



Throughlines

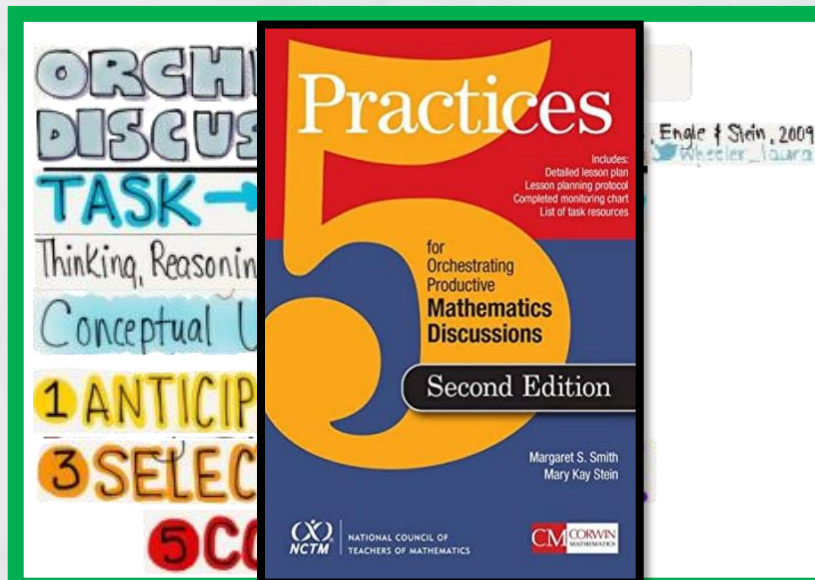
Can you:

Find a connection
between two
images?

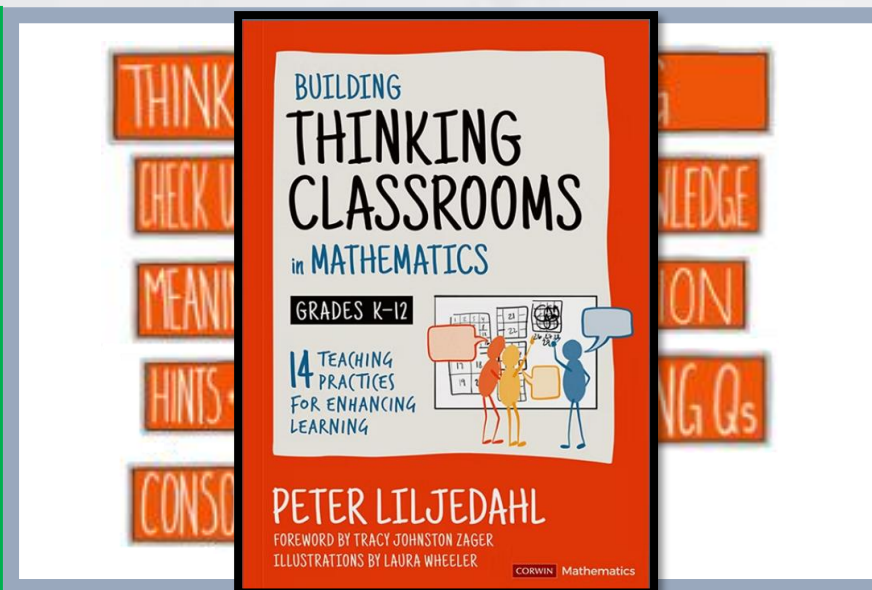
Find coherence
between three
images?

Find a throughline
between all four
images?

