



David Douglas  
School District:

Mathematics  
Leadership  
Team

Mathematics Leadership Team work in 2013-14 paid for by a Sustainability Grant from ODE.

For additional information and/or resources contact  
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Living Likert: To what degree do you agree or disagree with these statements in the context of your school/district...

Agree ←————→ Disagree



Our teachers have the mathematics content knowledge and pedagogical content knowledge required to maximize student learning and to effectively implement the CCSSM.

Living Likert: To what degree do you agree or disagree with these statements in the context of your school/district...

Agree ←————→ Disagree



Our teachers have both the mechanisms in place and sufficient time to improve their mathematics content knowledge and pedagogical content knowledge.

Living Likert: To what degree do you agree or disagree with these statements in the context of your school/district...

Agree ←————→ Disagree



Our school/district makes effective use of data to improve mathematics teaching and learning.

Living Likert: To what degree do you agree or disagree with these statements in the context of your school/district...

Agree ←————→ Disagree



Our teachers widely understand, model, and implement effective, high-leverage mathematics instructional practices in classrooms.

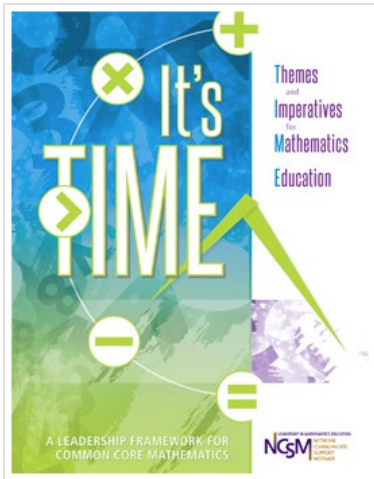
Living Likert: To what degree do you agree or disagree with these statements in the context of your school/district...

Agree ←————→ Disagree



Our efforts to increase mathematics achievement are successful due to a culture of beliefs and mindsets that raise expectations and provide rigorous opportunities to learn.

Read the “LEADERSHIP FRAMEWORK” on the next slide.



- In green, highlight components of the LEADERSHIP FRAMEWORK that your district/school currently has in place.
- In pink, highlight components of the LEADERSHIP FRAMEWORK that your district/school does not have in place at this time.
- Be prepared to share your discoveries with an elbow partner.

Leadership Framework taken from “It’s Time” published by the National Council of Supervisors of Mathematics

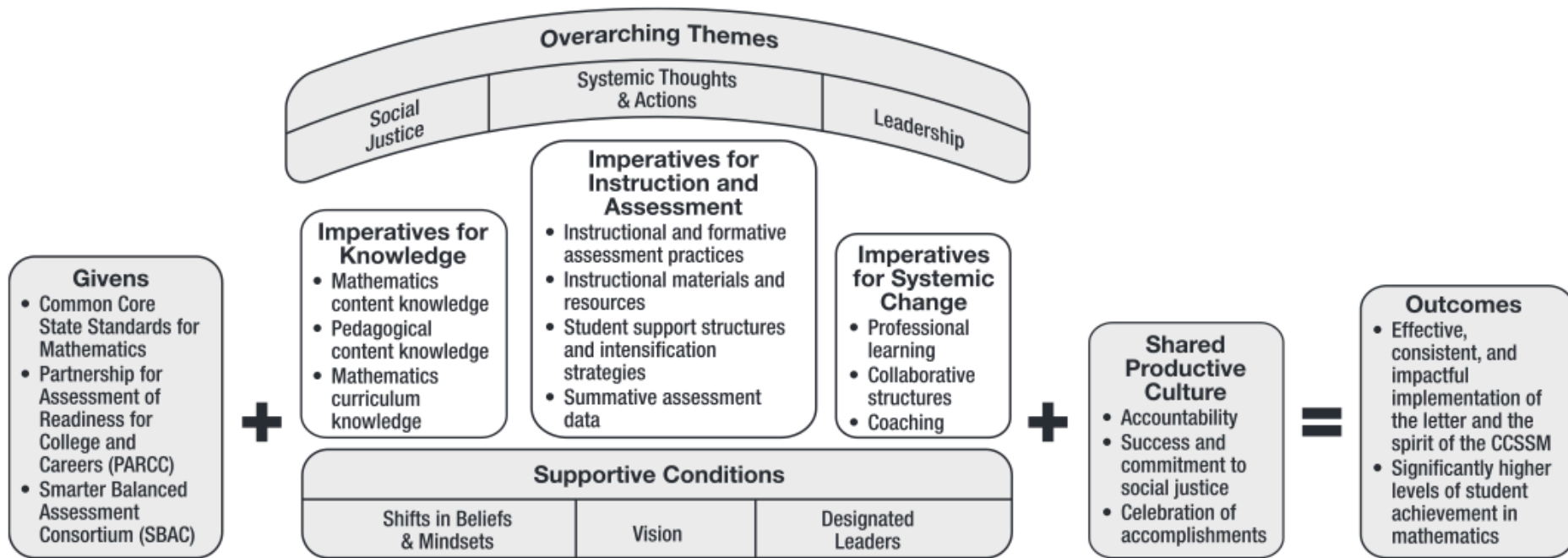
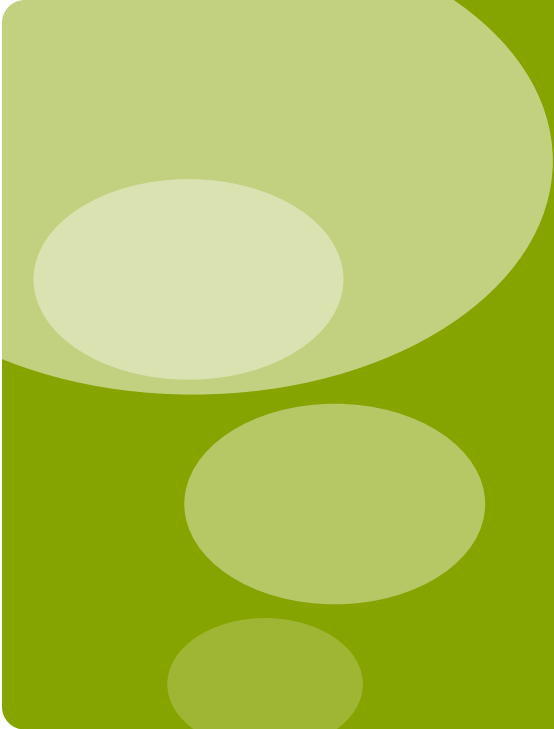


