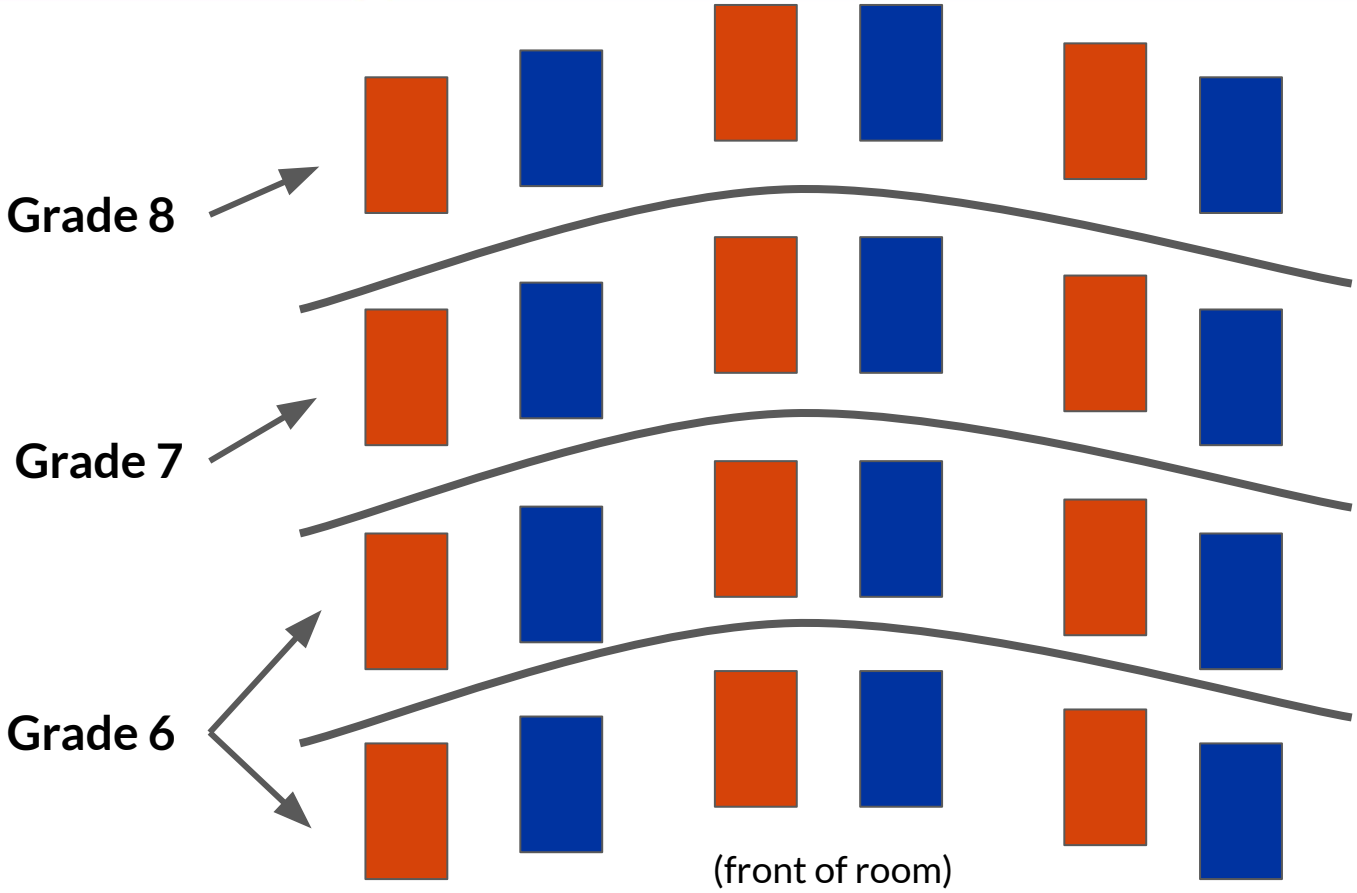
Module 2: Explicit Attention to Concepts

February 22, 2020

Boise State University

This material is based upon work supported by the National Science Foundation under Grant No. 1907840. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Please sit with a Grade Level today.



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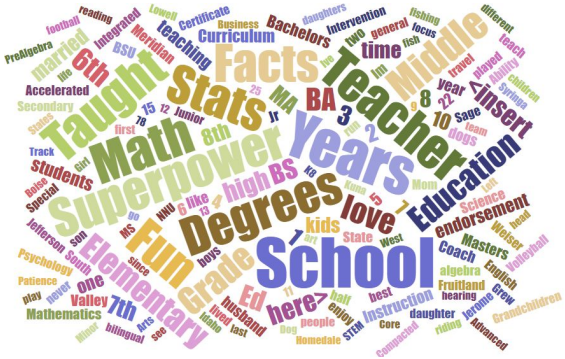
Goals for Today

1. **Community** - keep building our teacher-researcher alliance
2. **Math** - have fun doing a problem solving activity
3. **Research** - continue unpacking EAC, rehearse 4 of the 8 routines
4. **Teaching** - plan to try EAC routines in our classrooms

main goal: build a shared sense of how to try "Explicit Attention to Concepts" strategies

Welcome Back

(Who are we?)



(What's coming up?)

ROOT Website

(What's already happened?)

Module 1 Slides

Who’s the Dwight at YOUR table?

2019-20 Participation for ROOT Teachers

See handout "Checklist for ROOT Payments, 2019-20"

- ✓ Application & Selection
- ▣ Paperwork (e.g., W9, Confirmation)
- ▣ Baseline Data Collection — $450 stipend
  - Teaching Context Survey
  - Video / Lesson Submissions
- ▣ Spring Modules — $300 stipend
  - ✓ Module #1 : Introduction to ROOT (Feb 1)
  - ✓ **Module #2 : EAC in Focus (Feb 22)**
  - Module #3 : SOS in Focus (Mar 14)
- □ Summer Institute (June 22-25) — $750 stipend

Baseline Data

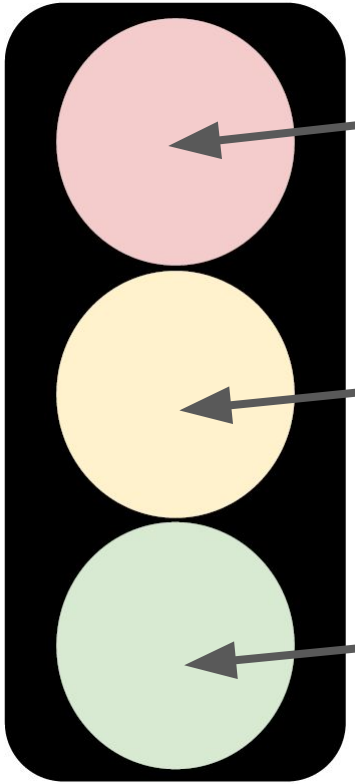
- Teaching Context Survey (distributed via email)
  - School/Course Structure
  - External Instructional Influences
  - Self-Efficacy to Teach Problem Solving and Modeling
  - EAC & SOS Priorities
  - Demographics
- Classroom Video
  - 3 Lesson Submissions (swivl video + google form)
  - Parent/Guardian Permission Forms
- Spring 2019 and 2020 ISAT scores for your students
  - NOT teacher's responsibility (stipends provided to schools/district administrators)

Classroom Implementation Reflection


Busted!

