



# Teaching in the moment: Making decisions that elicit and use student thinking

Amy Lucenta



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

@AmyLucenta  
#FosteringMPs  
#NCTMSD2019

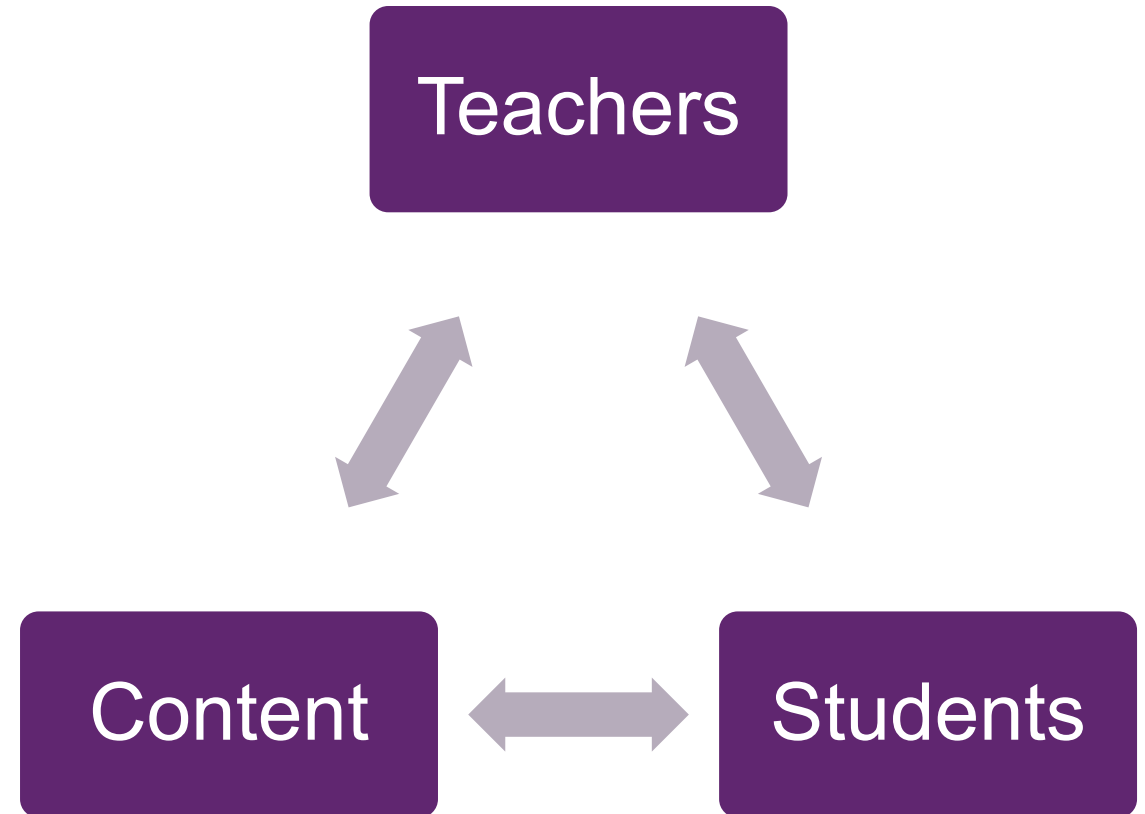
# How we will spend our time..

- A Bit about Instructional Routines
- Experience Connecting Representations
- Analyze video for decisions in the moment

