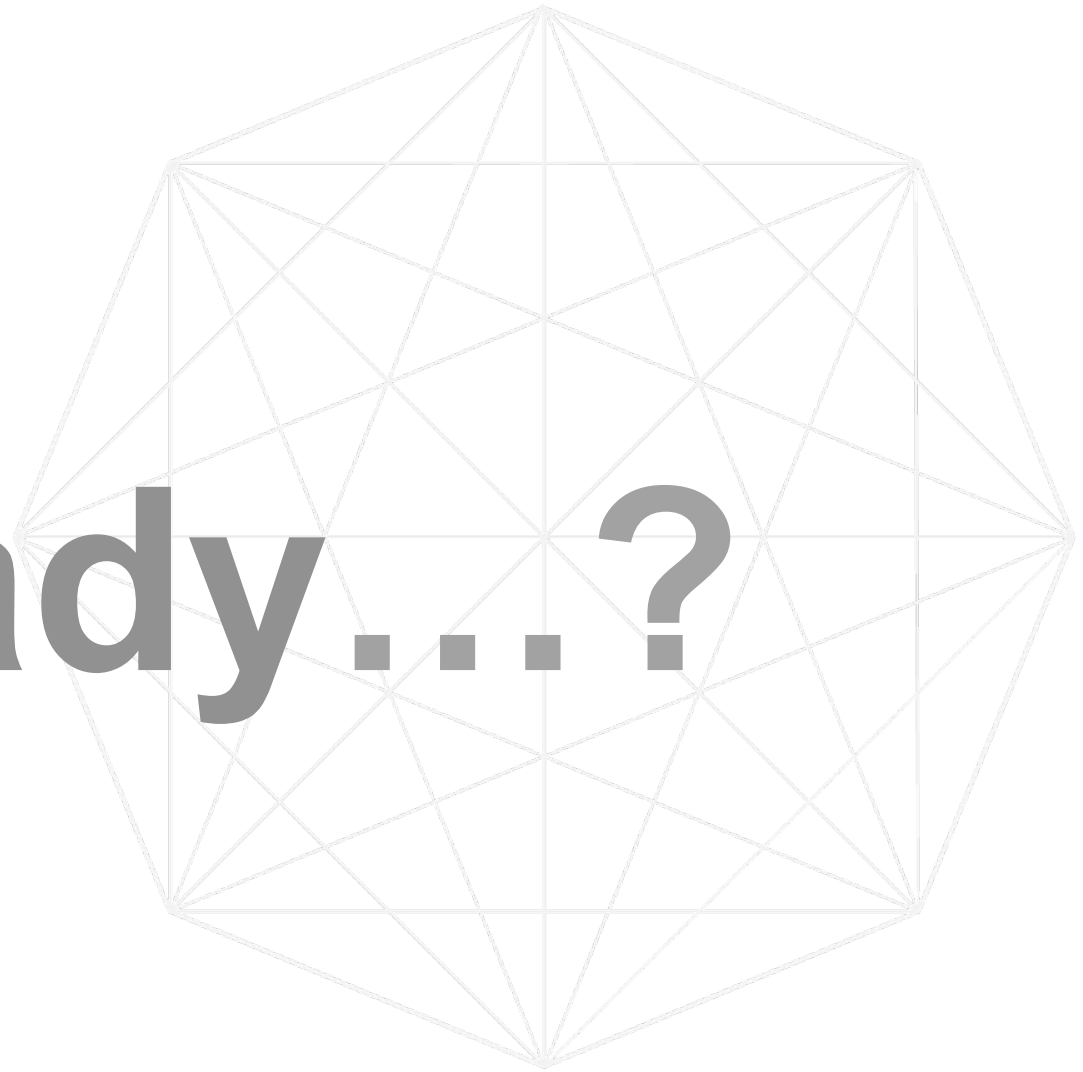
**R**ationale

**R**outine

**R**ehearsal

**R**esources

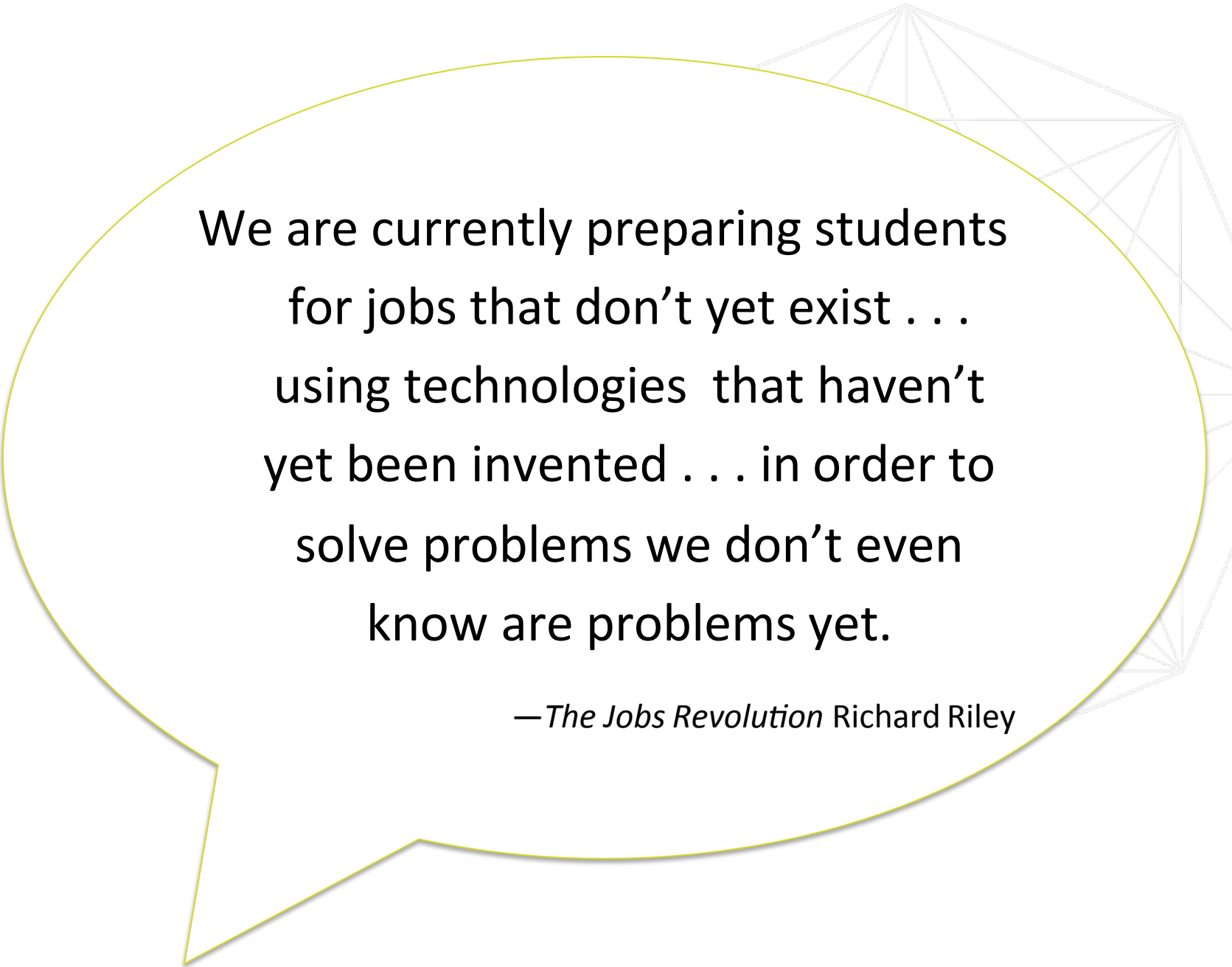
**Ready...?**





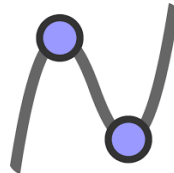
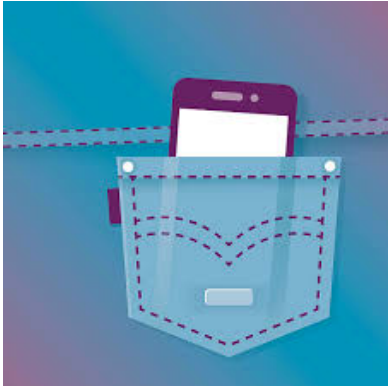
# Rationale