Implementation Stoplight

1. Write your **Teacher ID** (e.g., cactus).
2. Write the **strategy and routine** (e.g. EAC1.B.) you tried.
3. Complete the reflection form.
4. As time allows, debrief your responses at your table.

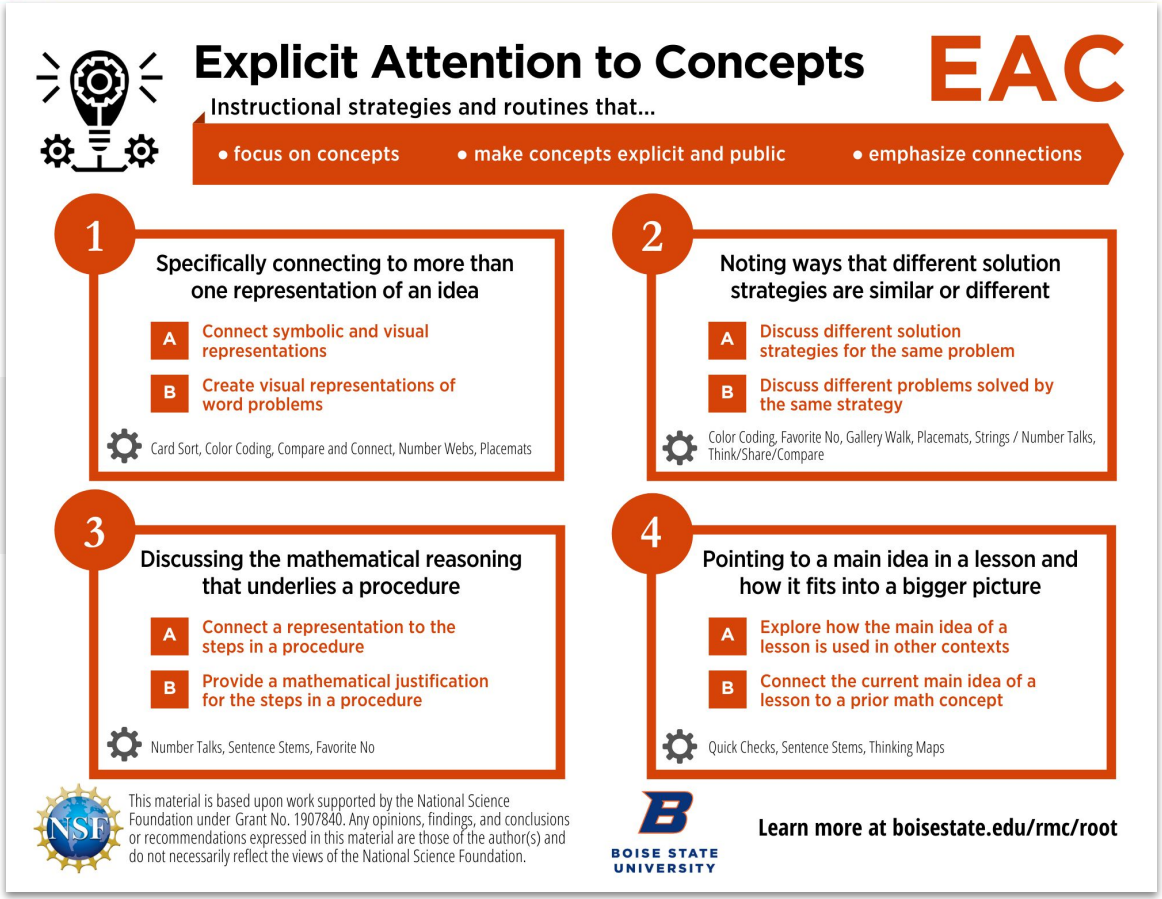


What was **DIFFICULT** about implementing your selected strategy and routine?

What **SUPPORT** could the ROOT team provide to teachers implementing this strategy and routine?

What **WENT WELL** in implementing your selected strategy and routine?

EAC in Focus


Explicit Attention to Concepts
EAC
Instructional strategies and routines that...
• focus on concepts
• make concepts explicit and public
• emphasize connections
1
Specifically connecting to more than one representation of an idea
A Connect symbolic and visual representations
B Create visual representations of word problems
Card Sort, Color Coding, Compare and Connect, Number Webs, Placemats
2
Noting ways that different solution strategies are similar or different
A Discuss different solution strategies for the same problem
B Discuss different problems solved by the same strategy
Color Coding, Favorite No, Gallery Walk, Placemats, Strings / Number Talks, Think/Share/Compare
3
Discussing the mathematical reasoning that underlies a procedure
A Connect a representation to the steps in a procedure
B Provide a mathematical justification for the steps in a procedure
Number Talks, Sentence Stems, Favorite No
4
Pointing to a main idea in a lesson and how it fits into a bigger picture
A Explore how the main idea of a lesson is used in other contexts
B Connect the current main idea of a lesson to a prior math concept
Quick Checks, Sentence Stems, Thinking Maps
NSF
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Learn more at boisestate.edu/rmc/root

Difference of Squares

(A Problem Solving Context for Grades 6-8)

Big Important Concept

Multiplication corresponds to rectangles.

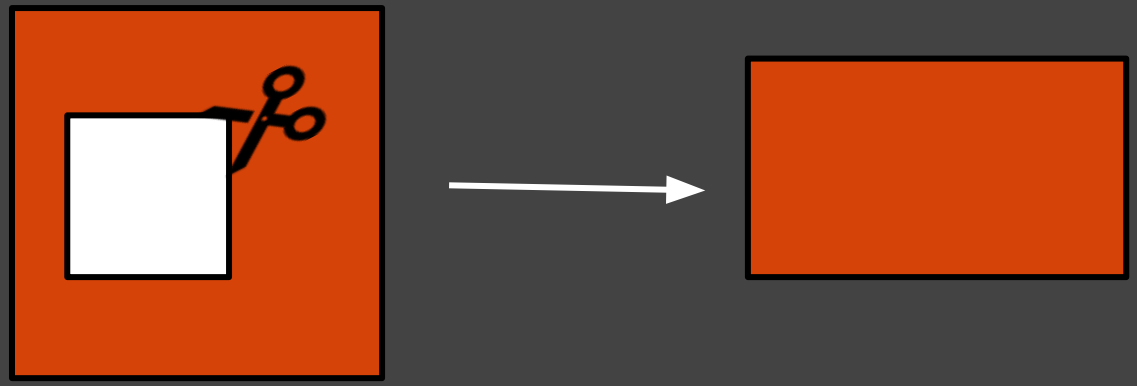
$$432 \times 89 = 400 \times 80 + 400 \times 9 + 30 \times 80 + 30 \times 9 + 2 \times 80 + 2 \times 9$$

Task

Show how to make the “difference of squares” shaded area into a **rectangle**. Write an equation that matches your shapes.

