Preparing the Next Generation to Critically Think as "Doers of Mathematics"

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TWENTY-SEVENTH ANNUAL CONFERENCE
LEHMAN COLLEGE
BRONX, NEW YORK
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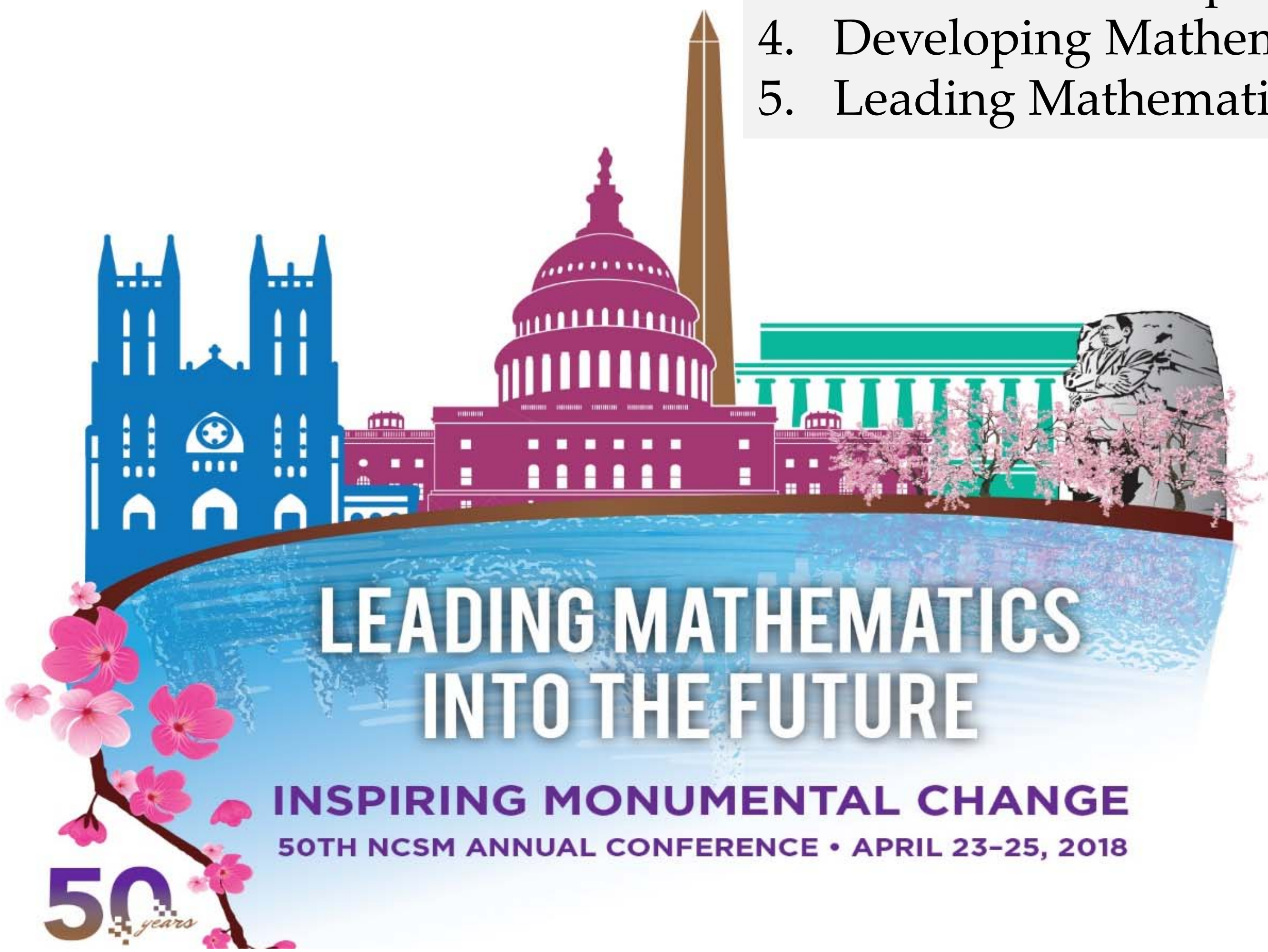
NCSM Mission

NCSM is a mathematics education leadership organization that equips and empowers a diverse education community to engage in leadership that supports, sustains, and inspires high quality mathematics teaching and learning every day for each and every learner.

www.mathedleadership.org

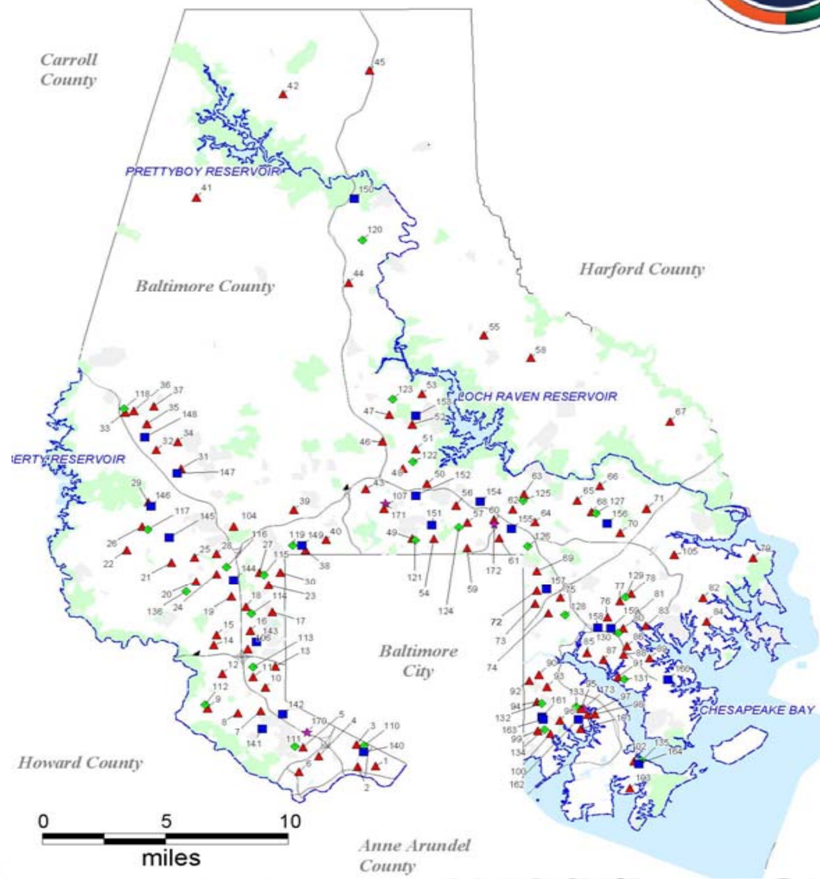
1. Equity in Practice
2. Cultivating a Mathematics Coaching Practice
3. Evidence and Experiences from the Field
4. Developing Mathematical Knowledge for Teaching
5. Leading Mathematics into the Future



Baltimore County Public Schools

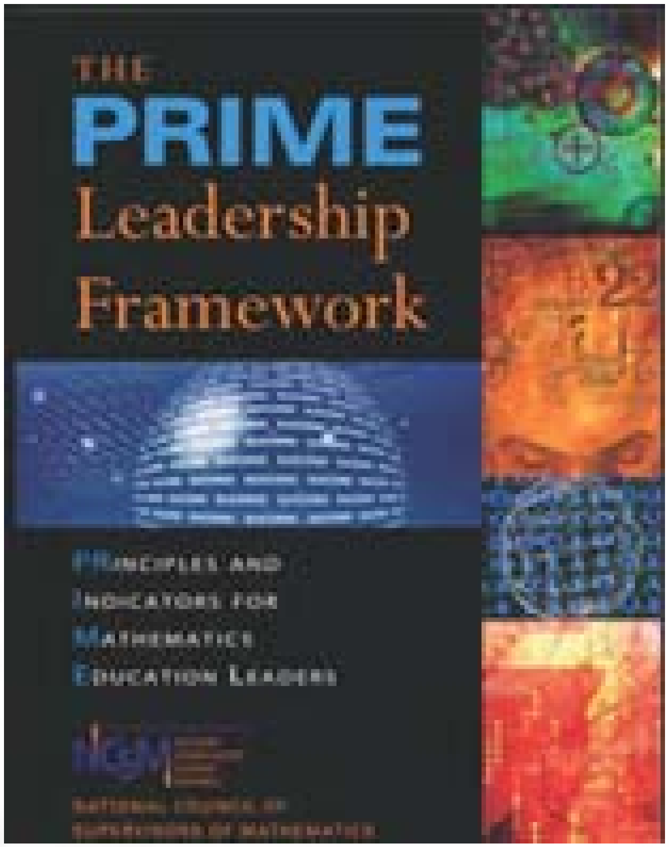
Baltimore County (2016-2017)

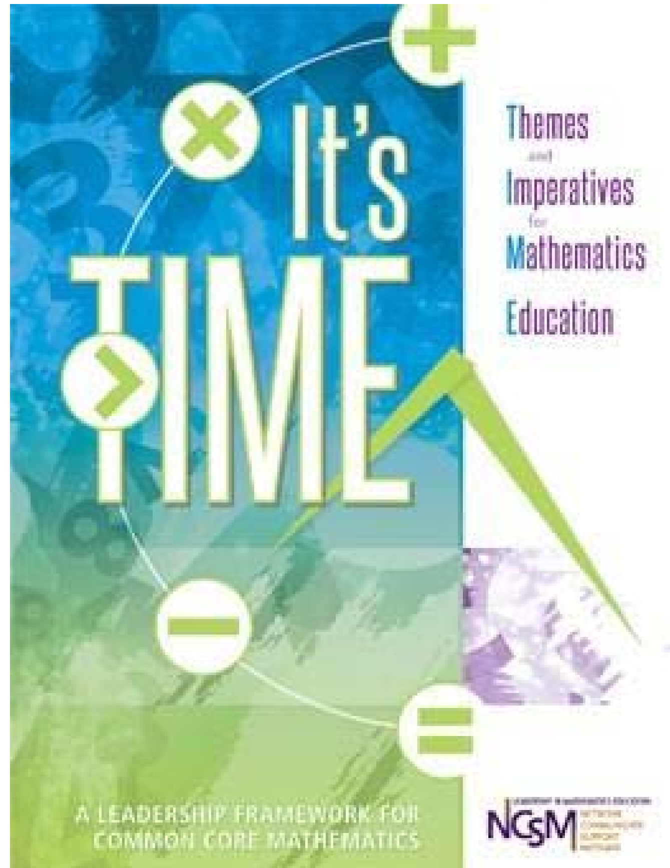
- Wraps around but does not include Baltimore City
- Suburban, rural, and urban
- 25th largest in the U.S.
- 3rd largest in Maryland
- 173 schools, programs, and centers
- 112,139students
- 45.1% eligible for free & reduced meals
- 114 countries, 92 languages