Figure 1.1: Leadership framework for Common Core mathematics.





**The State of  
Mathematics in  
Oregon and  
David Douglas  
School District**

# 2013 Oregon NAEP Results

- Read the Nation's Report Card: Mathematics 2013 State Snapshot Report for either Oregon Grade 4 or Grade 8 Public Schools.
- Interact with the text using...
  - \*—I was aware \_\_\_\_\_.
  - !—I am surprised by \_\_\_\_\_.
  - ?—I am concerned by \_\_\_\_\_.
- With your table group, share one or more statement(s) about the data.



# Graduation Policy – Impact Data

## OAKS Math Scores at NAEP Performance Standards

Grade	Performance Standard	OAKS Score	Percent of Students Meeting (2012-2013)
4	Oregon Meets	219	65
	NAEP Proficient	221	55
8	Oregon Meets	234	64
	NAEP Proficient	238	45
11*	Oregon Meets	236	70
	NAEP Proficient	245	18
	NAEP Prepared for College**	241	33

*\*NAEP administered at grade 12*

*\*\*NAGB adopted standard in August 2013*

# How does our data compare to the data for your school/district?

## David Douglas SD 40, 2013-2014

### Percentage of Students Meets or Exceeds

Grade	Reading	Mathematics	Science	Social Sciences	Writing
Grade 3	56%	53%	N/A	N/A	N/A
Grade 4	63%	52%	N/A	N/A	N/A
Grade 5	63%	51%	58%	N/A	N/A
Grade 6	63%	69%	N/A	N/A	N/A
Grade 7	67%	63%	N/A	N/A	N/A
Grade 8	60%	62%	58%	0%	N/A
High School	75%	57%	44%	0%	53%