Handout

(let’s try the problems)

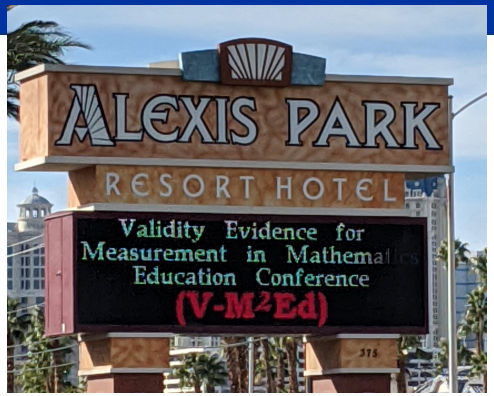


bit.ly/rootmod2

Related Standards

- 6.G.A.1 Find area of polygons by **composing into rectangles**.
- 6.EE.A.3 Apply properties to generate **equivalent expressions**.
- 6.EE.B.6 Use variables to represent numbers and **write expressions**.
- 7.EE.A.2 **Rewriting an expression** can shed light on the problem.
- MP 7 Look for and make use of **structure**.
- MP 8 Look for and express **regularity in repeated reasoning.**
- HSA.SSE.B.3 Produce an equivalent form of an expression to reveal and explain...

Teaching Rehearsals: Round 1



Fraction Multiplication

(A Problem Solving Context for Grades 6-8)

What is the answer to the math problem?

What are the steps to solve the math problem?

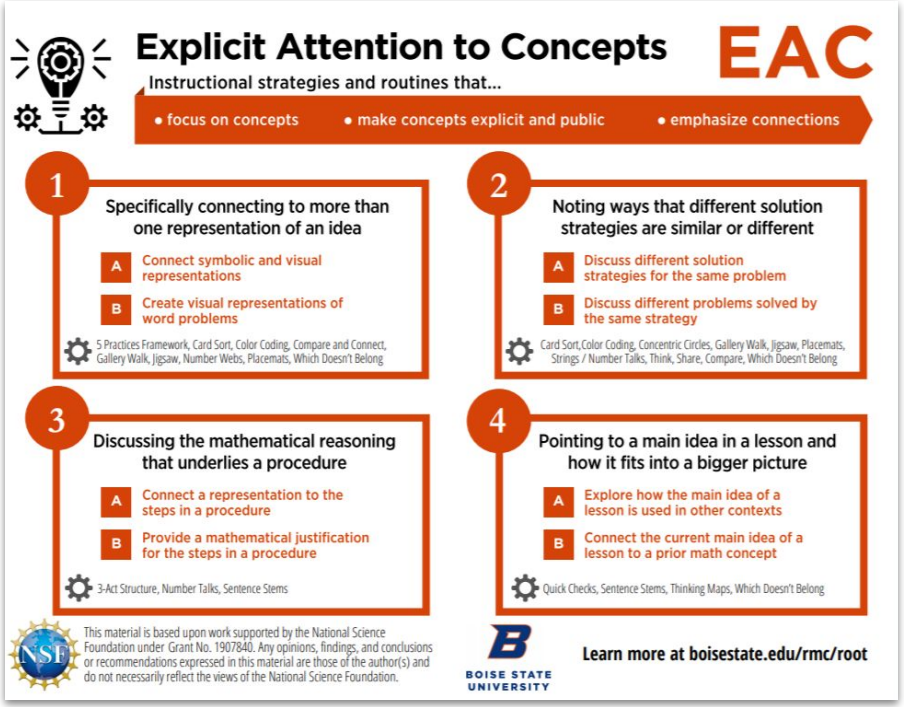
Where is each ~~number~~ digit in the math problem and answer represented - in the model?

$$\frac{3}{4} \times \frac{2}{2} =$$

Classroom Video 1

Watch two clips from a classroom lesson.

- Look for and identify EAC **features**, **strategies**, and **routines**.



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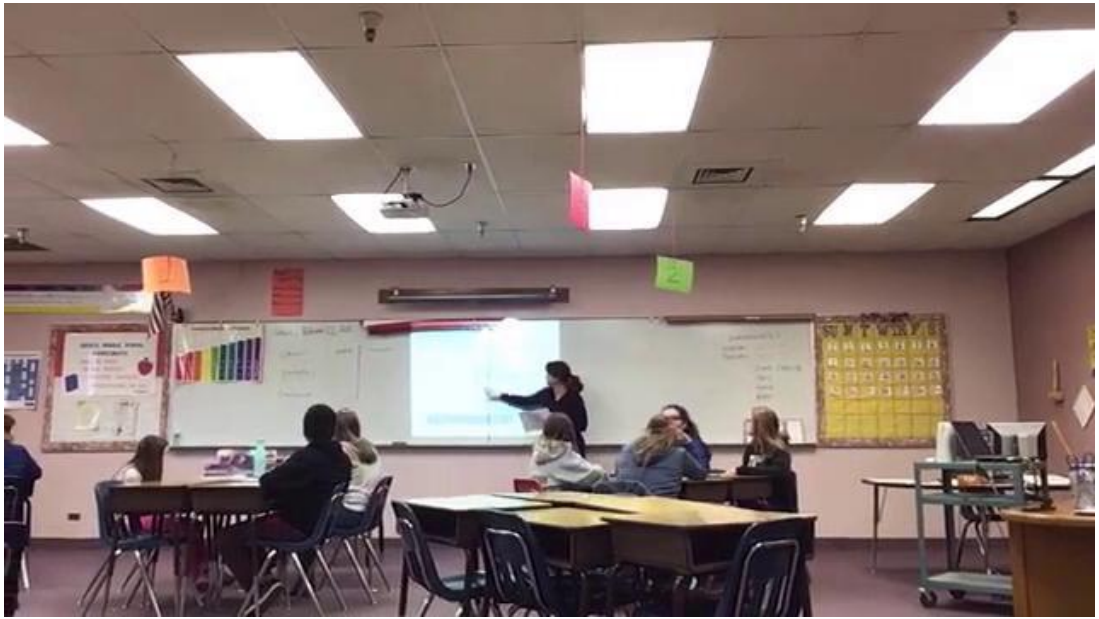