# Instructional Routines

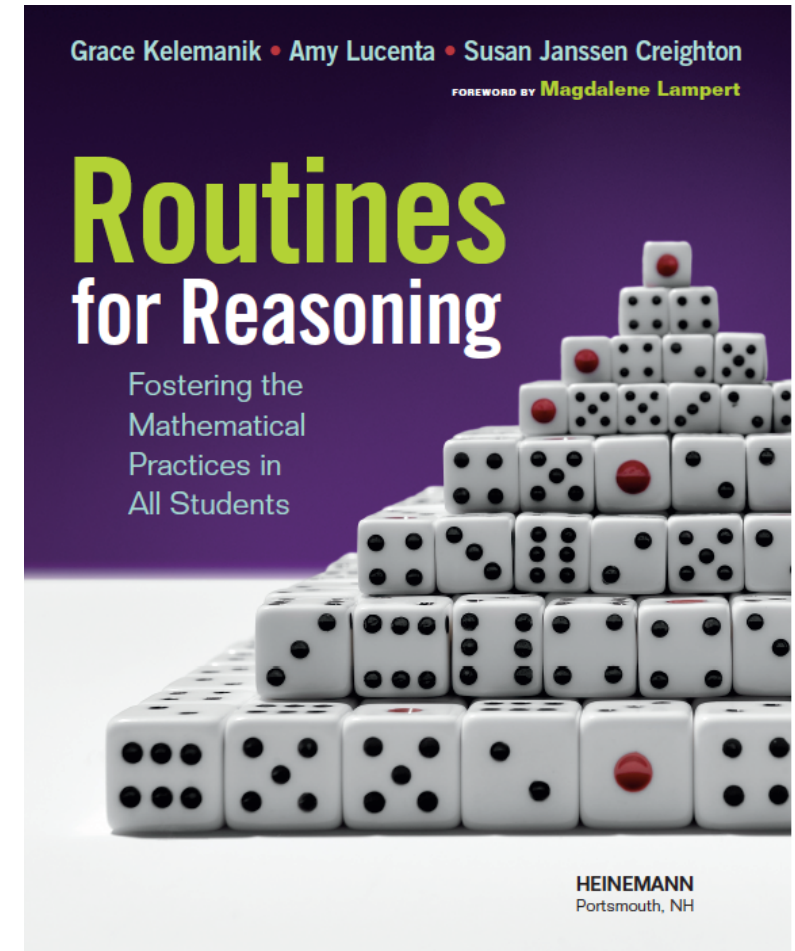
"Designs for  
interaction  
that organize  
classroom activities"

– Magdalene Lampert,  
NCSM 2015



# Instructional Routines that Develop Mathematical Practices

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

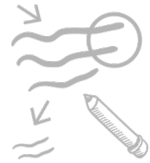




# 4 Essential Instructional Strategies that keep the focus on mathematical thinking while providing access for ALL learners...routinely



Ask-yourself questions



Annotation

I noticed...so I knew...  
I saw...so I looked for...  
... Connects to ... because

Sentence frames and starters



The Four Rs – repeat, rephrase,  
reword, record

# 4 Essential Instructional Strategies

An added bonus – support teachers in the moment



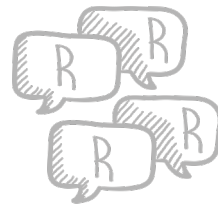
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# Connecting Representations



1

**Launch  
Routine**



**THINKING GOAL**  
**Reasoning structurally**

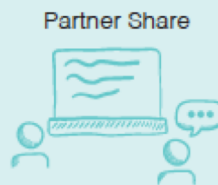
2

**Make  
Connections**



3

**Share and  
Study  
Connections**



Share, Discuss, & Annotate



4

**Create  
Representations**

Individual Think Time



Pairs



Share, Discuss, & Annotate



5

**Reflect  
on Your  
Thinking**

Individual Write Time



Pairs



Share & Record

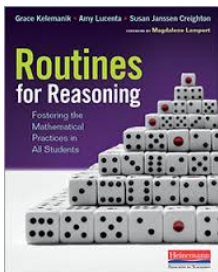


Routines for Reasoning  
Kelemanik, Lucenta, & Creighton

# Connecting Representations

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An Instructional Routine to Develop  
ALL Students' Structural Thinking



Routines for Reasoning  
Kelemanik, Lucenta, & Creighton

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# Connecting Representations



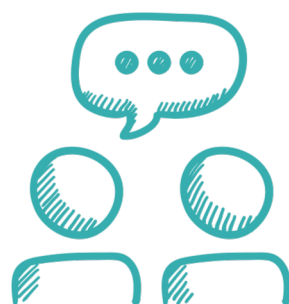
**WHAT:** Match visuals to problem situations by **chunking** and **connecting** to math you know

**WHY:** To “think like mathematicians”, to use mathematical *structure* to match two different representations.

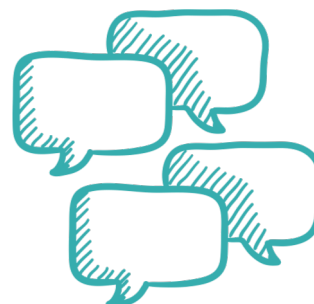
# Connecting Representations



Think



Make  
connections



Share &  
study  
connections



Create  
representation



Reflect on  
learning



# Think



## Ask yourself...

What part of the *visual* will help me connect to a chunk of the *problem situation*?

What about the *problem situation* will help me connect to the *visual*?