For rehearsing inside an  
instructional routine

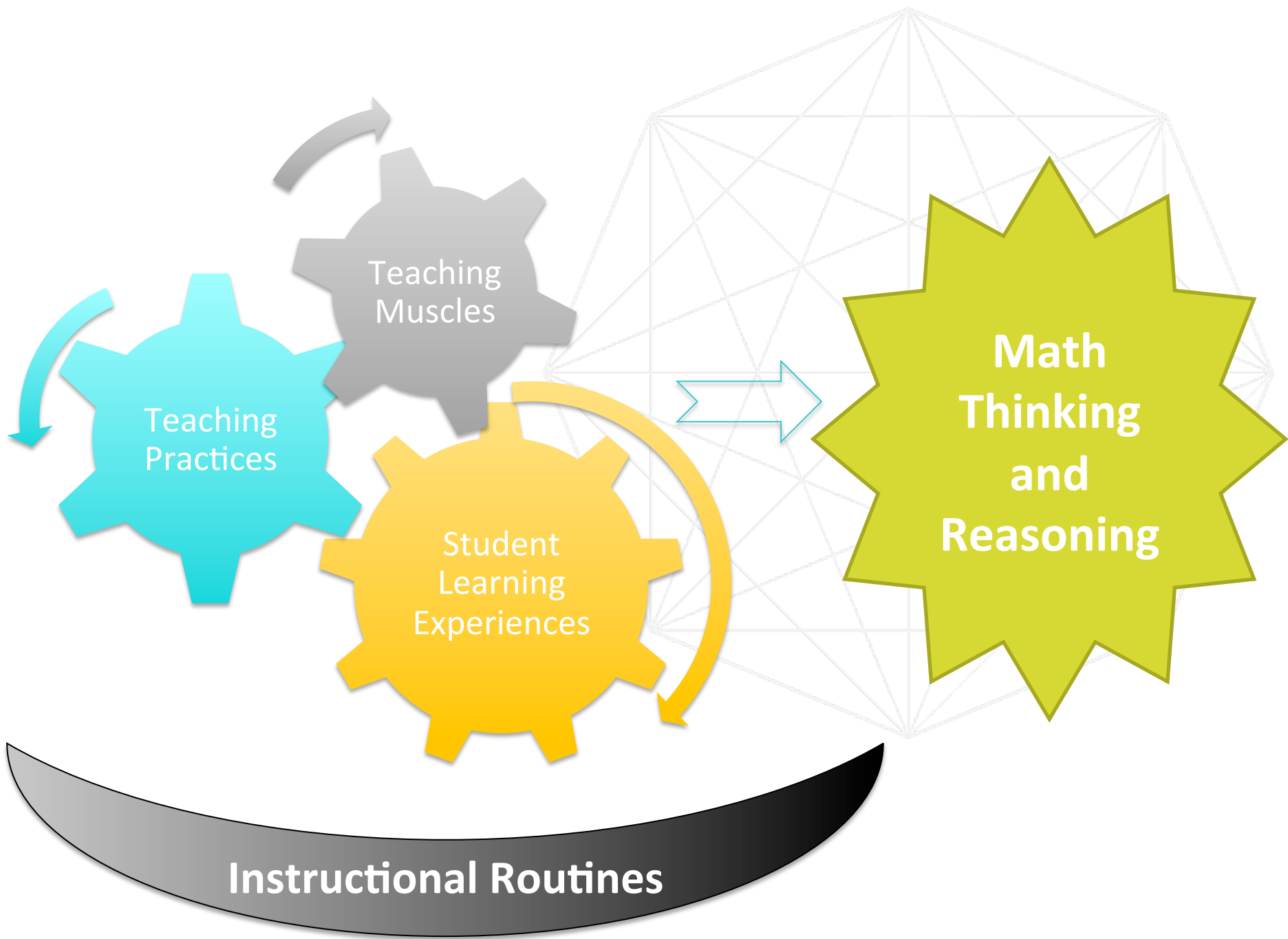


We are currently preparing students  
for jobs that don't yet exist . . .  
using technologies that haven't  
yet been invented . . . in order to  
solve problems we don't even  
know are problems yet.

—*The Jobs Revolution* Richard Riley







# Change in Student Learning Experience

Teaching students to think and reason mathematically requires requires learning experiences that, among other things, position students to:

- “Engage with challenging tasks that involve active meaning making and support.”
- “Construct knowledge socially through discourse, activity, and interaction related to meaningful problems.”

*-NCTM Principles to Action, page 9*

# Change in Teaching Practice

Creating and facilitating these types of learning experiences require certain high leverage teaching practices, e.g.

- ✧ Establish mathematics goals to focus learning
- ✧ Implement tasks that promote reasoning and problem solving
- ✧ Use and connect mathematical representations
- ✧ Facilitate meaningful mathematical discourse
- ✧ Pose purposeful questions
- ✧ Build procedural fluency from conceptual understanding
- ✧ Support productive struggle in learning mathematics
- ✧ Elicit and use evidence of student thinking

*NCTM Effective Math Teaching Practices*

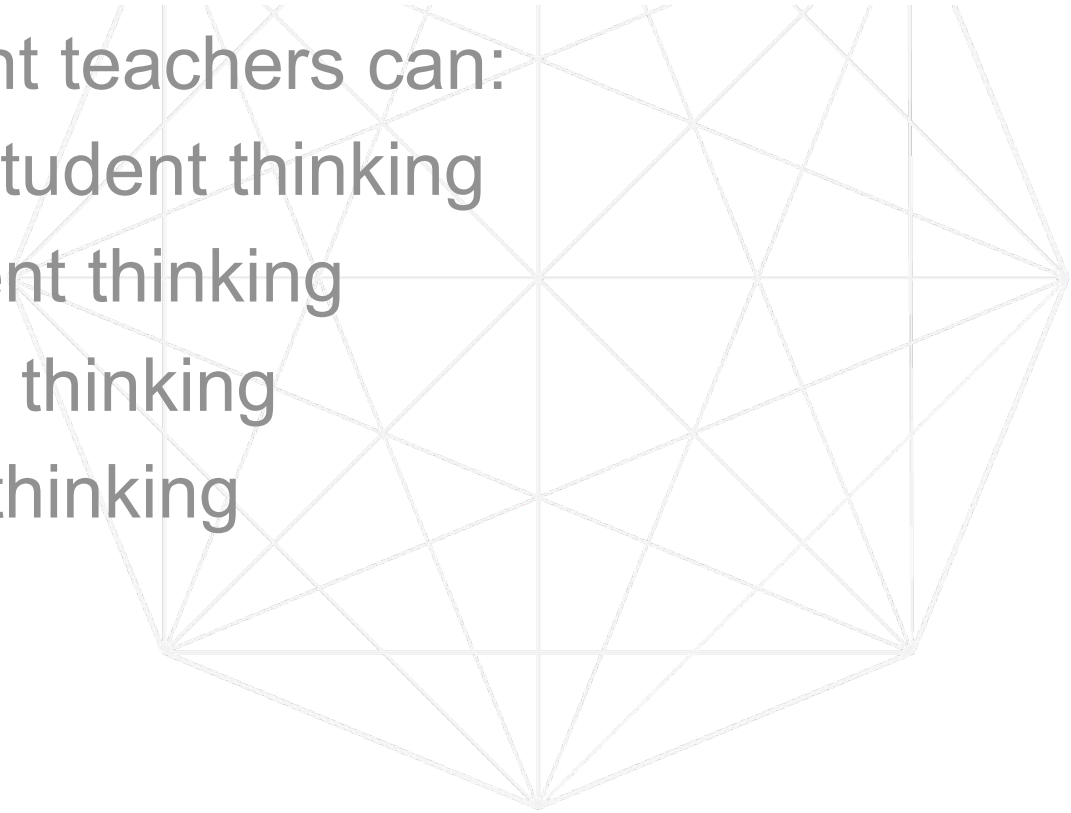
# In-the-Moment Decision Making



# Building Muscles for Teaching

So that in-the-moment teachers can:

