Grounding in Standards, Planting SEAD in Mathematics

Kentucky Summer Professional Learning Workshop – Day 1

IES Institute of Education Sciences

Kentucky Department of EDUCATION

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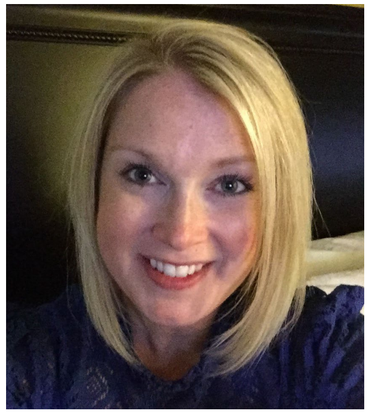
REL Appalachia

Welcome and Introductions

Meet the facilitators

Erin Chavez



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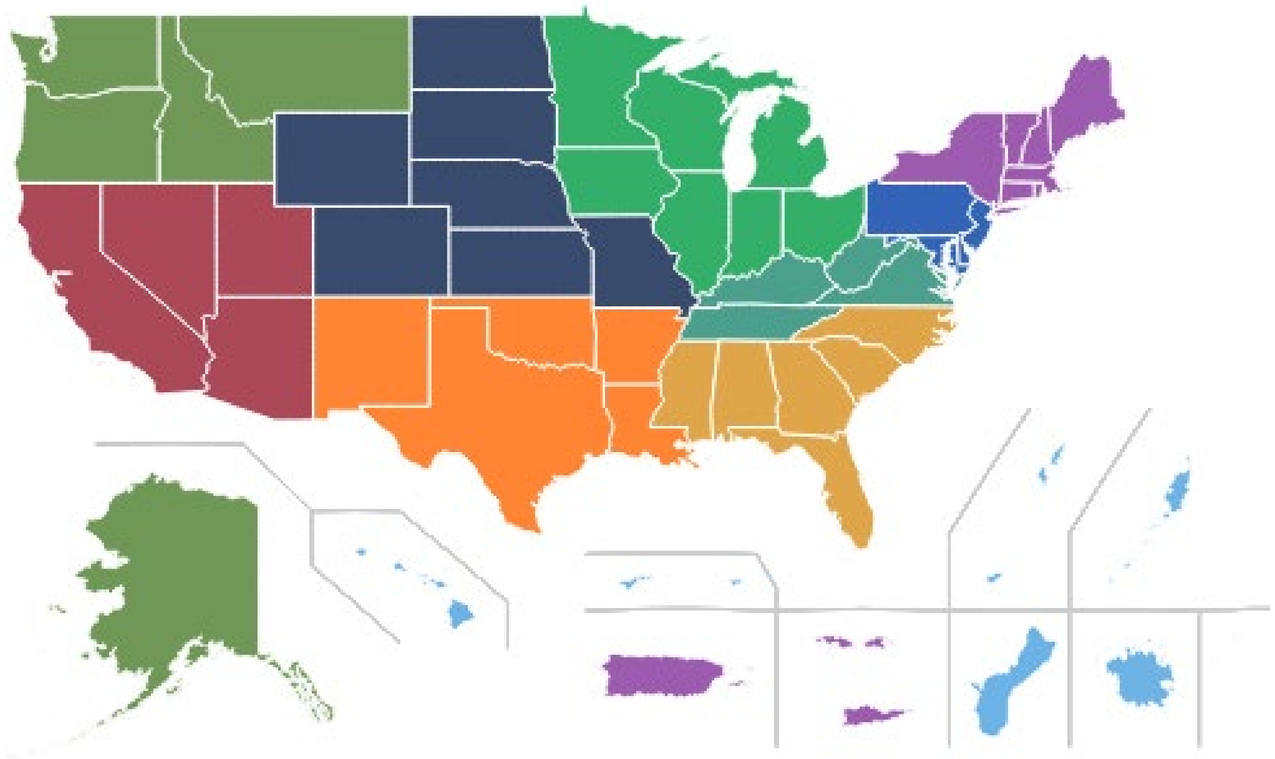
Regional Educational Laboratory (REL) Appalachia
SRI International

Regional Educational Laboratories



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Find us on the web! https://ies.ed.gov/ncee/rel/region/appalachia

Regional Educational Laboratory activities

Applied Research

Training, Coaching, and Technical Support

Dissemination

To improve student outcomes through use of evidence-based practices

REL Appalachia partnerships

For more information about our work, visit the REL Appalachia website:
https://ies.ed.gov/ncee/rel/region/appalachia

Workshop goals

- Facilitate deeper learning around high-quality instruction aligned to the *Kentucky Academic Standards (KAS) for Mathematics*.
- Build educator understanding of the importance and role of social, emotional, and academic development (SEAD) in effective and equity-focused mathematics instruction.
- Expand awareness of resources that support SEAD integration.
- Strengthen capacity for planning instruction that aligns with the content and practices within the *KAS for Mathematics*.

Day 1 Agenda

Time	Agenda item
9:00 – 9:20 a.m.	Welcome and introductions
9:20 – 10:40 a.m.	Grounding in the *KAS for Mathematics* – Part 1: Breaking down a standard
10:40 – 10:55 a.m.	Break
10:55 – 11:40 a.m.	Grounding in the *KAS for Mathematics* – Part 2: Assignment review protocol
11:40 – 12:40 p.m.	Lunch
12:40 – 1:30 p.m.	Planting SEAD in the *KAS for Mathematics* – Part 1: Research and reflection
1:30 – 2:00 p.m.	Planting SEAD in the *KAS for Mathematics* – Part 2: Experiencing SEAD
2:00 – 2:15 p.m.	Break
2:15 – 3:45 p.m.	Planting SEAD in the *KAS for Mathematics* – Part 3: Key components and strategies
3:45 – 4:00 p.m.	Wrap-up

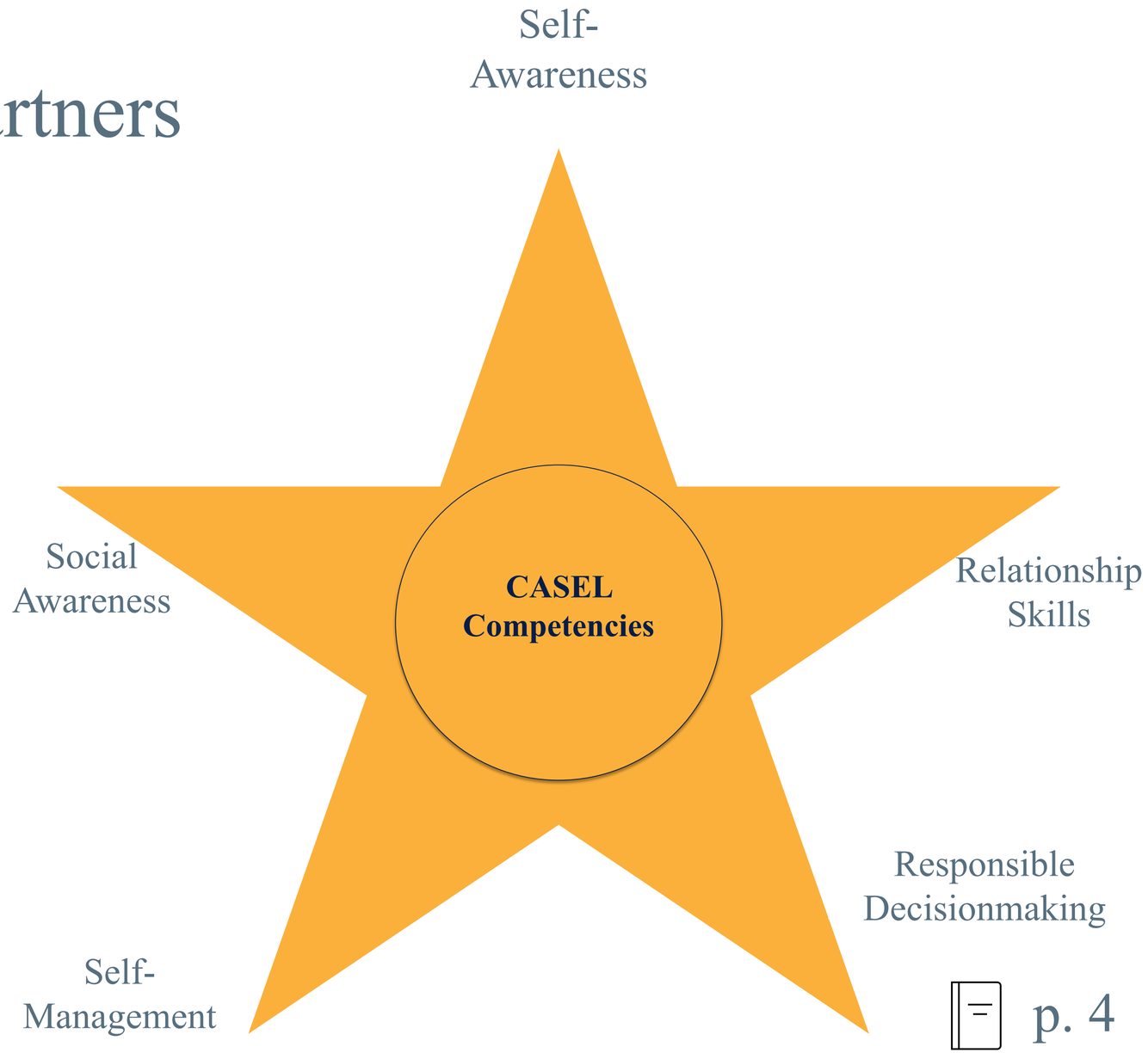
Day 2 Agenda

Time	Agenda item
9:00 – 9:20 a.m.	Welcome
9:20 – 11:00 a.m.	Integrating SEAD and *KAS for Mathematics* roadmap
11:00 – 11:15 a.m.	Break
11:15 – 12:15 p.m.	Co-designing SEAD in mathematics lessons: Part 1
12:15 – 1:15 p.m.	Lunch
1:15 – 2:15 p.m.	Co-designing SEAD in mathematics lessons: Part 2
2:15 – 2:30 p.m.	Break
2:30 – 3:30 p.m.	Supportive colleagues review and feedback
3:30 – 4:00 p.m.	Wrap-up

CASEL Competency Star Partners

Find your CASEL competency star partners!

- Walk around the room and introduce yourself to 5 different people.
- Write their name on the line next to a CASEL competency.
- Later in the workshop you'll get to connect with each of your partners to discuss your learning!



p. 4

Group Norms

- Assume best intentions.
- Listen carefully to one another.
- Be open to new ideas.
- Be open to working outside your comfort zone.
- Ask questions.
- Allow a chance for everyone to participate.

Establishing norms for our workshop:

Link to video: "Fostering Belonging With Classroom Norms"

In a moment we will craft norms similar to this for our session today.

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Co-Creating Group Norms

Step 1:

Review the list of values from Brene Brown's *Dare to Lead* and select five values that you most want to see reflected in your professional learning experience today.

Step 2:

Go to www.menti.com and use code:

8613 2742

to enter the values you selected.

What 5 values might you most want to see reflected in our time together today?

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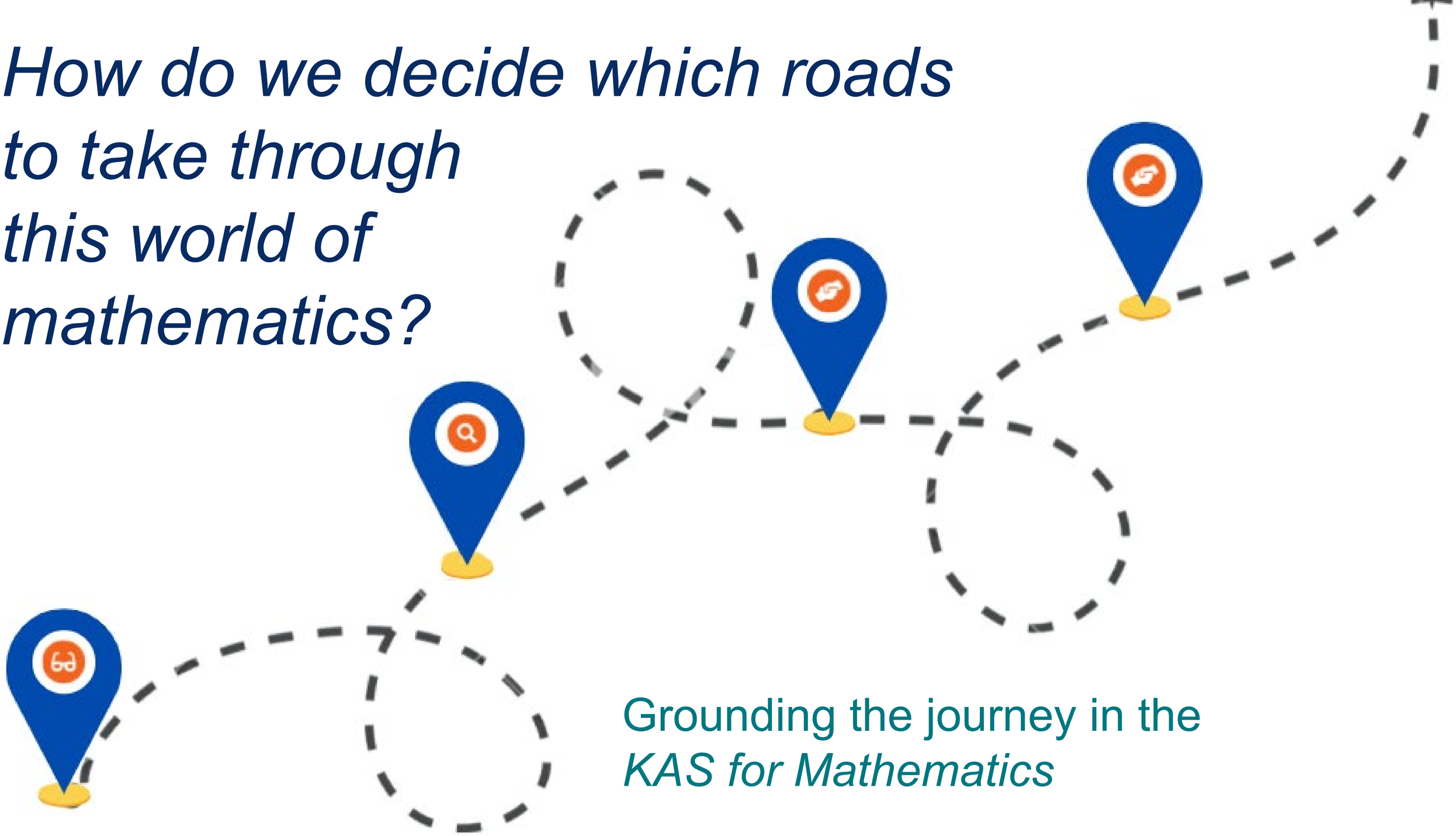
How do we decide which roads to take through this world of mathematics?