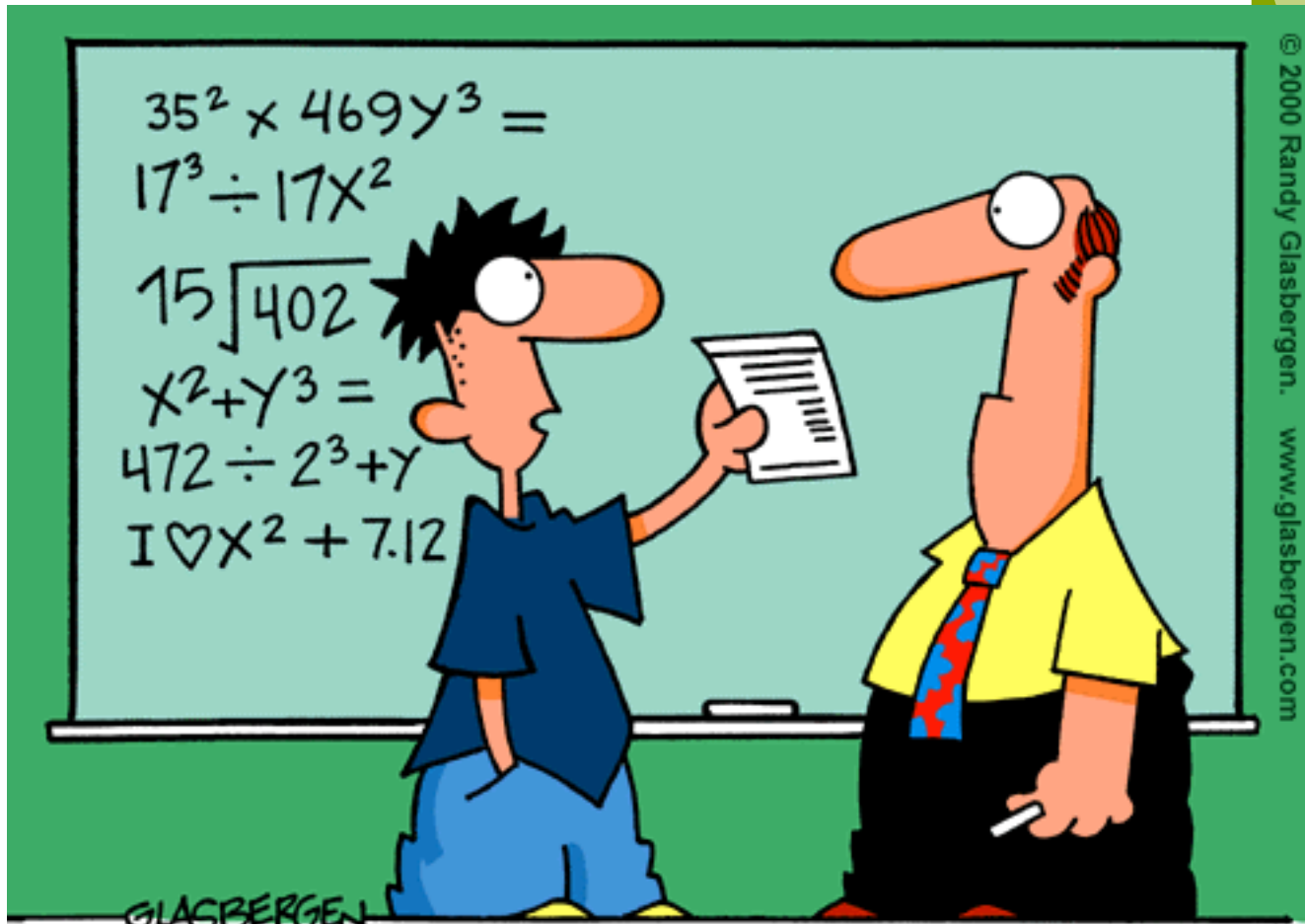
# Hollywood Hates Mathematics



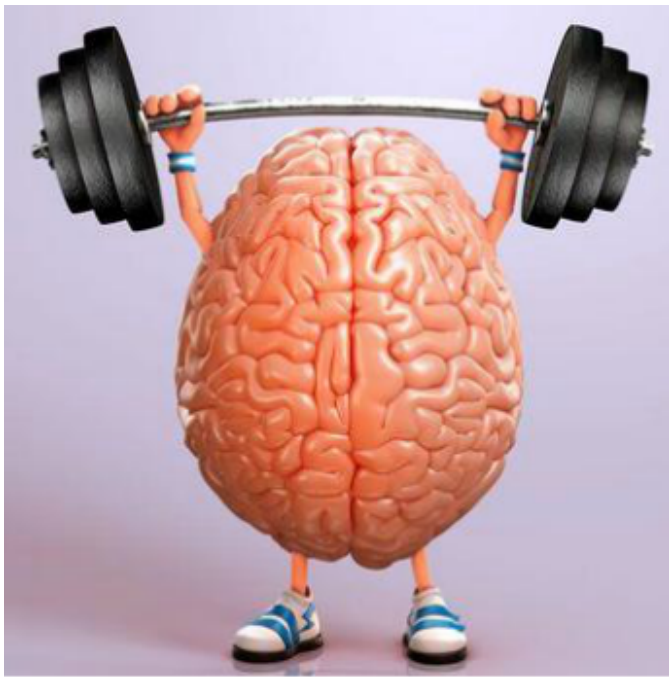
# What is your math story?



We all have some sort of feeling about math, whether it's a deep-seated fear or passion or even indifference. How did you get to that place? What experiences did you have that influenced your feelings and thoughts about math?



"I HAD MY DOCTOR DO A D.N.A. BLOOD ANALYSIS.  
AS I SUSPECTED, I'M MISSING THE MATH GENE."