- Make sense of student thinking
- Represent student thinking
- Connect student thinking
- Solidify student thinking





# How do we develop these critical teaching practices and muscles?

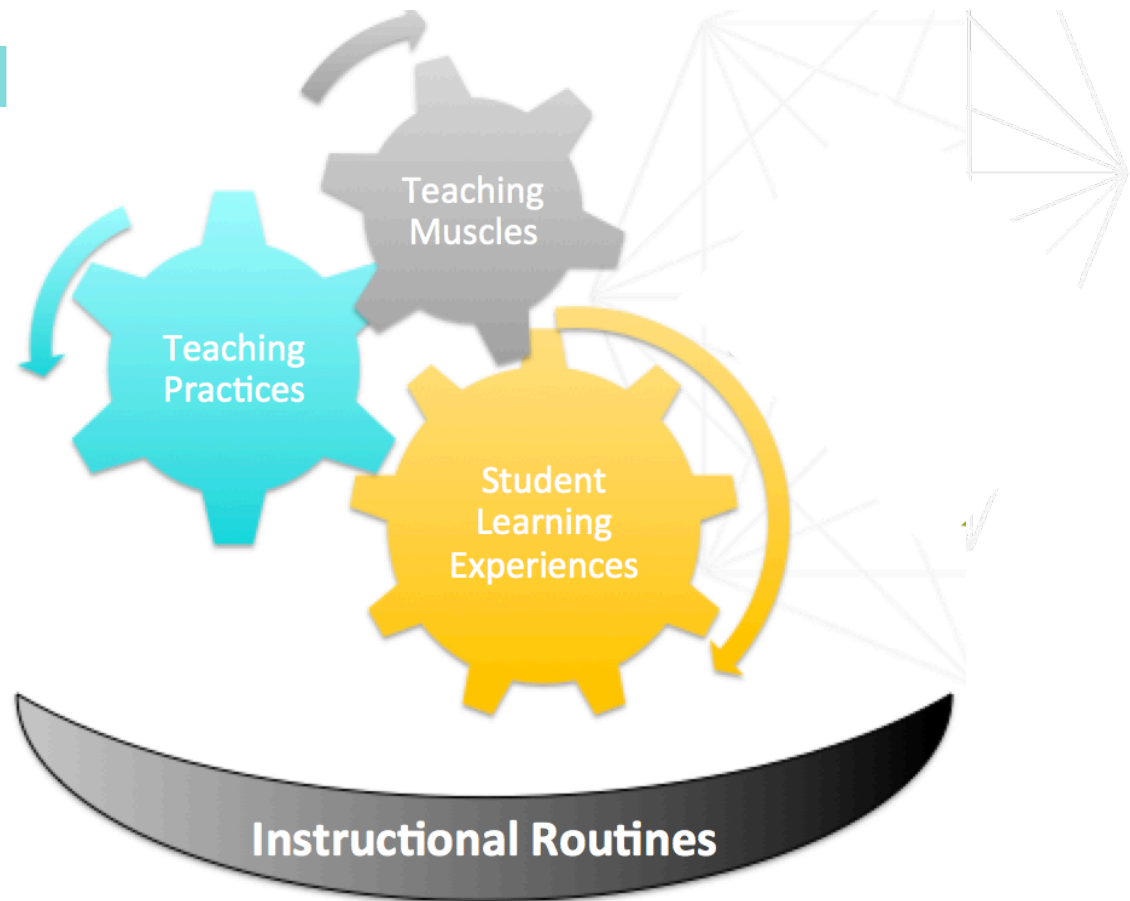
Leverage Instructional Routines!


**TEACHING PRACTICES**  
are habits and  
habits are formed  
through routine.

**TEACHING MUSCLES**  
can only be formed  
through routine.

## **INSTRUCTIONAL ROUTINES**

- Repeatable
- Predictable





# **R**outine

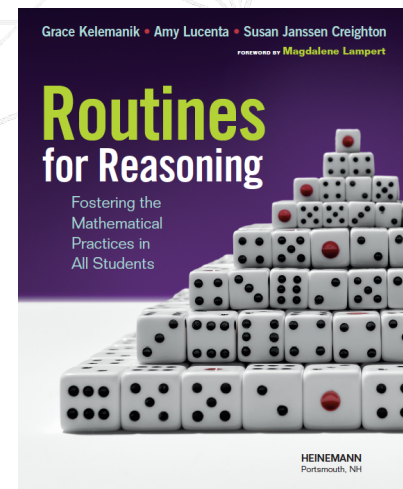
A vehicle for developing teaching practices  
and muscles

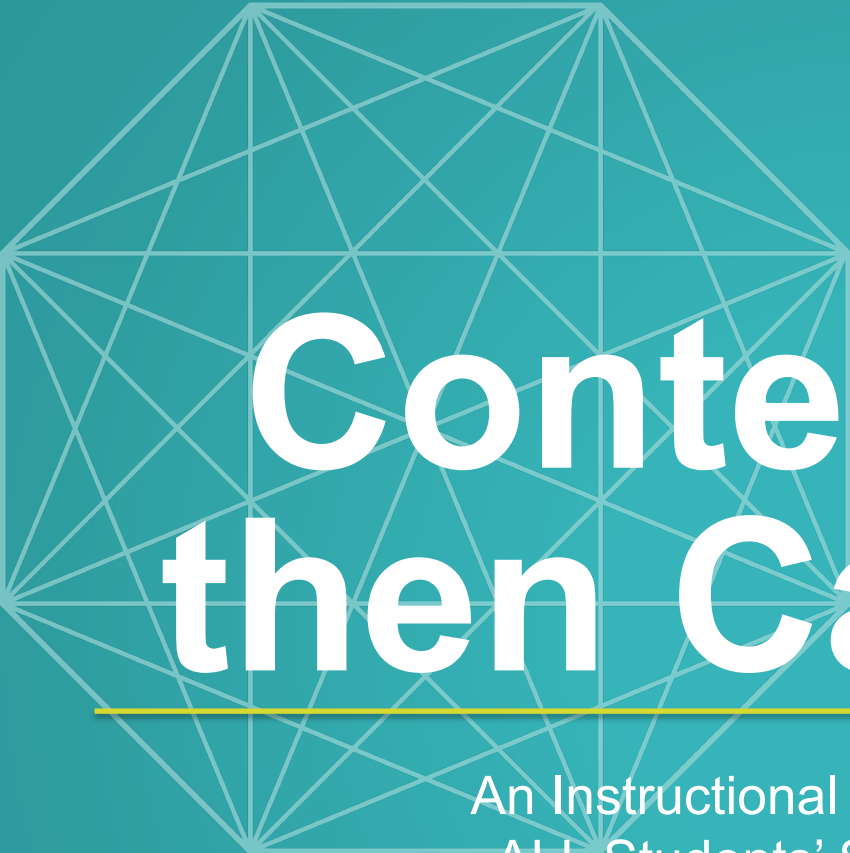


# Instructional Routines that Develop Math Practice Avenues of Thinking

- Contemplate then Calculate (MP7)
- Connecting Representations (MP7)
- Capturing Quantities (MP2)
- Recognizing Repetition (MP8)
- Three Reads (MP1)
- Decide and Defend (MP3)