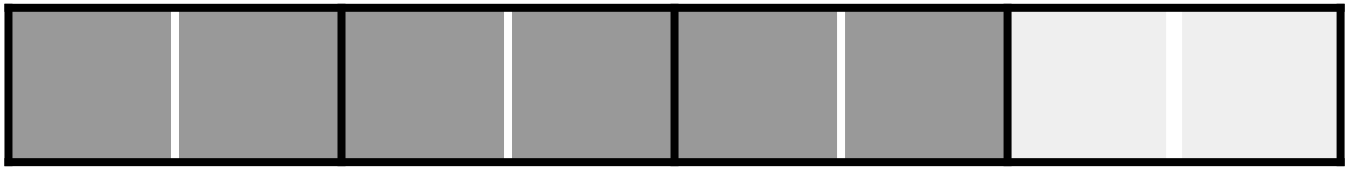

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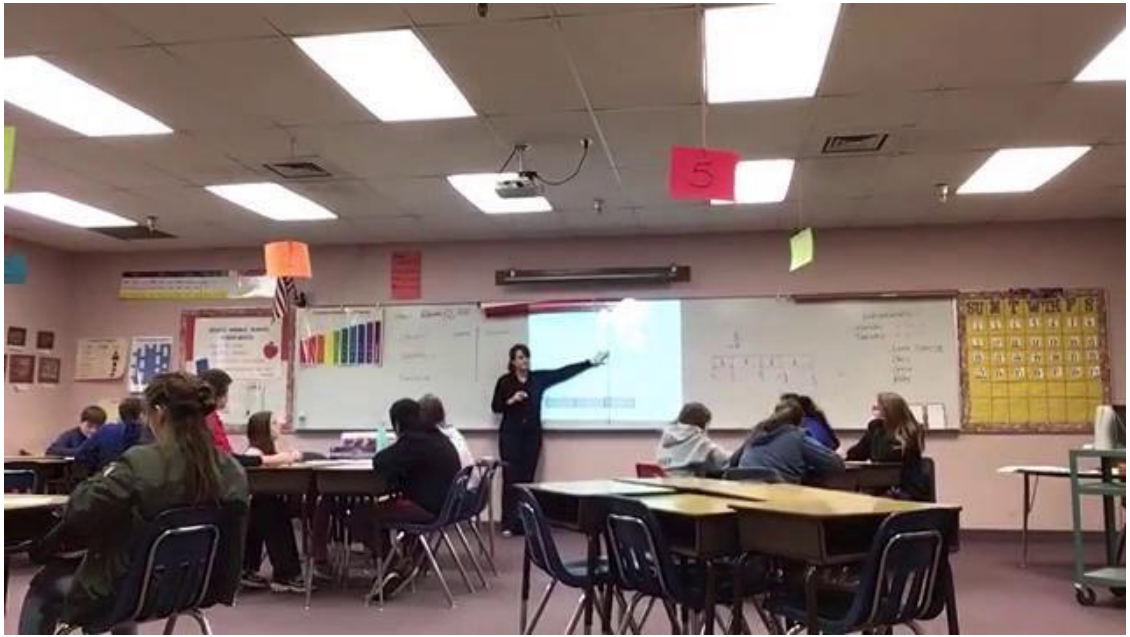


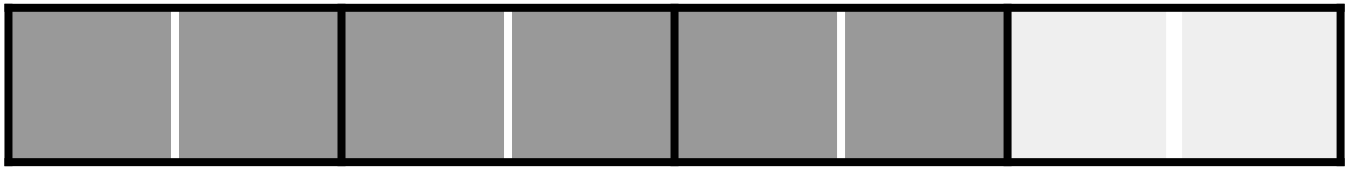
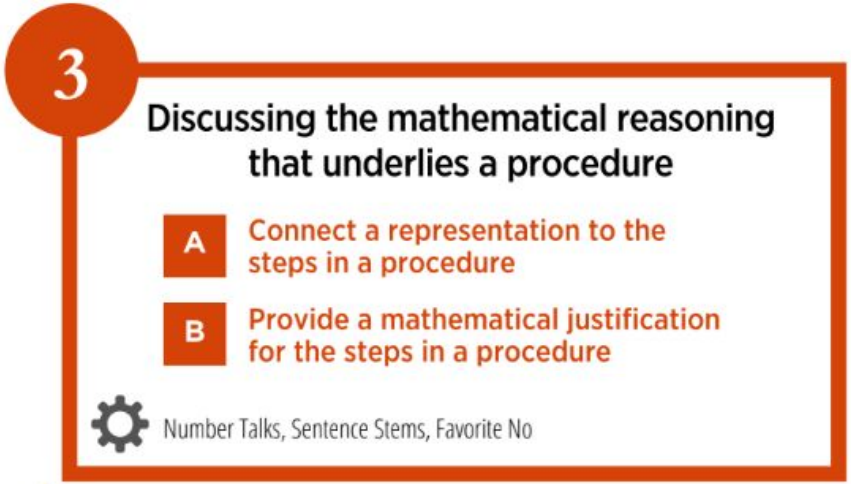