# Make Connections



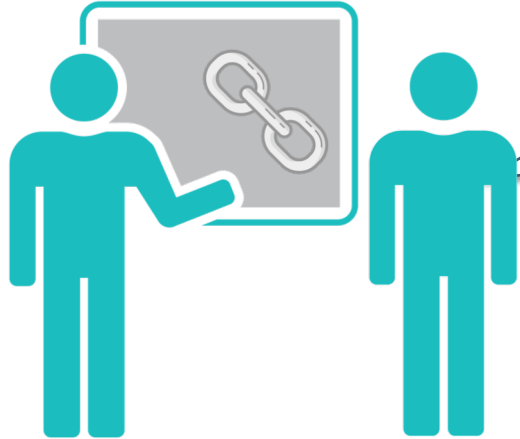
**“I saw... so I connected...”**

**“... connects to ... because...”**



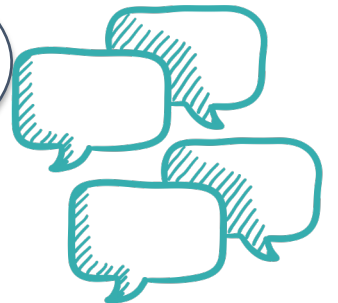


# Share and Study Connections



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

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



# Create a Representation



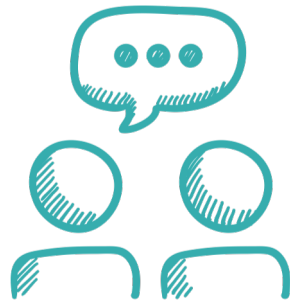
*THINK*

Ask yourself...

What do you notice about this visual?

How can you chunk this visual  
into pieces you can describe?

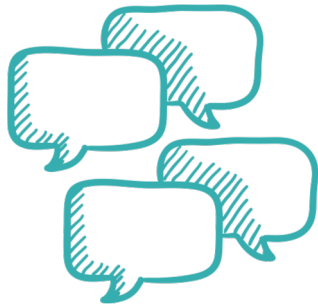
# Create a Representation



*PAIR*

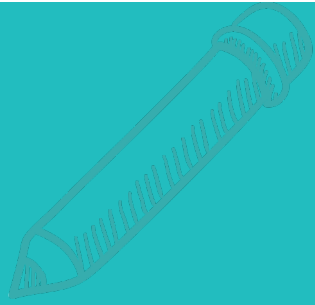
Share your interpretations of the visual.  
Together, create a matching problem situation

# Create a Representation

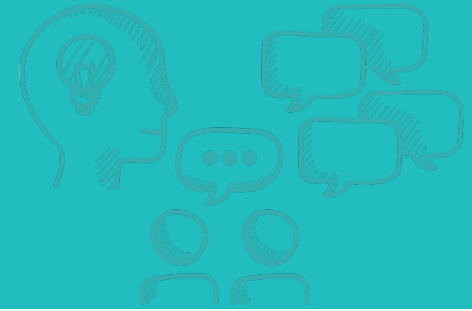


*SHARE*

They noticed.....so they  
When they saw....it made them think of....so they...