[www.FosteringMathPractices.com](http://www.FosteringMathPractices.com)

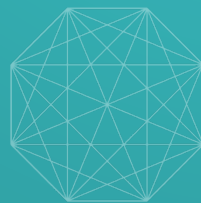




# Contemplate then Calculate

---

An Instructional Routine to Develop  
ALL Students' Structural Thinking



FOSTERING  
**MATH**  
PRACTICES

[www.fosteringmathpractices.com](http://www.fosteringmathpractices.com)

# Structure of the C then C Routine

Thinking Goal: Building an Avenue of Thinking

**1 Launch the Routine**  
Introduce thinking goal, review routine's steps

**2 Notice**

Individual Think Time



Pairs



Share & Record



**3 Develop Shortcut**

Pairs



**4 Discuss Shortcuts**

Repeat, Rephrase  
Reword, Record

Share: Discuss & Annotate



**5 Reflect on Your Thinking**

Individual Write Time



Pairs

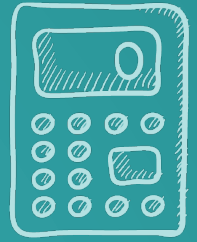


Share & Record





# Contemplate then Calculate

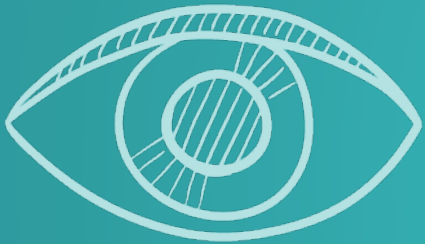


- **WHAT:** Quick count by chunking, changing the form and connecting to math you know.
- **WHY:** To “think like mathematicians”, to use mathematical structure to find shortcuts.

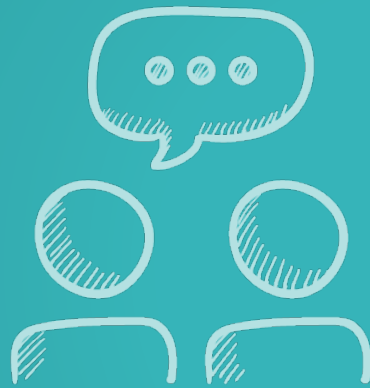




# Contemplate then Calculate



Notice



Find  
calculation  
shortcut

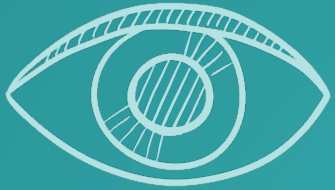


Share &  
study  
shortcut



Reflect on  
learning





What do you notice?

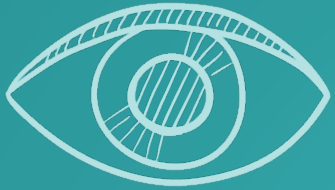


**ASK YOURSELF:**

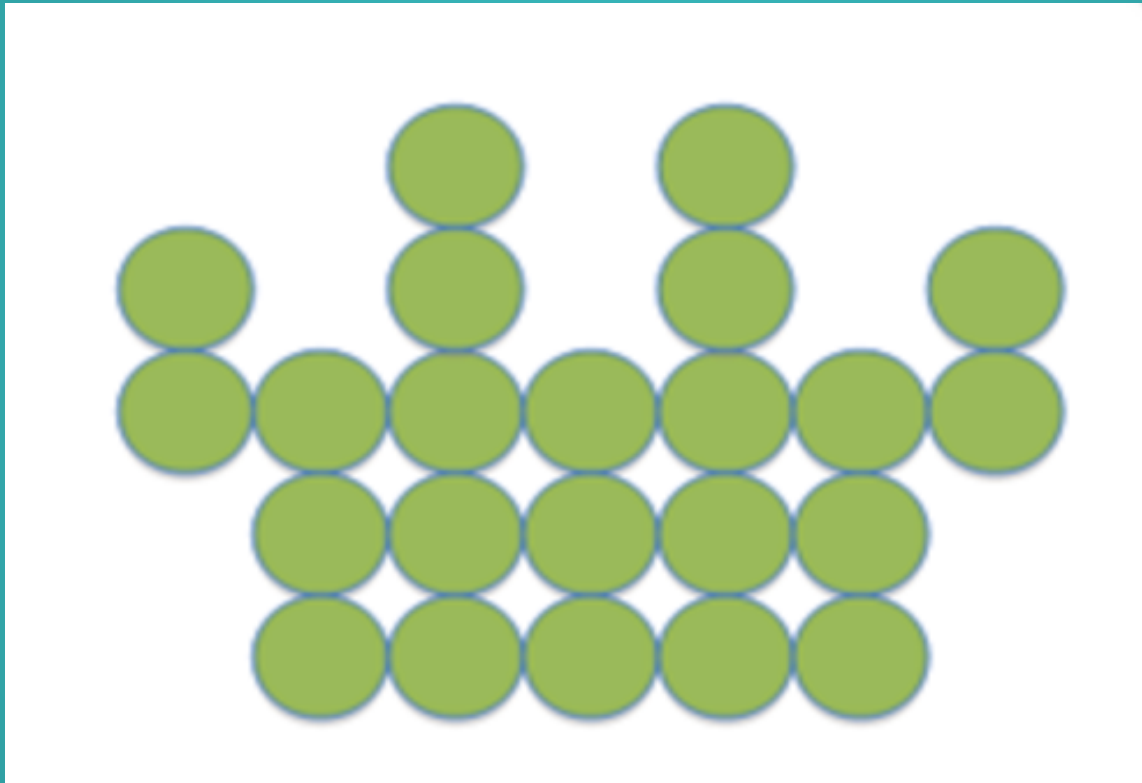
*What might be mathematically important?*



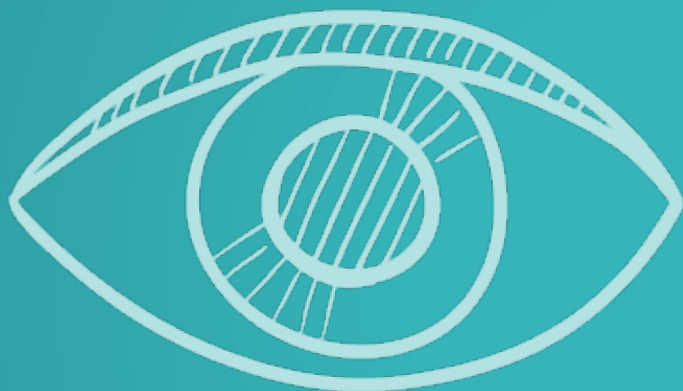
FOSTERING  
**MATH**  
PRACTICES



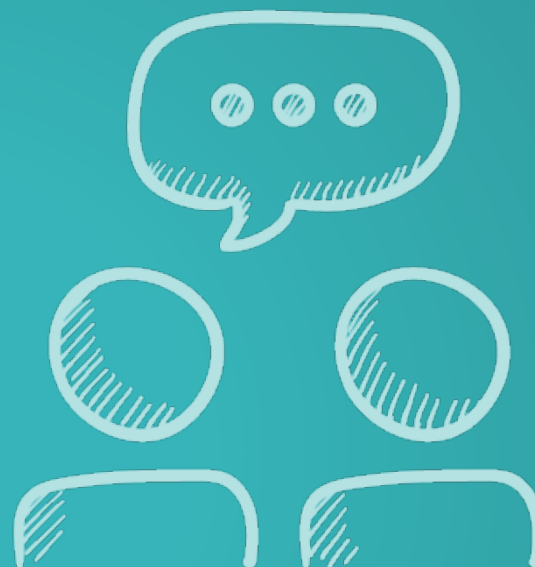
# What do you notice?