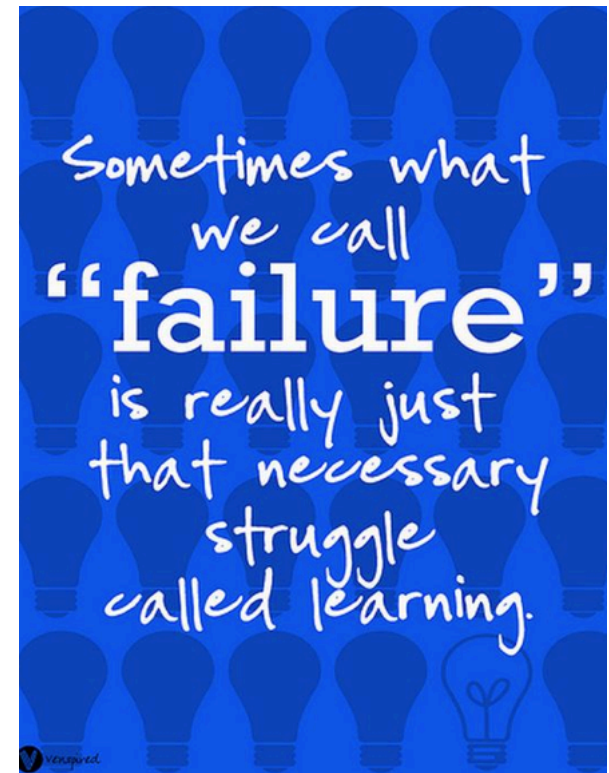
# MINDSETS:

- Research indicates that high-quality instruction leads to student achievement in mathematics, and individual and collective beliefs and mindsets are key determinants of instructional practices and classroom environment (Ash & D'Auria, 2013)
- A teacher's mindset can influence his or her approach to teaching mathematics.
- A teacher with growth mindset believes intelligence to be malleable and that, with effective effort, students can learn mathematics.



There is a growing body of evidence that students' mindsets play a key role in their math and science achievement. Students who believe that intelligence or math and science ability is simply a fixed trait (a fixed mindset) are at a significant disadvantage compared to students who believe that their abilities can be developed (a growth mindset). Moreover, research is showing that these mindsets can play an important role in the relative underachievement of women and minorities in math and science.

- a) mindsets can predict math/science achievement over time;
- b) mindsets can contribute to math/science achievement discrepancies for women and minorities;
- c) interventions that change mindsets can boost achievement and reduce achievement discrepancies; and
- d) educators play a key role in shaping students' mindsets.



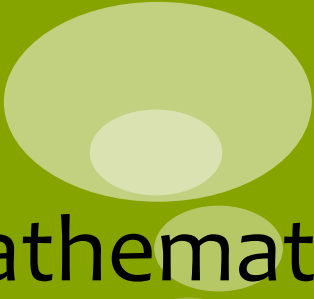
“Leaders must create the experience and opportunities for reflection that cause teachers to examine their beliefs and how these beliefs align with the expectations of the CCSSM.” (It’s TIME, pg.13)



- How does (or could) your school/district address staff’s mindsets around mathematics teaching and learning?

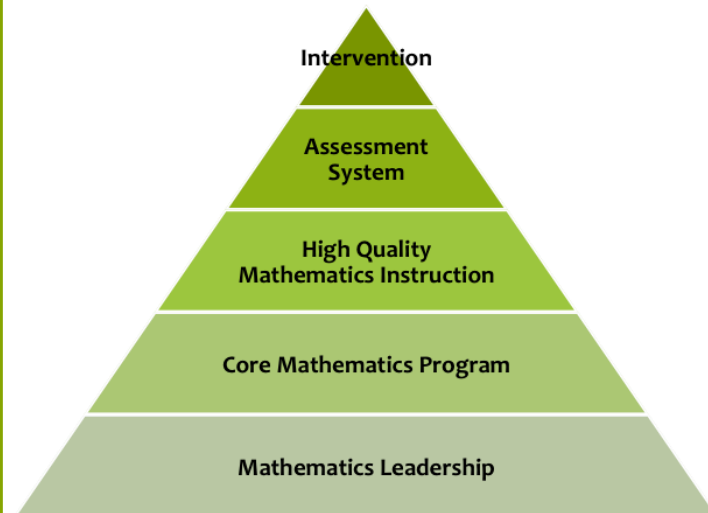


Our initial step toward a  
solution...



# Mathematics Leadership Team

David Douglas School District



*Adapted from the Mathematics Systems Improvement Framework: An Implementation Guide for District Leaders from the Washington State Superintendent of Public Instruction and the Mathematics Education Leadership Imperatives: An Agenda for Ensuring that All Students Benefit from the Common Core from the National Council of Supervisors of Mathematics.*

# Math Leaders Call to Action:

The Principles and Indicators for Mathematics Education (PRIME) Leadership Framework, published by National Council of Supervisors of Mathematics (NCSM, 2008) entreats teachers:

“not to settle for the current state of is-ness in mathematics education, but rather to lead the pursuit of a better future for every child. Student achievement in mathematics is unlikely to improve significantly beyond current local, regional, state, national, or provincial levels until mathematics education leaders assume and exercise professional responsibility and accountability for their own practice and the practice of the teachers they lead. Leadership matters. A single mathematics education leader can have an incredible impact on the development and effectiveness of others.”