Table Debrief

1. What strategies, and routines did you identify?
2. What features were explicit?

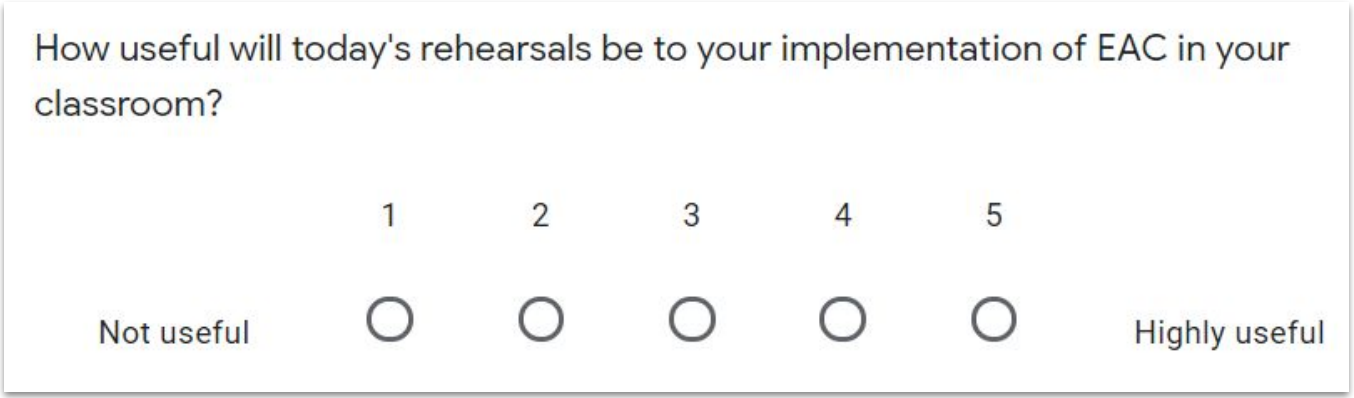
EAC Strategy 3



Rehearsals

Rehearsals provide space for teachers to think through and enact how an instructional episode may play out. The intent is to use what is learned through analysis of practice towards productive enactment of an instructional routine.

Opportunity for feedback at the end of the day



Rehearsal Process

Plan: Map out a task and series of steps to implement a grade-level mini-lesson

Teach: Pair up with **a different colored grade level table group**

- **Blue** teaches their lesson (10 mins), Orange role-plays as students

Reflect/modify

- Each table reflect on/modify your lesson (5 mins)

Swap

- **Orange** teaches their EAC lesson (10 mins)

Debrief

- Reflect upon the process (5 mins)

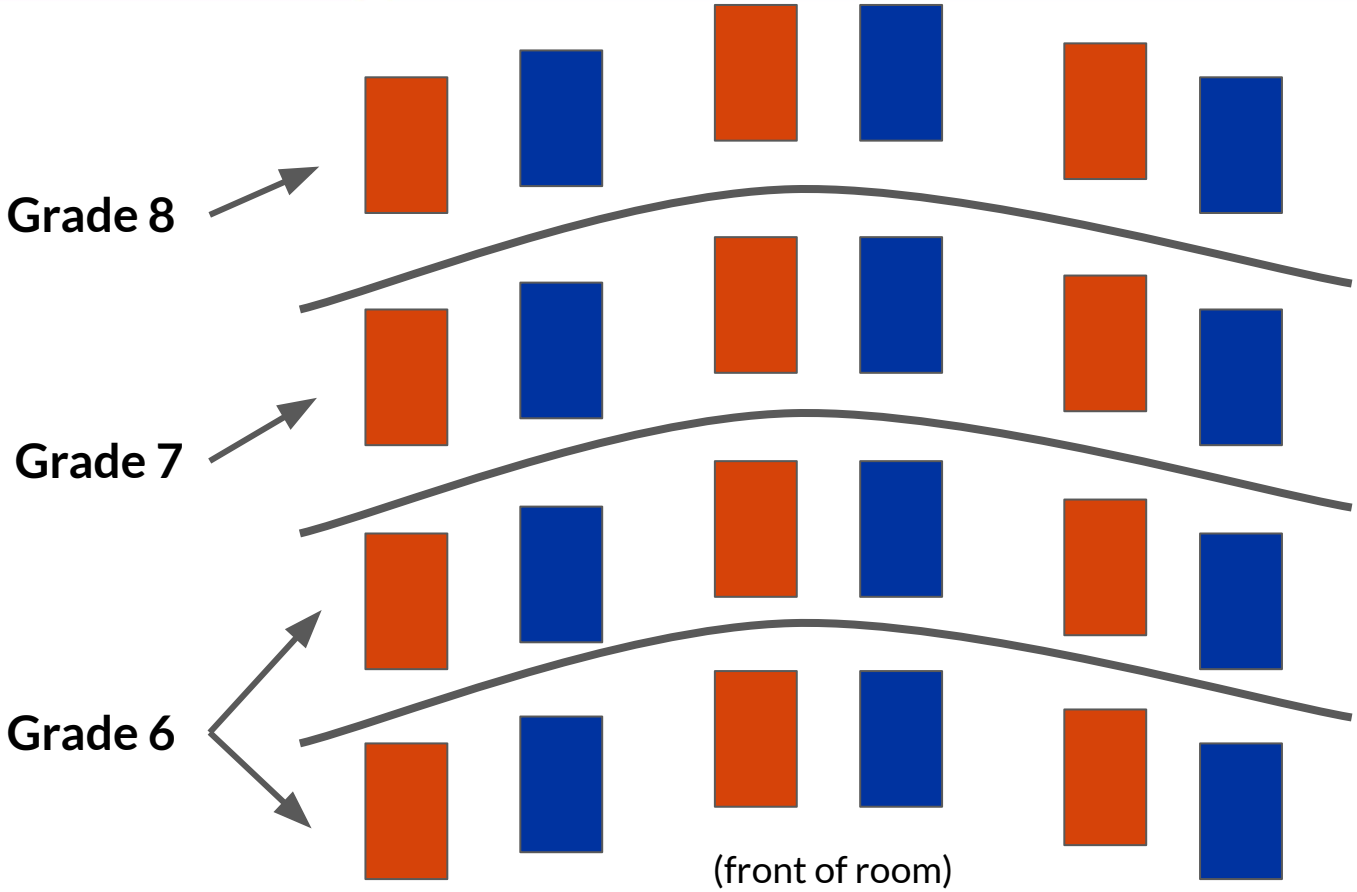
Plan

1. **Map out a task and series of steps** to implement a **grade-level appropriate** mini-lesson (~10 mins) using an EAC routine
2. Select a volunteer from your group who will teach the lesson.

Lesson Ideas

- Modify the task but keep the implementation similar
- Keep the task but modify the implementation
- Modify the task and implementation

Orange table pair up with a blue table - same grade level



Teach

1. **Classroom table:** Pair up with **a different colored grade level table group**
   a. **Blue** teaches their EAC lesson (10 mins)
   b. Discuss what worked and how to modify (3 mins)
2. Return to **planning table**

Students, your job is to be very cooperative! You are not trying to "stump the teacher" by giving confusing answers or acting out. This is an opportunity for you to anticipate how students might respond and see how teachers have to grapple with these responses in the moment.