# Share

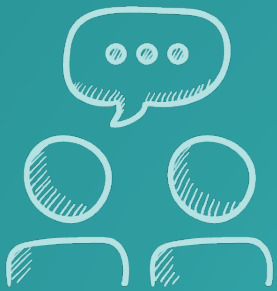


I noticed....



What did you notice?

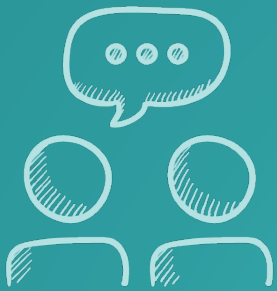




# Find counting shortcut



- Find the total number of circles quickly in your head
- Prepare to explain your shortcut using chunk, change, and connect.



# Find counting shortcut



- Find the total number of circles quickly in your head
- Prepare to explain your shortcut using chunk, change, and connect.



# Share and study shortcuts



## PRESENTER

- We noticed...so we...
- We knew...so we...

## AUDIENCE

- They noticed...so they...
- They knew...so they...



# Reflect on learning



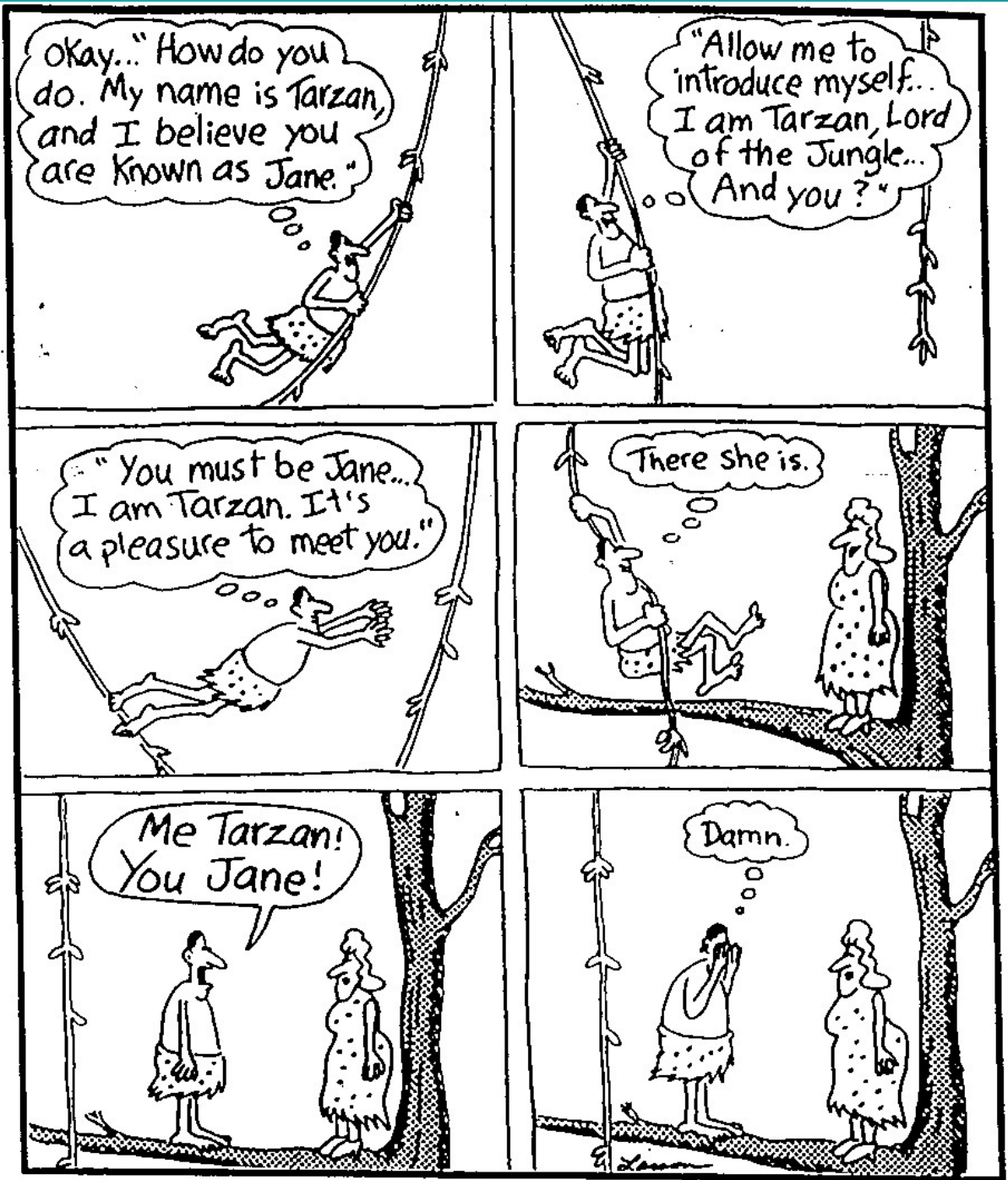
- a) To find a shortcut look for \_\_\_\_\_.
- b) Noticing \_\_\_\_\_ helped me count quickly because \_\_\_\_\_.
- c) Knowing \_\_\_\_\_ comes in handy when counting quickly because \_\_\_\_\_.



# Rehearsal

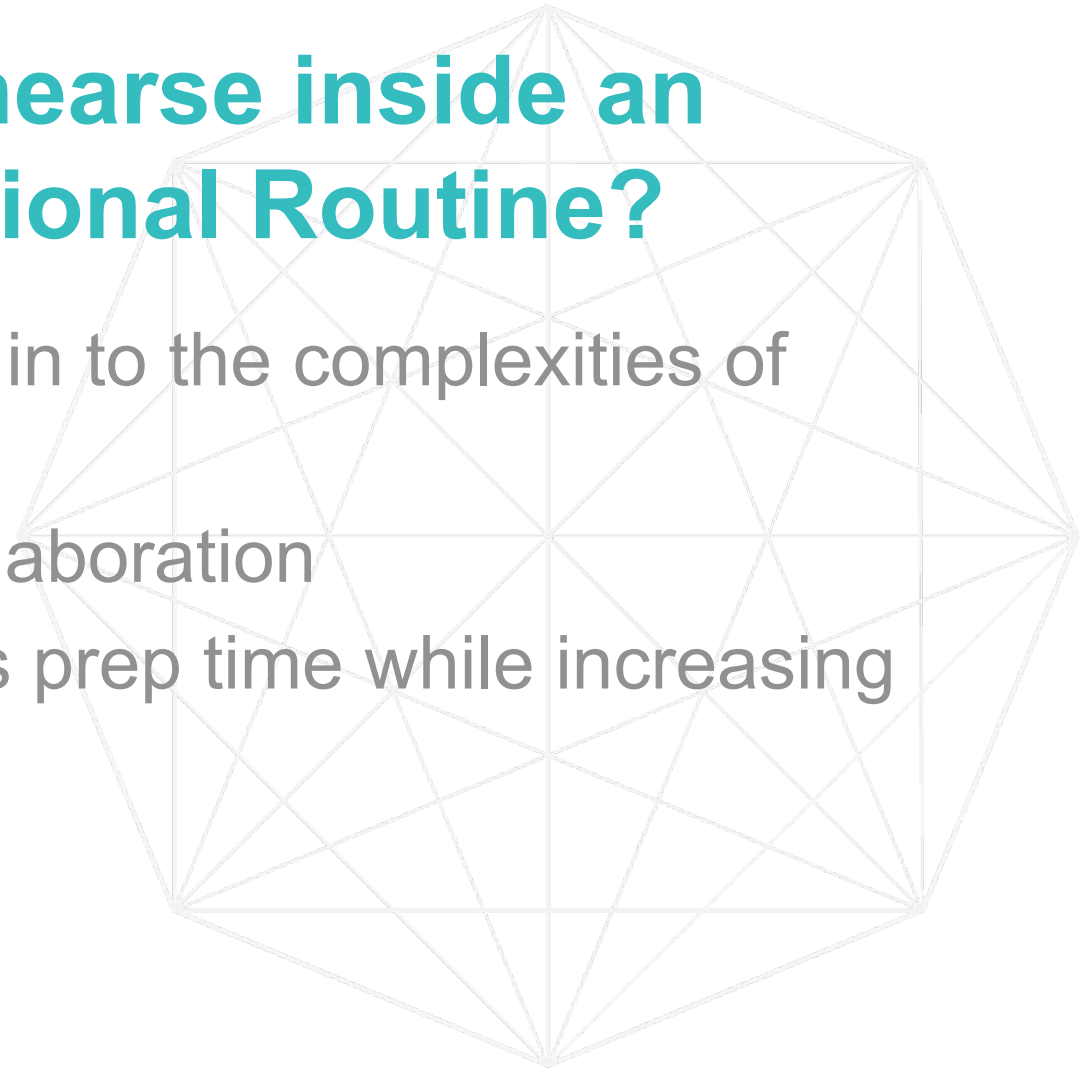
A process for developing teaching practices and muscles