**CALL <sup>to</sup> ACTION**

# PHASES OF IMPLEMENTATION

## Phase 5: Intervention

- Students identified in a tiered instructional system
- Diagnostic Assessments
- Instructional Interventions
- Progress Monitoring Assessments
- Instruction is monitored and adjusted based on assessment data

## Phase 4: Assessment System

- Data-based decision making cycle is used to inform practice at multiple levels
- Common assessments for a variety of purposes
- Universal Screening

## Phase 3: High Quality Mathematics Instruction

- Shared vision of high quality mathematics instruction
- Instruction is monitored and on-going PD is provided
- Formative assessment process is used to guide instructional practice
- Common assessment data is used to collaboratively make instructional decisions

## Phase 2: Core Mathematics Program

- Common Core State Standards
- Standards-aligned instructional materials
- Comprehensive curriculum guides

## Phase 1: Mathematics Leadership Team

- Mission, Vision, Values, Collective Commitments, Goal-setting & Action Planning
- Implementation monitoring
- Structures and support for professional collaboration and distributed leadership.



# PHASE 1: MATHEMATICS LEADERSHIP TEAM

- **Mission, Vision, Values, Collective Commitments, Goal-setting & Action Planning**
- **Implementation monitoring**
- **Structures and support for professional collaboration and distributed leadership.**

# MLT Phase 1 Work

- Application process through collaboration with Educator Effectiveness Grant.



- Representation across schools, grade levels, subject areas, special programs, administration, and district office.
- 3 Meetings in 2013-14
  - Kickoff: Imperatives, Framework, Vision, Collective Commitments
  - Meeting 2: CCSS Focus and Coherence
  - Meeting 3: CCSS Coherence and Rigor



# Mathematics Leadership Team members:

- Pre-Kindergarten—Megan Larsen & Rosa Linch
- Elementary Teachers—Sarah Phillips, Karen Reed, Matt Soule, Kari Fosse, Becky Buchanan, Dave Charbonneau, Sarah Wolfgang, Luan Nguyen & Jennifer Dolton
- Elementary Specialists—Maria Popii & Veronica Stewart
- Forward Coaches—Carrie Foster & Melissa Burch
- Middle School Math Teachers—Wendi Hetrick, Carli Halligan, Jim Loftus, Bruce James, Caleb Wilkinson & Nanette Twist
- Middle School Specialist—Eve Clemmer
- High School Math Teachers—Heidi Willis, Patricia Hayes, Natalie Denny, Kathryn Favali, & Amy Holman
- High School Specialist—Joe Talley
- Principals—Becki Chase, Cheri-Ann May, Doug Pease & Linda Vancil
- District Office—Brooke O’Neill, Amy McQueen, Erin Gardenhire, Belle Koskela, Amy Straw & Stephanie Myhre

# Purpose:

The purpose of the Mathematics Leadership Team is to provide David Douglas School District actionable steps and guidance around which a comprehensive K-12 mathematics system can be built.

Anchored in current mathematics education research, our implementation of the *Mathematics Education Leadership Imperatives* and *Mathematics Systems Improvement Framework* will provide clarity and vision for our district to improve mathematics teaching and learning.



# Our Vision!



"We will engage all students in a rigorous and productive journey through mathematics."

# Mathematics Leadership Team members will...

- Develop and ensure widespread use of a written, shared vision of effective teaching and learning of mathematics.
- Address the beliefs and mindsets that guide action and determine willingness to change.
- Provide direction and coordination in the areas of curriculum design, instructional materials, instructional practices, assessment, and professional development and ensure the alignment of effort.
- Maximize the opportunity for all students to learn mathematics.
- Maximize Instructional Capacity in Every Classroom.