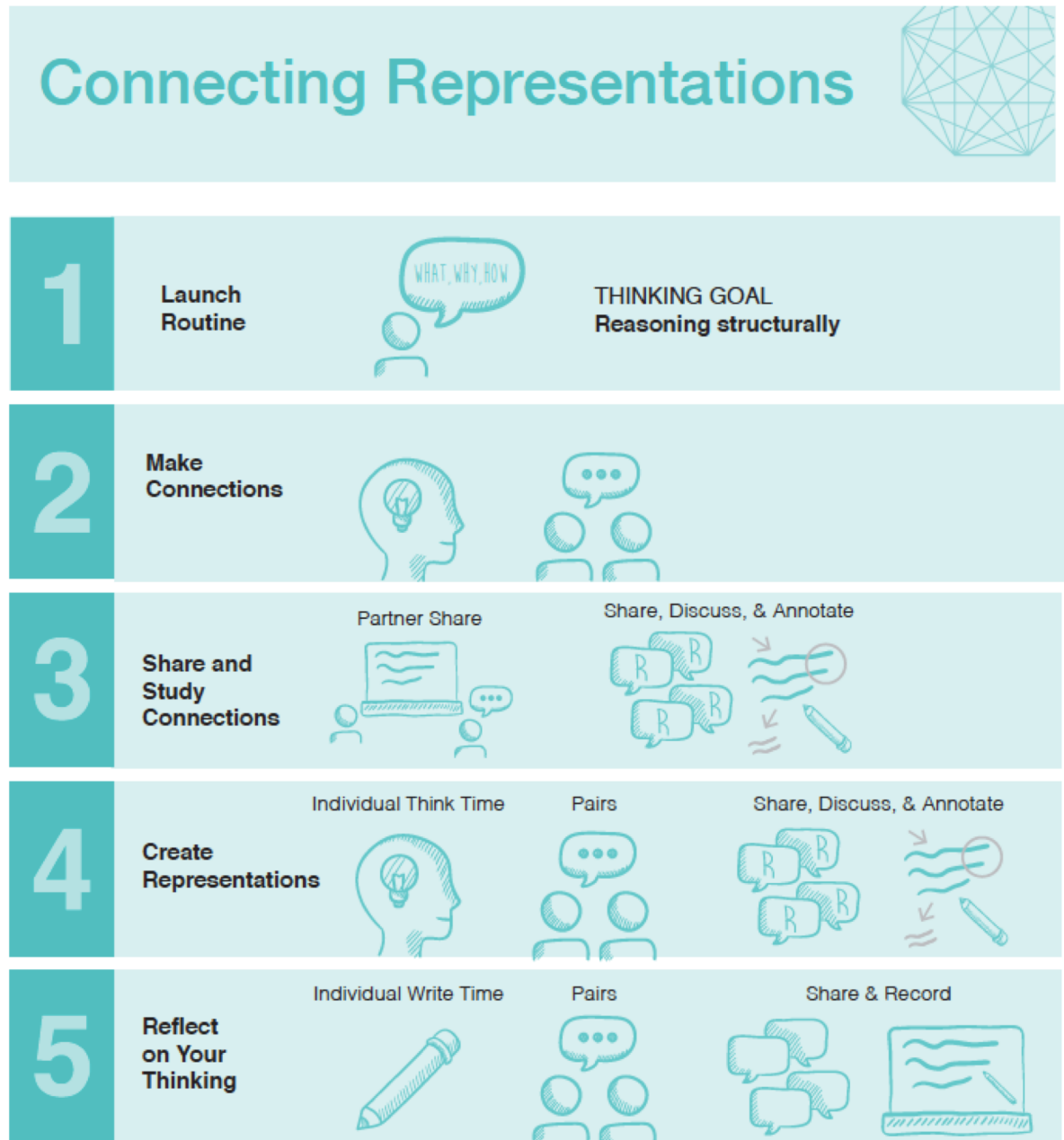


# Meta-Reflection



- A. When interpreting a *problem situation / visual*, I learned to pay attention to...
- B. When connecting representations, I learned to ask myself...
- C. A new mathematical connection I made was...

- What do you notice?
- What do you wonder?