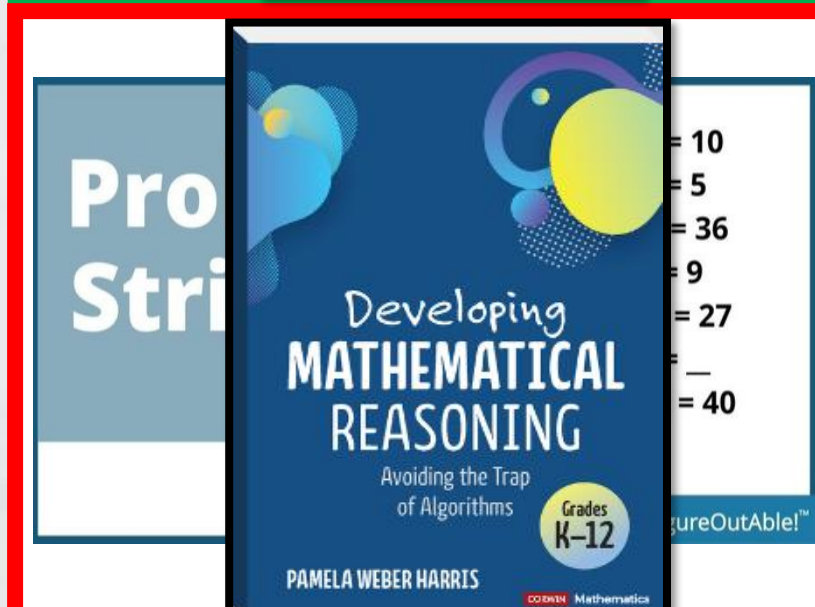
A



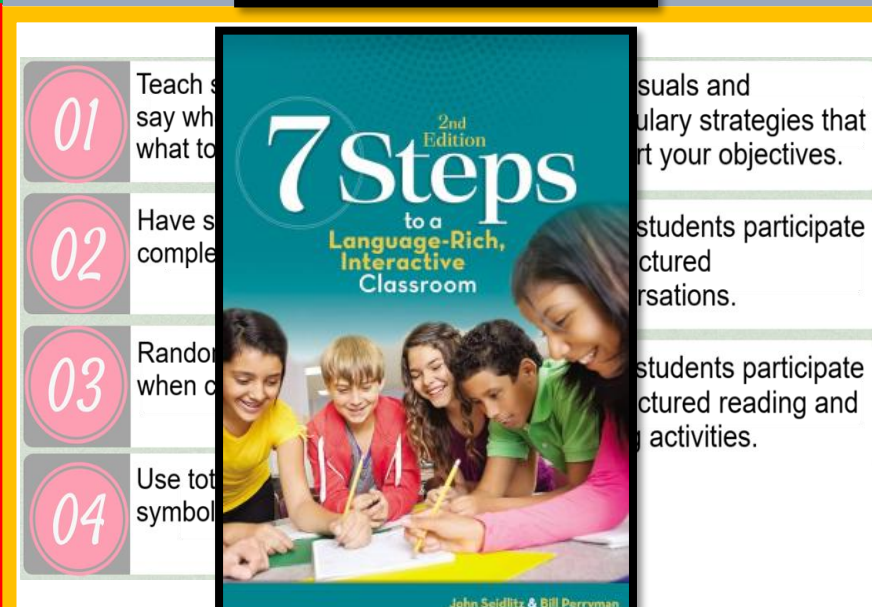
B



C



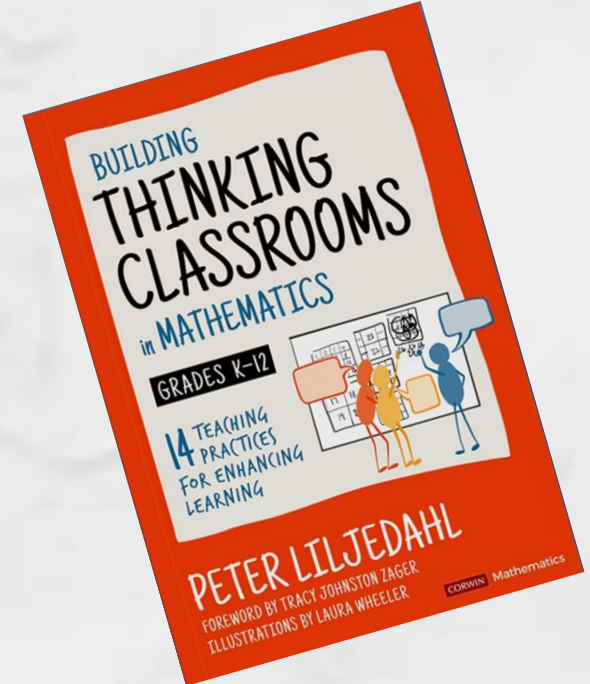
D





BTC PLAYBOOK
TO REACH ALL LEARNERS

Equity in Action: Layering Building Thinking Classrooms for Diverse Learners



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“Equity is what we want to achieve. Creating access is one of the ways we achieve it.”



Mathematics Tasks for a Thinking Classroom, Liljedahl and Giroux, pg 16

Rights of Learners

The right
to be
confused.



The right to
share
unfinished
thinking and
not be judged.

The right to
say what
makes sense to
you.

The right to
make
mistakes.

The right
to revise your
thinking.

***What
pedagogies/strategies
have I used
consistently to
promote student
thinking ?***

***Why or when do I pull
on one
pedagogy/strategy
more than others?***





UDL: Universal Design for Learning

BTC: Building Thinking Classrooms

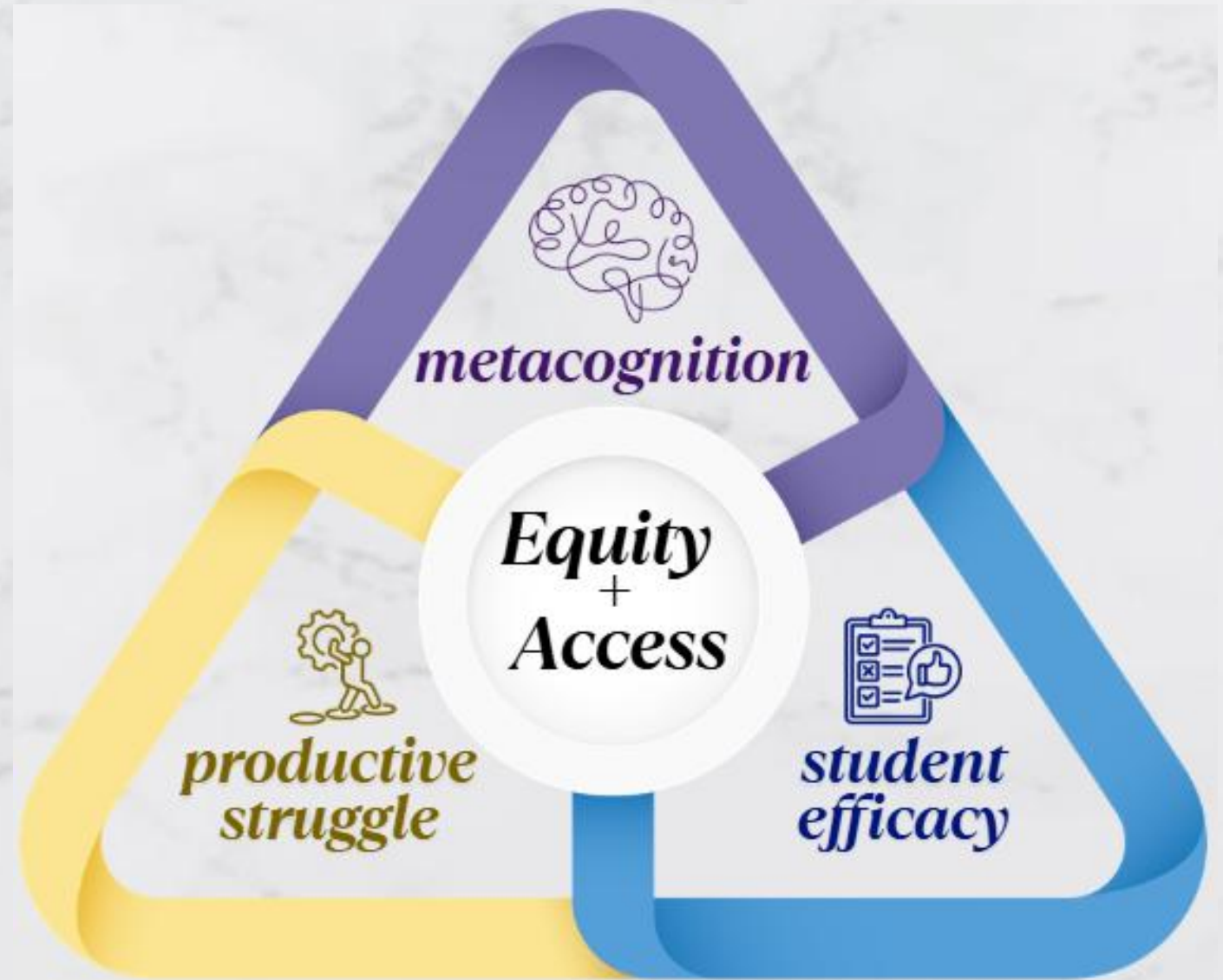
7-Steps: 7 Steps to a Language Rich Classroom