Grounding the journey in the *KAS for Mathematics*

Learning Goal

- To learn how the  Breaking Down a Standard resource and the  Assignment Review Protocol can work together to support instruction around specific standards and to ensure tasks and assignments are aligned to grade level standards.

Success Criteria

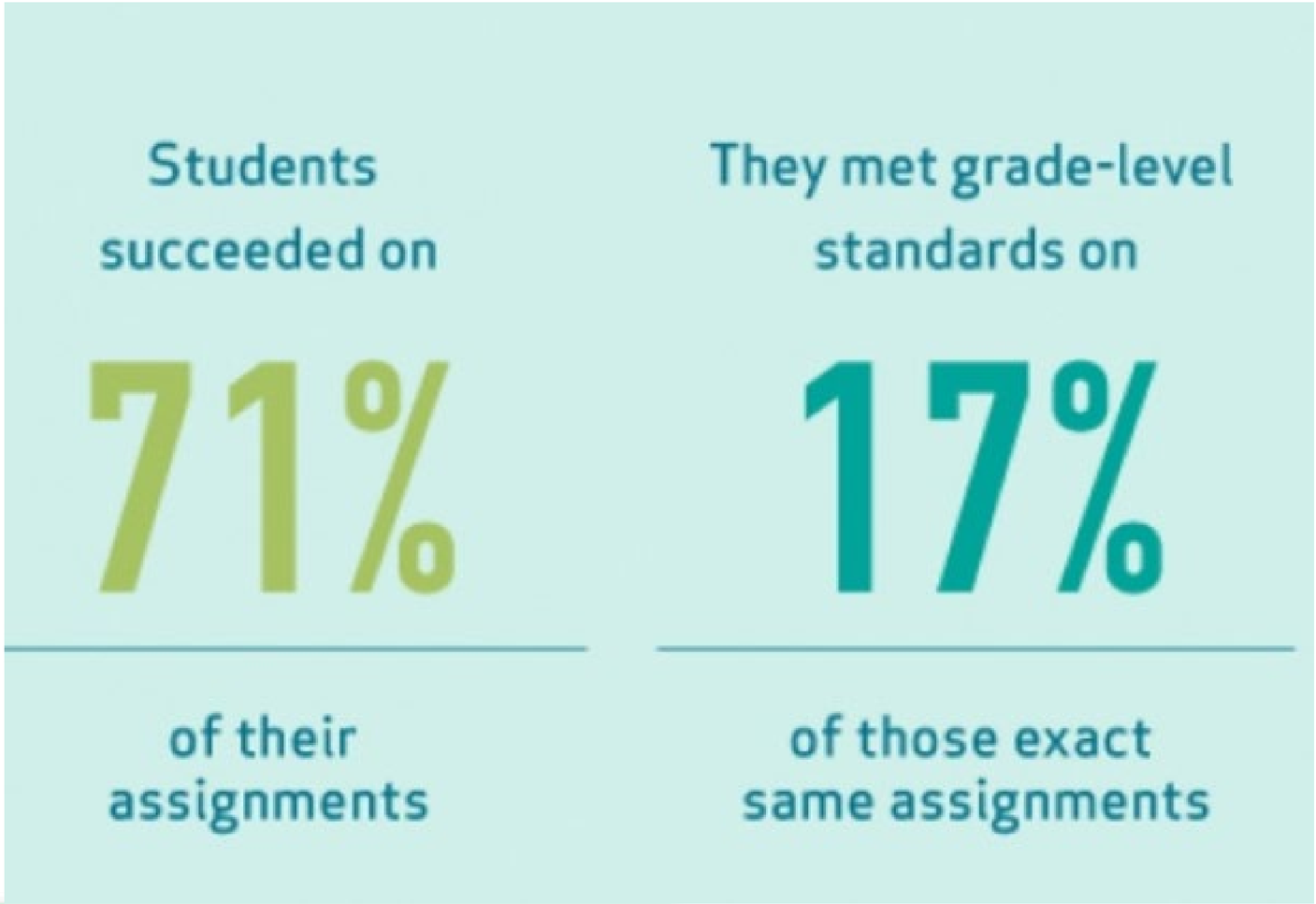
- Complete the  Breaking Down a Standard resource to build a shared understanding of a standard.
  - Explain and give grade appropriate examples of how the architecture/components of the standards support the development of cluster level understanding.
  - Identify and develop a shared understanding of the “target of the standard” (conceptual understanding, procedural skill/fluency, application)
  - Describe misconceptions that may occur in relation to the standard being explored.

Success Criteria

- Complete the  Assignment Review Protocol to review and evaluate mathematics tasks.
  - Determine the cognitive complexity of any given task.
  - Determine the level of relevance within a task.
  - Consider potential “next steps” with mathematics tasks based upon evaluation and shared understanding of the *KAS for Mathematics*.

Why start by grounding in the standards?

Most students do what they're asked in school - but still aren't prepared to meet their goals after graduation because so few of their assignments actually gave students the chance to complete grade-level work



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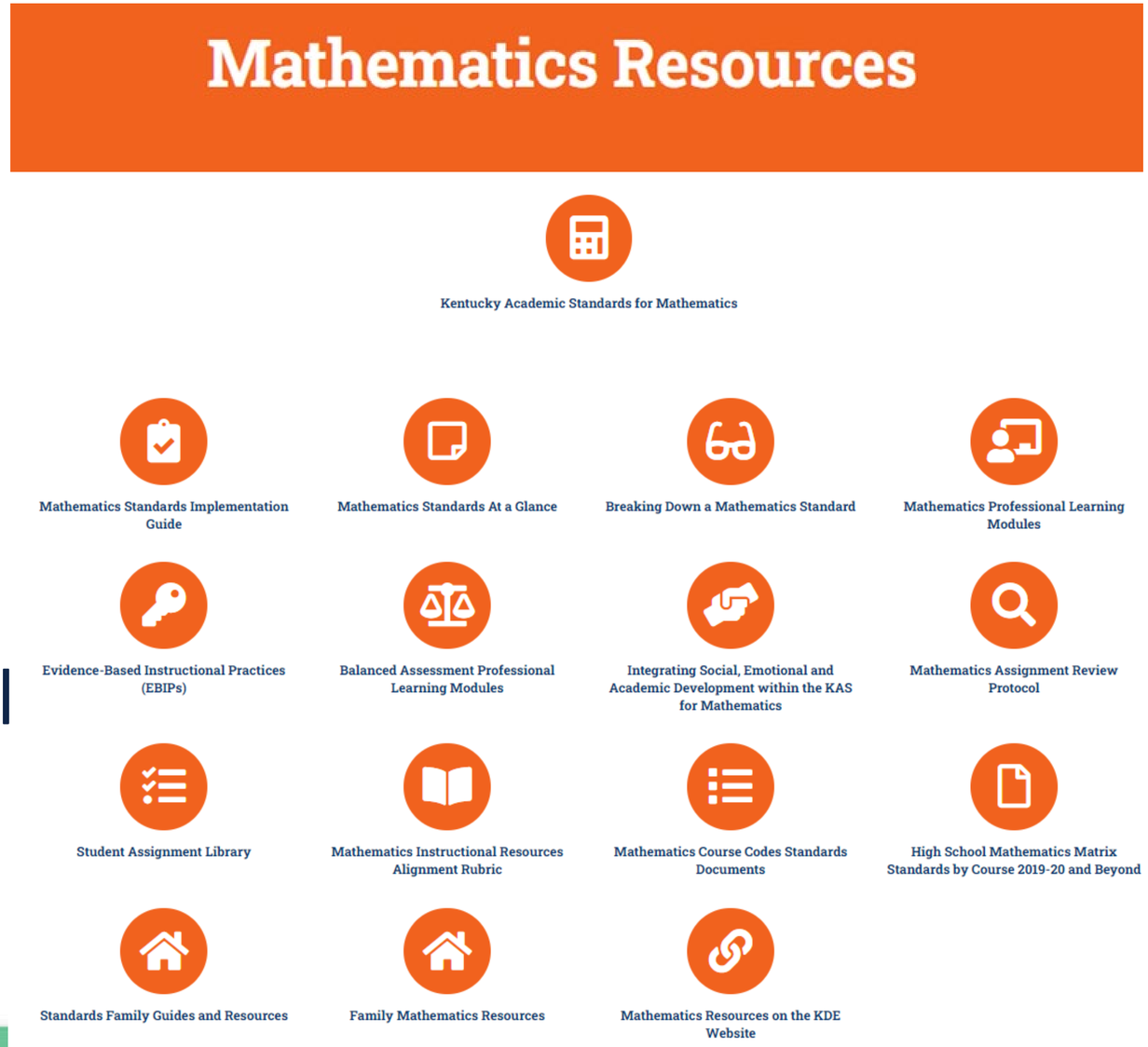
Resources from kystandards.org:

- Standards document
- Breaking Down a Standard
- Assignment Review Protocol
- Integrating SEAD within the *KAS for Mathematics*



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To ground our exploration in the *KAS for Mathematics* today:

Breaking Down a Standard Protocol

- Highlights the role each component within the *KAS for Mathematics* plays in answering the question, **“What do we expect our students to learn?”**

Breaking Down a Mathematics Standard **KAS: _____**

What is the domain/conceptual category/big idea?	
Standards for Mathematical Practice	
MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics.	MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.
Cluster: What is the broader understanding that the standard plays a role in building?	
Standards	**Clarifications**
• Identify the target of the standard: o conceptual understanding o procedural skill/fluency o application Consider how the target of the standard will have an impact on instruction and assessment. (For more information, refer to p. 7, 10 and 15 of *KAS for Mathematics.*) • What key mathematics should students know and be able to do?	• What are the specific representations/strategies that will need to be considered when planning instruction? • What are the possible misconceptions that will need to be addressed during instruction? Coherence: Previous Grade → Current Standard → Upcoming Grade • How does this standard build off of prior learning? • How does this standard support future learning? • How does this standard connect to other standards (or even other clusters or domains)?
Attending to the Standards for Mathematical Practice	
• How are students engaging in the mathematical practices as they learn this content? (For more information, refer to p. 12-15 of *KAS for Mathematics.*)	

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Think-Pair-Share

***T** : (Think)*

- What is the domain/conceptual category/big idea?
- What is the broader understanding the standard plays a role in building (cluster)?