Mission: To graduate globally competitive, mathematically literate citizens

Mathematics Education Leadership Framework

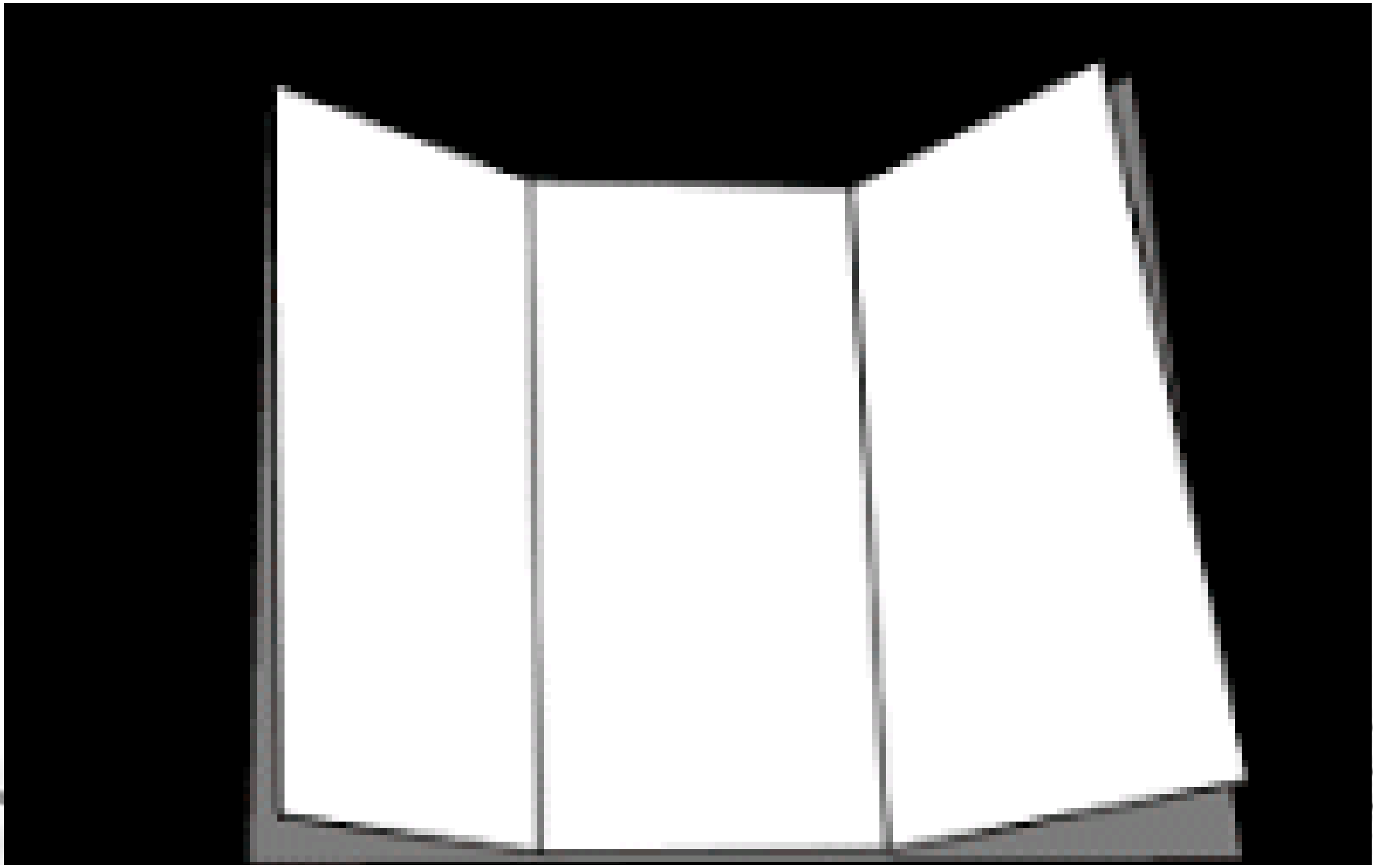




https://www.mathedleadership.org/resources/shop.html

Who?

Leadership Matters



How might we…?

- The ***how*** part assumes there are solutions out there – it provides creative confidence.
- ***Might*** says we can put ideas out there that might work or might not- either way, it's okay.
- The ***we*** part says we're going to do it together and build on each other's ideas.

A More Beautiful Question: The Power of Inquiry to Spark Breakthrough Ideas (Berger, 2014)

Are we teaching our students to “do math” or

to critically think as “doers of mathematics?”

Our Next Generation…

What do students who **critically think** as “doers of mathematics” look like, sound like?

What do students who critically think as "doers of mathematics" look like, sound like?

Vision for Students

- Active learners
- Construct knowledge of mathematics through
  - Exploration
  - Discussion
  - Reflection

Vision for Teachers

- Facilitator of student learning
- Challenging tasks
- Observer
- Listener
- Supporter

Vision for students

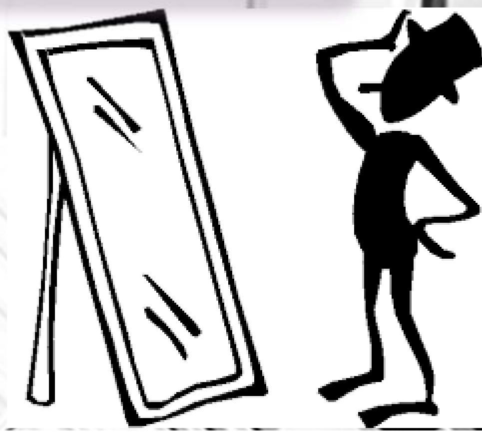
Tomorrow's leaders are sitting in our classrooms today and they are counting on us to prepare them to be globally competitive, mathematically literate citizens.

Mathematics identity - *"The dispositions and deeply held beliefs that students develop about their ability to participate and perform effectively in mathematical contexts and to use mathematics in powerful ways across the contexts of their lives."*

Aguirre, Mayfield-Ingram, Martin, *The Impact of Identity in K – 8 Mathematics*, NCTM (2013)

Vision for teachers

Provide rich learning opportunities so that all students have access to meaningful and relevant mathematics for their future.



There is no decision that teachers make that has a greater impact on students' opportunities to learn and on their perceptions about what mathematics is than the selection or creation of the tasks with which the teacher engages students in studying mathematics.

Lappan & Briars, 1995

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
6. Attend to precision

2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others

4. Model with mathematics
5. Use appropriate tools strategically

7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

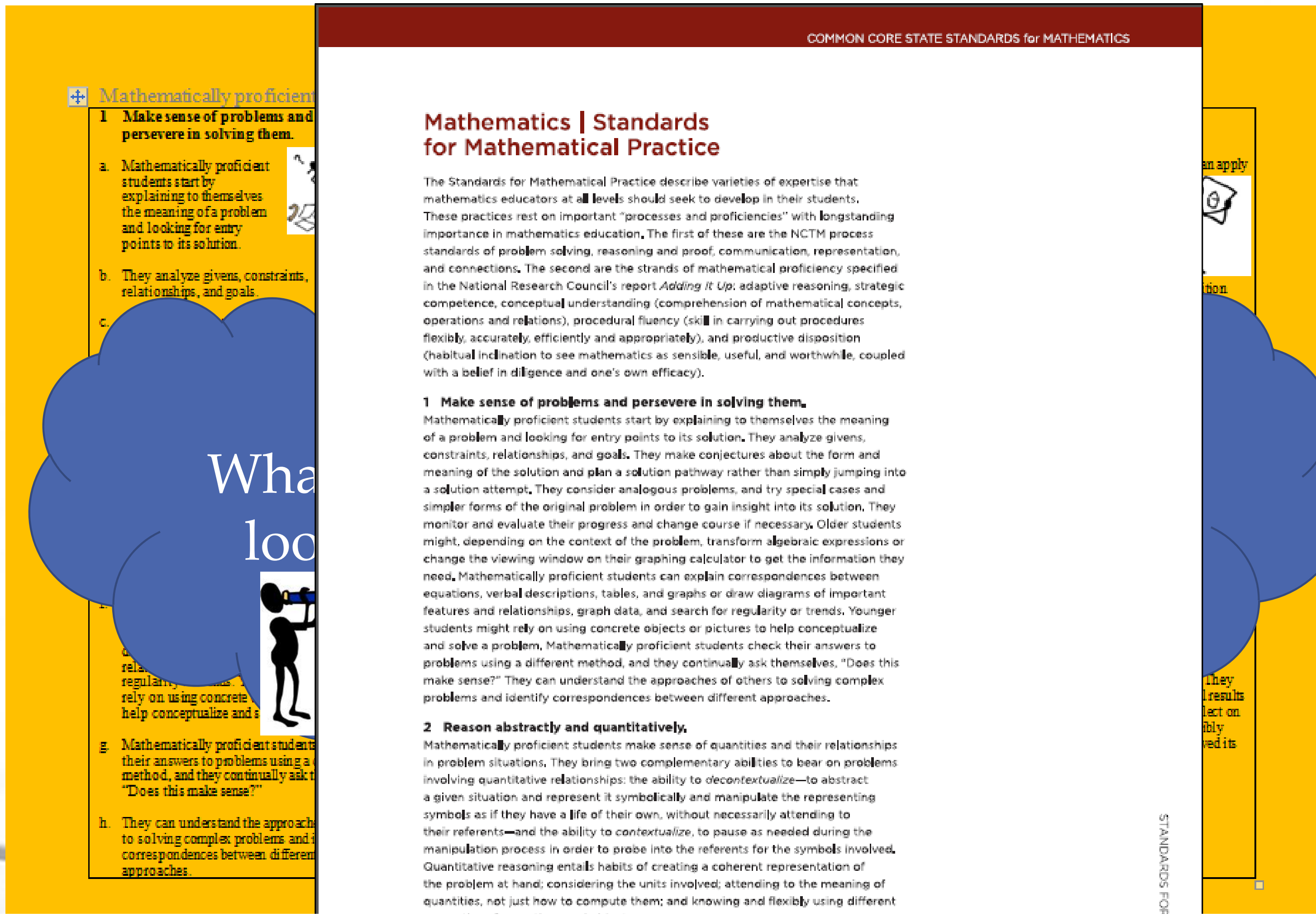
Overarching habits of mind of a productive mathematical thinker

Reasoning and Explaining

Modeling and Using Tools

Seeing Structure and Generalizing

Mathematically proficient students…
…Use, Think about, Do



COMMON CORE STATE STANDARDS for MATHEMATICS

Mathematics | Standards for Mathematical Practice

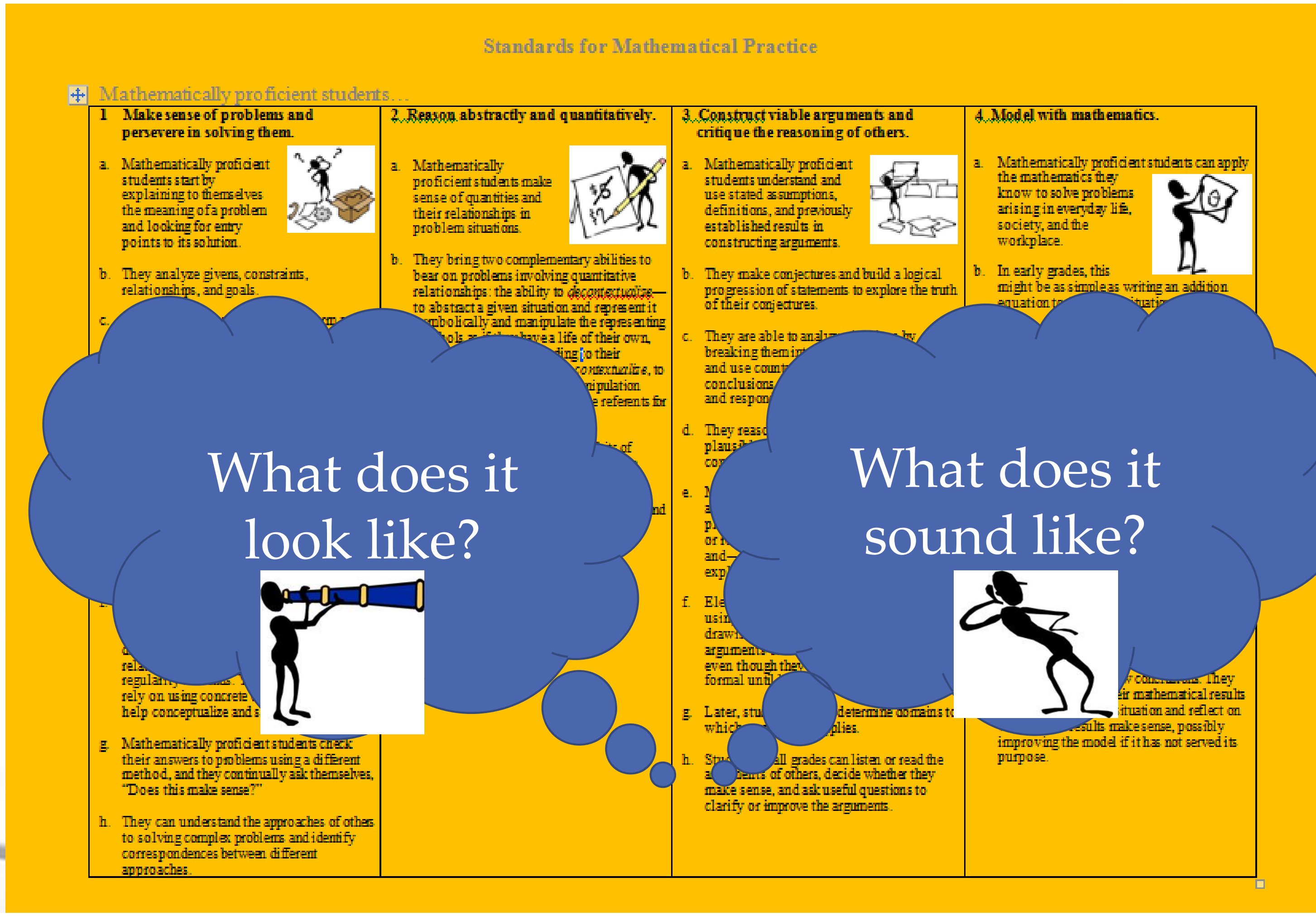
The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1 Make sense of problems and persevere in solving them.
Mathematically proficient students start by explaining to themselves 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 the approaches of others to solving complex problems and identify correspondences between different approaches.