# Into which facets of the Leadership Framework for the CCSSM does the convening of a Mathematics Leadership Team fall?

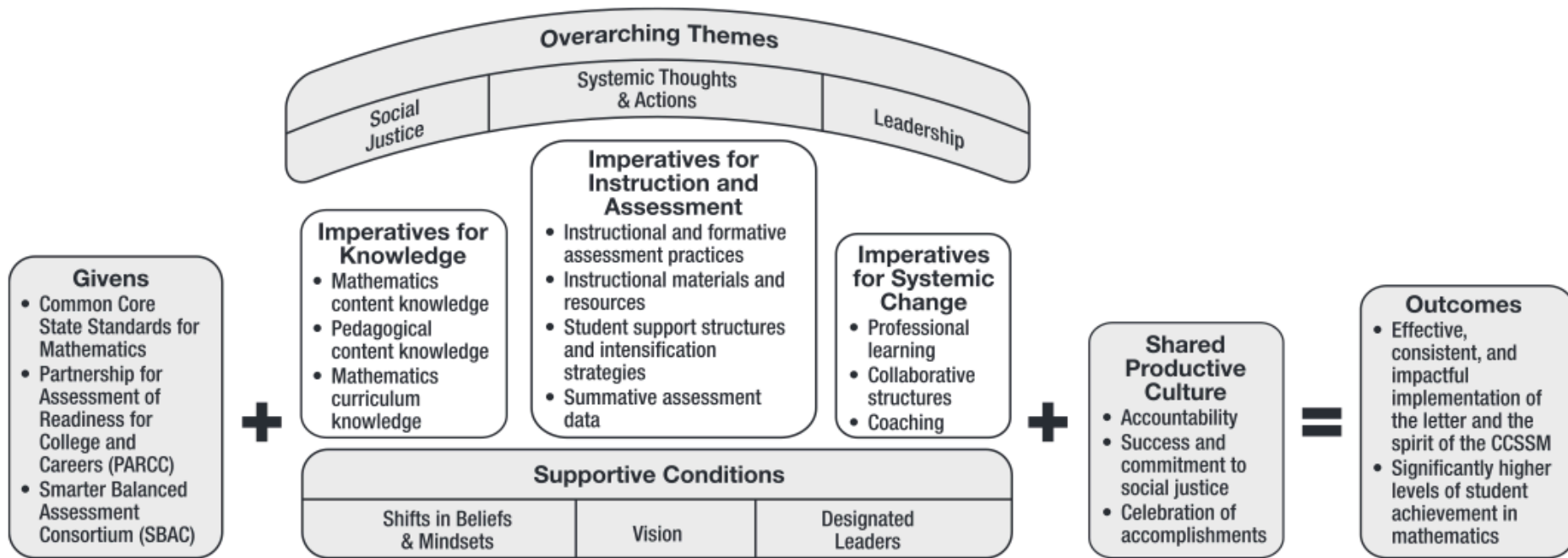


Figure 1.1: Leadership framework for Common Core mathematics.

Math problems  
are weird;

"I had 10 chocolate  
bars and ate 9.

What do I have now?"

"Oh, I dont know,

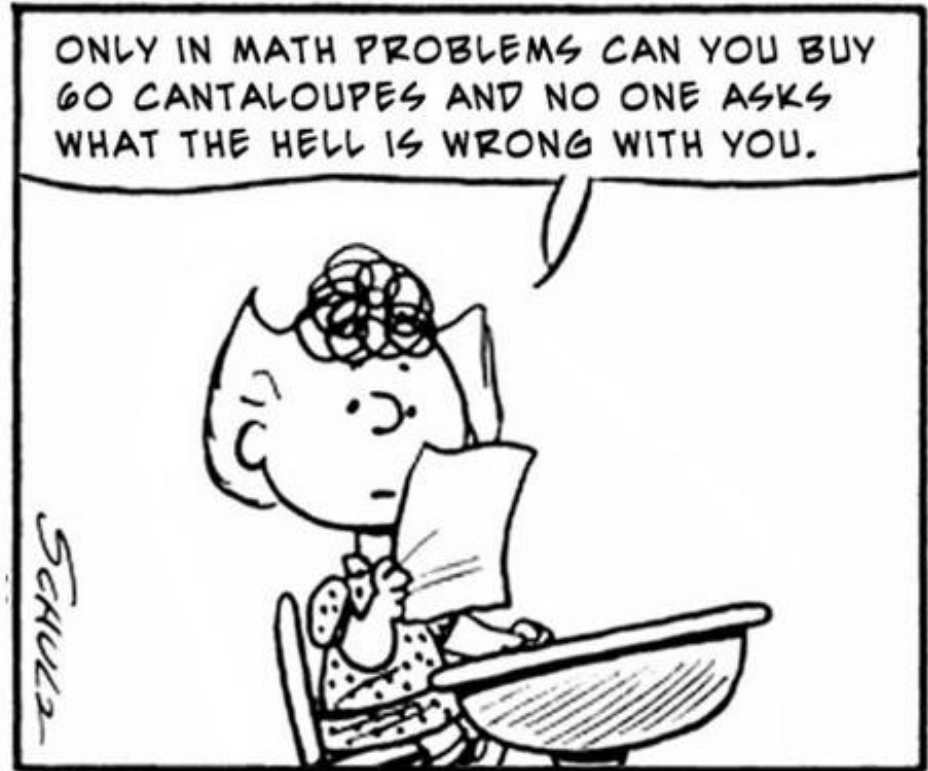
**DIABETES**

maybe?"