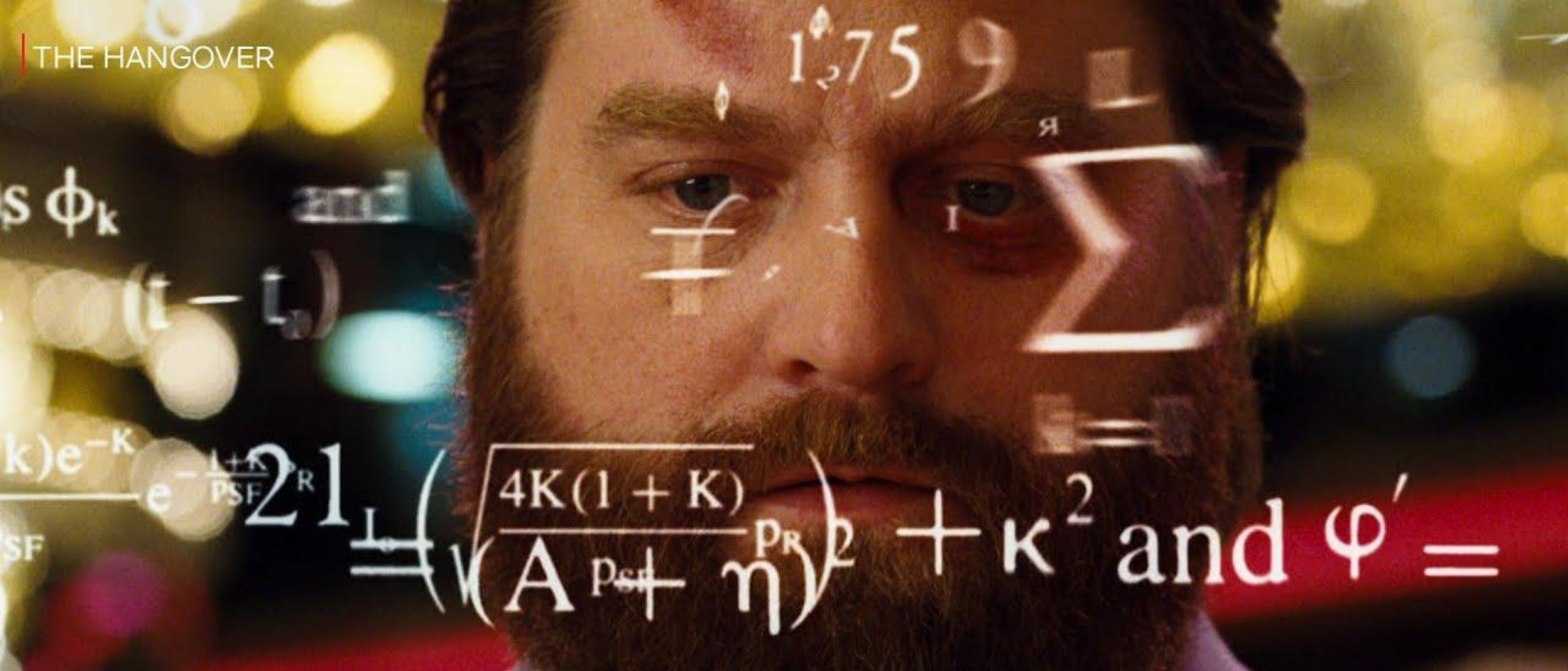


Today's Outcomes

- We will be **analyzing** how to intentionally **layer** BTC among other practices when planning lessons through the lens of a pre-written curriculum to **provide access**.
- You will **discuss** how to **implement** and **adapt** the planning framework for your classroom to prioritize equity.



THE HANGOVER



Our teachers and functions in the past

**DO
MORE.**

*Do
DIFFERENT*

LETS LOOK BACK

...to yesterday's consolidation

Can you:

Find a connection between two images?

Find coherence between three images?

Find a throughline between all four images?

Word Bank:

- Function
- Relation
- Slope
- Slope-intercept form
- Y-intercept

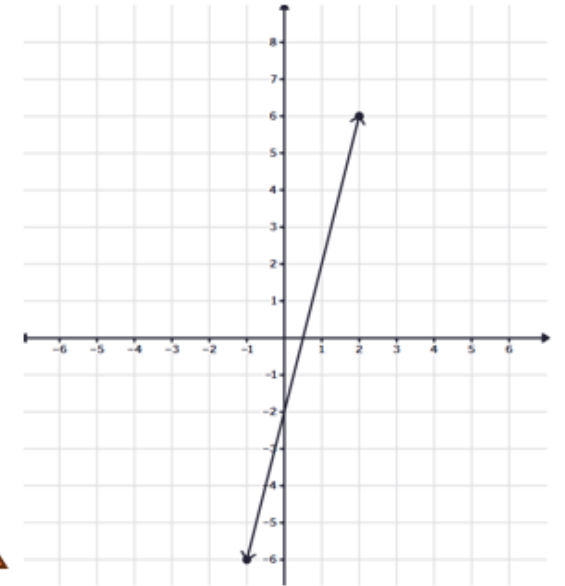
Throughlines

Mike starts his dive 2 feet below sea level. For every second he swims, he is 4 ft. further down from the surface.