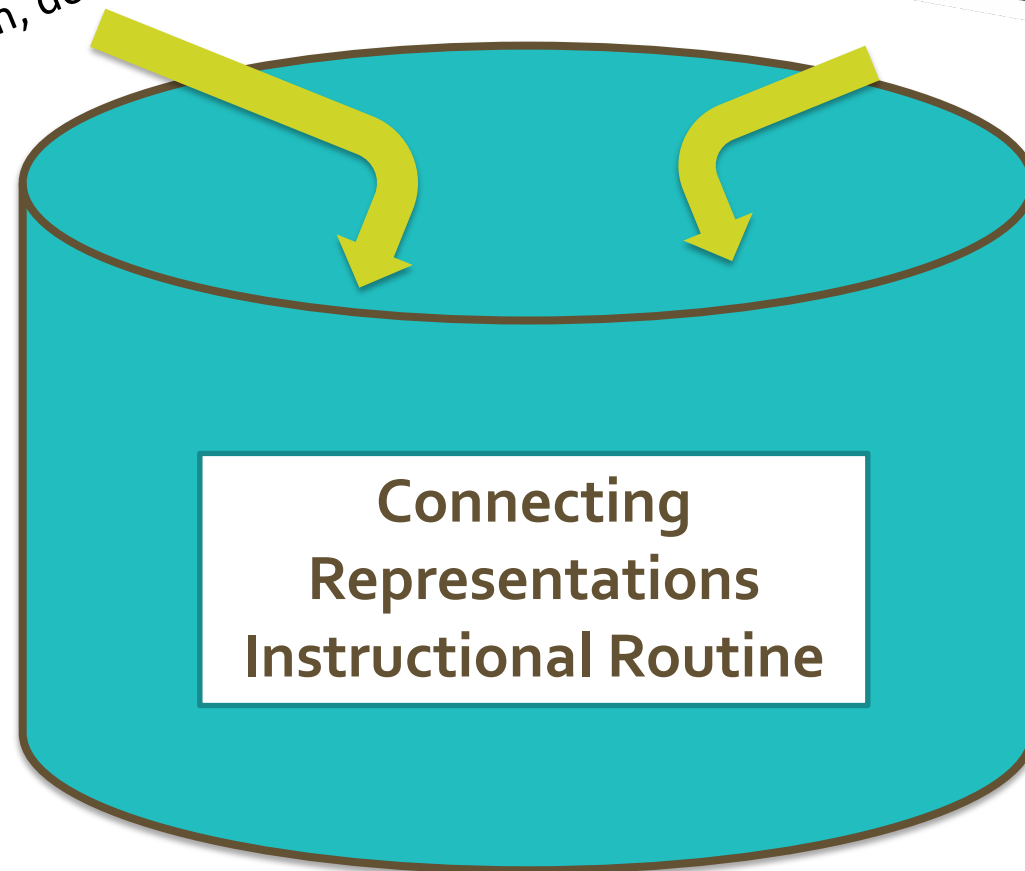


One plus 4 groups of 3

One plus 3 groups of 4

Seven, doubled, minus 1

A.		1) There are three cups of sugar for every 9 cups of mixture.
B.		2) The ratio of cups of sugar to cups of flour is 1:3.
C.		



Connecting  
Representations  
Instructional Routine

# 4 Essential Instructional Strategies

- Keep the focus on mathematical
- Provide access for ALL learners
- Support teachers to elicit and make use of student thinking
- ...Routinely and Regularly



Ask-yourself questions



Annotation

I noticed...so I knew...  
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... Connects to ... because