Reflect / Revise

Return to **planning table** to reflect on/modify your lesson (5 mins)

Break

Swap

Return to your **classroom table**

- **Orange** teaches their EAC lesson (10 mins)
- Discuss what worked and how to modify (3 mins)

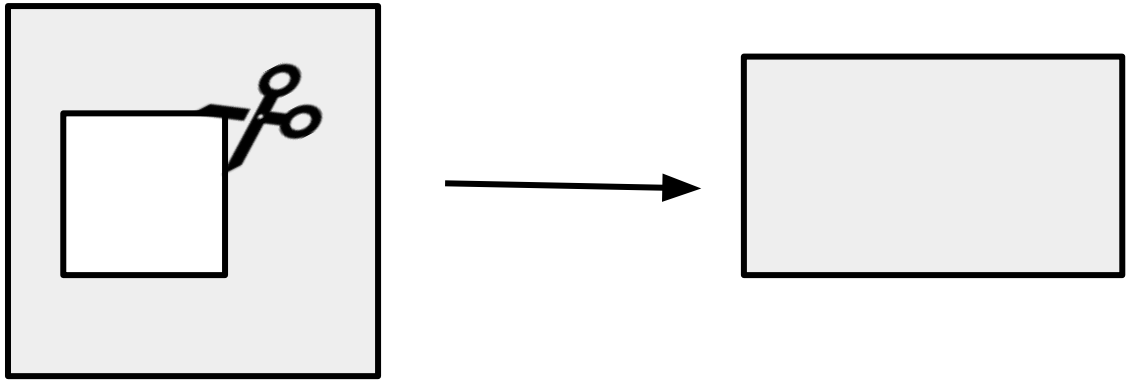
Reflect / Revise

Return to **planning table**

- Reflect upon the process (5 mins)

Teaching Rehearsals: Round 2

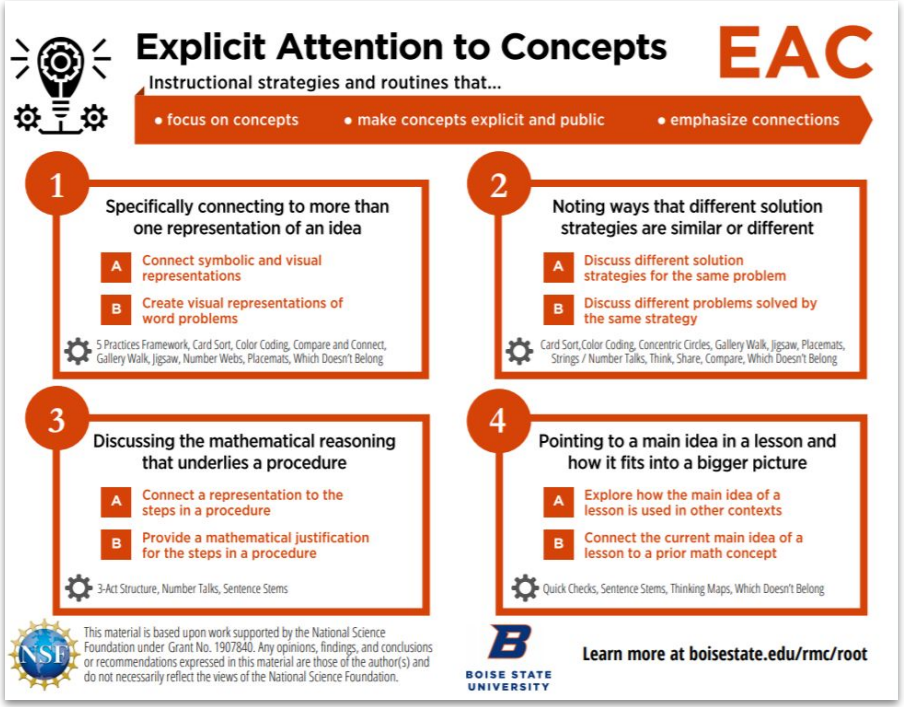
Differences of Squares

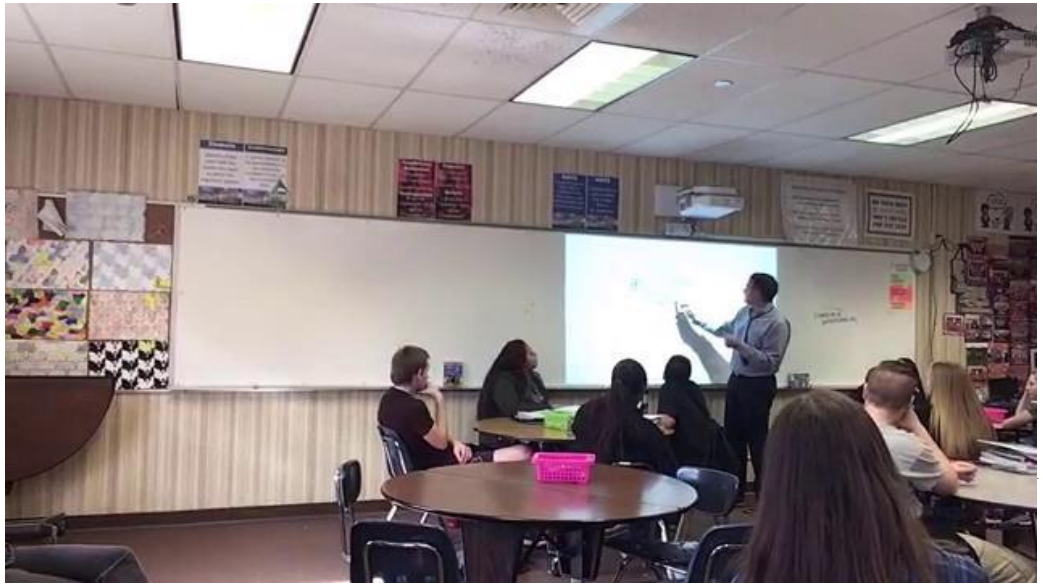


Classroom Video 2

Watch two clips from a classroom lesson.

Look for and identify EAC **features**, **strategies** and **routines**.