2 Reason abstractly and quantitatively.
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

STANDARDS FOR

Mathematically proficient students…
…Use, Think about, Do



I can make sense of problems and persevere in solving them. SMP - 1

Level 4:
I can find a second or third solution and describe how the pathways to these solutions relate.

Level 3:
I can make sense of problems and persevere in solving them.

Level 2:
I can ask questions to clarify the problem, and I can keep working when things aren't going well and try again.

Level 1:
I can show at least one attempt to investigate or solve the task.

@jgough
@jwilson828
#LL2LU

Search: Math Practices Learning Progressions #LL2LU

I can construct viable arguments and critique the reasoning of others. SMP - 3

Level 4:
I can build on the viable arguments of others and use their critique and feedback to improve my understanding of the solutions to a task.

Level 3:
I can construct viable arguments and critique the reasoning of others.

Level 2:
I can communicate my thinking for why a conjecture must be true to others, and I can listen to and read the work of others and offer actionable, growth-oriented feedback using I like..., I wonder..., and What if... to help clarify or improve the work.

Level 1:
I can recognize given information, definitions, and established results that will contribute to a sound argument for a conjecture.

https://www.teachingchannel.org

https://www.teachingchannel.org/videos/exploring-math-practice-standards#

inside + × = ÷ mathematics

http://insidemathematics.org

video clips | materials & artifacts | transcripts | teacher commentary

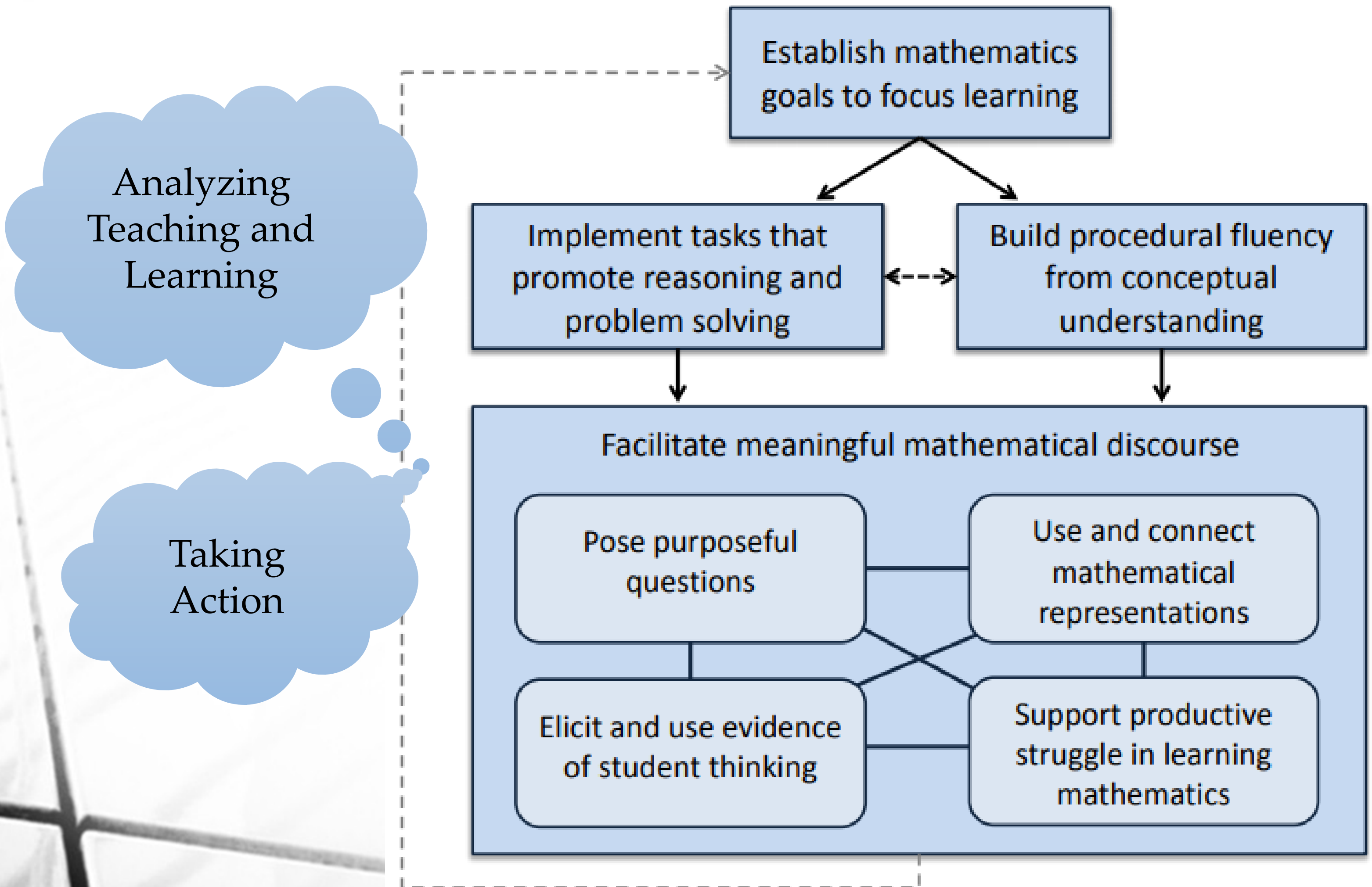
- Clip Transcript PDF
- Interpreting Fractions PDF: lesson plan, student pages, pre- and post-assessments, and supporting ins materials
- Discussion Stems PDF
- Student Work 1 PDF
- Student Work 2 PDF
- Student Work 3 PDF
- Student Work 4 PDF
- Student Work 5 PDF
- Student Work 6 PDF

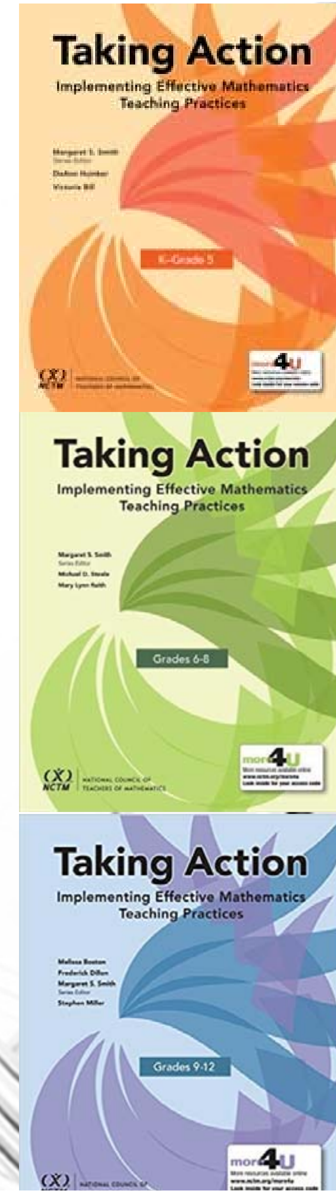
Mathematics Teaching Practices

1. Establish Mathematical Goals to Focus Learning
2. Implement tasks that Promote Reasoning and Problem Solving
3. Use and Connect Mathematics Representations
4. Facilitate Meaningful Mathematics Discourse
5. Pose Purposeful Questions
6. Build Procedural Fluency from Conceptual Understanding
7. Support Productive Struggle in Mathematics
8. Elicit and Use Evidence of Student Thinking

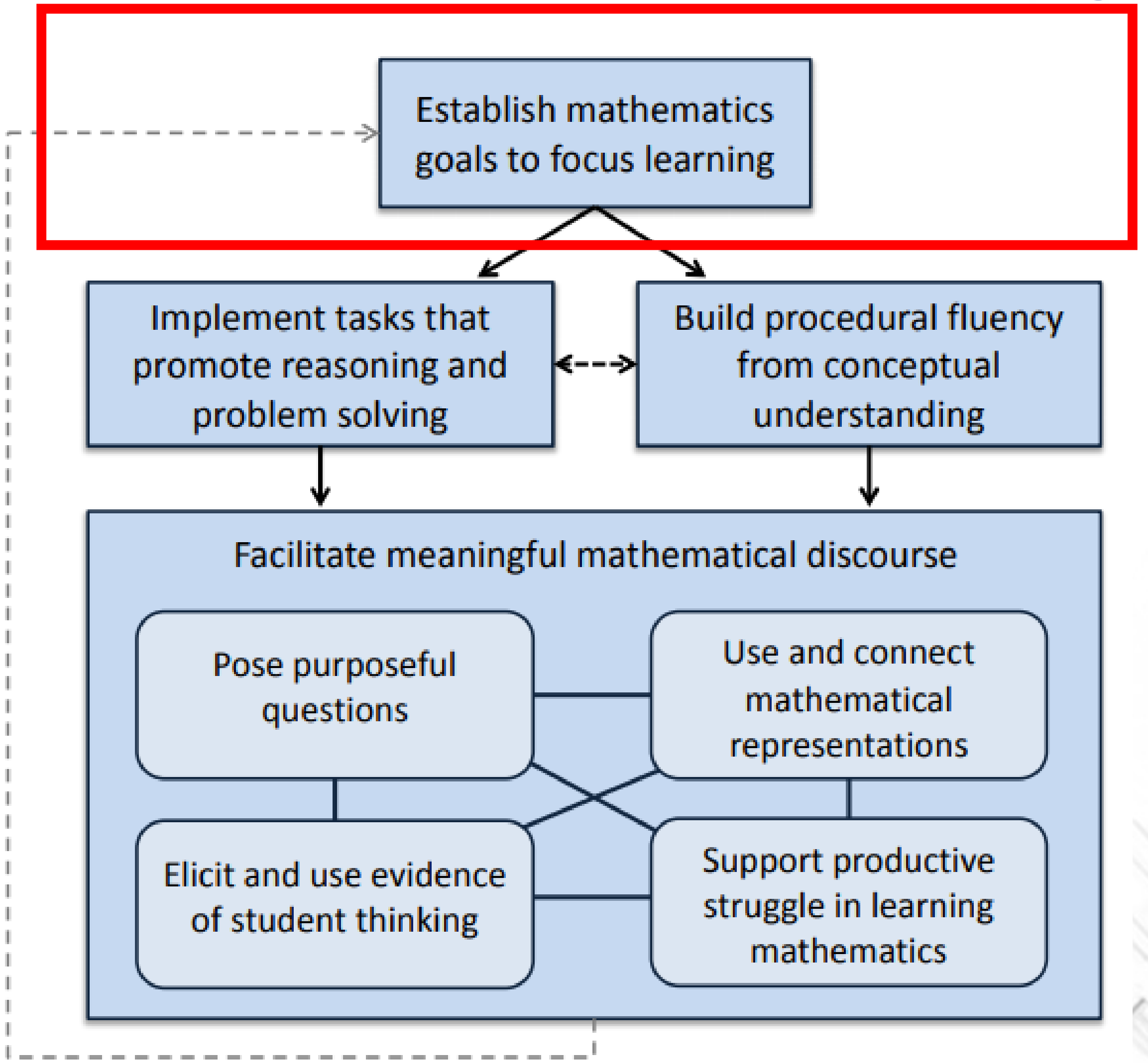
Principles to Action : Ensuring Mathematical Success For All, NCTM, 2014