***P** : (Pair) Paired with another participant or a small group.*

***S** : (Share) Share your thinking with your partner.*

Initial Overview

Use the *KAS for Mathematics* to identify:

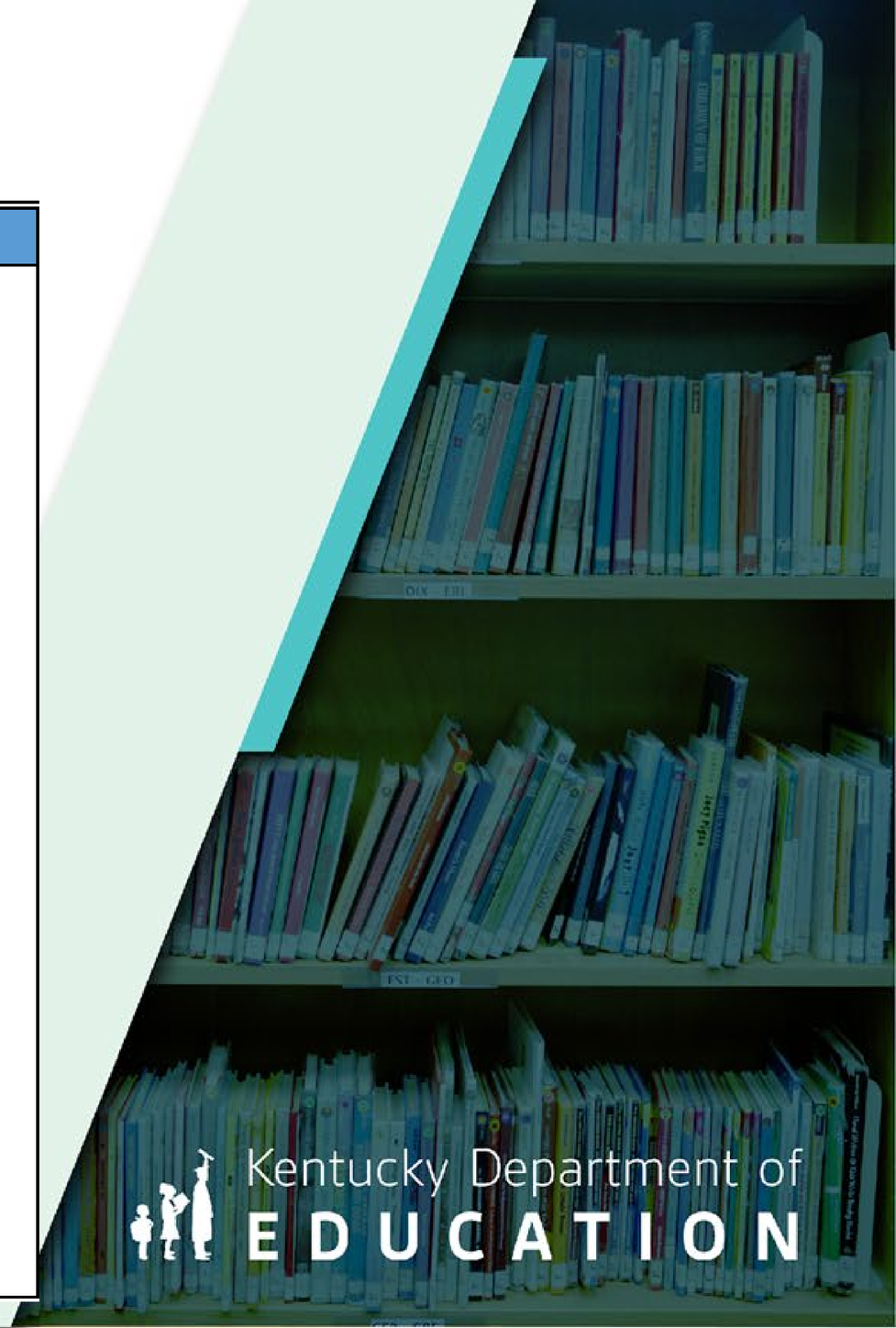
- What is the domain/conceptual category/big idea?
- What is the broader understanding the standard plays a role in building (cluster)?

What is the domain/conceptual category/big idea?	
Standards for Mathematical Practice	
MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics.	MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.
Cluster: What is the broader understanding that the standard plays a role in building?	

Standards

Standards

• Identify the target of the standard:
  ○ conceptual understanding
  ○ procedural skill/fluency
  ○ application
Consider how the target of the standard will have an impact on instruction and assessment. (For more information, refer to p. 7, 10 and 15 of *KAS for Mathematics.*)
 	
• What key mathematics should students know and be able to do?



Target of the Standard: Conceptual Understanding

The **Standards for Mathematical Content** are a balanced combination of conceptual understanding, procedural skill/fluency and application.

- Conceptual understanding refers to understanding mathematical concepts, operations and relations. Conceptual understanding is more than knowing isolated facts and methods; students should be able to make sense of why a mathematical idea is important and the kinds of contexts in which it is useful. Conceptual understanding allows students to connect prior knowledge to new ideas and concepts.

Target of the Standard: Procedural Skill/Fluency

The **Standards for Mathematical Content** are a balanced combination of conceptual understanding, procedural skill/fluency and application.

- Procedural skill/fluency is the ability to apply procedures accurately, efficiently, flexibly and appropriately. It requires speed and accuracy in calculation while giving students opportunities to practice basic skills. Students' ability to solve more complex application and modeling tasks is dependent on procedural skill and fluency.

Target of the Standard: Application

The **Standards for Mathematical Content** are a balanced combination of conceptual understanding, procedural skill/fluency and application.

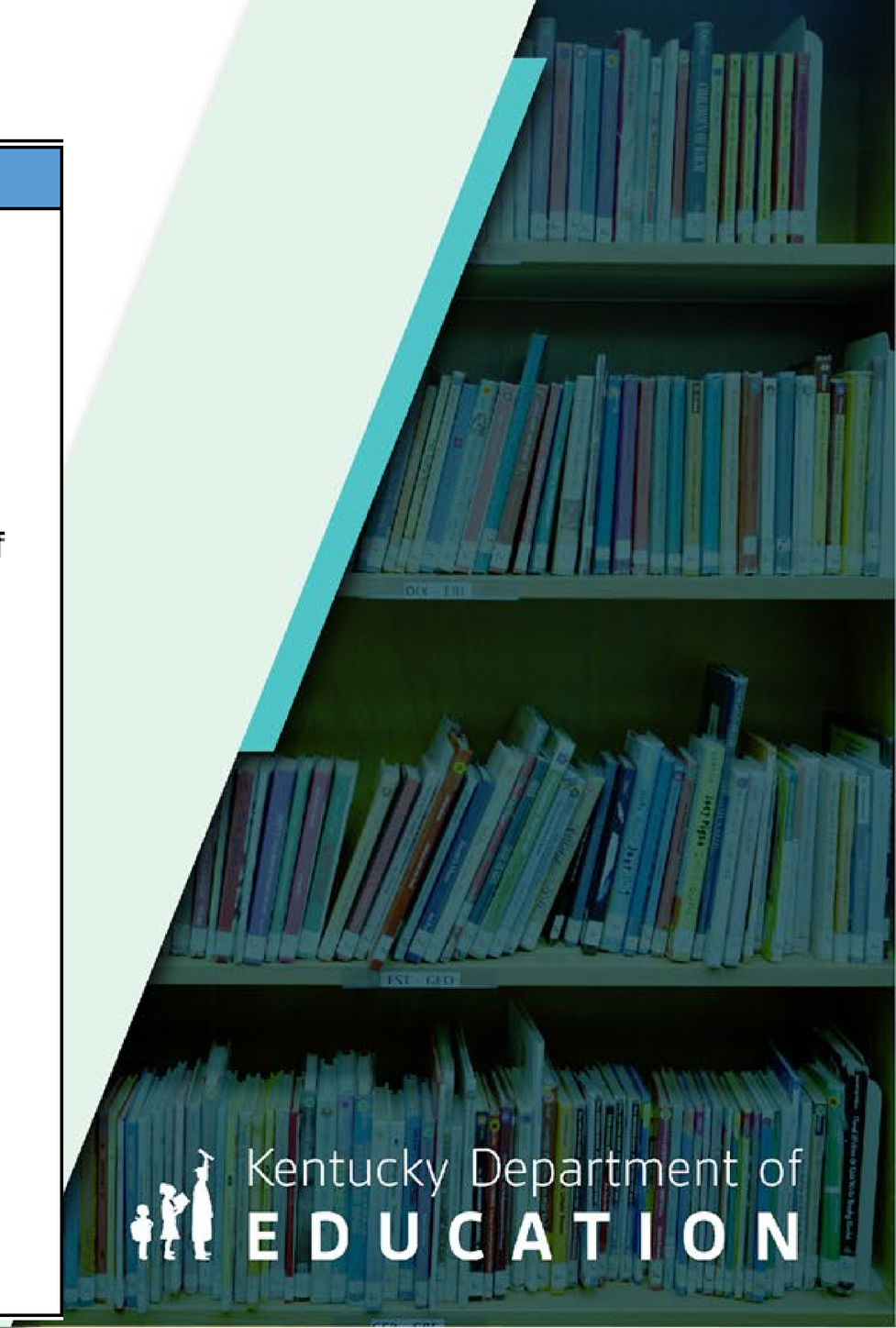
- Application provides a valuable context for learning and the opportunity to solve problems in a relevant and a meaningful way. It is through real-world application that students learn to select an efficient method to find a solution, determine whether the solution(s) makes sense by reasoning and develop critical thinking skills.

Standards

Standards

• Identify the target of the standard:
  ○ conceptual understanding
  ○ procedural skill/fluency
  ○ application
Consider how the target of the standard will have an impact on instruction and assessment. (For more information, refer to p. 7, 10 and 15 of *KAS for Mathematics*.)

• What key mathematics should students know and be able to do?



Let's discuss:

- What is the **target of the standard**?
  - Consider the impact that might have on instruction and assessment.
  - Include any notes that come up that you want to remember later on your protocol.
- Begin to indicate the key mathematics that students should know and be able to do to reach the full intent of this standard.

*Throughout this process, remember this is a living document that you can, will and should revisit. You don't have to write everything down right this second. You might add more as you gain more clarity around the standards as a whole.

Clarifications

Clarifications
• What are the specific representations/strategies that will need to be considered when planning instruction? • What are the possible misconceptions that will need to be addressed during instruction? Coherence: Previous Grade → Current Standard → Upcoming Grade • How does this standard build off of prior learning? • How does this standard support future learning? • How does this standard connect to other standards (or even other clusters or domains)?

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Relationship Status:

Target of the Standard

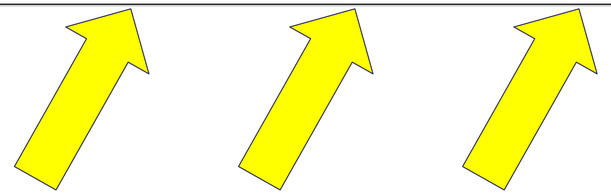
The standards emphasize procedural skill and fluency, building **from** conceptual understanding **to** application and modeling with mathematics, in order to solve real world problems.

Coherence:

Conceptual understanding → Procedural skill/ fluency → Application

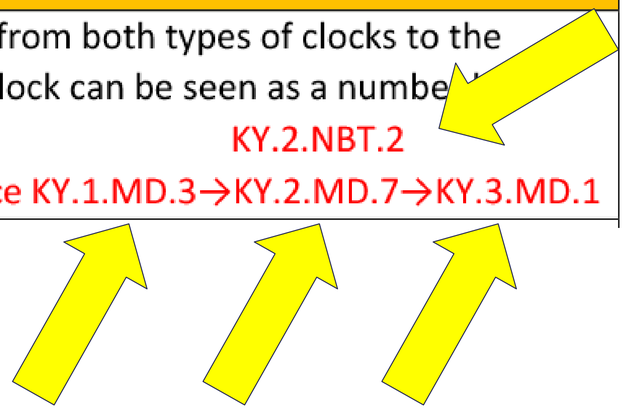
Coherence Across Grade Levels

Statistics and Probability	
Standards for Mathematical Practice	
MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics.	MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.
Cluster: Develop understanding of statistical variability.	
Standards	**Clarifications**
KY.6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. **MP.1, MP.3, MP.6**	For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates a variety of values with associated variability in students' ages. Coherence KY.5.MD.2→KY.6.SP.1→KY.7.SP.1



Coherence Within Grade Levels

Measurement and Data	
Standards for Mathematical Practice	
MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics.	MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.
Cluster: Work with time and money.	
Standards	**Clarifications**
KY.2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. **MP.5**, **MP.6**	Students orally tell and write the time from both types of clocks to the nearest five minutes. Realizing that a clock can be seen as a numbe KY.2.NBT.2 Coherence KY.1.MD.3→KY.2.MD.7→KY.3.MD.1



Let's discuss...

- What **specific representations or strategies** need to be considered when planning instruction around this standard?
- Indicate **possible misconceptions** that will need to be addressed during instruction.
- Begin looking at the various ways this specific standard with within the **overall progression of the standards**. This will allow for connections among the content to be **intentionally** build into instruction.

*Throughout this process, remember this is a living document that you can, will and should revisit. You don't have to write everything down right this second. You might add more as you gain more clarity around the standards as a whole.

Attending to the SMPs:

Attending to the Standards for Mathematical Practice
• How are students engaging in the mathematical practices as they learn this content? (For more information, refer to p. 12-15 of *KAS for Mathematics.*)

- Engaging the SMPs: Look fors and Question Stems
  - Provides guidance on ways teachers can design instruction to allow students to engage in the standards for mathematical practices (SMP). Resource includes Student Look-fors, Teacher Look-fors and potential Question Stems for each of the eight mathematical practices.

Let's discuss...

- How do you envision students **engaging with the SMPs** while learning content specific to this standard?
  - You might feel this specific standard offers students a unique opportunity to engage in a specific mathematical practice.
  - You might include specific ways you envision designing your instruction to emphasize purposeful questions that **intentionally** attend to a specific mathematical practice.

*Throughout this process, remember that this is a living document that you can, will and should revisit. You don't have to write everything down right this second. You might add more as you gain more clarity around the standards as a whole.

Page 2 of the resource:

- In what additional ways might you/your team envision students engaging in the mathematical practices for this content standard? How does that vision impact instruction for this content standard?
- What are additional coherence connections (within or across grade levels) that you/your team notice for this standard? How do those connections impact instruction for this content standard?
- Include any notes you/your team might utilize internally to provide additional clarifications for this standard.

What “souvenirs” can we take from Checkpoint 1?

- Value of identifying the target of the standard
- Power of discussing and predicting misconceptions
- Importance of utilizing the Coherence/Vertical Alignment component
- Impact on student experience when engaging with the SMPs with grade level tasks

Rest Area

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Grounding in the *KAS for Mathematics*

Part 2: Assignment review protocol

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Table Rally Robin:

Round 1:

With your table, take turns saying one word/phrase each, sharing something that makes you happy.