# WHY REHEARSE?



# Why Rehearse inside an Instructional Routine?

- You can drop right in to the complexities of teaching
- Routines invite collaboration
- Decreases coach's prep time while increasing impact



# Rehearsal



Rehearsant – Megan Taylor!

Roles

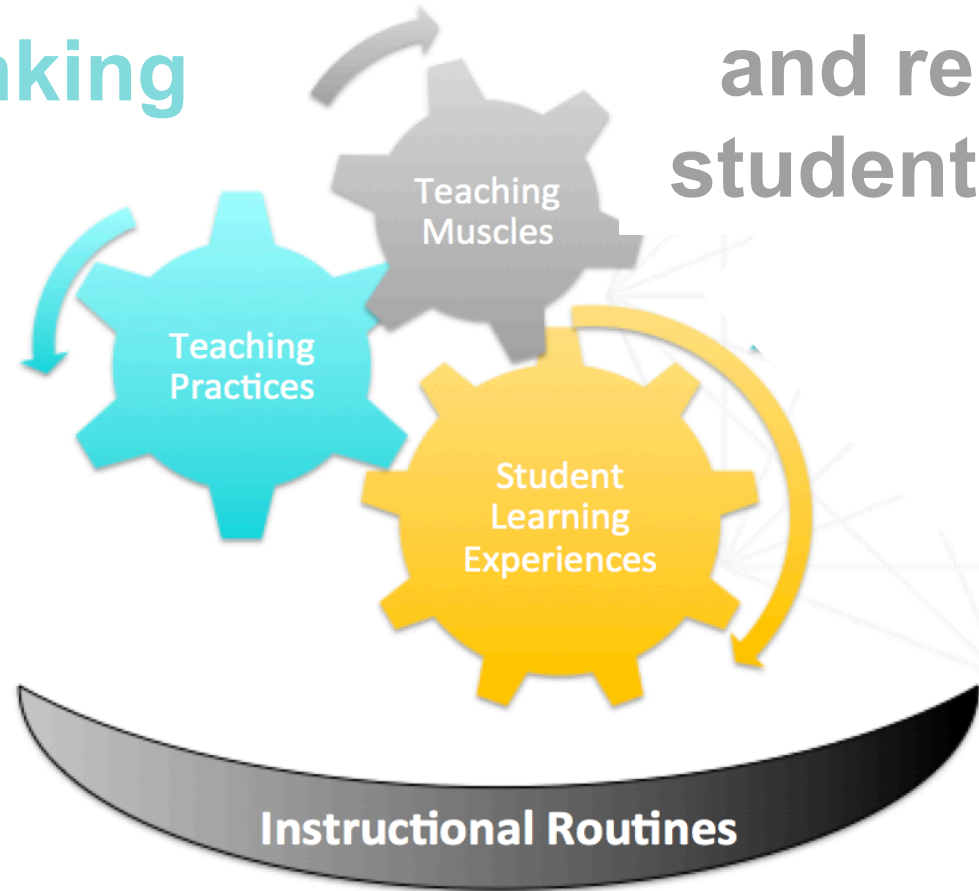


# TEACHING PRACTICE

Elicit and use student thinking

# TEACHING MUSCLES

Make sense of and represent student thinking



**Contemplate then Calculate**

# Where in C then C does the teacher elicit and use student thinking?

Thinking Goal: Building an Avenue of Thinking

**1 Launch the Routine**  
Introduce thinking goal, review routine's steps

**2 Notice**

Individual Think Time



Pairs



Share & Record



**3 Develop Shortcut**

Pairs



**4 Discuss Shortcuts**

Repeat, Rephrase  
Reword, Record

Share: Discuss & Annotate



**5 Reflect on Your Thinking**

Individual Write Time



Pairs

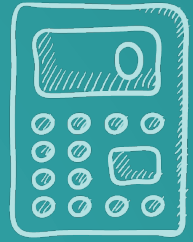


Share & Record





# Contemplate then Calculate



- **WHAT:** Quick count by chunking, changing the form and connecting to math you know.
- **WHY:** To “think like mathematicians”, to use mathematical structure to find shortcuts.

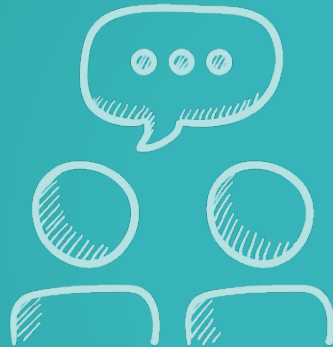




# Contemplate then Calculate



Notice



Find  
calculation  
shortcut

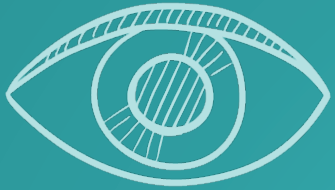


Share &  
study  
shortcut



Reflect on  
learning





What do you notice?

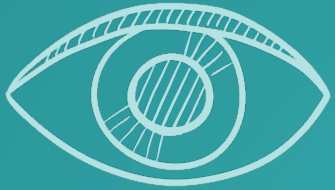


**ASK YOURSELF:**

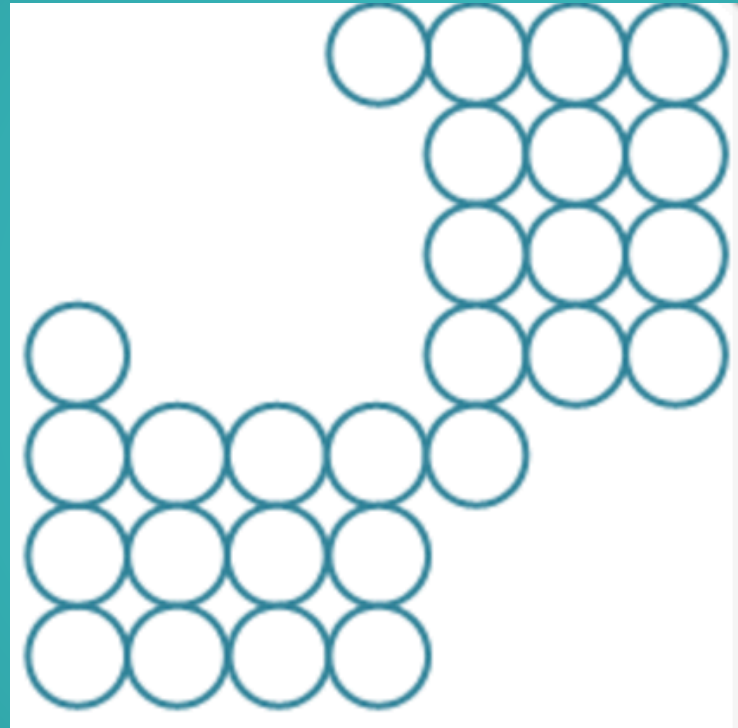
*What might be mathematically important?*