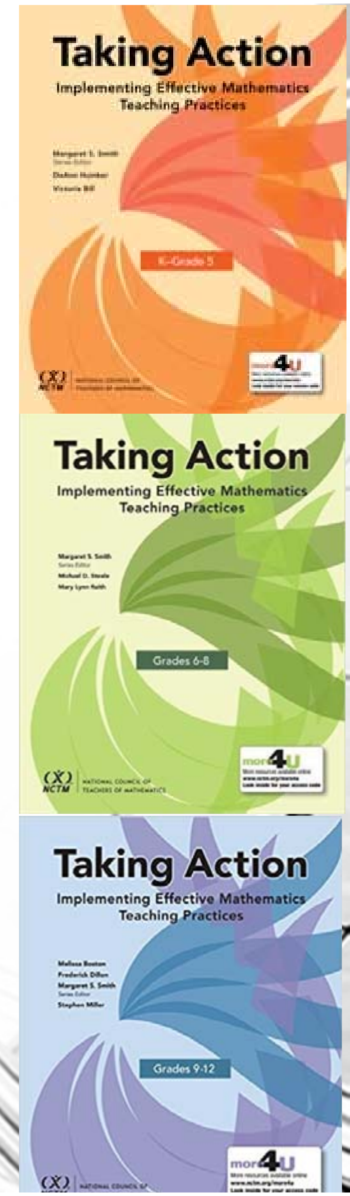
Framework For Mathematics Teaching





Framework For Mathematics Teaching

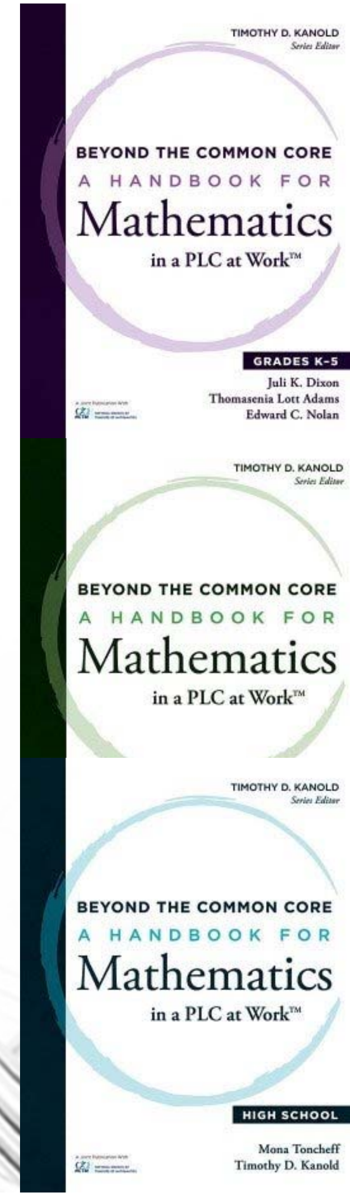




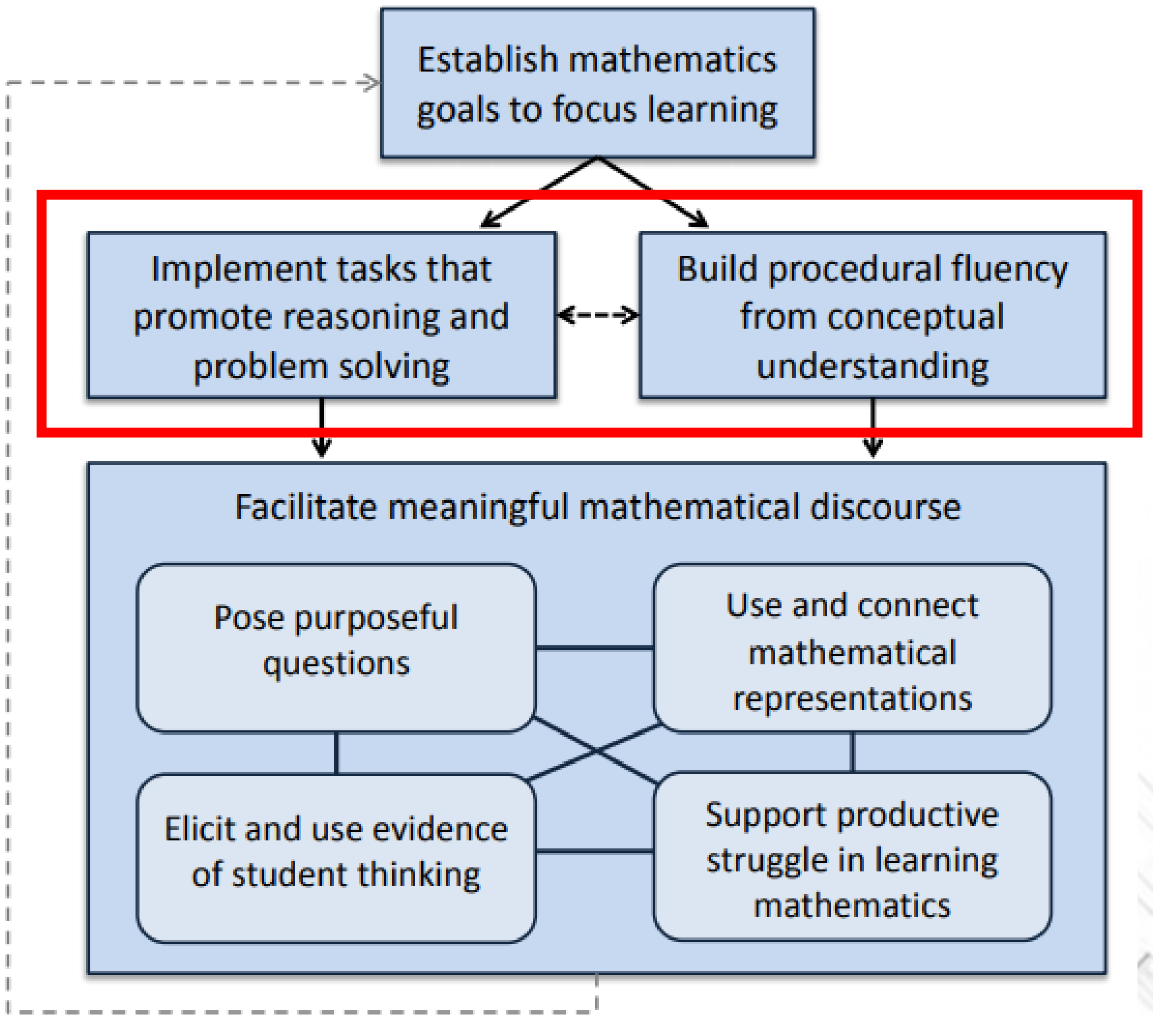
PLCs
4 Critical Questions

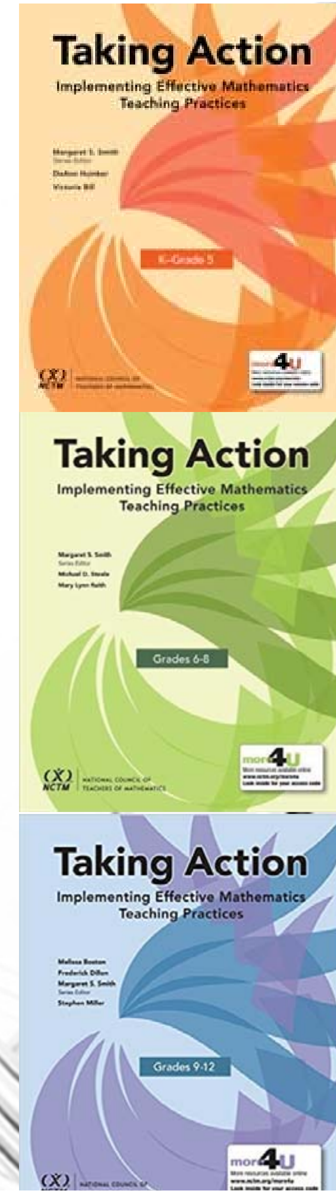
1. What do we want all students to know and be able to do?
2. How will we know if they know it?
3. What will be our team response if they don't know it?
4. What will be our response if they do know it?

Mathematics at Work, Solution Tree



Framework For Mathematics Teaching





If we want students to develop the capacity to think, reason, and problem solve then we need to start with high-level, cognitively complex tasks.

Stein & Lane, 1996

Mathematical TASKS

- Can be a single complex problem or set of problems
- Focus students attention on a particular mathematical idea
- Influence what students learn by directing their attention to specific aspects of content and by detailing ways to process information
- Require a higher level of thinking

Cognitive Demand Task Levels

- **Low-Level Tasks**
  - memorization
  - procedures without connections to meaning
- **High-Level Tasks**
  - procedures with connections to meaning
  - doing mathematics

Identify the Cognitive Demand Level

Low-Level Tasks

1. memorization
2. procedures without connections to meaning

High-Level Tasks

3. procedures with connections to meaning
4. doing mathematics

Using a 10 x 10 grid, identify the decimal and percent equivalents of $\frac{3}{5}$.

Solve this problem in two different ways: *Michael had 82¢. He spent 49¢ on stickers. How much does he have left?* Explain what you were thinking as you solved it.

Identify the Cognitive Demand Level

Low-Level Tasks

1. memorization
2. procedures without connections to meaning

High-Level Tasks

3. procedures with connections to meaning
4. doing mathematics

What are the decimal equivalents for the fractions ½ and ¼?

What is the place value of the underlined digits:

1<u>0</u>3

<u>2</u>,011

19.<u>8</u>

Identify the Cognitive Demand Level

Low-Level Tasks

1. memorization
2. procedures without connections to meaning

High-Level Tasks

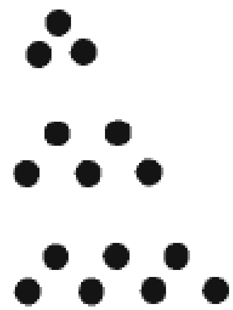
3. procedures with connections to meaning
4. doing mathematics

Tracey is making dot patterns

Pattern 1

Pattern 2

Pattern 3



1. Draw dot patterns 4 and 5.

2. Figure out how many dots will be in pattern 10 without drawing it.

$\frac{3}{5}$ is more than $\frac{3}{7}$. Explain how you know this is true.

José ate $\frac{1}{2}$ of a pizza. Ella ate $\frac{1}{2}$ of another pizza. José said that he ate more pizza than Ella, but Ella said they both ate the same amount. Use words and pictures to show that José could be right (NAEP, 1992).