Round 2:

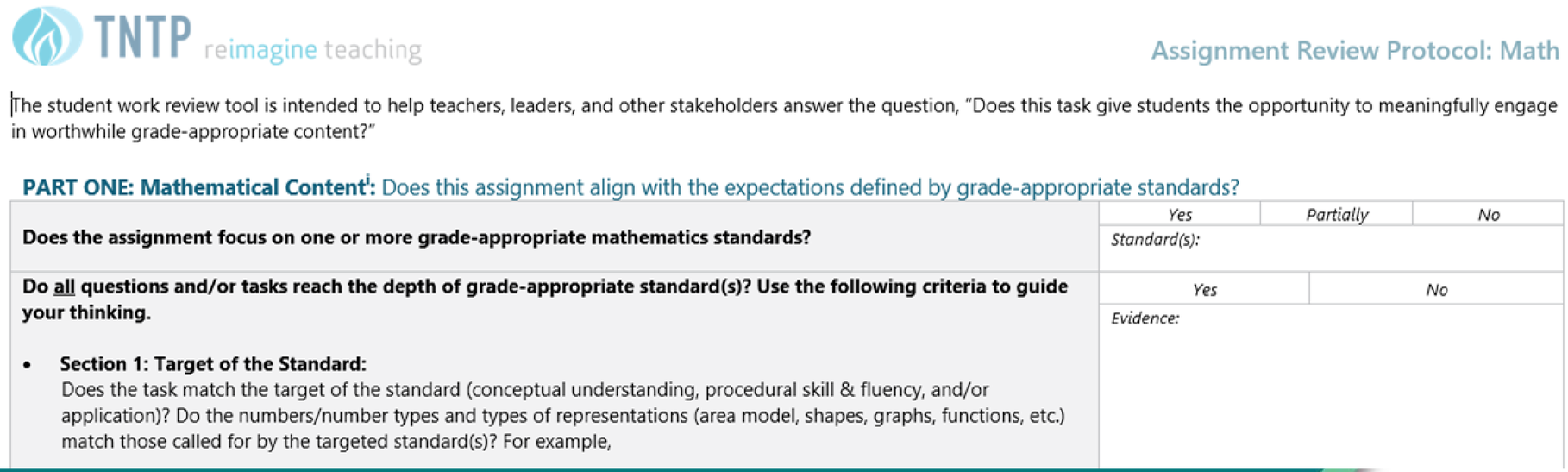
With your table, take turns saying one word each, sharing an idea/word/phrase from the first part of our session today.

Quick Reminder: Success Criteria

- Complete the  Assignment Review Protocol to review and evaluate mathematics tasks.
  - Determine the cognitive complexity of any given task.
  - Determine the level of relevance within a task.
  - Consider potential “next steps” with mathematics tasks based upon evaluation and shared understanding of the *KAS for Mathematics*.

Next Steps to Consider:

To deepen discussion around what different stages of student mastery could look like, you/your team might look at samples of student work intended to align to this standard. This might be an opportunity to utilize the Assignment Review Protocol.



TNTP reimagine teaching

Assignment Review Protocol: Math

The student work review tool is intended to help teachers, leaders, and other stakeholders answer the question, "Does this task give students the opportunity to meaningfully engage in worthwhile grade-appropriate content?"

PART ONE: Mathematical Content[i]: Does this assignment align with the expectations defined by grade-appropriate standards?

Does the assignment focus on one or more grade-appropriate mathematics standards?	*Yes*	*Partially*	*No*
	Standard(s):		
Do all questions and/or tasks reach the depth of grade-appropriate standard(s)? Use the following criteria to guide your thinking. • **Section 1: Target of the Standard:** Does the task match the target of the standard (conceptual understanding, procedural skill & fluency, and/or application)? Do the numbers/number types and types of representations (area model, shapes, graphs, functions, etc.) match those called for by the targeted standard(s)? For example,	*Yes*	*No*	
	Evidence:		

Assignment Review Protocol:

Intended to answer the question, “Does this task give students the opportunity to meaningfully engage in worthwhile grade-appropriate content?” This protocol is designed to guide participants through the process of reviewing a **single task/assignment**.

- PART ONE: Mathematical Content
  - Section 1: Target of the Standard
  - Section 2: Coherence
  - Section 3: Cognitive Complexity
- PART TWO: Mathematical Practices
- PART THREE: Relevance
- PART FOUR: Student Performance (if applicable)

KY.3.OA.8

Today we will review this sample task for alignment to KY.3.OA.8:

Robert Kaplinsky

Problems Blog

Do You Have Enough Money?

March 25, 2013

Kentucky Department of EDUCATION

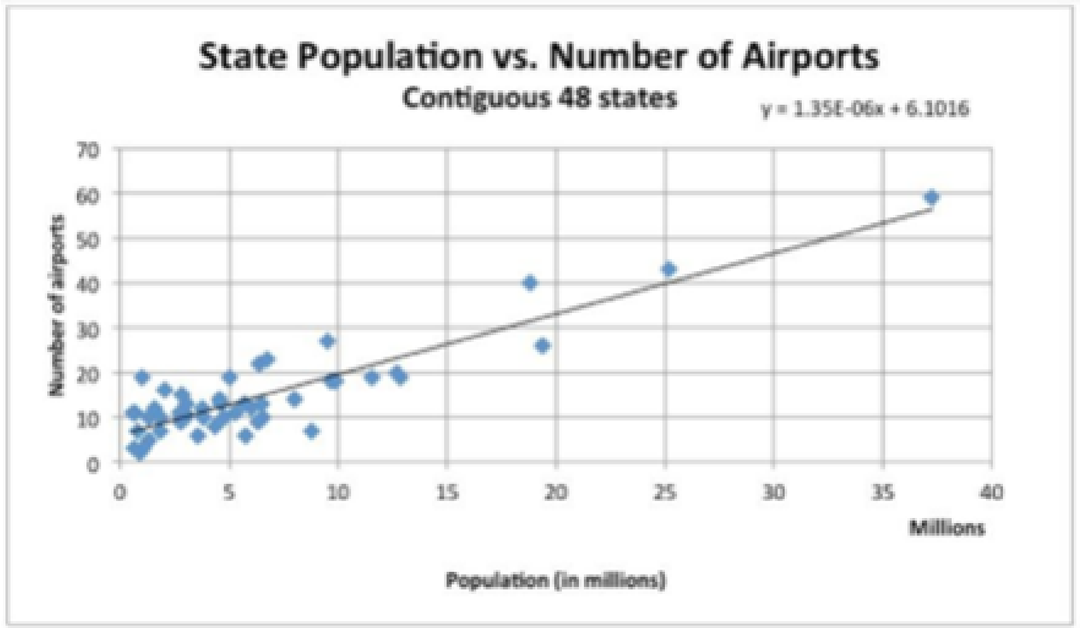
Today we will review this sample task for alignment to KY.4.NF.1:

a. What fraction of the rectangle below is shaded?

b. Laura says that ¼ of the rectangle is shaded. Do you think she is correct? Explain why or why not by using the picture.

Today we will review this sample task for alignment to KY.8.SP.3:

The scatter plot below shows the relationship between the number of airports in a state and the population of that state according to the 2010 Census. Each dot represents a single state. The number of airports in each state comes from data on http://www.nationalatlas.gov/atlasftp.html?openChapters=chptrans#chptrans. The data for population comes from the 2010 census: http://www.census.gov/2010census/data/



Today we will review this sample task for alignment to KY.HS.N.1:

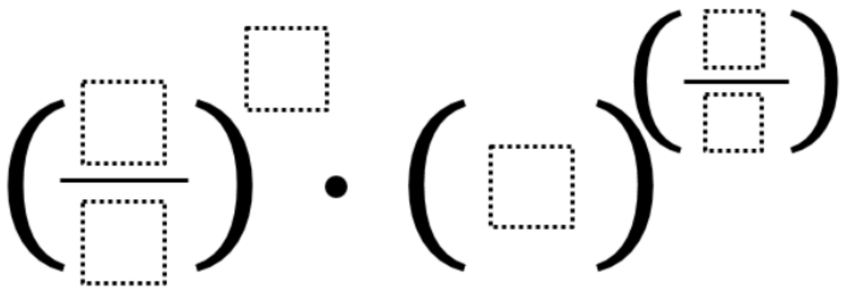
OPEN MIDDLE

Home | Kinder | 1st Gr | 2nd Gr | 3rd Gr | 4th Gr | 5th Gr | 6th Gr | 7th Gr | 8th Gr

Home > High School: Number and Quantity > Rational Exponents

RATIONAL EXPONENTS

Directions: Using the digits 1 to 6, at most one time each, fill in the boxes make the greatest or least value.
Extension: How close to 1 can you get?



Part One: Mathematical Content
Section 1: Target of the Standard

Do <u>all</u> questions and/or tasks reach the depth of grade-appropriate standard(s)? Use the following criteria to guide your thinking.

- **Section 1: Target of the Standard:**
  Does the task match the target of the standard (conceptual understanding, procedural skill & fluency, and/or application)? Do the numbers/number types and types of representations (area model, shapes, graphs, functions, etc.) match those called for by the targeted standard(s)? For example,

  - If the standard is **conceptual understanding**, does the task require more than knowing isolated facts and methods? Are students asked to make sense of why a mathematical idea is important and the kinds of contexts in which it is useful?

  - If the standard is **procedural skill/fluency**, does the task require students to apply procedures accurately, efficiently, flexibly and appropriately? Does the task focus students' attention on the use of procedures for the purpose of developing a deeper level of understanding of mathematical concepts or ideas? If general procedures may be followed, can they be followed mindlessly or are students asked to engage with the conceptual ideas that underlie the procedures to complete the task successfully?

  - If the standard is **application**, does the task offer students the opportunity to solve problems in a relevant and meaningful way? Are students asked to select an efficient method to find a solution and develop critical thinking skills? Are students asked to actively examine task constraints that may limit possible solutions and strategies?

Part One: Mathematical Content
Section 2: Coherence

- Looking across grade-levels, is there a coherent connection to the same topic in a previous grade? If so, is the task crafted to elicit a more sophisticated level of understanding than would have been acceptable in the previous grade?
- Is there a coherent connection to another standard within the current grade?

Part One: Mathematical Content

Section 3: Cognitive Complexity

Target of the Standard	Low (Level 1)	Medium (Level 2)	High (Level 3)
Conceptual Complexity	Solving the problem requires students to recall or recognize a grade-level concept. The student does not need to relate concepts or demonstrate a line of reasoning.	Students may need to relate multiple grade-level concepts or different types, create multiple representations or solutions, or connect concepts with procedures and strategies. The student must do some reasoning but may not need to demonstrate a line of reasoning.	Solving the problem requires students to relate multiple grade-level concepts and to evidence reasoning, planning, analysis, judgment, and/or creative thought OR work with a sophisticated (nontypical) line of reasoning.
Procedural Complexity	Solving the problem entails little procedural demand or procedural demand is below grade level.	Solving the problem entails common or grade-level procedure(s) with friendly numbers.	Solving the problem requires common or grade-level procedure(s) with unfriendly numbers, an unconventional combination of procedures, or requires unusual perseverance or organizational skills in the execution of the procedure(s).
Application Complexity	Solving the problem entails an application of mathematics, but the required mathematics is either directly indicated or obvious.	Solving the problem entails an application of mathematics and requires an interpretation of the context to determine the procedure or concept (may include extraneous information). The mathematics is not immediately obvious. Solving the problem requires students to decide what to do.	In addition to an interpretation of the context, solving the problem requires recognizing important features, and formulating, computing, and interpreting results as part of a modeling process.

Part Two: Mathematical Practices

Does the assignment require students to engage with one or more mathematical practices while working on grade-appropriate content?

- Does the target standard(s) explicitly call for the use of a specific mathematical practice? If so, does the task provide opportunity for students to engage in the mathematical practice named by the standard?

It may be useful to utilize the front matter of the *KAS for Mathematics* (p. 12-15) and/or the Engaging the SMPs: Look fors and Question Stems resource from the *Getting to Know the KAS for Mathematics* module.

Part Three: Relevance

- Does the majority of the assignment consist of word problems or real-world application problems/tasks?

- If the assignment connects grade-appropriate content standards to real-world experiences, does it allow students to apply math in a meaningful way?

Part Four: Student Performance

TNTP reimagine teaching

Assignment Review Protocol: Math

PART FOUR: Student Performance: If students have not yet completed the task, users only review the quality of the task. If students have completed the task, users first review the quality of the task and then analyze students' performance.

Which students met the expectations of the assignment, as communicated by the directions and/or scoring key?

- *If no directions and/or scoring key is provided, assume 80% accuracy and completion meets the assignment expectations.*

Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Evidence:					

Which students met the expectation of the target standard(s) for the assignment?

- *If the assignment meets the demands of the standards, then student performance on the standards should match that of the assignment*
- *If the assignment does not meet the demands of the standards, then student performance likely won't meet the demands of the standards*

Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Evidence:					

Overall Rating: Overall, based on ratings for Content Standards, Standards for Mathematical Practices, Relevance and Student Performance, how does this assignment rate?

0 – Weakly Aligned	1 – Partially Aligned	2 – Strongly Aligned

Overall Rating Rationale:

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What “souvenirs” can we take from Checkpoint 2?

- Is it already strongly aligned to the standard?
- If not
  - Could minor revisions improve the alignment?
  - Could another assignment fill the gaps that showed up when examining this assignment?
  - Is instruction balanced when considered collectively?

The *KAS for Mathematics*

Are…

- Goals or outcomes of an educational program.
- Statements of what students should be able to do after instruction

Are NOT…

- A set of instructional or assessment tasks

Do…

- Establish what students should know and be able to do at the conclusion of a course

Do NOT…

- dictate curriculum, teaching methods, the design of a lesson or how units should be organized

Timed Pair Share

Within your group, each person will select a question from the next slide to focus their sharing on.

The first speaker will have 30 seconds to share their thinking around the question.