GIRLFRONPARIS | TUMBLR



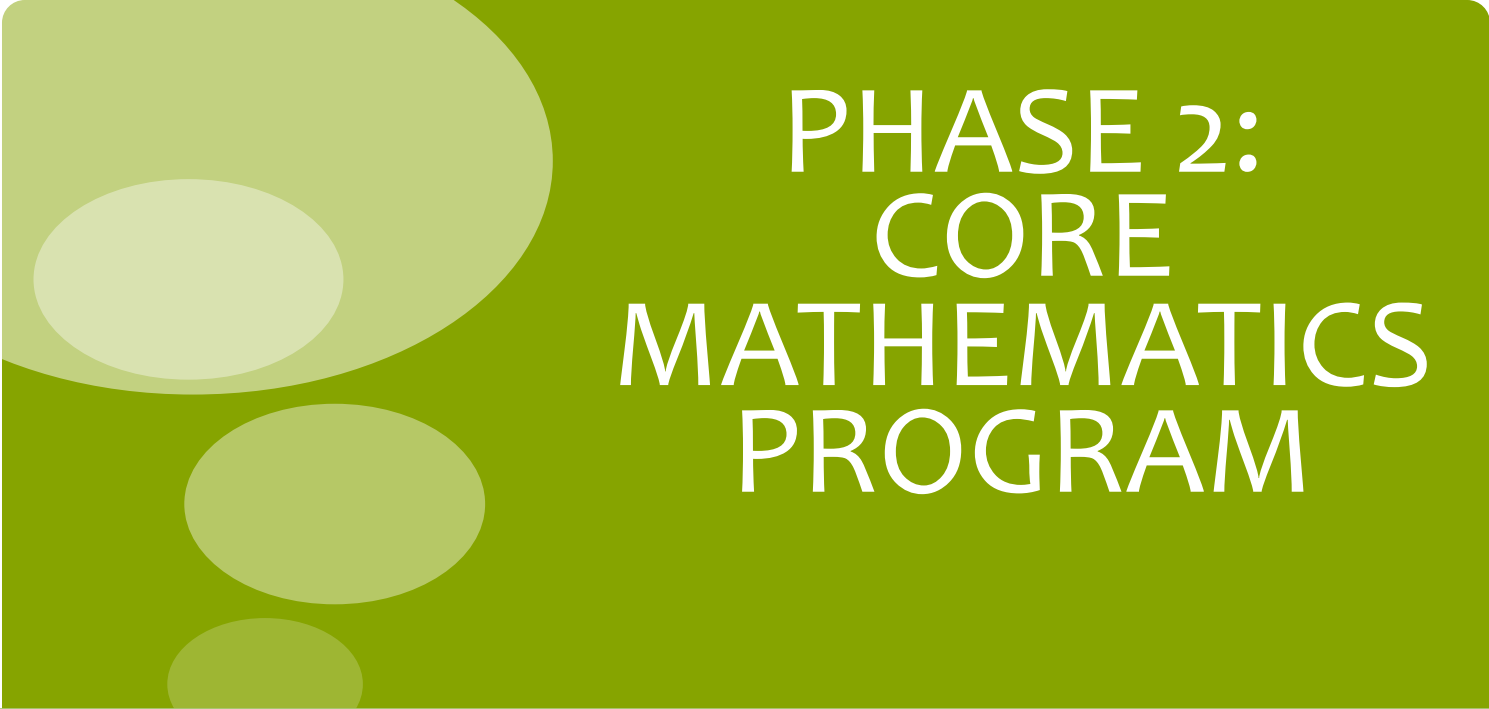
ONLY IN MATH PROBLEMS CAN YOU BUY  
60 CANTALOUPEs AND NO ONE ASKS  
WHAT THE HELL IS WRONG WITH YOU.



SCHULZ

PEANUTWEETER.COM

@KARIMI

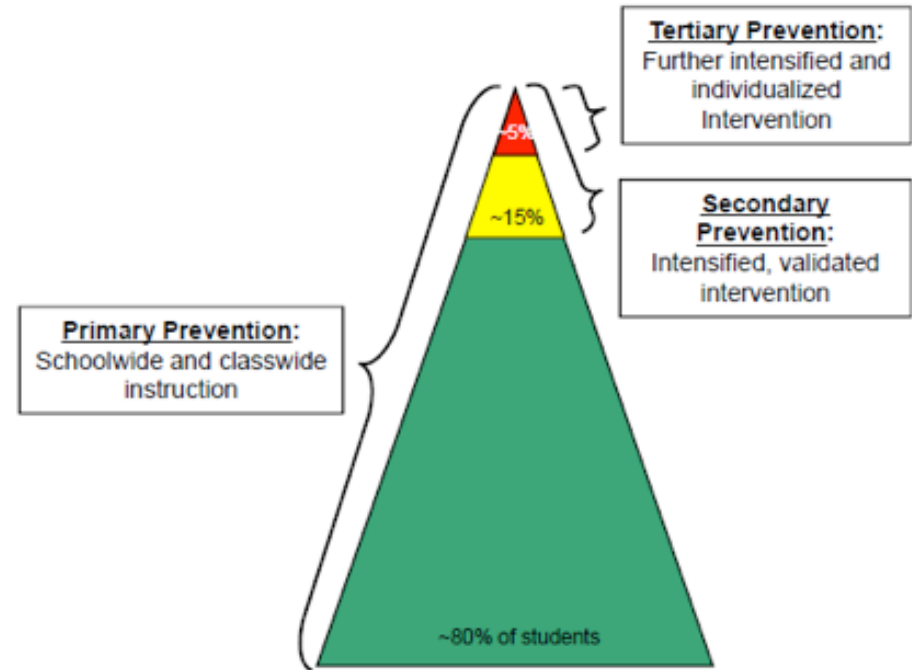


# PHASE 2: CORE MATHEMATICS PROGRAM

- **Common Core State Standards**
- **Standards-aligned instructional materials**
- **Comprehensive curriculum guides**

# RTI:

Built on the belief that the core mathematics curriculum and instruction should be meeting the needs of the majority of students, the Mathematics Systems Improvement Framework suggests implementing mathematics interventions after the core mathematics program, instruction, and assessment components have been addressed for *all* student populations.