Identify the Cognitive Demand Level

Low-Level Tasks

1. memorization
2. procedures without connections to meaning

High-Level Tasks

3. procedures with connections to meaning
4. doing mathematics

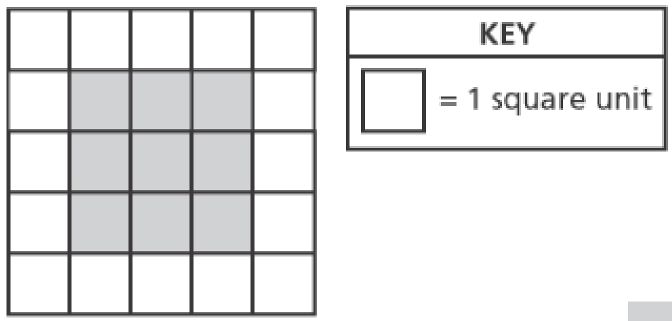
Rewrite $3/8$ as a decimal.

---

22 x 11 =

Frank wants to carpet his bedroom, which is 9 feet wide and 12 feet long. How many square feet of carpeting does he need?

23 Brandon used square tiles to find the area of the shaded part of the picture below.



What is the area of the shaded part of the picture?

A 3 square units

B 6 square units

C 8 square units

D 9 square units

29 Which expression is equivalent to 5×9?

A $(5 \times 4) \times (5 \times 5)$

B $(5 \times 5) + (5 \times 4)$

C $(5 \times 5) + (5 \times 9)$

D $(5 \times 9) \times (5 \times 9)$

[2017 Grade 3 Mathematics Test Released Questions (1.47 MB)]

25 A student has 3 puzzles. Each puzzle has 1,250 pieces. What is the total number of pieces in the puzzles?

A 3,650

B 3,750

C 4,650

D 4,750

40 Which method can be used to solve 11×13?

A Multiply 11×10 and 10×3, then add the two products.

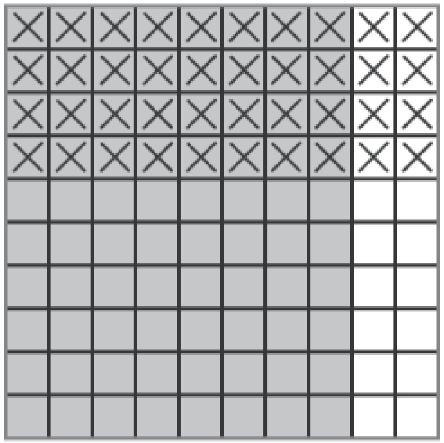
B Multiply 11×10 and 11×3, then add the two products.

C Multiply 11×100 and 10×3, then add the two products.

D Multiply 11×100 and 11×3, then add the two products.

2017 Grade 4 Mathematics Test Released Questions (1.56 MB)

12 The decimal grid shown below is shaded and marked with Xs to model an expression.



Which expression could be modeled by this decimal grid?

A 0.08×0.04

B 0.08×0.40

C 0.80×0.04

D 0.80×0.40

7 Which phrase is represented by the expression $5 \times (36 + 9)$?

A the product of 36 and 5, increased by 9

B the product of 36 and 9, multiplied by 5

C the sum of 36 and 9, multiplied by 5

D the sum of 36 and 5, increased by 9

2017 Grade 5 Mathematics Test Released Questions (1.56 MB)

23 Which expression is equivalent to $5(6x + 3y)$?

A $11x + 3y$

B $11x + 8y$

C $30x + 3y$

D $30x + 15y$

57 The area of Brian's rectangular garden, in square feet, can be found by using the expression $6(2x + 5y)$. Use the distributive property to write an equivalent expression for the area of Brian's garden.

Equivalent expression ______________________

Use your equivalent expression to find the area of Brian's garden, in square feet, if $x = 3$ and $y = 4$.

Show your work.

2017 Grade 6 Mathematics Test Released Questions (1.77 MB)

47 What value for the constant, h, in the equation shown below will result in an infinite number of solutions?

$$6x + 18 = h(3x + 9)$$

A -2

B -3

C 2

D 3

21 Which expression is equivalent to the expression shown below?

$$-\frac{1}{2}\left(-\frac{3}{2}x + 6x + 1\right) - 3x$$

A $\frac{3}{2}x - \frac{1}{2}$

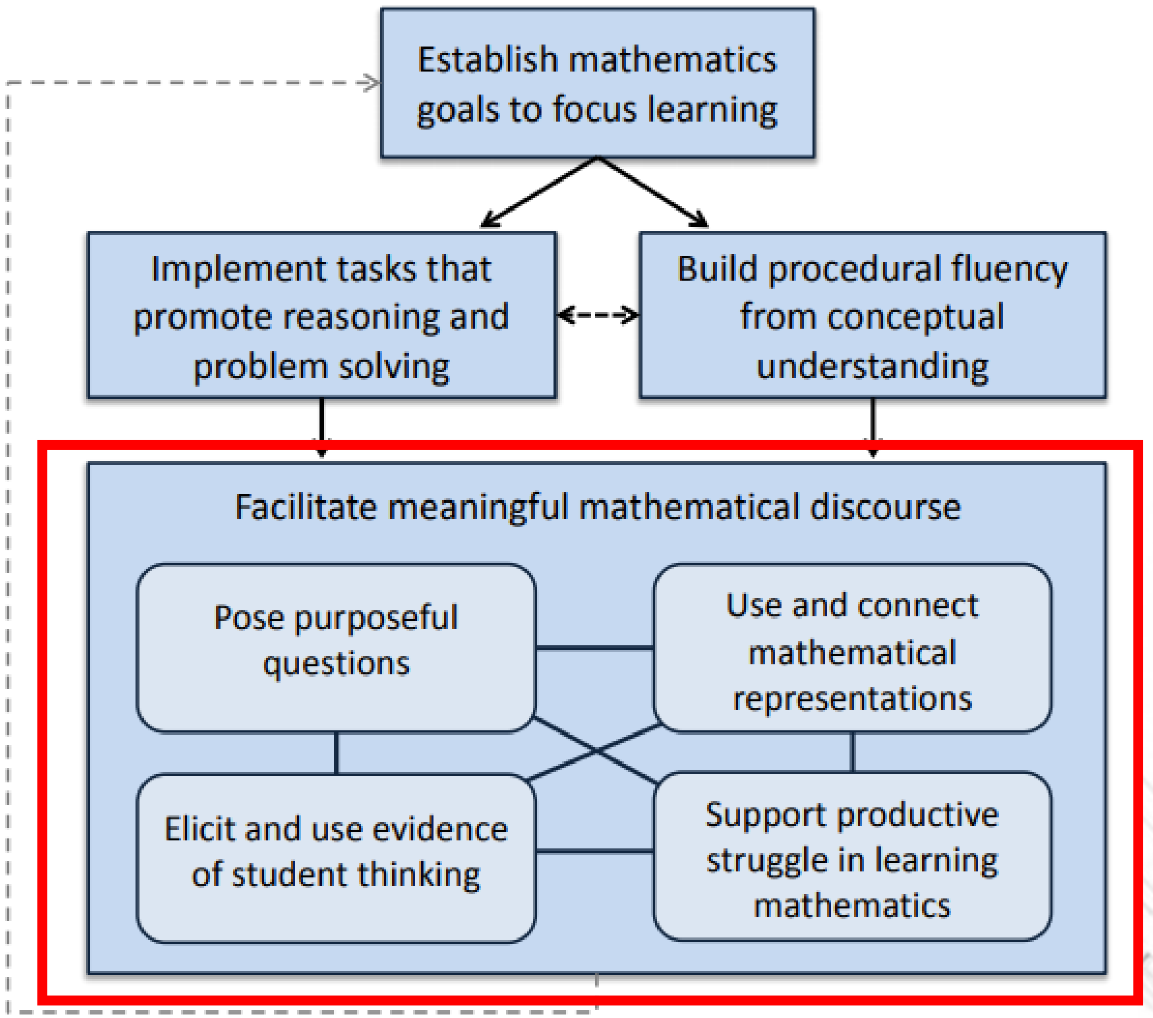
B $6\frac{3}{4}x - \frac{1}{2}$

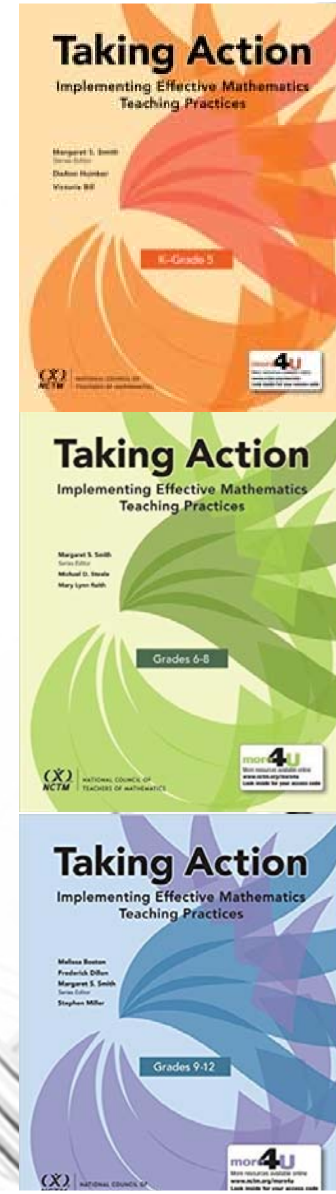
C $-\frac{3}{4}x + \frac{1}{2}$

D $-5\frac{1}{4}x - \frac{1}{2}$

2017 Grade 7 Mathematics and Grade 8 Test Released Questions (2.84 MB)

Framework For Mathematics Teaching

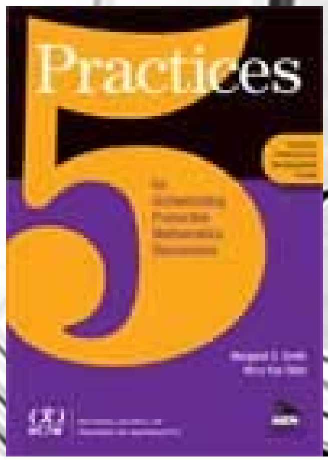




Five Practices When Implementing High-Cognitive Tasks

- **Anticipating** likely student responses to challenging mathematical tasks.
- **Monitoring** students' actual responses to the tasks (while students work on the task in pairs or small groups).
- **Selecting** particular students to present their mathematical work during the whole-class discussion.
- **Sequencing** the student responses that will be displayed in a specific order.
- **Connecting** different students' responses and connecting the responses to key mathematical ideas.