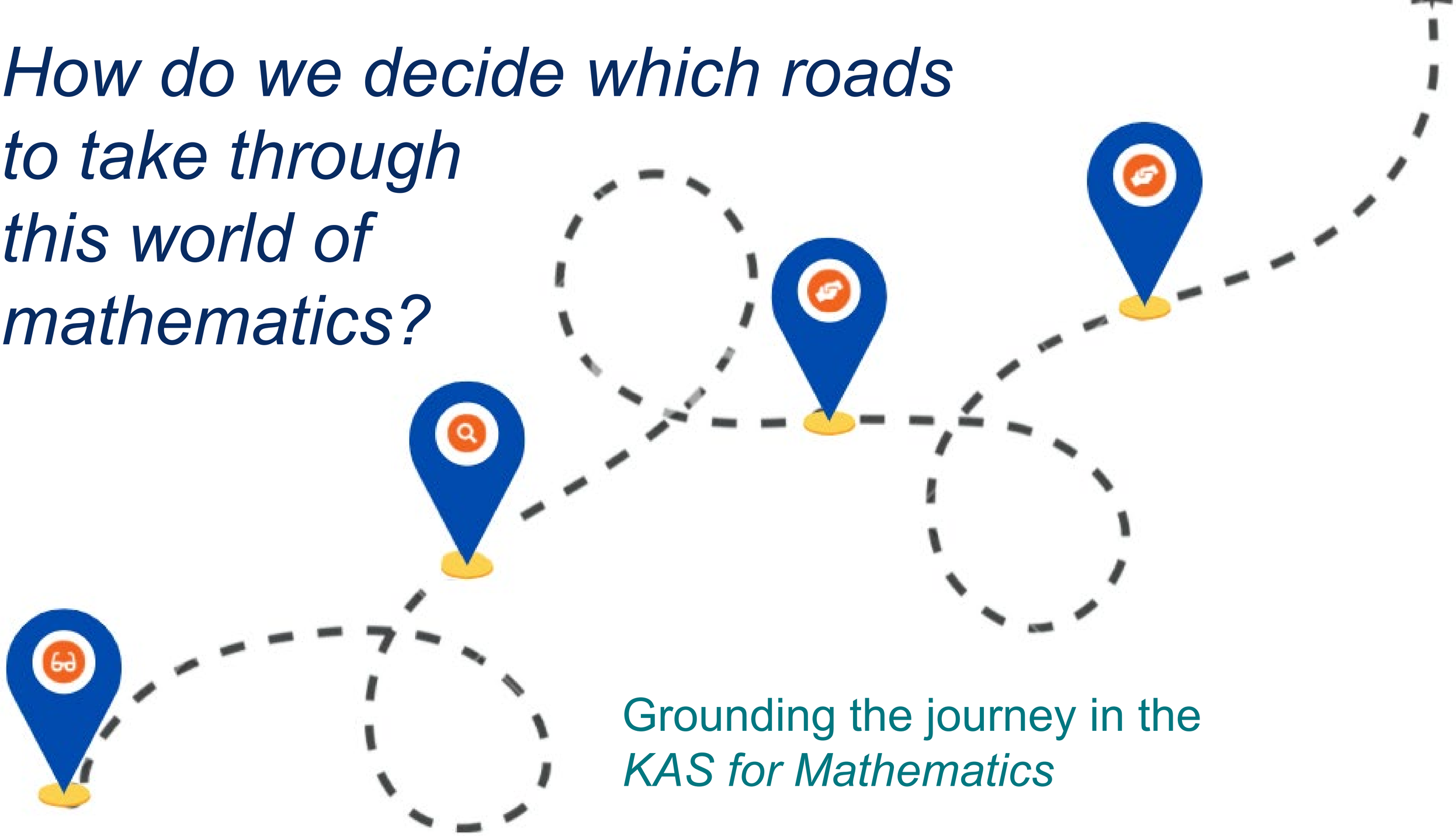
Partners will then have 30 seconds to respond - ask a question, share an idea, expand the original sharing, etc.

Switch role and repeat for another of the questions on the slide.

Essential Questions

- How do the components of the architecture within the standards support the development of cluster level understanding?
- What is meant by the “target of the standard” and how might the “target” have implications for educators when designing instruction?
- Why is it important to determine the cognitive complexity of a given task/assignment?
- How do I (or my team/PLC) determine potential “next steps” for mathematics tasks/assignments based upon evaluation and shared understanding of the *KAS for Mathematics*?

How do we decide which roads to take through this world of mathematics?



Grounding the journey in the *KAS for Mathematics*


all you
need is love.
but sometimes
a lunch break
works wonders.

Lunch

60 min

Planting SEAD in the KAS for Mathematics

Part 1: Research and reflection

Social-emotional learning

Social-Emotional Learning (SEL) is "the process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to:

- Develop healthy identities
- Manage emotions and achieve personal and collective goals
- Feel and show empathy for others
- Establish and maintain supportive relationships
- Make responsible and caring decisions."

(Collaborative for Academic, Social, and Emotional Learning, 2022)

p. 8

SEL and student outcomes

SEL

- Fewer behavioral problems
- Lower levels of emotional distress
- Improved academic outcomes

(Durlak et al., 2011)

p. 8

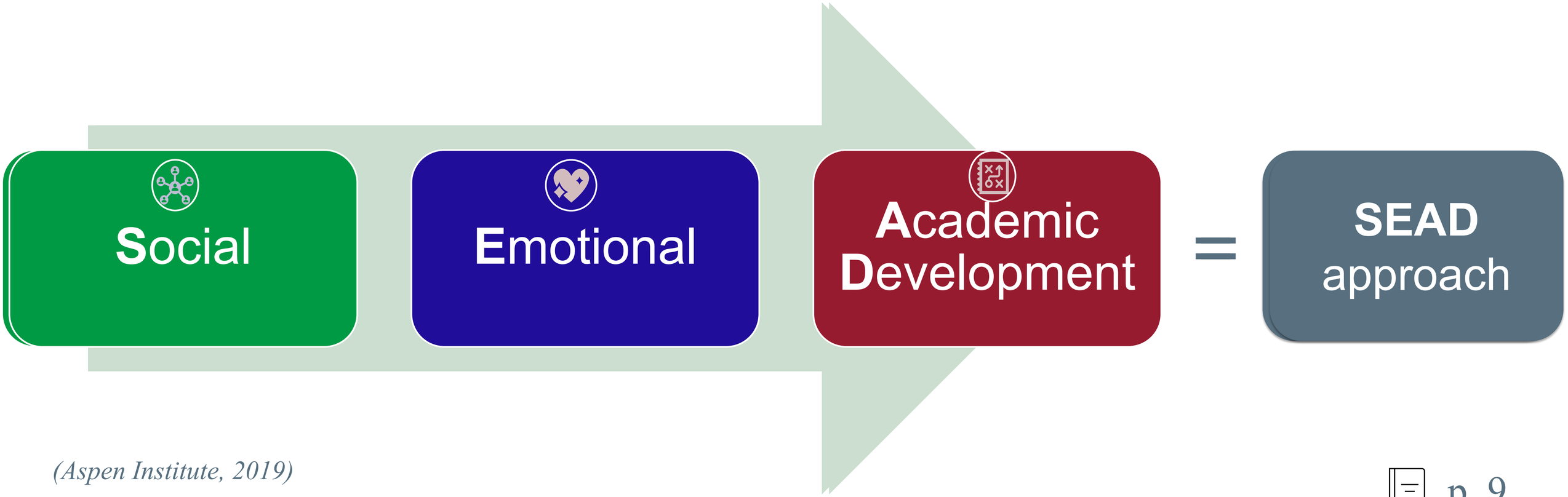
Why might SEL improve academic outcomes?

- Take a moment to think about the skills that help you learn and grow every day as an adult.
- What are they?

p. 8

Integrating **s**ocial, **e**motional, and **a**cademic **d**evelopment (SEAD)

Academic learning requires the integration of these skills:



(Aspen Institute, 2019)

p. 9

Turn and talk

- What instructional strategies did you find to be effective in your classrooms this past year?
- In what ways do these strategies contribute to students' social, emotional, and/or academic development?

p. 9

How to integrate SEAD

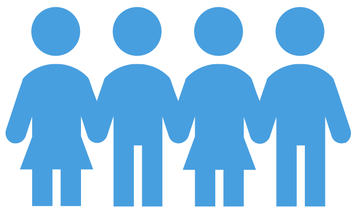
1. Create learning environments that are physically and emotionally safe.
2. Intentionally teach social, emotional, and cognitive skills.
3. Have students practice these skills as they learn academic content and in their interactions.

(Aspen Institute, 2019; Darling-Hammond, et al., 2020; Jones et al., 2017)

p. 9

Role of SEAD in educational equity

- SEAD benefits all students by supporting students' ability to cope with stress and trauma.
- While students from all backgrounds may experience stress and trauma, research indicates that students from low-income families and students of color are more likely to have repeated exposures to stress and traumatic experiences, due to systemic inequities and injustice.
- While SEAD is well positioned to support educational equity, educators must be intentional about teaching it in culturally responsive ways that counter privilege, prejudice, and structural inequality.



(Aspen Institute, 2019; Gregory & Fergus, 2017; Jagers et al., 2018; Jones et al., 2021)

p. 10

Stop and jot

- What personal identities do I bring to my classroom?
- How might my identity influence how I support students' SEAD?

p. 10

Principles of equitable SEAD

1. Ensure safe and inclusive learning environments that are respectful and affirming of diverse identities.
2. Recognize and incorporate student cultural values, practices, and assets.
3. Foster positive identity development.
4. Promote student agency and voice.
5. Explicitly acknowledge issues of bias, power, and inequality, and work to address them.

(Jones et al., 2017)

Pair and share

- In what ways have you embodied the principles of equitable SEAD in your classroom?
- How can you keep these principles at the forefront in your instructional planning and classroom practices?

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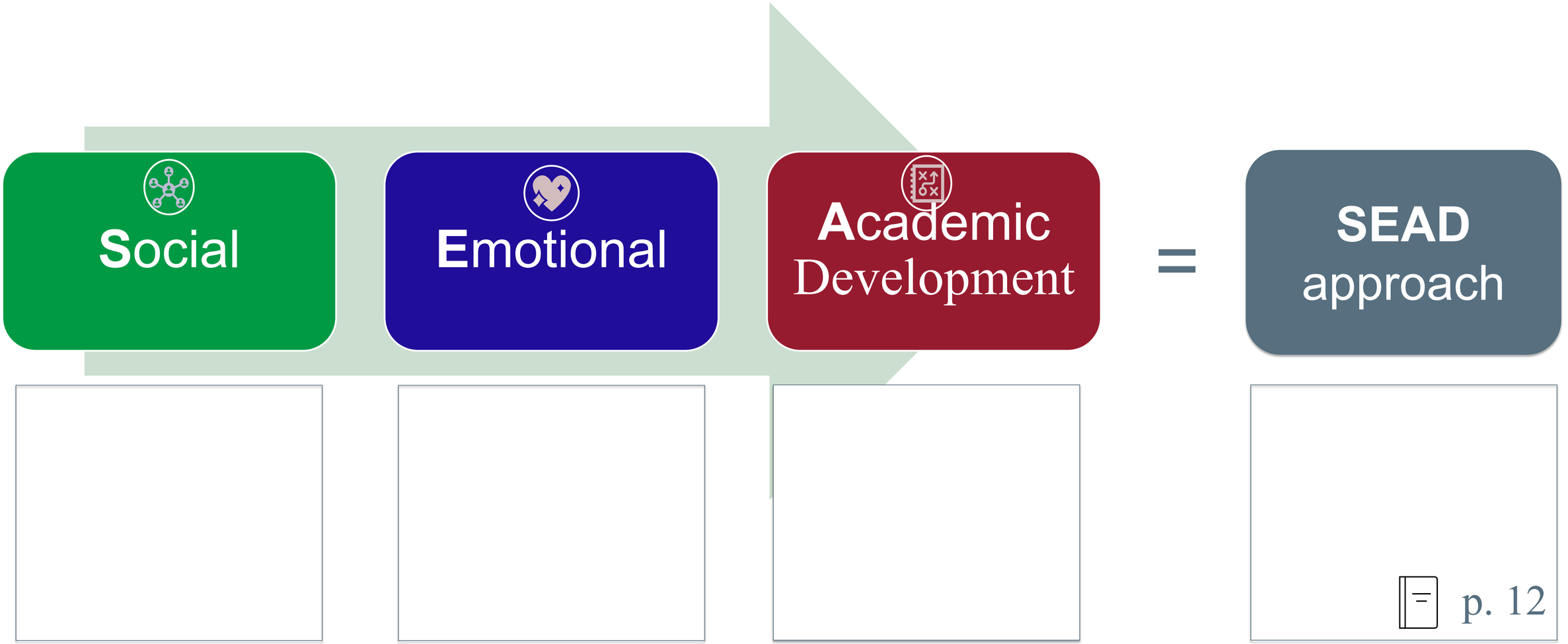
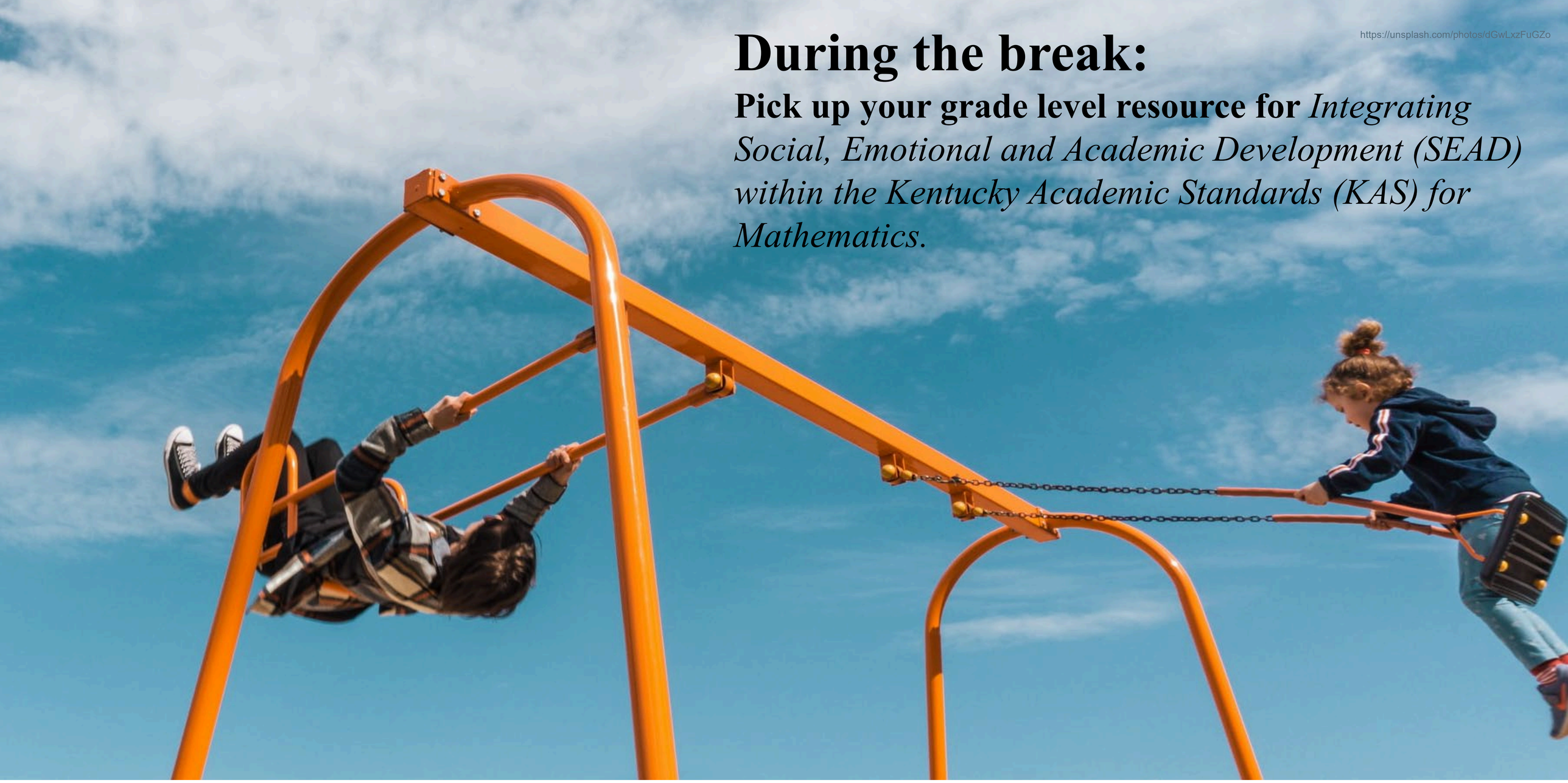
Planting SEAD in the KAS for Mathematics