Sentence frames and starters



The Four Rs – repeat, rephrase, reword, record



# Connecting Representations in Action

Kit Golan

Lab School NYC

Grade 6



# Connecting Representations in Action

## Connecting Representations



1

Launch Routine



THINKING GOAL  
Reasoning structurally

2

Make Connections



3

Share and Study Connections

Partner Share



Share, Discuss, & Annotate



4

Create Representations

Individual Think Time



Pairs



Share, Discuss, & Annotate



5

Reflect on Your Thinking

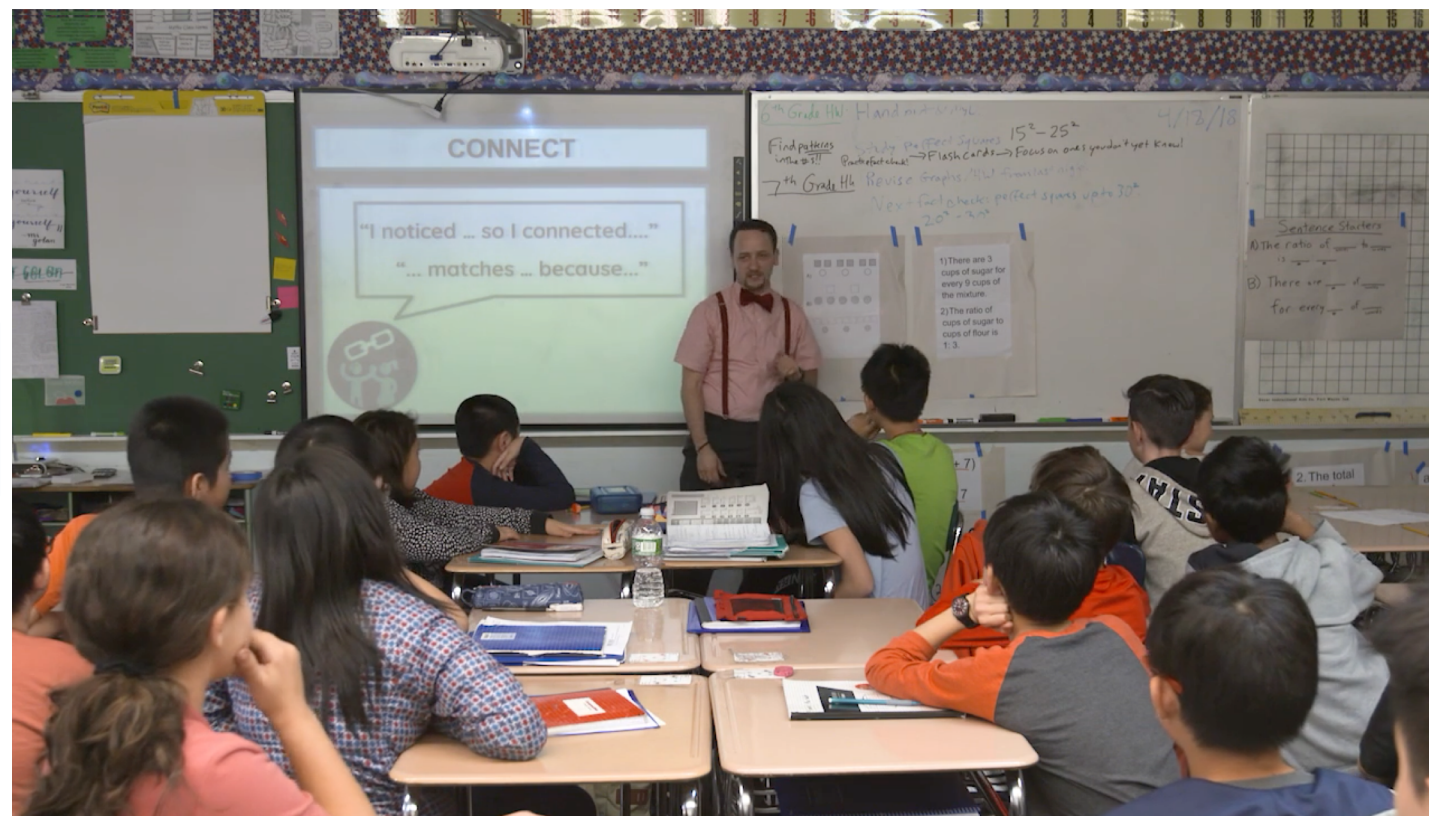
Individual Write Time



Pairs



Share & Record





# Connecting Representations in Action

## Connecting Representations



1

Launch  
Routine



THINKING GOAL  
Reasoning structurally

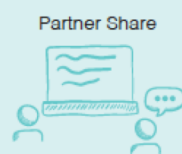
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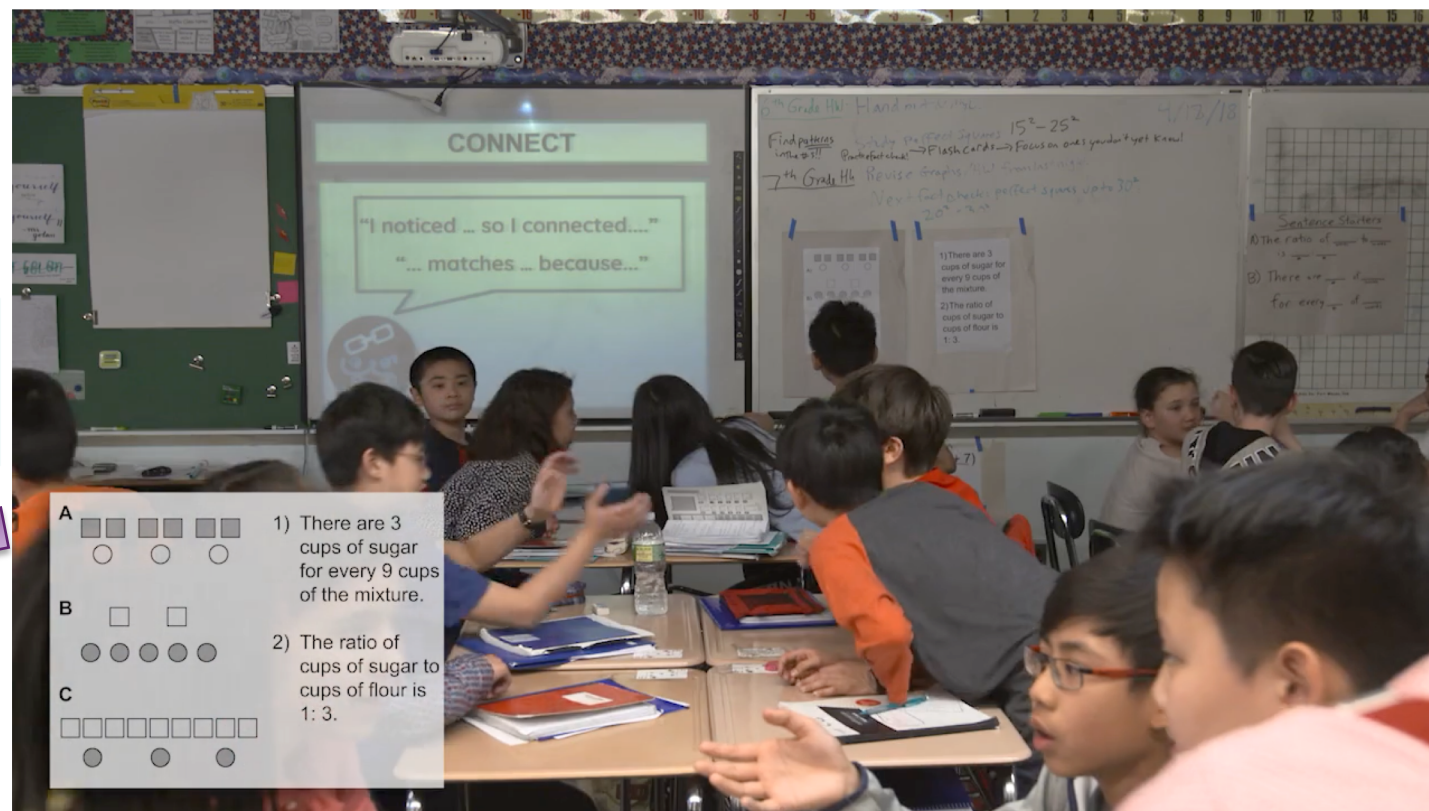
Individual Write Time