—Smith & Stein, *5 Practices for Orchestrating Productive Mathematics Discussions*, 2011 (p. 8)



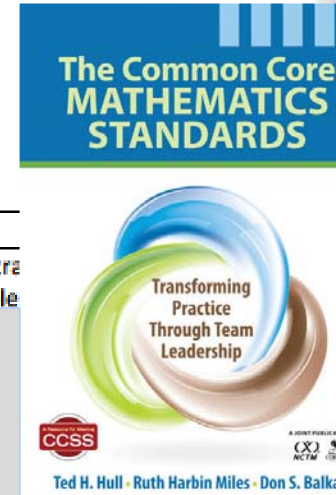
Standards of Student Practice in Mathematics Proficiency Matrix

http://www.mathleadership.com/ccss.html

	Students:	(I) = Initial	(IN) = Intermediate	(A) = Advanced
1a	Make sense of problems	Explain their thought processes in solving a problem one way.	Explain their thought processes in solving a problem and representing it	Discuss, explain, and demonstra solving a problem with multiple
1b	Pe th			
2	Re qu			to well gful
3a	Co ar			e heir
3b	Cr of			he

Engagement Strategies

1. Initiating think, pair, share
2. Showing thinking in classrooms
3. Questioning and wait time
4. Grouping and engaging problems
5. Using questions and prompts with groups
6. Allowing students to struggle
7. Encouraging Reasoning



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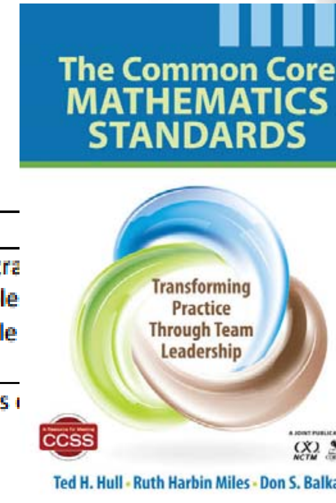

	Students:	(I) = Initial	(IN) = Intermediate	(A) = Advanced
1a	**Make sense of problems**	Explain their thought processes in solving a problem one way. *(Pair – Share)*	Explain their thought processes in solving a problem and representing it in several ways. *(Question/Wait time)*	Discuss, explain, and demonstra solving a problem with multiple representations and in multiple *(Grouping/Engaging)*
1b	**Persevere in solving them**	Stay with a challenging problem for more than one attempt. *(Question/Wait time)*	Try several approaches in finding a solution, and only seek hints if stuck. *(Grouping/Engaging)*	Struggle with various attempts time, and learn from previous solution attempts. *(Show Thinking)*
2	**Reason abstractly and quantitatively**	Reason with models or pictorial representations to solve problems. *(Grouping/Engaging)*	Are able to translate situations into symbols for solving problems. *(Grouping/Engaging)*	Convert situations into symbols to appropriately solve problems as well as convert symbols into meaningful situations. *(Encourage Reasoning)*
3a	**Construct viable arguments**	Explain their thinking for the solution they found. *(Show Thinking)*	Explain their own thinking and thinking of others with accurate vocabulary. *(Question/Wait time)*	Justify and explain, with accurate language and vocabulary, why their solution is correct. *(Grouping/Engaging)*
3b	**Critique the reasoning of others.**	Understand and discuss other ideas and approaches. *(Pair – Share)*	Explain other students' solutions and identify strengths and weaknesses of the solution. *(Question/Wait time)*	Compare and contrast various solution strategies and explain the reasoning of others. *(Grouping/Engaging)*

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http://www.nctm.org/

iM Illustrative Mathematics

http://www.illustrativemathematics.org

ACHIEVE THE CORE

http://achievethecore.org

inside + × = ÷ mathematics

http://insidemathematics.org

Mathematics Assessment Project
ASSESSING 21ST CENTURY MATH

http://map.mathshell.org/materials/index.php

NCSM Resources
www.mathedleadership.org

Jump Start Formative Assessment

JUMP START Formative Assessment

COMMON CORE STATE STANDARDS

PRINT PAGE

Illustrating the Standards for Mathematical Practice

Module Index

Introduction to the CCSS Standards for Mathematical Practice

Professional Learn
Powerful PD resource

Click a button below to view

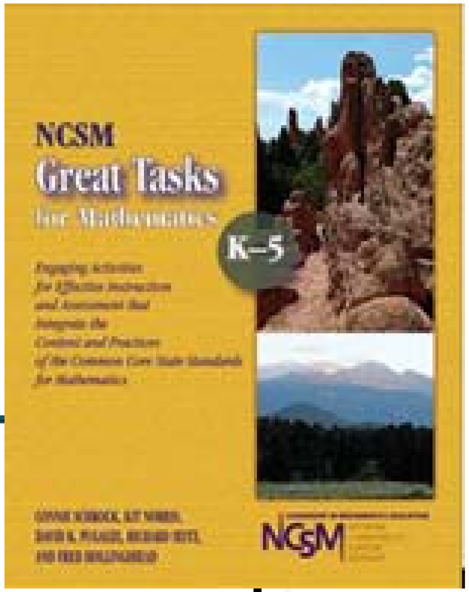
	K – 2	3 – 5
Problem Solving & Precision	Problem of the Month	
Reasoning & Explaining	Properties of Operations	Butt Patte
Modeling & Using Tools	Penny Jar	Representing Number Sentences
Seeing Structure & Generalizing	Patterns with Walls	

Note: The placement of each module is intended as a quick reference to suggest f

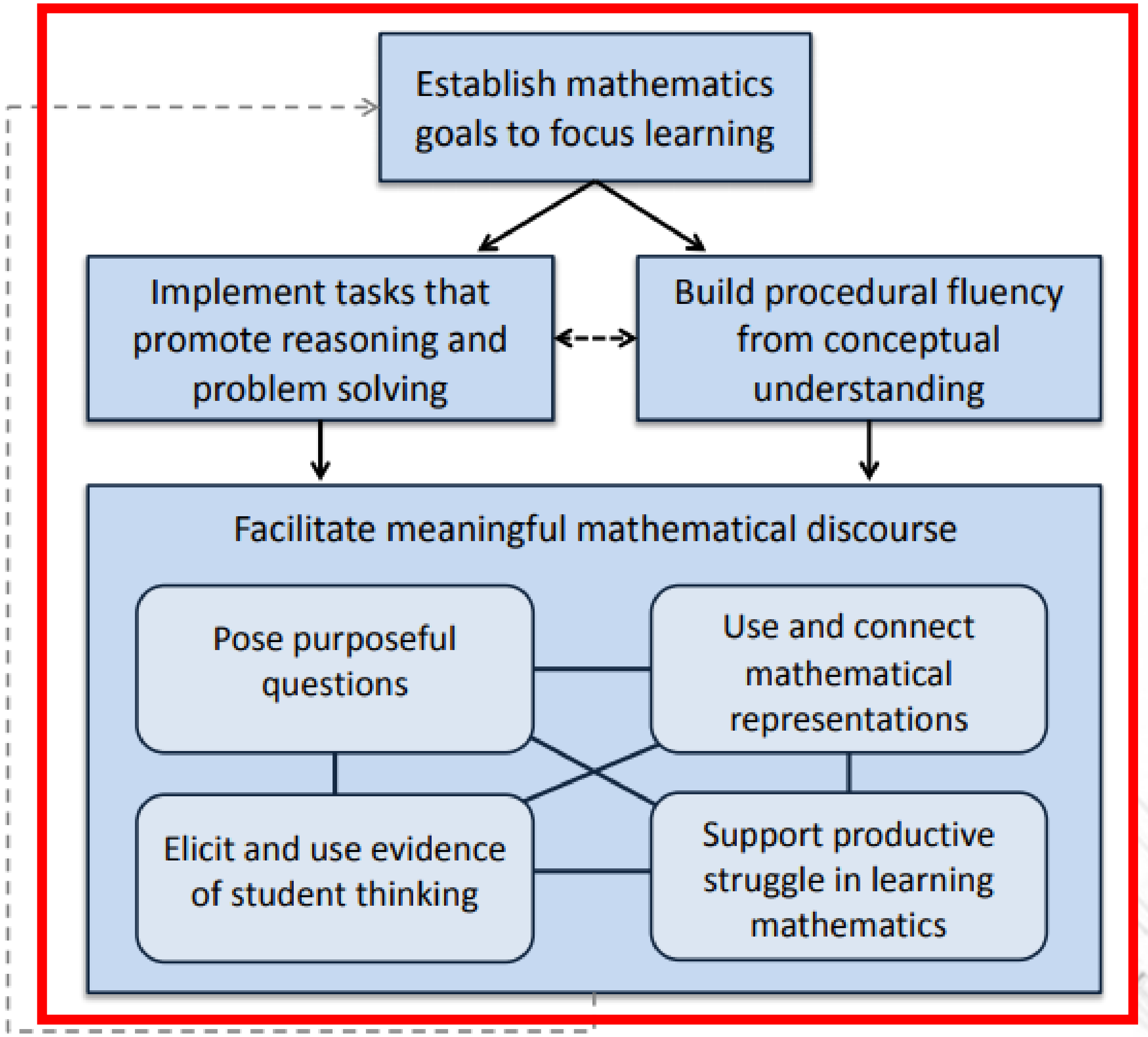
LEADERSHIP RESOURCES | THREE ACTS

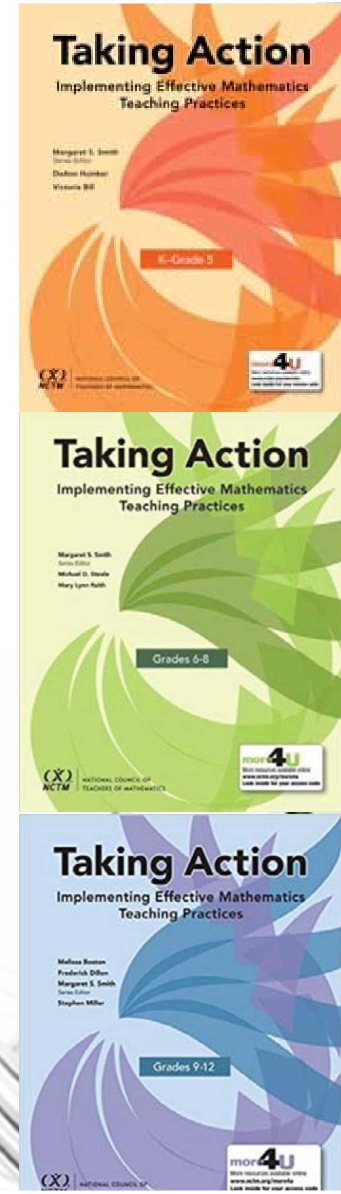
Great Modeling Tasks in Three Acts

	K	1	2	3	4	5	6	7	8	HS
Bucky the Badger										
In-N-Out Burger										
File Cabinet (Free Preview)										
Penny Circle										
Stacking Cups										
Super Bear										
Thirsty Values (Free Preview)										
Yellow Starbursts										
You Pour, I Choose										



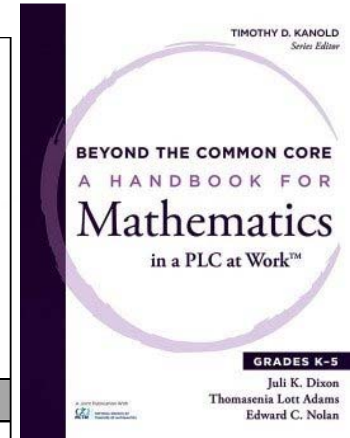
Framework For Mathematics Teaching

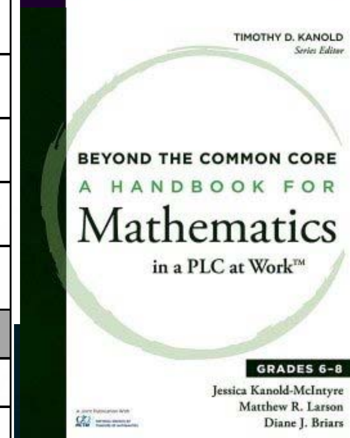


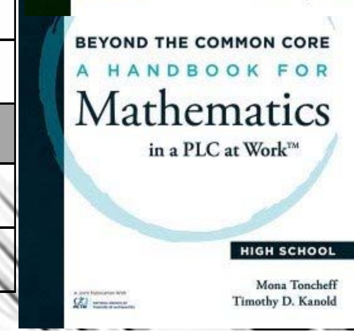


HLTAs of PLCs

High Leverage Team Actions aligned to the PLC at Work™ critical questions ■ = fully addressed with HLTA ◧ = partially addressed with HLTA	1. What is it we want all students to know and be able to do?	2. How will we know if they know it?	3. What will be our response if they don't know it?	4. What will be our response if they do know it?
Before the Unit HLTA				
1. Making sense of the agreed upon essential learning standards (content and practices) for the unit.	■			
2. Identifying higher-level cognitive demand mathematical tasks for the unit.	■	◧		
3. Developing common assessment instruments for the unit.		■		
4. Developing Scoring Rubrics for the Common Assessment Instruments for the unit.		◧		
5. Planning common homework (independent practice) assignments for the unit.	◧	■		
During the Unit HLTA				
6. Using higher-level cognitive demand tasks.		■		
7. Using in-class formative assessment processes effectively.			■	■
8. Using a lesson design process for lesson planning and collective team inquiry.	■	■	■	■
After the Unit HLTA				
9. Ensuring evidence based ***Student*** goal setting and action for the next unit of study			■	■
10. Ensuring evidence based ***Adult*** goal setting and action for the next unit of study			■	■