FOSTERING  
**MATH**  
PRACTICES



# What do you notice?

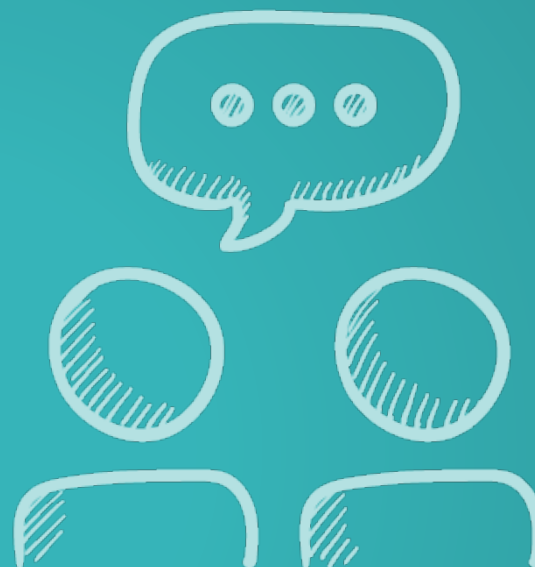


FOSTERING  
**MATH**  
PRACTICES

# Share

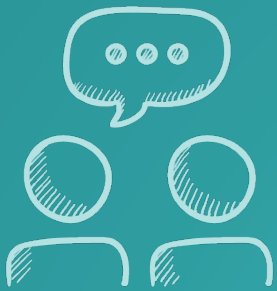


I noticed....



What did you notice?



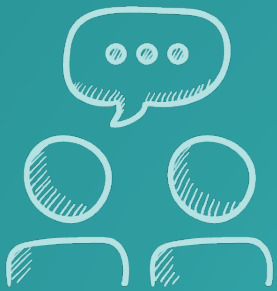


# Find counting shortcut

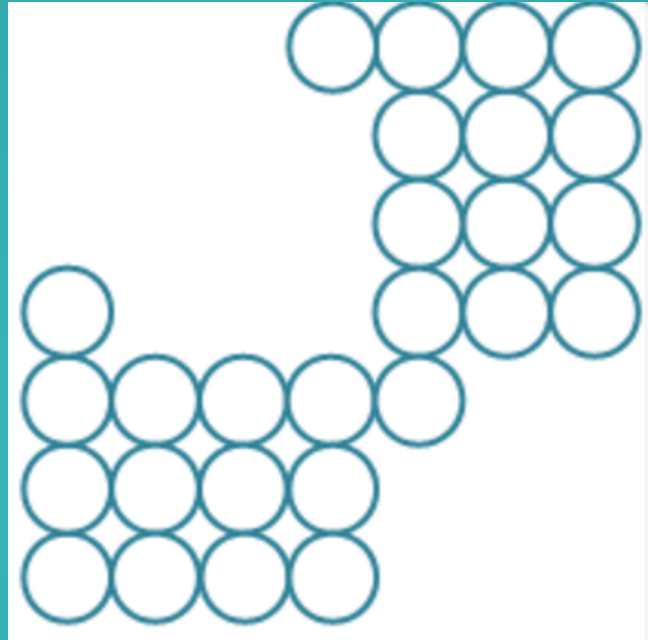


- Find the total number of circles quickly in your head
- Prepare to explain your shortcut using chunk, change, and connect.





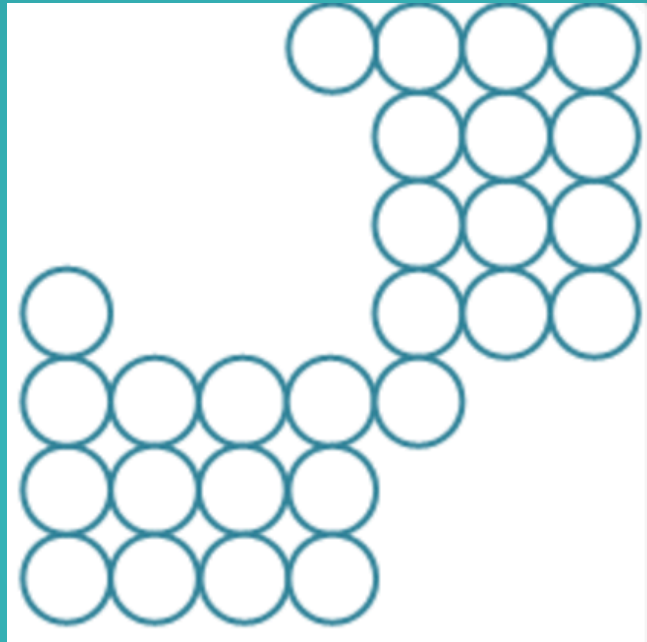
# Find counting shortcut



- Find the total number of circles quickly in your head
- Prepare to explain your shortcut using chunk, change, and connect.



# Share and study shortcuts



## PRESENTER

- We noticed...so we...
- We knew...so we...

## AUDIENCE

- They noticed...so they...
- They knew...so they...



# Reflect on learning



- a) To find a shortcut look for \_\_\_\_\_.
- b) Noticing \_\_\_\_\_ helped me count quickly because \_\_\_\_\_.
- c) Knowing \_\_\_\_\_ comes in handy when counting quickly because \_\_\_\_\_.

# Rehearsal Debrief



What did you notice?

What questions do you have?

# Rehearsal Planner

| Contemplate then Calculate Routine REHEARSAL PRE-PLANNER  |   |  |
|---|---|--|
| Anticipate Student Goal and Anticipate Student Thinking   |   |  |
| <p>Task</p>   | <p>Student Goal: MP 7<br/>Quick count</p> <ul style="list-style-type: none"> <li>- chunking</li> <li>- changing the form</li> <li>- connecting math</li> </ul>  | <p>Possible Mathematical Noticings:</p> <ul style="list-style-type: none"> <li>Circles</li> <li>✓ EXTRA 0's</li> <li>✓ RECTANGLES</li> <li>✓ SQUARES</li> </ul> <p>↓ same size groups<br/>Rows / columns.<br/>✓ SYMMETRY</p> |
| Possible Shortcuts and Annotations  |   |  |
| <p>2 RECTANGLES "chunks"<br/>AND 3 EXTRA 0's<br/>chunking</p>   | <p>two 3 by 3 □s<br/>2x4<br/>10<br/>chunking =</p>  | <p>(3x4 + 0) doubled<br/>PLUS 1 MORE</p> <p>3x5 + 2x4<br/>change the form</p>  |
| Articulate Rehearsal Goal   |   |  |
| <p>Teacher's Rehearsal Goal(s):</p> <p>Eliciting and using student thinking</p>   | <p>In what part(s) of the routine can the teacher work on their goal?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Launch</li> <li><input checked="" type="checkbox"/> Notice sharing + recording notices: <sup>monitor</sup> PAIRS; select.</li> <li><input checked="" type="checkbox"/> Develop Shortcuts monitoring and selecting + sequencing</li> <li><input checked="" type="checkbox"/> Discuss Shortcuts</li> <li><input checked="" type="checkbox"/> Reflect on Thinking monitor / select reflections.</li> </ul> |  |
| Anticipate Teacher Practice   |   |  |
| <p>What will it look/sound like if teacher achieves goal?</p> <p>purposeful selection and sequencing of ideas (e.g. noticings, shortcuts)</p> <p>Monitoring partner TALK</p> <p>Know range of ideas in the room</p> | <p>What missteps might teacher make?</p> <ul style="list-style-type: none"> <li>- not circulating / being positioned to hear pairs</li> <li>- misinterpret student idea</li> </ul>  |  |

# Rehearsal Planner

## Contemplate then Calculate Routine REHEARSAL PLANNER

### Launch

Contemplate then Calculate

- **WHAT:** Contemplate then Calculate, identifying the better way of proceeding to math, any lesson.
- **WHY:** To check for mathematicalness, to use mathematical structure to find solutions.