Pairs



Share & Record



# Connecting Representations in Action

## Connecting Representations



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Reasoning structurally

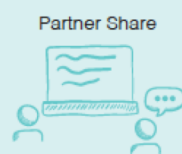
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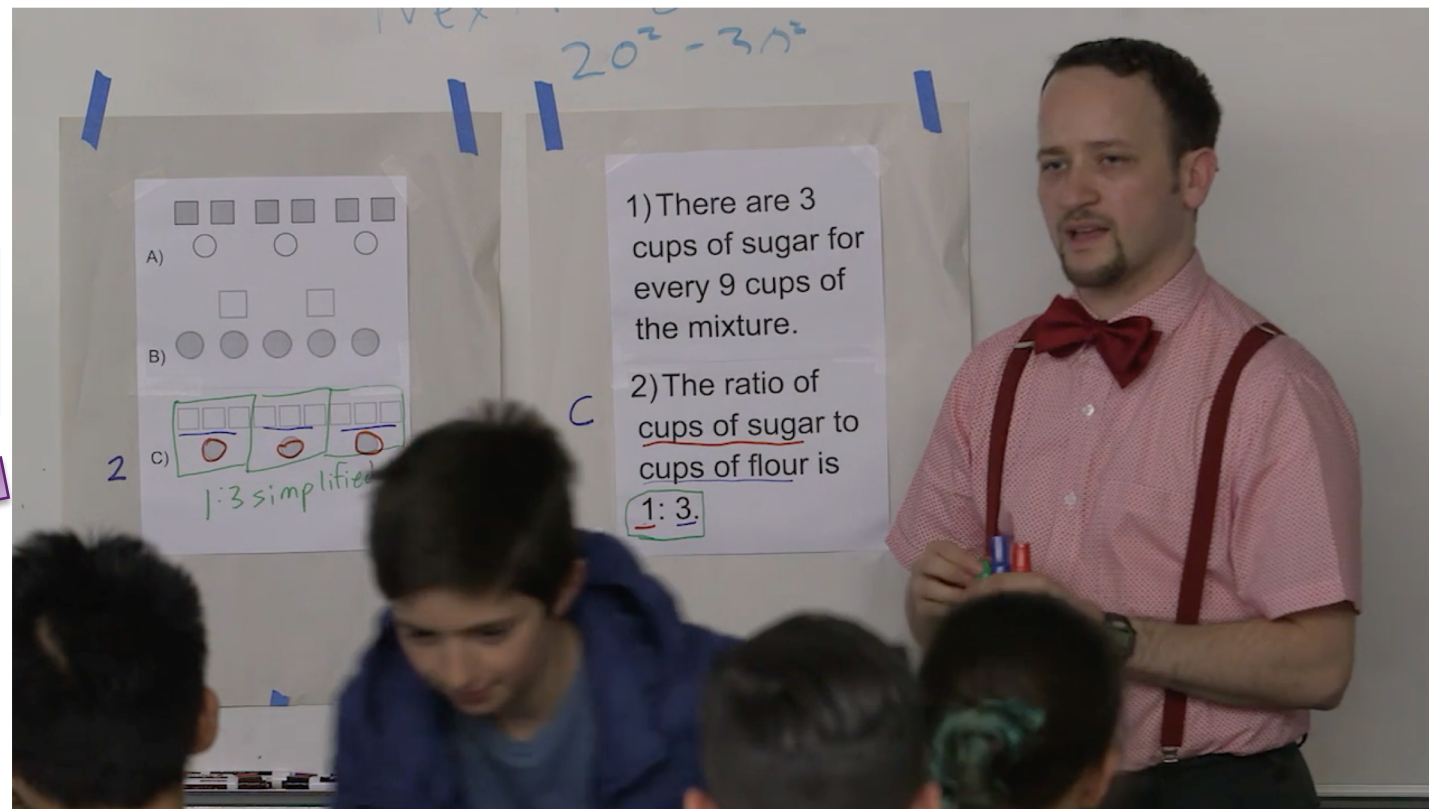
Individual Write Time



Pairs



Share & Record



# Where can I find more about...

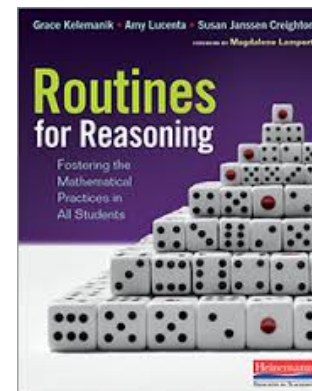
- Instructional Routines?