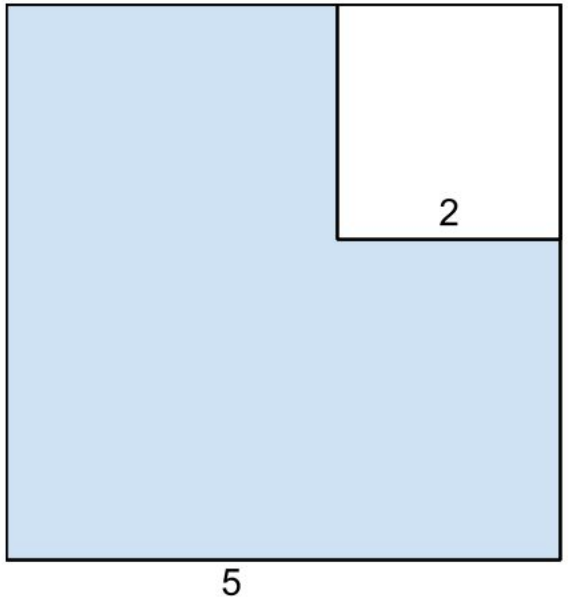


Introducing the Big Idea

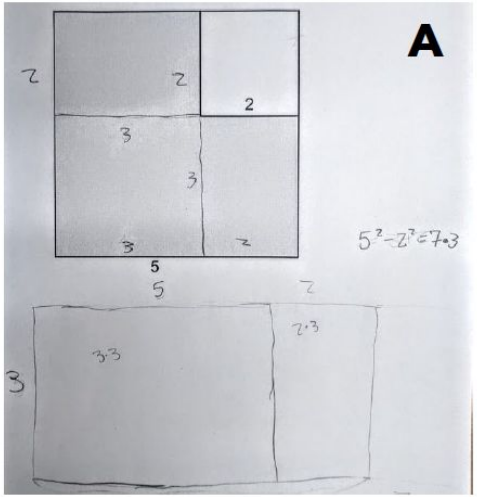
$$432 \times 89 = 400 \times 80 + 400 \times 9 + 30 \times 80 + 30 \times 9 + 2 \times 80 + 2 \times 9$$

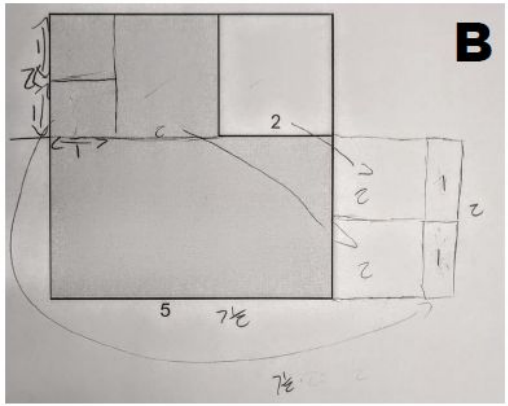
Launching Task 1

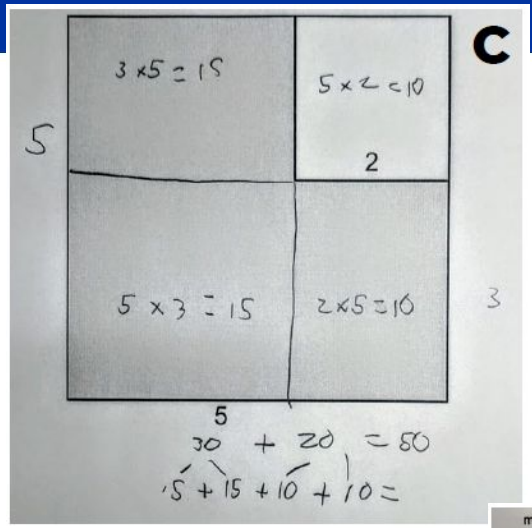
Show how to make the “difference of squares” shaded area into a **rectangle**. Write an equation that matches your shapes.

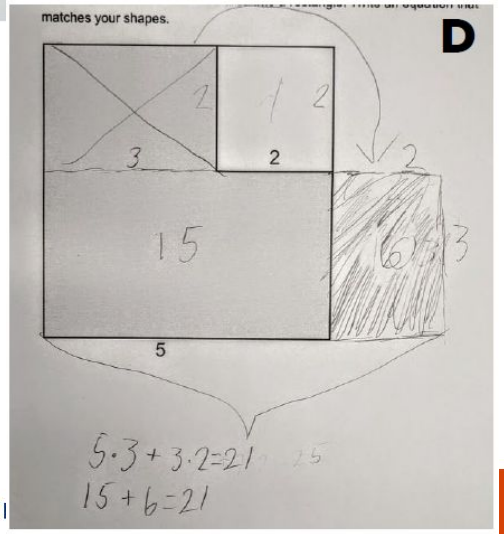


Sample Student Work



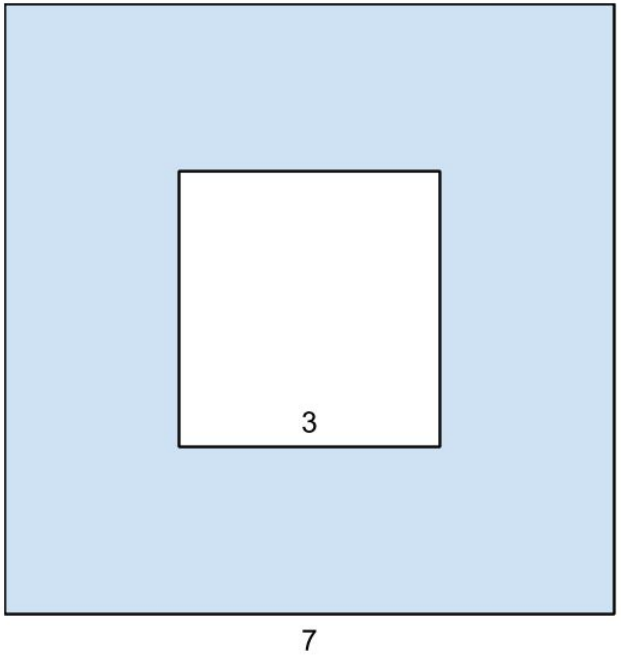


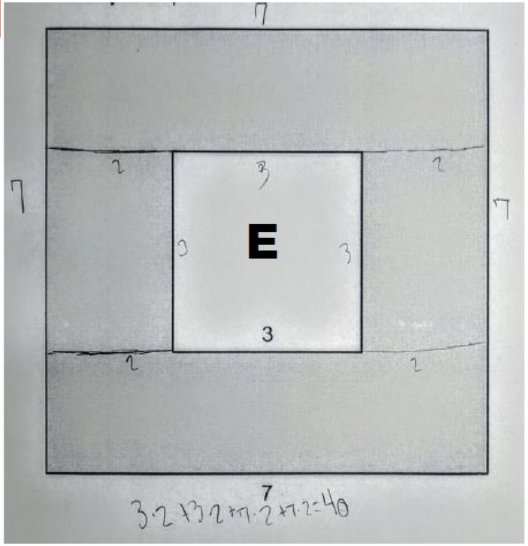


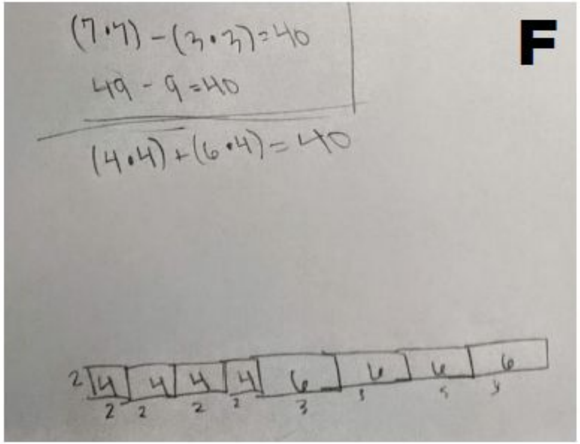


Launching Task 2

Show how to make the shaded “difference of squares” area into a **rectangle**. Write an equation that matches your shapes.