Part 2: Experiencing SEAD

Integrating **s**ocial, **e**motional, and **a**cademic development (SEAD)





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During the break:

Pick up your grade level resource for *Integrating Social, Emotional and Academic Development (SEAD) within the Kentucky Academic Standards (KAS) for Mathematics.*

Planting SEAD in the *KAS for Mathematics*

Part 3: Key components and strategies

CASEL framework for SEAD

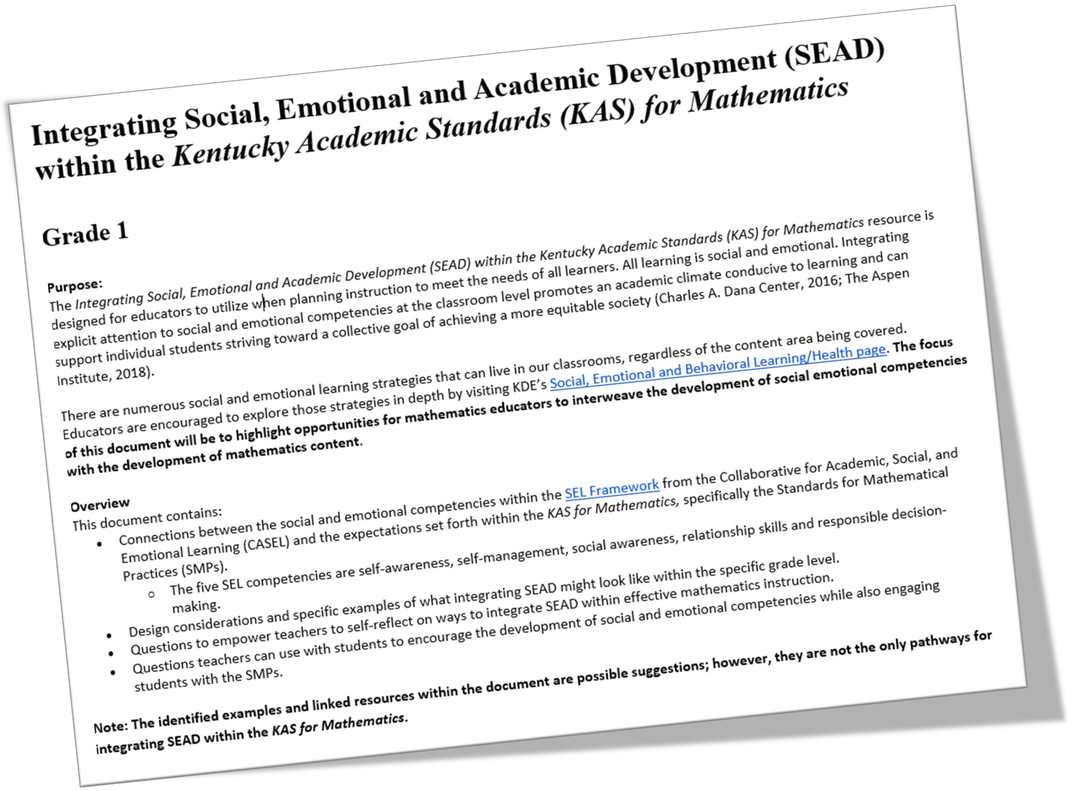
- What is the CASEL 5 framework and where does it come from?
- How does the framework help our work toward connecting SEAD to math?

p. 13

Integrating the CASEL Competencies within the *KAS for Mathematics*

The integration document shows the connection between the CASEL competencies and the expectations set forth within the *KAS for Mathematics,* including:

- **SEAD competency connections to the Standards for Mathematical Practices (SMPs)**
- **Design considerations** and specific examples of what integrating SEAD might look like within the specific grade level.
- **Questions** teachers can use with students to encourage the development of social and emotional competencies while also engaging students with the SMPs.
- **Self-Reflection Questions** to empower teachers to self-reflect on ways to integrate SEAD within effective mathematics instruction.



Integrating Social, Emotional and Academic Development (SEAD) within the *Kentucky Academic Standards (KAS) for Mathematics*

Grade 1

Purpose:
The *Integrating Social, Emotional and Academic Development (SEAD) within the Kentucky Academic Standards (KAS) for Mathematics* resource is designed for educators to utilize when planning instruction to meet the needs of all learners. All learning is social and emotional. Integrating explicit attention to social and emotional competencies at the classroom level promotes an academic climate conducive to learning and can support individual students striving toward a collective goal of achieving a more equitable society (Charles A. Dana Center, 2016; The Aspen Institute, 2018).

There are numerous social and emotional learning strategies that can live in our classrooms, regardless of the content area being covered. Educators are encouraged to explore those strategies in depth by visiting KDE's Social, Emotional and Behavioral Learning/Health page. **The focus of this document will be to highlight opportunities for mathematics educators to interweave the development of social emotional competencies with the development of mathematics content.**

Overview
This document contains:

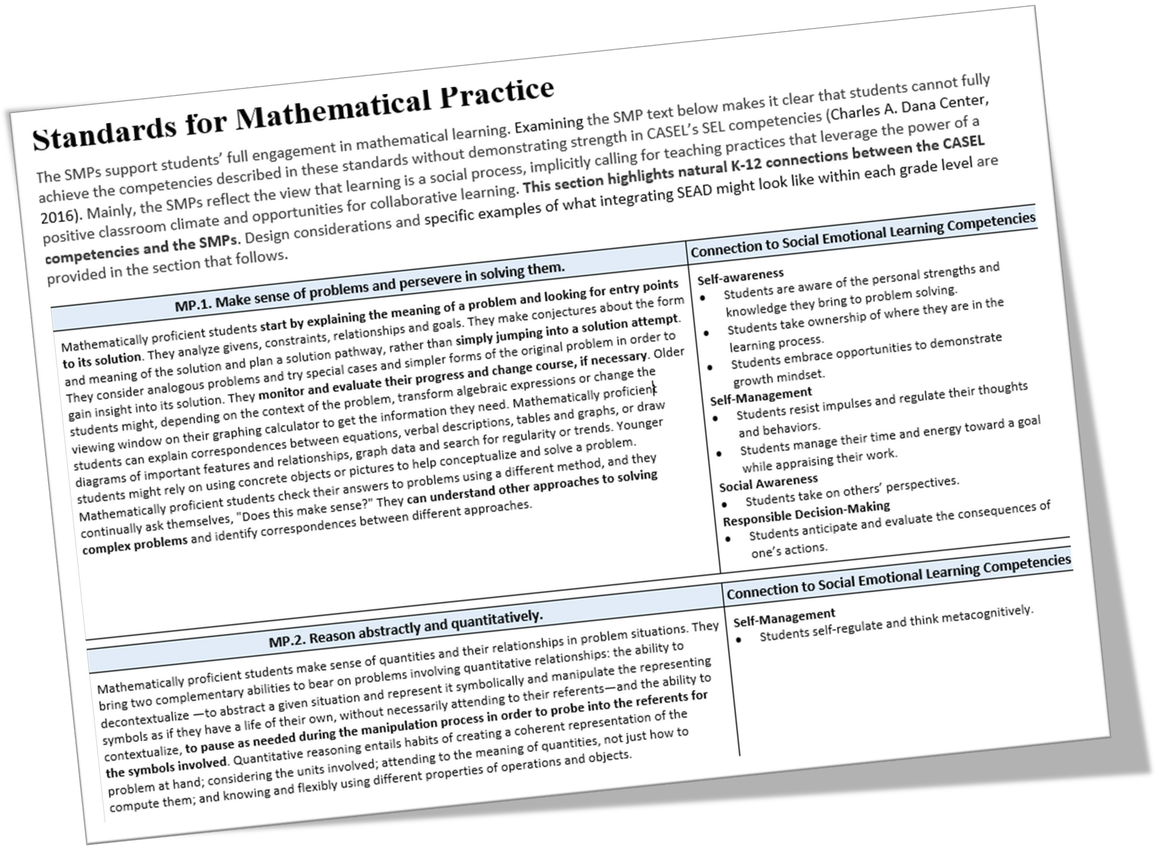
- Connections between the social and emotional competencies within the SEL Framework from the Collaborative for Academic, Social, and Emotional Learning (CASEL) and the expectations set forth within the *KAS for Mathematics,* specifically the Standards for Mathematical Practices (SMPs).
  - The five SEL competencies are self-awareness, self-management, social awareness, relationship skills and responsible decision-making.
- Design considerations and specific examples of what integrating SEAD might look like within the specific grade level.
- Questions to empower teachers to self-reflect on ways to integrate SEAD within effective mathematics instruction.
- Questions teachers can use with students to encourage the development of social and emotional competencies while also engaging students with the SMPs.

Note: The identified examples and linked resources within the document are possible suggestions; however, they are not the only pathways for integrating SEAD within the *KAS for Mathematics*.

Kentucky Department of EDUCATION

CASEL Competencies & Standards for Mathematical Practice

The SMPs support students' full engagement in mathematical learning...there is a natural connection between the CASEL competencies and the SMPs.