Let x be the number of seconds Mike is diving.

Let y be the total number of feet he is from the surface.

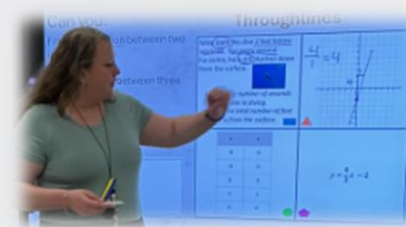


x	y
-8	-4
-4	-3
0	-2
4	-1
8	0



$$y = \frac{4}{3}x - 2$$

"I see the y-intercept is the same."



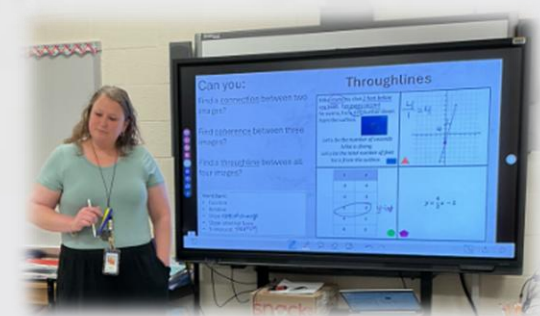
"I see the point (0, -2) is in all of the options."

"Y-intercept is the starting point, slope is the rate of change and is different in all of them."



"There is a 4 in all of the slopes, but they all mean different things."

"They all have different slopes."





What can you count?

I can count the number of . . .

What could you measure?

I can measure _____ by . . .



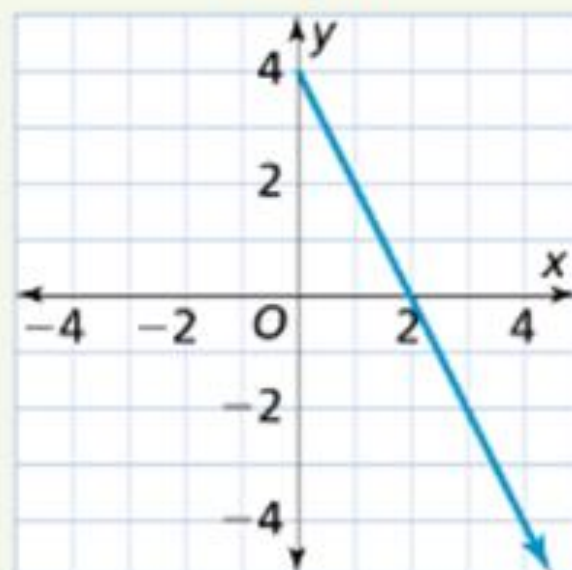
Equation

$$y = 2x + 5$$

Table

x	y
0	0
1	2
2	4
3	6

Graph





Communicate and Collaborate



One Marker Take Turns

MATH TALK
CONVERSATION STARTERS

LET'S TALK MATH!

	TO EXPLAIN: > The strategy I used was... > I noticed that...
=	TO AGREE: > I agree with ____ because... > My strategy is like yours because... > That solution makes sense because...
≠	TO DISAGREE: > I disagree with ____ because... > The solution doesn't make sense because...

y-intercept
starting point

Range
y = $mx + b$
Output

Domain
Input

Slope
rate of change

$Slope = \frac{rise}{run} = \frac{change\ in\ y}{change\ in\ x}$

**WHAT TO SAY
INSTEAD OF
I don't know**

Would you mind repeating the question?

Can I have a few more minutes to think?

I'm not sure, but here is what I do know...

This is my best guess...

I'm not quite sure... yet.

May I ask a friend for help?

Could you explain it in a different way?

@weareteachers

Justification

Answering

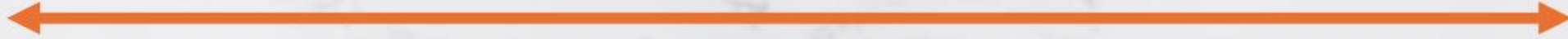
Convincing



Justification

Answering

Convincing



Create a contextual situation to match one of the given representations.



Could the connection be more clear?

Could the context be adjusted for reasonableness?

Would a different representation better match the context written?

Rotate Revise Reflect



Reflection

A connection that is starting to make more sense to me is...

The characteristic of the function that I had to think hardest about was...

One procedure I need to remember next time is...

A question I still have after doing this task is...

Consolidation Considerations...

IT
DEPENDS

What **role does the 2** play in each of these scenarios?

A

Nala has a collection of 356 comics. Every month she sells 2 of her comic books. The number of comic books in her collection can be represented by a linear equation.



B



C

Nala's brother started with 2 comic books. Each month he buys 3 new comic books. The number of comic books in his collection can be represented by a linear equation.

D

Nala's cousin purchased a website domain name for \$2 and then sold all his old comic books for \$5 each online. The equation $y = 5x - 2$ represents how much profit he has made.

Debate Math... Which representation is easiest to create a context from?