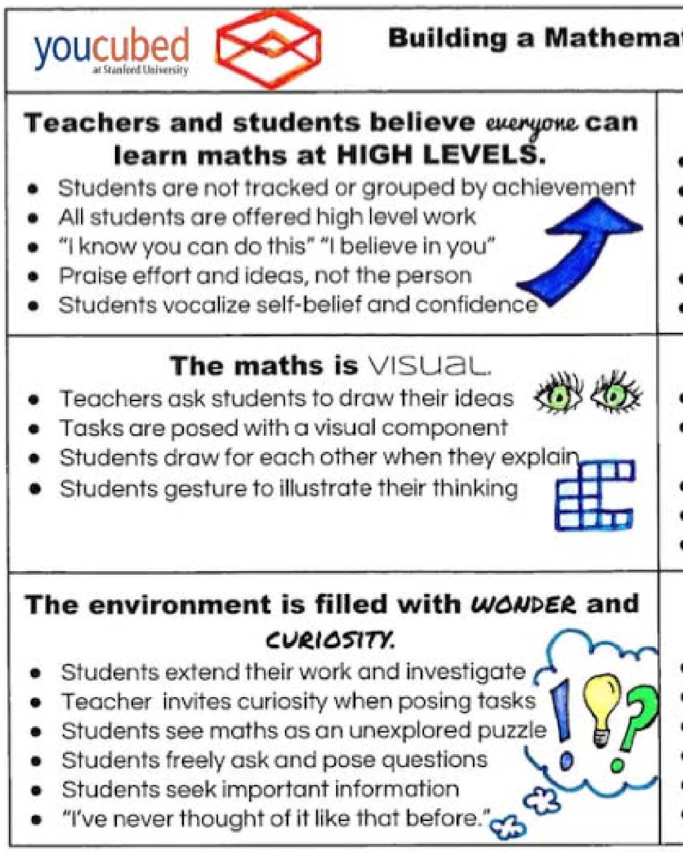


Guiding Principles for School Mathematics

1. Teaching and Learning
2. Access and Equity
3. Curriculum
4. Tools and Technology
5. Assessment
6. Professionalism

Principles to Action : Ensuring Mathematical Success For All, NCTM, 2014

Mindsets



youcubed at Stanford University

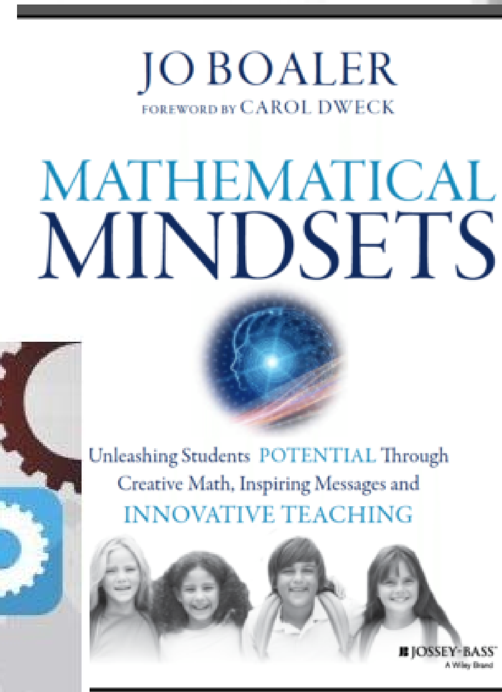
Building a Mathematical Mindset Community

Teachers and students believe *everyone* can learn maths at HIGH LEVELS.
- Students are not tracked or grouped by achievement
- All students are offered high level work
- "I know you can do this" "I believe in you"
- Praise effort and ideas, not the person
- Students vocalize self-belief and confidence

Communication and *connections* are valued.
- Students work in groups sharing ideas and visuals.
- Students relate ideas to previous lessons or topics
- Students connect their ideas to their peers' ideas, visuals, and representations.
- Teachers create opportunities for students to see connections.

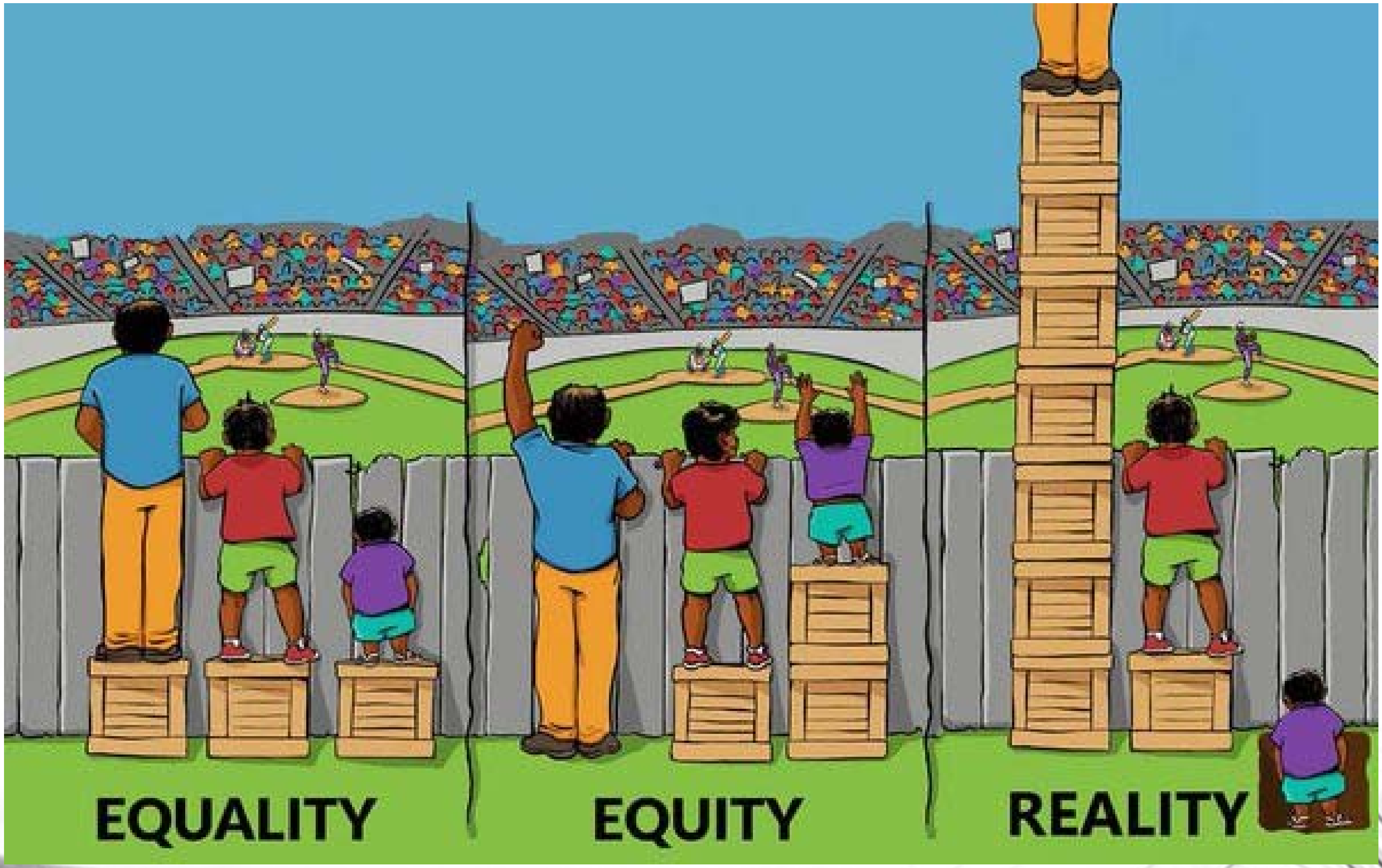
The maths is VISUAL.
- Teachers ask students to draw their ideas
- Tasks are posed with a visual component
- Students draw for each other when they explain
- Students gesture to illustrate their thinking

The environment is filled with *WONDER* and *CURIOSITY*.
- Students extend their work and investigate
- Teacher invites curiosity when posing tasks
- Students see maths as an unexplored puzzle
- Students freely ask and pose questions
- Students seek important information
- "I've never thought of it like that before."



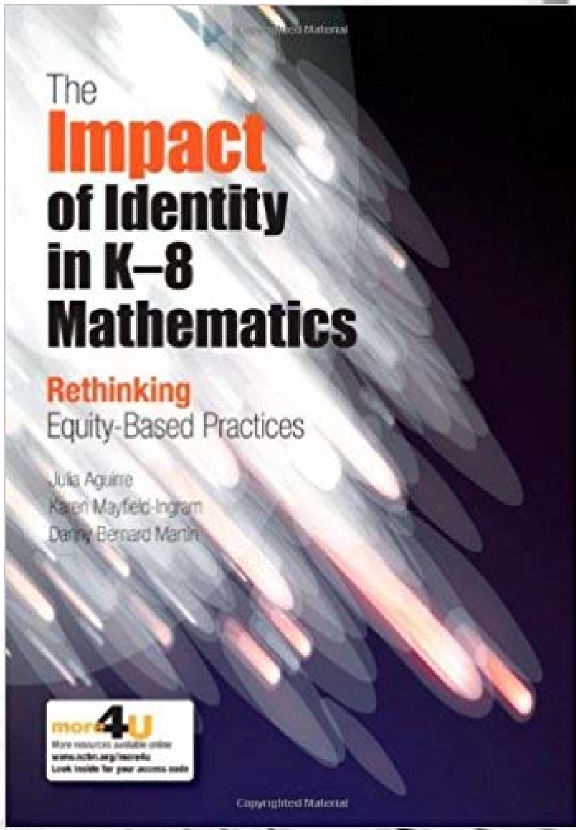
https://www.youcubed.org

Write a New narrative…



Equity-Based Mathematics Teaching Practices

- Going deep with mathematics
- Leveraging multiple mathematical competencies
- Affirming mathematics learners' identities
- Challenging spaces of marginality
- Drawing on multiple resources of knowledge



Equity-Based Mathematics Teaching Practices

- Going deep with mathematics
- **Leveraging multiple mathematical competencies** – Recognizing and positioning students' various mathematical backgrounds and competencies…
- **Affirming mathematics learners' identities** – Instruction that values multiple mathematical contributions, provides multiple entry points, and promotes student participation in various ways…
- Challenging spaces of marginality
- **Drawing on multiple resources of knowledge** – Recognize and tap students' knowledge and experiences – mathematical, cultural, linguistic, peer, family, and community…

Aguirre, Mayfield-Ingram, and Bernard. *The Impact of Identity in K-8 Mathematics: Rethinking Equity Based Practices,* NCTM 2013

Equity-Based Mathematics Teaching Practices

1. Going deep with mathematics

A non-representative lesson	Where are you?	A representative lesson
Promotes memorization and step-by-step procedures.		Supports students in analyzing, comparing, justifying, and proving their solutions along with mathematical discourse.
Presents tasks with low cognitive demand and limited solution strategies.		Presents tasks that have high cognitive demand and include multiple solution strategies and representations.