Standards for Mathematical Practice

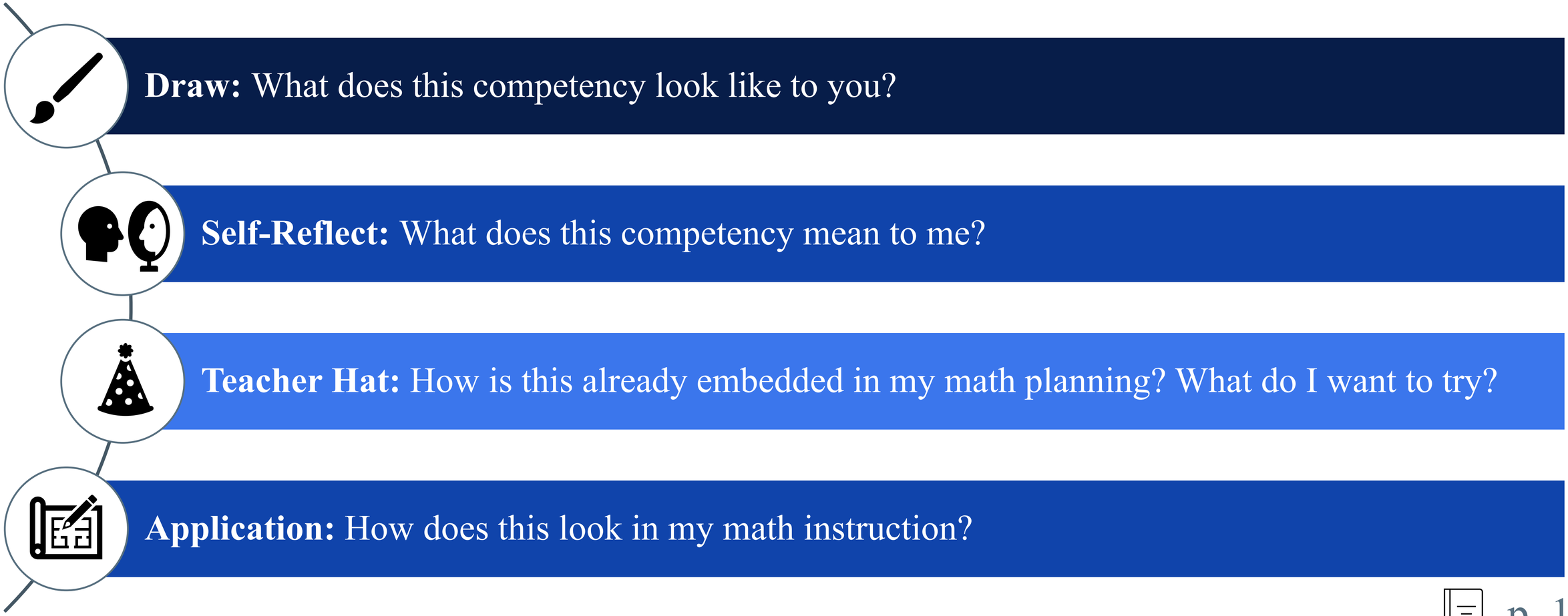
The SMPs support students' full engagement in mathematical learning. Examining the SMP text below makes it clear that students cannot fully achieve the competencies described in these standards without demonstrating strength in CASEL's SEL competencies (Charles A. Dana Center, 2016). Mainly, the SMPs reflect the view that learning is a social process, implicitly calling for teaching practices that leverage the power of a positive classroom climate and opportunities for collaborative learning. **This section highlights natural K-12 connections between the CASEL competencies and the SMPs.** Design considerations and specific examples of what integrating SEAD might look like within each grade level are provided in the section that follows.

MP.1. Make sense of problems and persevere in solving them.	Connection to Social Emotional Learning Competencies
Mathematically proficient students **start by explaining the meaning of a problem and looking for entry points to its solution**. They analyze givens, constraints, relationships and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway, rather than **simply jumping into a solution attempt**. They consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They **monitor and evaluate their progress and change course, if necessary**. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables and graphs, or draw diagrams of important features and relationships, graph data and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They **can understand other approaches to solving complex problems** and identify correspondences between different approaches.	**Self-awareness** • Students are aware of the personal strengths and knowledge they bring to problem solving. • Students take ownership of where they are in the learning process. • Students embrace opportunities to demonstrate growth mindset. **Self-Management** • Students resist impulses and regulate their thoughts and behaviors. • Students manage their time and energy toward a goal while appraising their work. **Social Awareness** • Students take on others' perspectives. **Responsible Decision-Making** • Students anticipate and evaluate the consequences of one's actions.

MP.2. Reason abstractly and quantitatively.	Connection to Social Emotional Learning Competencies
Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize —to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, **to pause as needed during the manipulation process in order to probe into the referents for the symbols involved**. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	**Self-Management** • Students self-regulate and think metacognitively.

Kentucky Department of EDUCATION

Protocol: Unpacking the CASEL competencies



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Preview

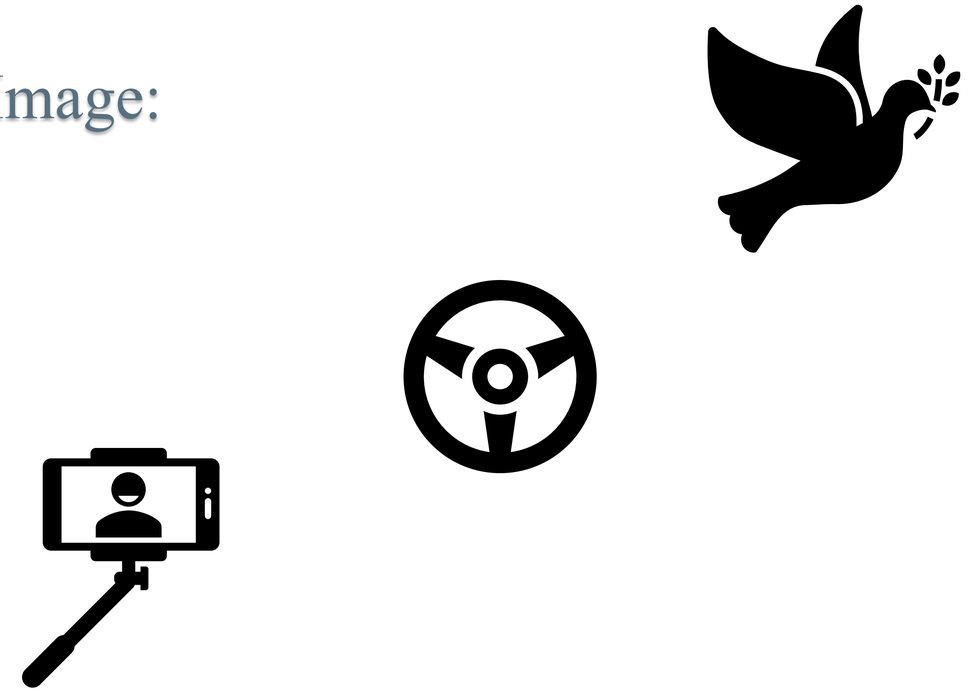
- **I do/We do:** We'll use the protocol to walk through one competency together.
- **You do:** You'll apply the protocol to unpack one more competency.
- **Celebrate:** We'll share out and celebrate our learning together!

CASEL Competency: **Self-Awareness**

Stop and draw

- Draw an image that represents what **self-awareness** means to you.

Image:



p. 14

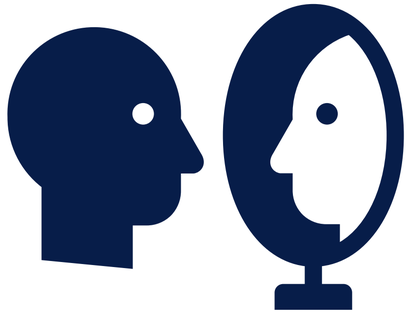
What is self-awareness?

Self-awareness is the ability to understand one's own emotions, thoughts, and values and how they influence behavior across contexts. Examples of how teachers can promote and students can demonstrate self-awareness include:

- Integrating personal and social identities
- Identifying personal, cultural, and linguistic assets
- Identifying one's emotions
- Demonstrating honesty and integrity
- Linking feelings, values, and thoughts
- Examining prejudices and biases
- Experiencing self-efficacy
- Having a growth mindset
- Developing interests and a sense of purpose

p. 14

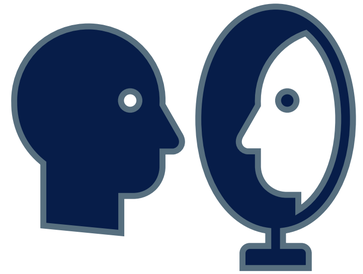
Self-reflect



- What does self-awareness mean to me?
- How do my dispositions and experiences with this competency impact how I support my students?
- What are my strengths and assets in relation to this competency?
- What am I missing?

p. 14

Self-reflect



Self-awareness is the ability to understand one's own emotions, thoughts, and values and how they influence behavior across contexts. Examples include:

- Integrating personal and social identities*
- Identifying personal, cultural, and linguistic assets
- Identifying one's emotions*
- Demonstrating honesty and integrity
- Linking feelings, values, and thoughts
- Examining prejudices and biases
- Experiencing self-efficacy*
- Having a growth mindset
- Developing interests and a sense of purpose

Which examples of self-awareness are already part of my practice?

Which example practices challenge me to think differently about self-awareness?

Teacher Hat: How is this already embedded in my planning? What do I want to try?

Read the two following sections in your integration document:

- *Considerations when designing mathematics instruction that fosters self-awareness*
- *Questions to foster self-awareness in students*

As you read:

- Highlight in Green (or use a *checkmark*) to indicate design considerations and questions **you're already using and can build on.**
- Highlight in Blue (or use a *asterisk*) to indicate a **new practice you'd like to try**

p. 15-16

Application: What does this look like in my math instruction?

Use the design considerations, questions, and your own experiences to brainstorm specific strategies you already use – or might try – for developing students' self-awareness. Connect these strategies to specific example practices (or add a practice of your own!)

Self-awareness example practices	Strategies to continue in math	Strategies to try in math
Integrating personal and social identities		
Identifying personal, cultural, and linguistic assets		
Identifying one's emotions		
Demonstrating honesty and integrity		
Linking feelings, values, and thoughts		
Examining prejudices and biases		
Experiencing self-efficacy		
Having a growth mindset		
Developing interests and a sense of purpose		
Other:		

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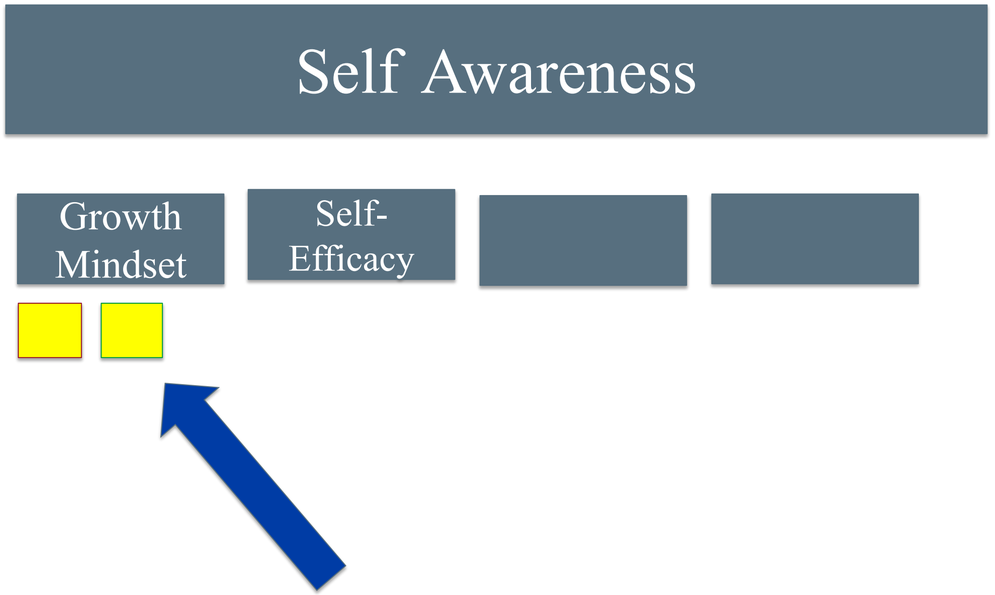
Application: What does this look like in my math instruction?

Use the design considerations, questions, and your own experiences to brainstorm specific strategies you already use – or might try – for developing students' self-awareness. Connect these strategies to specific example practices (or add a practice of your own!)

Example practice	Strategies I will continue to do in math	Strategies I might try in math
Identifying personal, cultural, and linguistic assets	Giving a student survey at the start of the year. *Add questions that ask about their personal, cultural, and linguistic assets (does someone here have a resource?? ☺)	Bringing students' identities and assets into the unit (e.g., kick off a unit learning about mathematicians of color, ancient math practices in Africa and Latin America)
Identifying one's emotions		Connecting feeling words to math (e.g., I know you might feel frustrated/nervous/scared to get the wrong answer)
Experiencing self-efficacy	Providing opportunities for students to work on open-ended tasks with multiple strategies.	Asking students, "Can you explain that?" when they solve a problem.
Having a growth mindset		Teaching a lesson about growth mindset at the start of the year, then praising growth on student assessments

Think-Pair-Share

- Find your **self-awareness star partner** and share your reflections on the process.
  - *How did you feel about going through that protocol? What did you learn?*
- Share your strategies from your application table. Then record your two favorite strategies on stickies.
- Post strategies under the appropriate practice on the self-awareness wall.