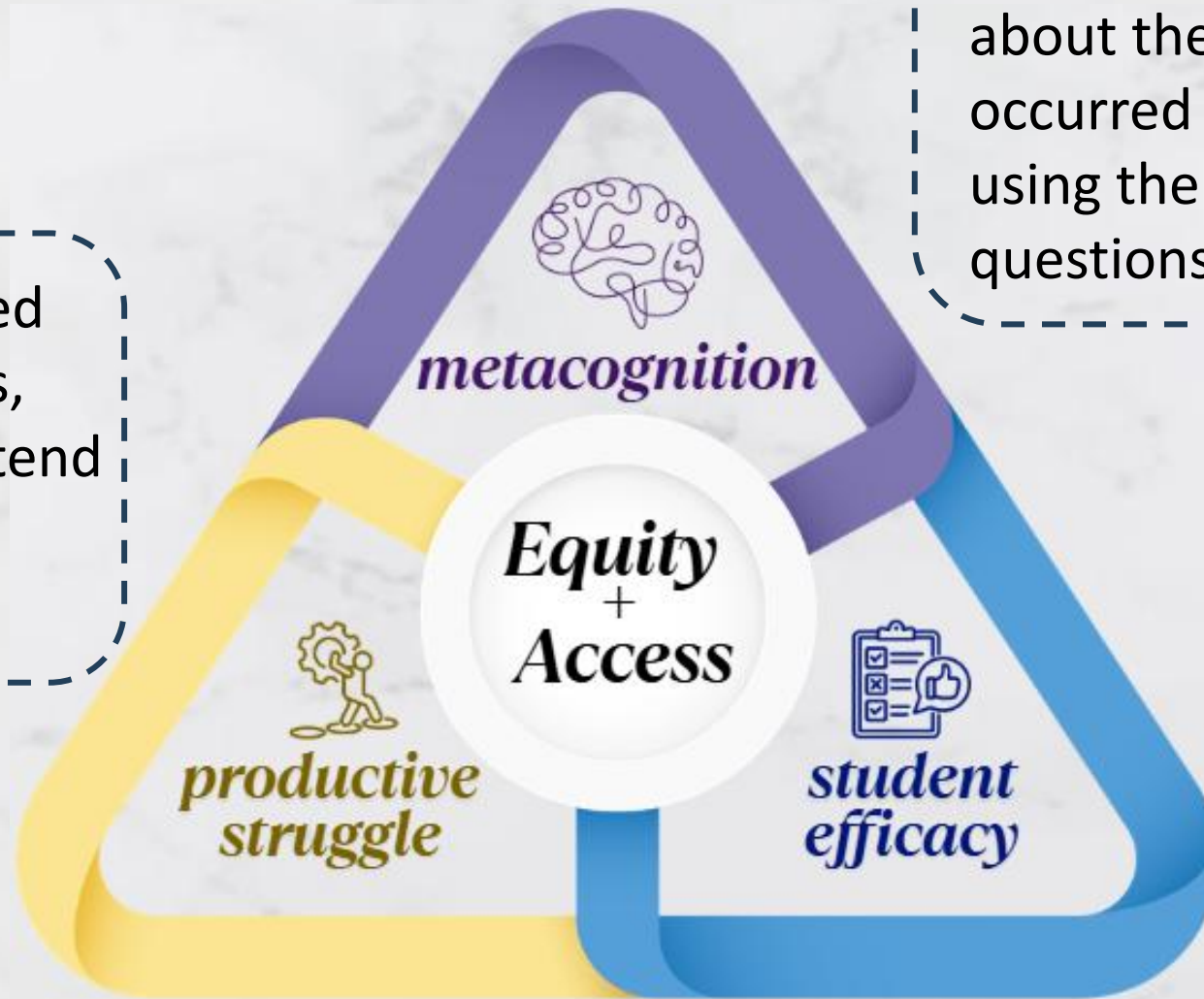
Graph → Context

Table → Context

Equation → Context



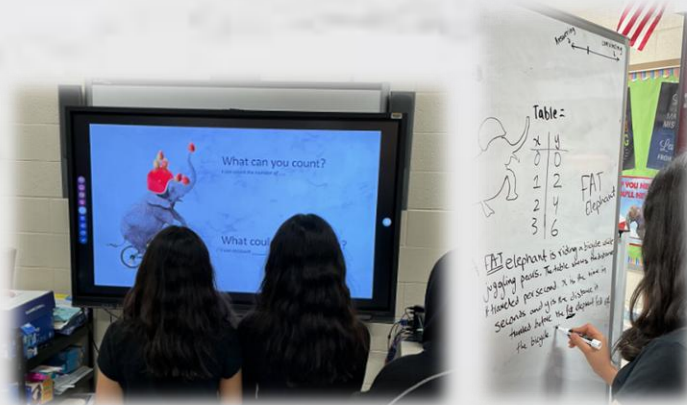
Students are exposed to various strategies, pushing them to extend and adjust their thinking.



During Rotate, Revise, Reflect, students think about the thinking that occurred during the task using the prompting questions as guides.

Students use prompting questions as a method of self-reflection for their current level of understanding.

- "this is way better than a worksheet"
- "I liked being able to see other work and other's opinion of my work"
- "That change makes so much more sense"



- When asked to self-rate, students took it as an opportunity to revise their rough draft thinking.
- Students started to make changes right when they got back to their board to be stronger and clearer.
- Students used sentence frames to ground understanding from representation to create a context.

ORIGINAL

VS

Solve & Discuss It!

Write a real-world scenario about something in the picture that could be represented by the table, graph, or equation.



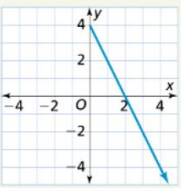
Equation

$$y = 2x + 5$$

Table

x	y
0	0
1	2
2	4
3	6

Graph



Lesson 4-5
Interpret Slope and y-Intercept of a Linear Relationship

I can...
determine and interpret the slope and y-intercept in a linear relationship.