2. Leveraging multiple mathematical competencies

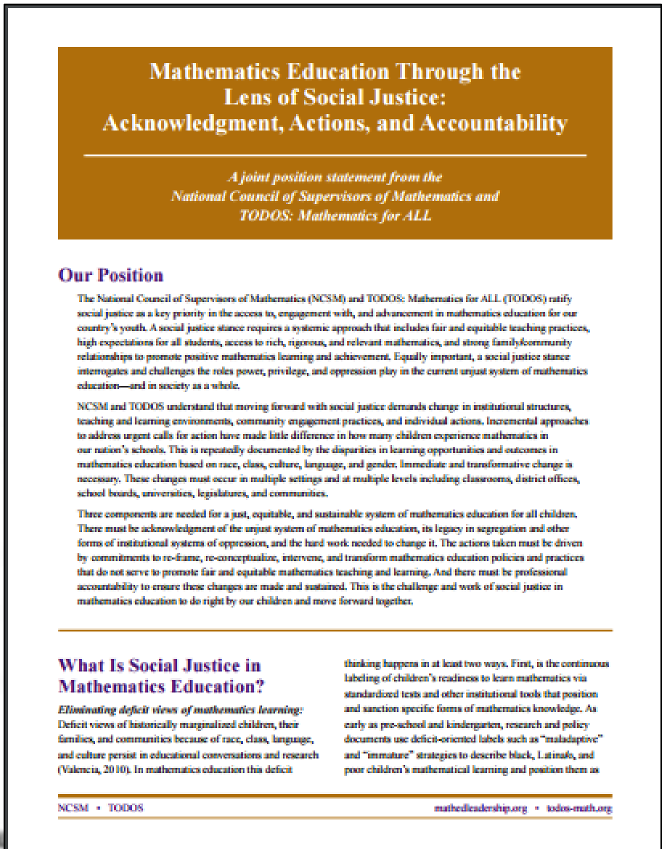
A non-representative lesson	Where are you?	A representative lesson
Promotes individual progress at specific, predetermined levels of ability and structures group work by ability.		Supports students in analyzing, comparing, justifying, and proving their solutions along with mathematical discourse.
Presents tasks that are rigid and highly sequenced. Requires students to show mastery of skills prior to engaging in more complex problem solving.		Presents tasks that offer multiple entry points, allowing students with varying skills, knowledge and levels of confidence to engage with the problem and make valuable contributions.

3. Affirming mathematics learners' identities

A non-representative lesson	Where are you?	A representative lesson
Is structured to emphasize speed and competition.		Is structured to promote student persistence and

Search: Five Equity-Based Practices for Math Classrooms ... | NC Mathematics

Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability



Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability

A joint position statement from the National Council of Supervisors of Mathematics and TODOS: Mathematics for ALL

Our Position

The National Council of Supervisors of Mathematics (NCSM) and TODOS: Mathematics for ALL (TODOS) ratify social justice as a key priority in the access to, engagement with, and advancement in mathematics education for our country's youth. A social justice stance requires a systemic approach that includes fair and equitable teaching practices, high expectations for all students, access to rich, rigorous, and relevant mathematics, and strong family/community relationships to promote positive mathematics learning and achievement. Equally important, a social justice stance interrogates and challenges the roles power, privilege, and oppression play in the current unjust system of mathematics education—and in society as a whole.

NCSM and TODOS understand that moving forward with social justice demands change in institutional structures, teaching and learning environments, community engagement practices, and individual actions. Incremental approaches to address urgent calls for action have made little difference in how many children experience mathematics in our nation's schools. This is repeatedly documented by the disparities in learning opportunities and outcomes in mathematics education based on race, class, culture, language, and gender. Immediate and transformative change is necessary. These changes must occur in multiple settings and at multiple levels including classrooms, district offices, school boards, universities, legislatures, and communities.

Three components are needed for a just, equitable, and sustainable system of mathematics education for all children. There must be acknowledgment of the unjust system of mathematics education, its legacy in segregation and other forms of institutional systems of oppression, and the hard work needed to change it. The actions taken must be driven by commitments to re-frame, re-conceptualize, intervene, and transform mathematics education policies and practices that do not serve to promote fair and equitable mathematics teaching and learning. And there must be professional accountability to ensure these changes are made and sustained. This is the challenge and work of social justice in mathematics education to do right by our children and move forward together.

What Is Social Justice in Mathematics Education?

Eliminating deficit views of mathematics learning: Deficit views of historically marginalized children, their families, and communities because of race, class, language, and culture persist in educational conversations and research (Valencia, 2010). In mathematics education this deficit thinking happens in at least two ways. First, is the continuous labeling of children's readiness to learn mathematics via standardized tests and other institutional tools that position and sanction specific forms of mathematics knowledge. As early as pre-school and kindergarten, research and policy documents use deficit-oriented labels such as "maladaptive" and "immature" strategies to describe black, Latina/o, and poor children's mathematical learning and position them as

NCSM • TODOS mathedleadership.org • todos-math.org

A Call for a Collective Action:
Equity & Social Justice in Mathematics Education
From Awareness to Action

- **Purpose: A year dedicated to building from our collective knowledge and understanding of topics and issues related to Equity and Social Justice in Mathematics Education to taking action to make a difference.**

- Bi-monthly Readings
- Quarterly Webinars
- Discussion Chat Board
- Face-to-Face Informal conversations

Where will you start?

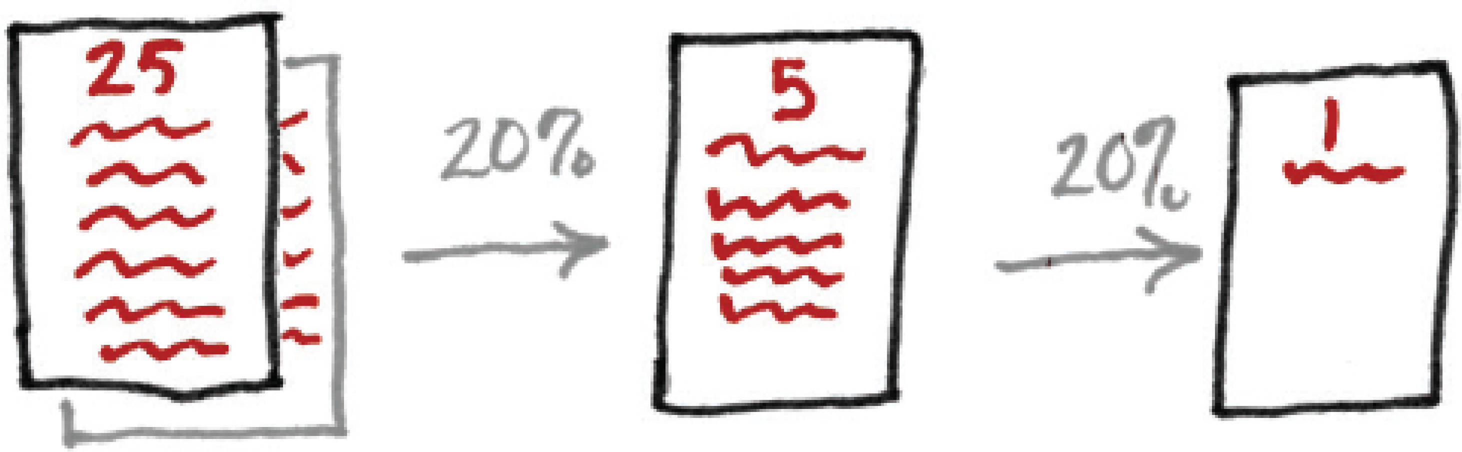
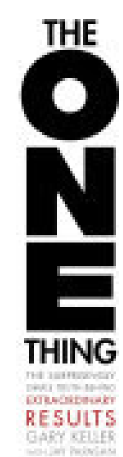


FIG. 5 No matter how many to-dos you start with, you can always narrow it to one.

FIG. 4 A to-do list becomes a success list when you prioritize it.

Keller, & Papasan, *The ONE Thing*, 2013



Our Next Generation…

Are we teaching our students to “do math” or

to critically think as a “doer of mathematics?”

When…

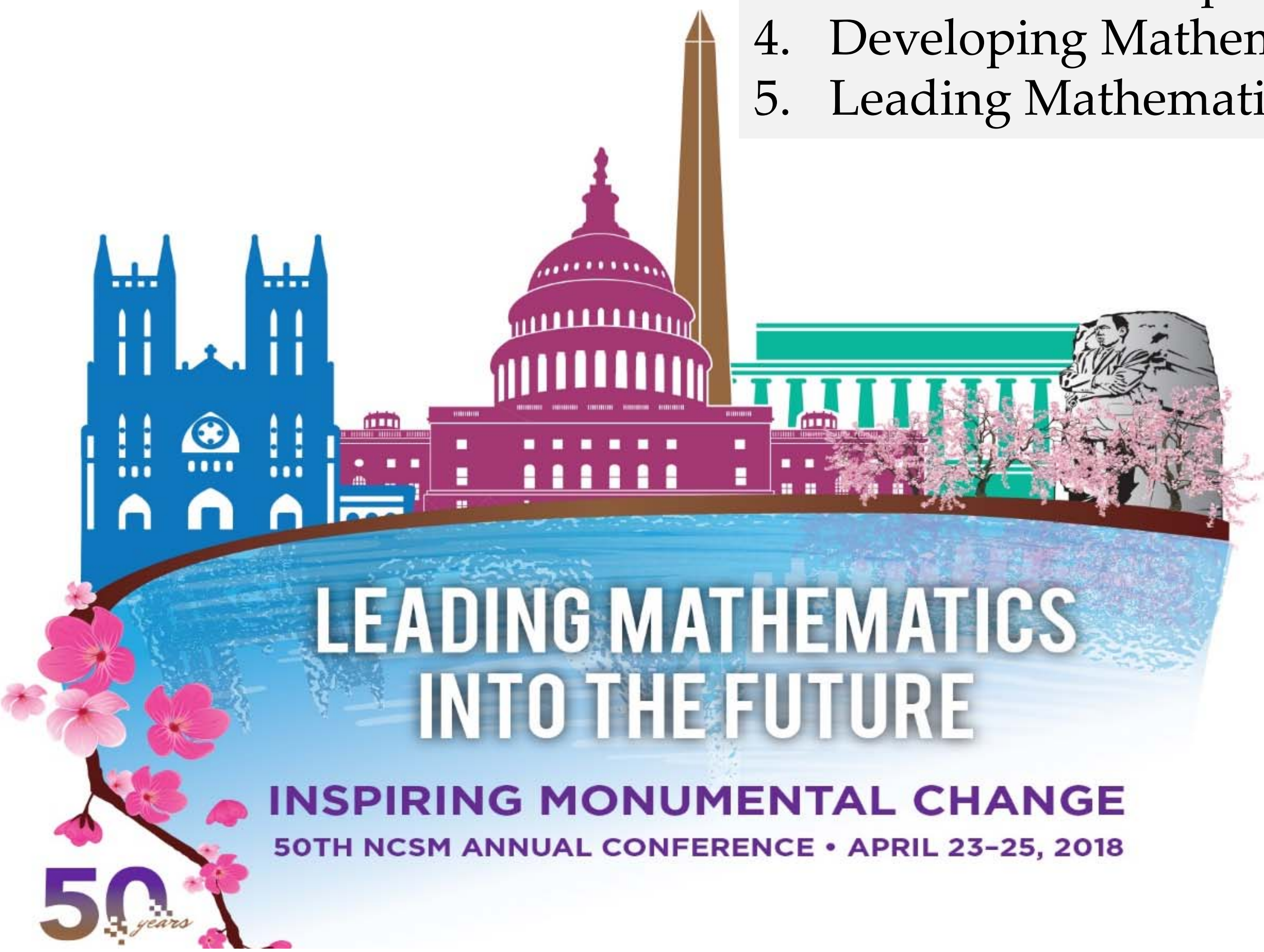
Every day I am reminded of the sense of urgency.

The urgency to instill hope for the future in today's youth…

…especially our youth of color.

Dr. John W. Staley, @jstaley06
Immediate Past President NCSM, jstaley@mathedleadership.org

1. Equity in Practice
2. Cultivating a Mathematics Coaching Practice
3. Evidence and Experiences from the Field
4. Developing Mathematical Knowledge for Teaching
5. Leading Mathematics into the Future



Preparing the Next Generation to Critically Think as "Doers of Mathematics"

Dr. John W. Staley, jstaley@mathedleadership.org @jstaley06
Director Mathematics PreK-12, Baltimore County Public Schools
Immediate Past President, NCSM

TWENTY-SEVENTH ANNUAL CONFERENCE
LEHMAN COLLEGE
BRONX, NEW YORK
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