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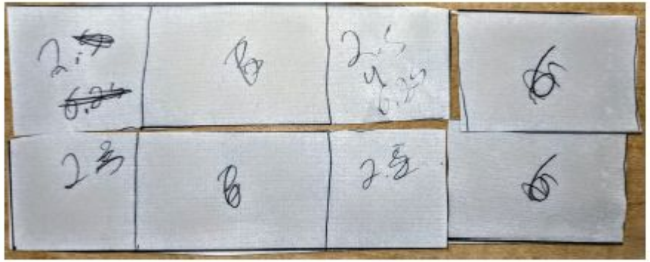
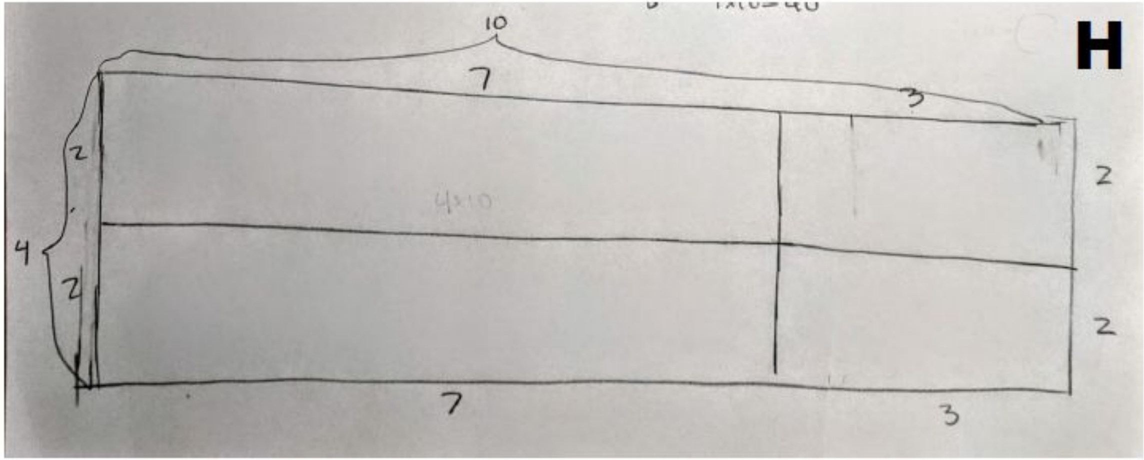
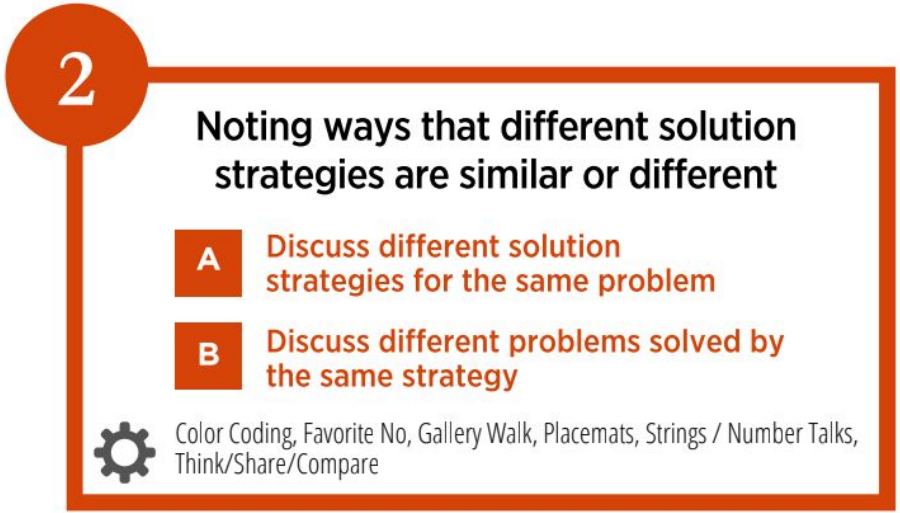




Debrief

1. What EAC features, strategies, and routines did you see?
2. Based on the student work, how might you lead a discussion with these students?

EAC Strategy 2



Plan

1. Select a **math learning goal**.
2. Choose routine **EAC.2.A** or **EAC.2.B** to try
3. Choose **1 or 2 student work samples**
4. Plan for leading a discussion of the student work
5. Select one person from your group to teach the lesson

Lesson Ideas

- Tasks 3/4
- Shape/Number Connections
- Expressions and equations
- Generalizing

Teach

1. **Classroom table:** Pair up with **a different colored grade level table group**
   a. **Blue** teaches their EAC lesson (10 mins)
   b. Discuss what worked and how to modify
2. Return to **planning table**

Students, your job is to be very cooperative! You are not trying to "stump the teacher" by giving confusing answers or acting out. This is an opportunity for you to anticipate how students might respond and see how teachers have to grapple with these responses in the moment.

Reflect / Revise

Return to **planning table** to reflect on/modify your lesson (3 mins)

Blue - What could you have done to get at even deeper connections?

Orange - Try to make the learning goal different from what Blue chose.

Swap

Return to your **classroom table**

- **Orange** teaches their EAC lesson (10 mins)
- Discuss what worked and how to modify

Announcements

Announcements

- Hiring for next year
- Next time
  - SOS with Ramey & Lindsey's help

Implementation & Reflection

Implementation & Reflection

Plan for Implementation

- Pick an **EAC routine** to implement in your classroom before the next session
  - e.g. EAC 1.B
- Try it in your classroom before the next session, be prepared to discuss how it went

Reflection/Feedback

Please submit this google form

bit.ly/mod2root

This Year's Activities

- ✓ Hiring
- ✓ Recruitment
- ▣ Red Tape
- ▣ Baseline Data Collection — $450 stipend
  - Teaching Context Survey
  - Video / Lesson Submissions
  - ISAT scores
- ✓ Module #1 : Introduction to ROOT (Feb 1) — $100 stipend
- ✓ Module #2 : EAC in Focus (Feb 22) — $100 stipend
- □ **Module #3 : SOS in Focus (Mar 14)** — $100 stipend
- □ Summer Institute (June 22-25) — $750 stipend