Launch to
springboard
thinking



Sentence Stems
as an access point

Emphasizes the
community of learners

Rough Draft
thinking



Layered
TASK

How to navigate your lesson companion guide:



Task A brief description of the task structure and the rationale for choosing it. A glimpse of the lesson progression with a QR code to watch the lesson flow.	
Anchor Chart <i>Any vocabulary card/visual support that aids in the task</i>	Manipulatives <i>Suggested manipulatives that would be available.</i>
Sentence Stems [7 Steps] <i>Sentence stems specific to the task and standard that would be posted at the location of student work</i>	Hints and extensions <i>Suggested questions to keep thinking moving forward.</i>
Considerations for diverse learners <i>Key considerations for how this structure provides access and equity.</i>	



LAYER

Planning for Equity and Access



Targets and Objectives



- What do I want all students to know and be able to do by the end of this lesson?
- What are the verbs in the standards that I need to address in this lesson?
- How will students show their understanding for this lesson (speaking/listening/writing)?

Launch



- How can I give access to all students to engage in today's lesson?
- What will student discourse sound like? How will I structure it?
- Is there prior knowledge I need to revisit in the launch for students to be successful with the lesson?

Lesson/Task



- How might this HQIM task be adapted to increase opportunities for students to analyze, justify, create, question, or make connections?
- Is there a barrier to student thinking about how this task is originally written?
- Given my goal for this lesson, what strategy would best suit my students?
- What questions/hints can I script to broaden student thinking?
- How can I encourage students to make their thinking visible?
- What will I do for students who get it? What will I do for students who don't get it?
- If I removed myself from the lesson for ten minutes, what would students be doing, and how much thinking would still be happening?
- How will I transition between tasks?

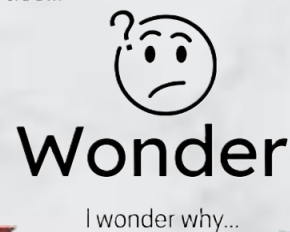
Consolidation



- What question(s) could I pose to help students connect their thinking in the task before returning to a whole-group consolidation?
- How can I intentionally make student thinking visible in ways that connect their ideas to the lesson's intended learning goal? What will I do with this information?

CHOOSE YOUR CONTEXT

When the task scenario does not seem to connect to the students experiences and becomes a barrier for student access.



THIN SLICE

When the textbook tasks seem to rush into new contexts or gives too much away in the printed version.

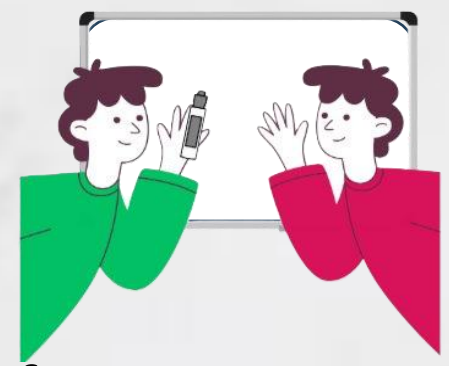
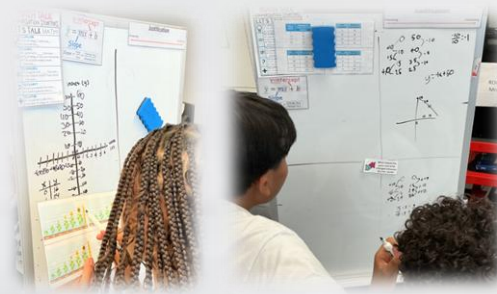
3-ACT MATH

When the task gives too much away and is too wordy.

QUIZ-QUIZ-TRADE

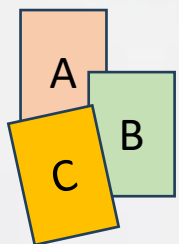
When I want students to think about the math behind the task differently.

- "It made us think deeper"
- "This let us have perspective"
- "I liked I could see how others thought"
- "It was a lot of thinking and working my brain. I liked that."
- "I struggled on this before and this helped a lot."
- "some contexts are just easier to work with"
- "Wait...class is done already."



- Students used sentence frames to gain access to the task.
- Students utilized the single-indicator rubric to strengthen their work.
- Students used multiple modalities of communication to justify their thinking.
- When given choice, 2 students intentionally chose a representation they struggled with which resulted in increased confidence.
- Students often did more work than was required (created additional reps)





Pick your reflection:



- What are some elements from the strategies that support engagement and promote thinking for diverse learners?



- Which type of modification resonated the most with you?



- How do the framework questions help support your planning for diverse learners?



CHAPTER 9

HOW WE USE HINTS AND EXTENSIONS IN A THINKING CLASSROOM

How is this practice already good for diverse students?

When tasks are thin sliced, students are more willing to take on new challenges, building on their previous successes. When hints are needed, they help students stay in the flow and continue to persevere.

Maintain Flow

- Great opportunity for adaptations on the co-teaching models (parallel, station, and alternative)- go to [chapter 18](#)
- Have students use the W.I.T. strategy for themselves to ask about their work. (7 Steps-Step 6)
 - Why do we think that?
 - Is there another way to solve it?
 - Tell a classmate more about that.
- UDL Crossover: Brainstorm a list of common barriers for students and have hints prepared for those anticipated barriers.



Start with low challenge task to start flow (productive struggle is only productive if it immediately follow success)

- UDL Crossover: Instead of providing students one question at a time, give them a set of four or five questions that they can have the choice to complete some of the questions. They have some choice of where they think they will be successful to start.

Student write the problem they are working on at the top of the board (banner method)

- Use magnets/Velcro/plastic sleeve to place questions they are working on at the board visible to all to reduce the copy time or legibility issue. (Minimize size and white space around printed tasks so work still lives on the boards)
- Create a stack of three problems at a time for students to come and grab and place in three trays. Keep adding another set when one is out.



- Students could divide their boards into sections so they could use previous thinking/strategies to build on.
- Use an extra board in the room to add additional questions to maintain flow (helpful if one group is outpacing others)
- To reduce the number of questions for students to start to 3, any group that is farther ahead would write new problems below their banner.



Create a sequence of tasks (thin slice)

- Lean on your EL/SpEd/ Gifted specialists to preview or collaborate on a thin sliced progression.
- Identify what they know and what the end goal is and fill in between (naturally makes three groups)
- Have "milder" and "spicier" questions ready if needed.