Ask myself: Check in / Stop if...

N/A

Contemplate then Calculate

Notice  Think  Discuss  Record

Coaching Action:

Teacher suggests move(s)  Coach suggests move(s)  Group suggests moves

### Notice

What do you notice?

**ASK YOURSELF:**  
What might be mathematically important?

Ask myself: Does T have a handle on noticing in the room and ideas about which to share/record?

Check in Stop if... T-P- Before SHARE

```

    graph TD
        A[Check in] --> B[yes]
        A --> C[no]
        B --> D[move on]
        C --> E[REDO if T doesn't feel they have enough noticing.]
    
```

What do you notice?

o T position during 49 share.

### QUICK INTAKE

Share

I noticed  What did you notice?

Coaching Action:

Teacher suggests move(s)  Coach suggests move(s)  Group suggests moves

REDO

# Rehearsal Planner

**Develop Shortcuts**

Find counting shortcut

**INTAKE !!**

Find counting shortcut

Ask myself: Does T know range of shortcuts in Room and have a plan for selecting and sequencing shortcuts?

Check in Stop if...  
 Yes → move on  
 No → **REDO**  
 → suggest to hear more OR **DISCUSS** Select/sequence

Coaching Action:  
 Teacher suggests move(s)  Coach suggests move(s)  Group suggests moves

**Discuss Shortcuts**

Share and study shortcuts

Ask myself: Is T taking over the thinking? Is T ANNOTATING in a way that accurately represents student idea?

Check in Stop if...  
~~TEACHER TAKES OVER~~  
 TEACHER TAKES OVER or MISREPRESENTS student thinking

Coaching Action:  
 Teacher suggests move(s)  Coach suggests move(s)  Group suggests moves PRACTICE ANNOTATION.

**Reflect on Thinking**

Reflect on learning

a) To find a shortcut look for \_\_\_\_\_

b) Noticing \_\_\_\_\_ helped me count quickly because \_\_\_\_\_

c) Knowing \_\_\_\_\_ comes in handy when counting quickly because \_\_\_\_\_

Ask myself: Does T have A sense of RANGE of reflections in The Room And a plan for which to share And Record?

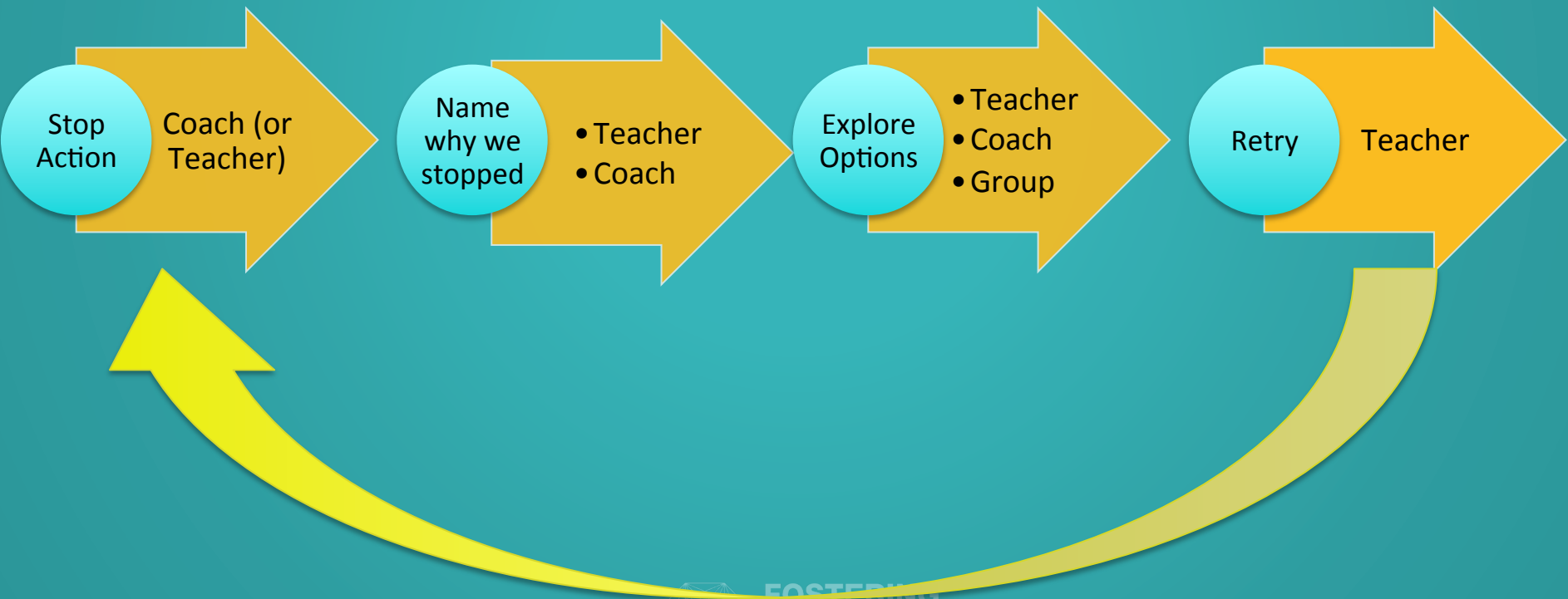
Check in Stop if...  
 yes → move on  
 No → **REDO** && share

Coaching Action:  
 Teacher suggests move(s)  Coach suggests move(s)  Group suggests moves

\*\*

INTAKE \*  
 OF PAPERS  
 && share.

# Rehearsal Flow







# Resources

More on routines, rehearsals, plus slides and other resources from this session.

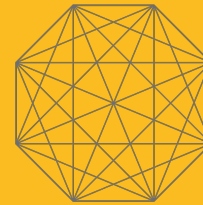
# For More on Instructional Routines

Reach Out

GraceKelemanik@gmail.com

Log On

[www.fosteringmathpractices.com](http://www.fosteringmathpractices.com)



**FOSTERING  
MATH  
PRACTICES**

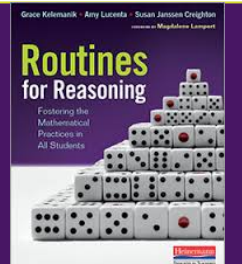
Join the Conversation

#fosteringMPs #CthenC



Get the Book

[www.heinemann.com](http://www.heinemann.com)



# For more on rehearsals and routines

Tedd.org

tedd.org/activities/leading-rehearsals/

Teacher Education by Design

The Design Teacher Education Content Areas Community Blog About

## Leading Rehearsals

1 Introduce

2 Prepare

4 Analyze

About This Activity

### ABOUT THIS ACTIVITY

Since teaching involves simultaneously working with P-12 students, maintaining students' engagement in disciplinary ideas, and maintaining productive relationships among students, *rehearsing* teaching needs to involve practicing managing all of those elements simultaneously. Rehearsals are an opportunity for teachers and teacher educators to figure out how an instructional episode may play out and to use what they learned in analyzing and unpacking practice to aim towards productive enactment of their instructional plan. Rehearsals occur with a group of novice teachers and at least one teacher educator present.

Read the Rehearsal Primer for more information about what rehearsal looks like

# Session Evaluation

- Please take the time to me give feedback on my session, it helps my planning for future sessions and it helps the conference committee determine your needs and wants.
- Use the EduPlus app by downloading it from the App Store or Google Play.
- Or go to <http://e.confplusapp.com/>
- Or ask the session presider for the paper version.
- At the end of the conference, don't forget to do the conference evaluation for a chance to win free registration and on-grounds housing for next year.

2017 CMC North Conference Going Mobile with EduPlus

# E+eduplus

*Connect Conferences in Education*

**Go to App Store or Google Play Market and search "eduplus" or simply scan the QR Code:**

Available on the  
**App Store**



ANDROID APP ON  
**Google play**