Routines for Reasoning

TEDD.org

Fosteringmathpractices.com

Ready Mathematics and other curricula



- Tasks for Connecting Representations

Fosteringmathpractices.com

#ConnectingReps

YOUR OWN CURRICULUM

# www.fosteringmathpractices.com



[Avenues of Thinking](#)

[Special Populations](#)

[Routines for Reasoning](#) ▾

[Related Resources](#)

## Free Resources (Site Registration/Login Required)

[Go to Downloads](#)

[View Tasks](#)

### Classroom Planner



### Classroom PPTX Template



### Tasks & Discussion



**Routines for Reasoning**  
**Support students to develop mathematical**  
**thinking and reasoning**  
**...and support teachers to elicit and use student**  
**thinking in the moment!**



**FOSTERING**  
**MATH**  
**PRACTICES**

# Resources and Contacts

Reach Out

AmyLucenta@gmail.com

Log On

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



Join the Conversation

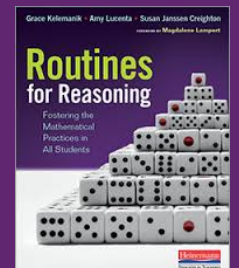
@AmyLucenta



#ConnectingReps #fosteringMPs

Get the Book

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



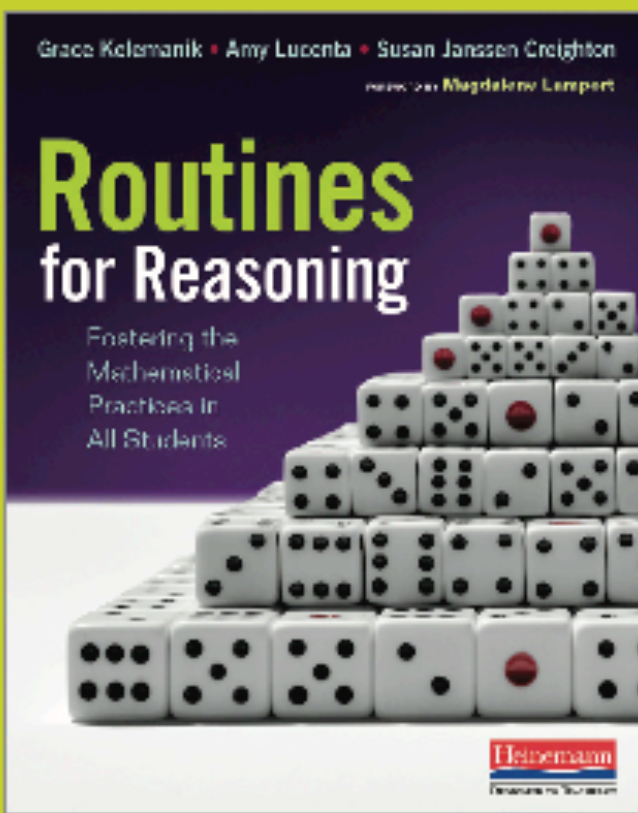


# More Today ....

- 9:30: Interpret and Communicate Math Ideas with Increasing Precision through the Decide and Defend Routine, Hilton Indigo BF
- 10:30 -10:50 Representing Student Thinking, Networking Lounge
- 6 pm IGNITE Our Greatest Challenge



**FOSTERING  
MATH  
PRACTICES**



## **Courses at EDCO Collaborative** 36 Middlesex Turnpike, Bedford, MA



### **Routines for Reasoning: Fostering Structural Thinking in ALL Students**

**June 24 - 27, 2019 • 8:30 AM to 3:00 PM**

**\$599 before May 1st • \$649 after May 1st**

**Register at:**

**<https://edco.rocks/routines>**



### **4 Essential Strategies for Teaching Students with Learning Disabilities to Think Mathematically**

**August 6-7, 2019 • 8:30 AM to 3:00 PM**

**\$299 before May 1st • \$349 after May 1st**

**Register at:**

**<https://edco.rocks/strategies>**