Create a parallel sequence of tasks.

New Idea

21

MATH LANGUAGE ROUTINES

MLR 1 - Stronger and Clearer Each Time

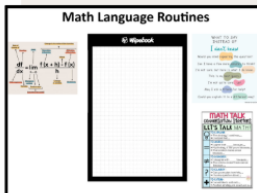
Have students complete their first round individually at their seats, then send them to their random groups to refine their thinking. Works great with a CYU, reasoning routine, or any thinking task!

MLR 2 - Collect and Display

While students are working at VNPS, scribe student language for a topic to reference during consolidation. 7-Steps add on - display language using an anchor chart that students can annotate/build on as they progress through the unit.

MLR 3 - Critique, Correct, and Clarify

Have students work at VNPS on a "my favorite no" or any error analysis, with provided sentence stems to explain the common mistake, make corrections, and provide strategies for future problem solving.



to explain the common mistake, make corrections, and provide strategies for future problem solving.

MLR 4 - Information Gap

This routine is great to facilitate knowledge mobilization. Consider breaking a task down into parts where each random group has a different piece, they must mobilize knowledge to gain missing information to complete the task at hand collaboratively. Provide sentence stems for clarification.

MLR 5 - Co-Craft Questions and Problems

This routine is great for layering other math strategies such as numberless word problems, slow reveal graphs, here's the answer-what was the question, and more. Have students do a brain dump at their VNPS, then engage in a 1-stay 2-stray routine to collaborate and improve questions before consolidating.

MLR 6 - Three Reads

Have students divide boards in to 3 sections - one for each read. 7-steps add on - have students use representations for read 1, use sentence frames for read 2, and a structured conversation to justify their work for read 3.

MLR 7 - Compare and Connect

This strategy works well with mobilizing knowledge and consolidation. Have sentence stems available for mobilizing, and intentionally select and sequence consolidation to show progression of representations to abstract strategies.

MLR 8 - Discussion Supports

This strategy can be supported through use of rubrics to evaluate what we value, as well as sentence frames posted at the boards during a task. 7-steps add on - employ structured conversations, what to say instead of "I don't know", and randomize and rotate.

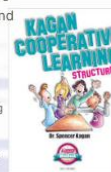
New Idea

25

KAGAN STRUCTURES

How is this layering structure good for diverse students?

Kagan structures are great for supporting all learners by promoting equitable participation and encouraging all voices. Strategies such as Rally Coach and Think-Pair-Share ensure that all students are given the support and time they need to build communication and language skills, building confidence and collaboration.



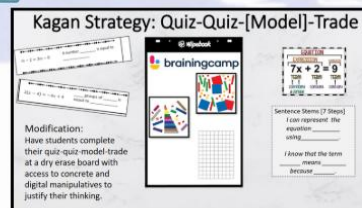
Considerations on when to layer these together:

- We choose these structures when we want to foster social-emotional learning to increase empathy in our thinking classrooms.
- We layer these when we want to strengthen active listening and learning from diverse perspectives in a more structured way.
- These structures are helpful when classroom dynamics include dominate or quiet voices to ensure everyone is able to participate in the conversation.

Considerations on how to layer these together:

- Students can use structures like quiz-quiz-trade or stand up- hand up- pair up as a method for randomly grouping at boards to expand on a task.
- Students can apply the rally coach structure to a CYU, where each student still chooses where they start, but have a built in system to check with a peer.
- Students can employ think-pair-share while consolidating with home groups to diversify the strategies and understandings from the day's task.

EXAMPLE



New Idea

24

3-ACT MATH

How is this layering structure good for diverse students?

This structure paired with the ideas of [Rough Draft Math](#) (Amanda Jansen) allows students to see how we can adjust and revise our thinking as we get new information. Students are encouraged to think outside the box and listen to others ideas. Consider using a [graphic organizer](#) to scaffold student thinking



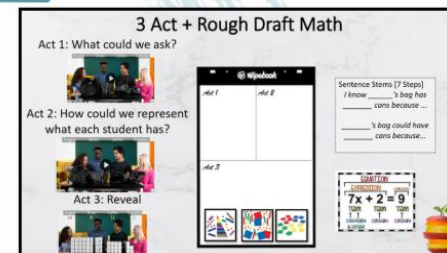
Considerations on when to layer these together:

- We use this when we need an engaging hook that brings the class together for discussion at three distinct points.
- We could use this when we want a structure to support hints and extensions, while also facilitating knowledge mobility throughout the room.

Considerations on how to layer these together:

- Students can script their thinking at the VNPS after splitting it into three sections.
- Sentence stems can be added that are directly related to the 3 Act or general sentence stems that encourage the revision thinking.
- Students could have QR codes readily available at their VNPS so they could move to each act as their group is ready.

EXAMPLE



New Idea

BETHANY LIGHTFIELD
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KYLIE SAMKO
kyliesamko@gmail.com

EMAIL US

Sign up!



MAKING MOVES THROUGH BTC

newsletter

MAKING MOVES THROUGH BTC

newsletter

2024-25 SCHOOL YEAR LAUNCH

PETER UPDATES

Highlights from Peter's Keynote at the 2024 BTC National Conference:



If you're like us, you may have been utilizing technology to create random groups for your BTC classrooms. While we love all the convenience these digital tools offer, Peter's findings suggest old-school cards (or any number of tangible resources) are best for this practice. As expected (and experienced), there's almost always one student who audibly huffs/complains when they see the group they were sorted into. When digital randomizers are used, this becomes a form of micro-bullying that hinders the empathetic nature of a thinking classroom.

On their own TOGETHER

While working at VNPS is a critical foundation to establishing a Thinking Classroom, it is not expected that students are at the boards daily. Students need time to transfer collective knowledge from the boards to individual understanding. This is where CYUs and MMS can be a tool in having students work "on their own together." The same culture from the boards can exist as they are individually bring order to the disorder.