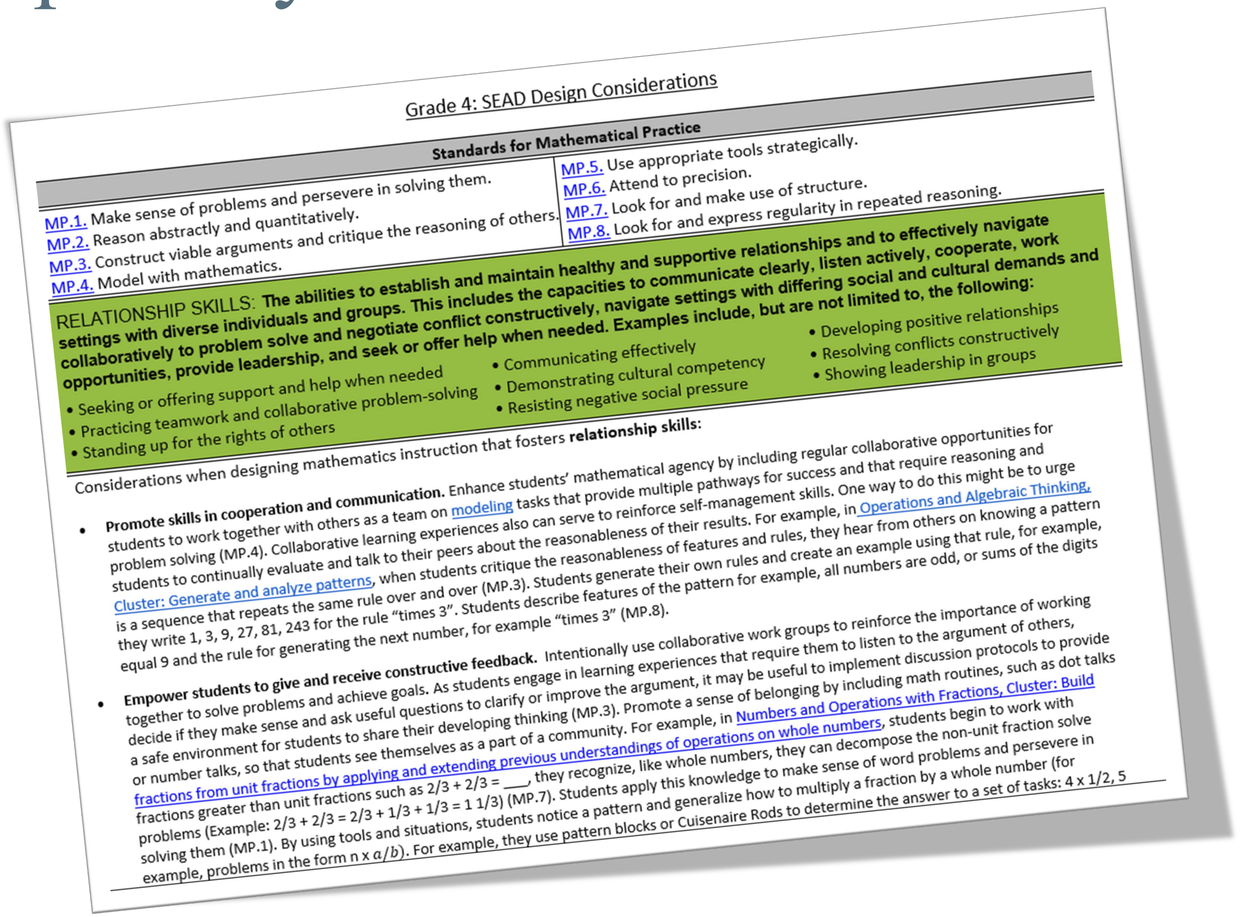
Growth mindset:

Start math class with a song about the "power of yet."

Your turn: Choose your next competency

Using your **workbook** and grade level **integration document,** locate the Design Considerations for the competency of your choice.

1. **Reflect independently (10 mins)**: Using the same protocol, use all 4 steps to unpack: record an image, self-reflect, teaching connections, and application strategies.
2. **Share with a partner (5 mins):** Meet a new partner at the competency wall. Share your reflections. Record your favorite strategies on stickies.
3. **Whole-group share-out (5 mins):** Post your stickies on the corresponding competency wall.



Grade 4: SEAD Design Considerations

Standards for Mathematical Practice

MP.1. Make sense of problems and persevere in solving them.
MP.2. Reason abstractly and quantitatively.
MP.3. Construct viable arguments and critique the reasoning of others.
MP.4. Model with mathematics.
MP.5. Use appropriate tools strategically.
MP.6. Attend to precision.
MP.7. Look for and make use of structure.
MP.8. Look for and express regularity in repeated reasoning.

RELATIONSHIP SKILLS: **The abilities to establish and maintain healthy and supportive relationships and to effectively navigate settings with diverse individuals and groups. This includes the capacities to communicate clearly, listen actively, cooperate, work collaboratively to problem solve and negotiate conflict constructively, navigate settings with differing social and cultural demands and opportunities, provide leadership, and seek or offer help when needed. Examples include, but are not limited to, the following:**

- Seeking or offering support and help when needed
- Practicing teamwork and collaborative problem-solving
- Standing up for the rights of others
- Communicating effectively
- Demonstrating cultural competency
- Resisting negative social pressure
- Developing positive relationships
- Resolving conflicts constructively
- Showing leadership in groups

Considerations when designing mathematics instruction that fosters **relationship skills:**

- **Promote skills in cooperation and communication.** Enhance students' mathematical agency by including regular collaborative opportunities for students to work together with others as a team on modeling tasks that provide multiple pathways for success and that require reasoning and problem solving (MP.4). Collaborative learning experiences also can serve to reinforce self-management skills. One way to do this might be to urge students to continually evaluate and talk to their peers about the reasonableness of their results. For example, in Operations and Algebraic Thinking, Cluster: Generate and analyze patterns, when students critique the reasonableness of features and rules, they hear from others on knowing a pattern is a sequence that repeats the same rule over and over (MP.3). Students generate their own rules and create an example using that rule, for example, they write 1, 3, 9, 27, 81, 243 for the rule "times 3". Students describe features of the pattern for example, all numbers are odd, or sums of the digits equal 9 and the rule for generating the next number, for example "times 3" (MP.8).

- **Empower students to give and receive constructive feedback.** Intentionally use collaborative work groups to reinforce the importance of working together to solve problems and achieve goals. As students engage in learning experiences that require them to listen to the argument of others, decide if they make sense and ask useful questions to clarify or improve the argument, it may be useful to implement discussion protocols to provide a safe environment for students to share their developing thinking (MP.3). Promote a sense of belonging by including math routines, such as dot talks or number talks, so that students see themselves as a part of a community. For example, in Numbers and Operations with Fractions, Cluster: Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers, students begin to work with fractions greater than unit fractions such as 2/3 + 2/3 = ___, they recognize, like whole numbers, they can decompose the non-unit fraction solve problems (Example: 2/3 + 2/3 = 2/3 + 1/3 + 1/3 = 1 1/3) (MP.7). Students apply this knowledge to make sense of word problems and persevere in solving them (MP.1). By using tools and situations, students notice a pattern and generalize how to multiply a fraction by a whole number (for example, problems in the form n x a/b). For example, they use pattern blocks or Cuisenaire Rods to determine the answer to a set of tasks: 4 x 1/2, 5

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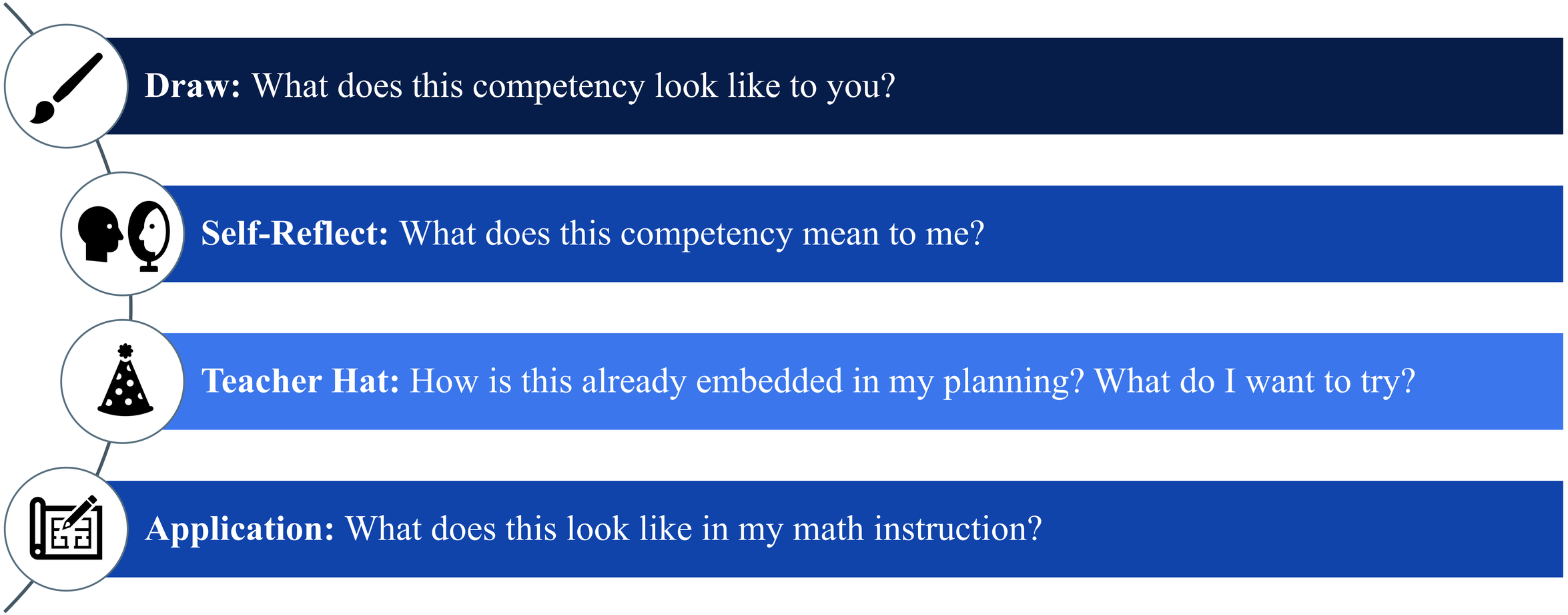
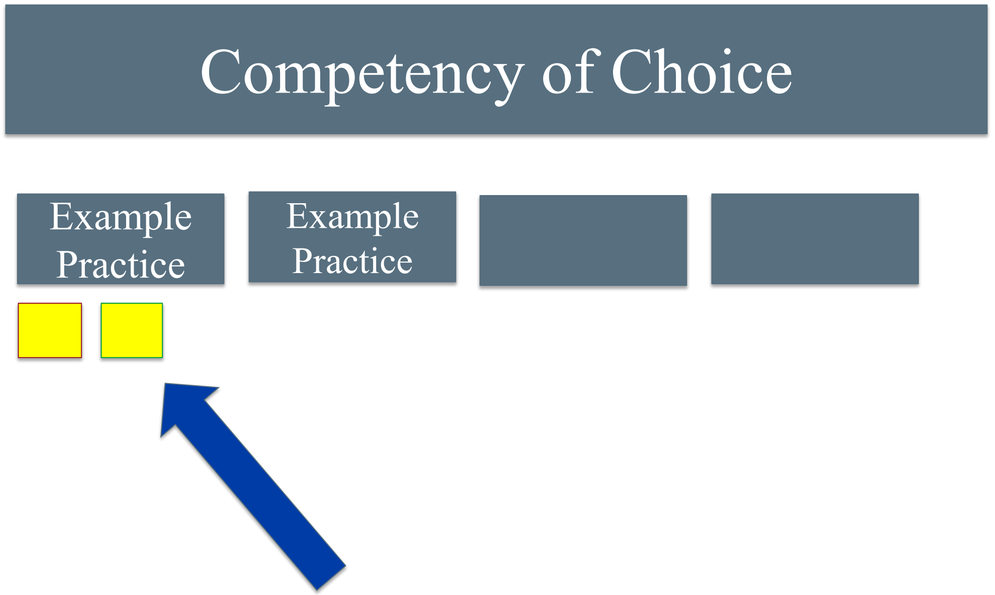
Independently complete the reflection protocol (10 mins)



Think-Pair-Share (5 mins)

- Walk to your competency wall.
- Find a partner and discuss:
  - *How did you feel about repeating this 4-step reflection protocol on your own? What did you learn?*
- Share your strategies from your application table. Then record your two favorite strategies on stickies.
- Post strategies under the appropriate example practice on the related competency wall.



SEL Strategy:

Description of strategy that connects relationship skill to math learning

Group share-out

As you listen to the strategies, react using fist to five:

How likely are you to use the strategy?

Fist ⟷ **Five**

Not at all — A bunch! I'll likely use it.

Celebrate!

Let’s take a moment to celebrate the learning and growth that happened today!

Tomorrow we will think about how to integrate this work into your math standards and lesson plans.

Day 1 Wrap-up

Reflecting on the day

What is **resonating** with you or **making you anxious**?

What did you **learn today,** and how might it **impact your practice**?

What are you **already doing** in the spirit of SEAD? How can you **build** on these efforts?

What **questions** are you hoping will be answered in tomorrow's session?

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p. 30

Looking ahead to Day 2

Time	Agenda item
9:00 – 9:20 a.m.	Welcome
9:20 – 10:00 a.m.	Integrating SEAD and *KAS for Mathematics* resource library
10:00 – 11:00 a.m.	Integrating SEAD and *KAS for Mathematics* Roadmap tool
11:00 – 11:15 a.m.	Break
11:15 – 12:15 p.m.	Co-designing SEAD in mathematics lessons: Part 1
12:15 – 1:15 p.m.	Lunch
1:15 – 2:15 p.m.	Co-designing SEAD in mathematics lessons: Part 2
2:15 – 2:30 p.m.	Break
2:30 – 3:30 p.m.	Supportive colleagues review and feedback
3:30 – 4:00 p.m.	Wrap-up

Final words and housekeeping

- This is head and heart work.
- Try and take time tonight to rest and reflect.
- Tomorrow's session begins at 9:00 a.m.
- Questions? Thoughts?

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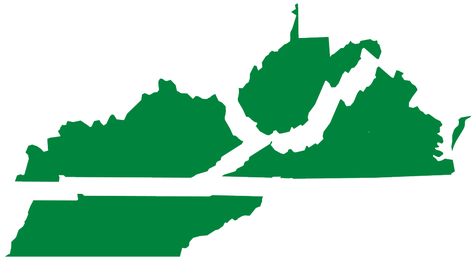
Thank you!



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