KEY TAKEAWAYS

FEATURED TASKS

Kickstarting the year with BTC? Check out some collections of non-curricular tasks to get you started!

- Google Doc of K-12 math options
- Polar Bear Science task
- Reverse Dictionary
- Why do we learn this? (ELA)



REFLECTIVE QUESTIONS

As the school year begins, consider the following:

- What BTC practices are you committed to trying?
- How do you know your students are thinking?
- What moves can you employ to build a safe collaborative environment?

Need a thinking partner? Book us for VIRTUAL collaboration using the following links:
Bethany's Booking Link
Kylie's Booking Link

STRATEGY SPOTLIGHTS

SEPTEMBER EDITION

BTC +



Step 3: Randomize and Rotate
Through VRG students are already supporting students as diversifying the thinking that consolidating student thinking as a class using random calling can easily be incorporated and if students are not sure what to say they can refer back to Step 1. These grouping cards offer 9 ways to randomize with 1 card!

Step 4: Total Response Signals
Before sending students off to work at boards you can ensure students are prepared and clear on the task at hand by having students understand they are ready or when checking their infographic with some ideas for total response signals.

TEAMS ENGAGEMENT
Have a task that went great? Post it in the 3a or 3b section of our Teams page to share!

on
Planning a task for an upcoming unit? Drop your ideas in 3a or 3b to collaborate on bringing the task to life! Not a member yet? Join here.

BTC WINS/ANNOUNCEMENTS
Building Thinking Classroom Collaboration Interest

Have you filled out this form for additional opportunities to collaborate with teachers implementing BTC in our division? If not, it's not too late! We will continue working to connect teachers implementing BTC throughout the school year. Already filled the form out? Be on the lookout for communication to schedule some collaboration!



MAKING MOVES THROUGH BTC

newsletter

DECEMBER EDITION

PETER UPDATES

Mini-Huddles



When managing the flow of a lesson, there may come a time you want to huddle students together to keep learning moving forward. This may be due to a misconception you are seeing frequently, to bridge learning to a new concept, etc. Depending on the scenario, consider the question - should I huddle the entire class, or just a couple of groups.

Full Class Huddles

Use when:
• Shifting the lesson to a new topic/thick slicing for a mini-consolidation
• Mitigating a misconception evident throughout the room

Spotlight:

Check out the BTC+ on Pam Harris problem strings for strategies to move the full class forward together.

Small Group Huddles

Use when:
• Noticing a misconception with 1-2 groups
• Needing to move a small group forward to extend their learning

Best for:
Maintaining flow within the entire class. Not all groups need to huddle at the same time, so focusing more individually allows for fewer interruptions to the learning.

FEATURED TASKS

Three Reads

Looking for strategies to provide access all learners to be successful with context problems? Consider using the 3-reads strategy to teach students how to dissect wordy questions for clarity.

Read 1 - Understand the Context

The first pass through is just to understand the context of the situation (to further emphasize, you could remove the question from the problem)

Read 2 - Identify Quantities

"What can be counted or measured?" focus on drawing out numerical values this time

Read 3 - Plan a Solution Strategy

"What are some ways we might solve this?" Allow students time to think independently, then share ideas with peers

Read more about this strategy here.

REFLECTIVE QUESTIONS

As we see BTC as a framework, what other practices have you made a seamless integration with? (consider 7 steps, UDL, number sense routines, etc.)

Need a thinking partner? Book us for a VIRTUAL collaboration using the following links:

Bethany's Booking Link
Kylie's Booking Link

STRATEGY SPOTLIGHTS

MARCH EDITION

BTC +

Dan Meyer

3-Act-Math Tasks
Dan Meyer's tasks engage students through storytelling, making math problems more interesting and relatable. They promote critical thinking and problem-solving by breaking down problems into manageable parts after hooking students with a curiosity-sparking video or image. The tasks also encourage student discourse, enhancing their learning experience.

Our Connection:

These tasks fold seamlessly in to a thinking classroom as students are making sense of the real world math applications through collaboration and inquiry. As Peter states, students need to be allowed to "muck about" with the material prior to our consolidation with formalizing their thinking. This process does just that, while also fostering collaboration and communication skills. Put students up at the boards to work through the 3 acts and they'll be on their way to a deeper understanding of a contextual applications!

BTC WINS/ANNOUNCEMENTS
SOL Brainstorming Sessions
SOL season is just around the corner! If you're curious about incorporating BTC structures into your SOL Review, join us for a chat. Bring any burning questions to help with your planning process. Zoom links will be included in the April edition of the newsletter.

Monday, April 7 from 7:30am-8:00am and 3:30pm-4:00pm
Tuesday, April 8 from 7:30am-8:00pm
Wednesday, April 9 from 2:30pm-3:45pm
Thursday, April 10 from 12:30-1pm

BTC ACROSS CURRICULUM

Point-Prove-Explain

The Set Up: Provide a prompt for students to consider prior to starting. Then, give students the following directions:
Point - What is your point? Answer the question.
Prove - What is your position or idea in one sentence.
Explain - This is where you analyze the relationship between your point and proof. This will be the bulk of your paragraph.

See more, including a rubric, [here!](#)

TEAMS ENGAGEMENT
Share a Three Act Math Task that aligns to your pacing. Link it to the grade level and unit in the Brainstorm Excel.

Mach Brainstorm
other contents Brainstorm
Not a member yet? Join here.

Podcast Episodes
As we approach this time of year, some success stories might be just what you need. In this "super sized" podcast episode, Peter shares inspiring success stories from teachers and students in thinking classrooms. He also highlights the transformative power of success for teachers.

EMAIL US

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What you'll find:

- PDF of the PowerPoint Slides
- PDF of the companion document
- PDF of the framework questions
- Whiteboard Supports

KEEP 'EM *Thinking!*



So, what's one tidbit you'd like to reflect on to bring into next school year?

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