**If successful, the core mathematics program will meet the needs of at least eighty percent of students. If greater than twenty percent of students are identified as needing intervention services, the focus must remain on core program improvements.**



# When prompted: I use the district adopted curriculum as my MAIN resource for my mathematics instruction.

## ■ DDSD Elementary School Teachers

- 117 respondents

- 49 answered FALSE

- 68 answered TRUE

- Of these 26 said they supplement heavily from Engage NY, Bridges, Teachers-Pay-Teachers, Digging into Math, K-5 Teaching Resources, and Pinterest

## ■ DDSD Middle School Teachers

- 24 respondents

- 24 answered TRUE

- Of these 3 said they supplement for either interventions, extensions, or problem solving activities

## ■ DDSD High School Teachers

- 20 respondents

- 5 answered FALSE

- 15 answered TRUE

- Of these, 3 said they supplement with materials they or a colleague has written

## Statewide Match/Gap Committee Results

CCSS Grade level	% of content that stayed at the SAME grade e.g. OR 5 <sup>th</sup> → CCSS 5 <sup>th</sup>	% of content that moved from a LOWER grade e.g. OR 3 <sup>rd</sup> /4 <sup>th</sup> → CCSS 5 <sup>th</sup>	% of content that moved from a HIGHER grade e.g. OR 6 <sup>th</sup> /7 <sup>th</sup> → CCSS 5 <sup>th</sup>	% of content NOT MATCHED in CCSS (either brand new content or content presented in a new way)
K	71%	N/A	24%	5%
1	61%	4%	7%	29%
2	52%	4%	9%	35%
3	48%	0%	32%	20%
4	16%	21%	20%	43%
5	41%	11%	26%	22%
6	36%	9%	28%	28%
7	30%	18%	43%	8%
8	40%	10%	36%	14%
HS (non- advanced standards)	26%	2%	43%	29%
HS + (Advanced Knowledge & Skills)	63%	0%	N/A	37%
K-5 Average	48%	8%	20%	25%
6-HS Average	33%	10%	38%	20%

# MLT Phase 2 Work



- Expanded team to include 3 teachers from each grade level/subject area.
- Provided 2 days of intense Mathematics Professional Learning
  - Turning Your Vision for Content and Instruction into Action k – 12
  - Turning Your Vision for Content and Assessment into Action k – 12
- Provided hours and resources for creation of CCSS Comprehensive Curriculum Guides k – Geometry.





## Grade K Part 4 Week 9

TASS for Part 4: Originality and Metacognition

Grade K Part 4 Week 9							
TASS for Part 4: Originality and Metacognition							
	Name of SLT	Pacing	CCSS	Vocabulary	Resources	Assessment/Check for Understanding:	Notes
Priority SLTs	Use informal language to describe the attributes of shapes (Part 3 Week 9)			cylinder, cube	Use <u>Our Boat</u> e-reader	<p>Assessment/Check for Understanding:</p> <p>Note the extent to which each student is able to give clues about shapes in the story by describing the relative positions of the shapes in the design and using informal language to describe the attributes of the shapes in the three-dimensional object. For example, can the student identify an object's position relative to other objects on the page, as well as describe its geometric attributes?</p>	<p>Daily routines for Part 4:</p> <p style="text-align: center; background-color: #e1f5fe;"><b>Weeks 4-9 Geometry</b></p> <p>Counting to 100</p> <p>Fluency adding and subtracting to 5</p> <p style="background-color: #e8f5e9;">Use Quick Checks in each Part's Assessment folder for Formative assessments</p>
	<input type="checkbox"/> MP #1			face, 3-dimensional			
	<input type="checkbox"/> MP #2			similar, 2-dimensional			
	<input type="checkbox"/> MP #3			attribute, geoblocks			
	<input type="checkbox"/> MP #4		G.2	pattern blocks, cone			
	<input type="checkbox"/> MP #5		G.3	square, triangle			
	<input type="checkbox"/> MP #6			rectangle, circle			
	<input type="checkbox"/> MP #7			solid, flat, shapes			
	<input type="checkbox"/> MP #8			hexagon, trapezoid			
Aligned Engagement Strategy			rhombus, corner				
			sphere, side				
			oval, straight				
						Learning Targets:	
						I can use position words to give clues about shapes in a story.	
	Identify and describe the faces on a three-dimensional shapes as two dimensional shapes (Part 3 Week 7)			cylinder, cube		<p>Assessment/Check for Understanding:</p> <p>Note the extent to which each student is able to identify and describe the faces of a three-dimensional shape as two-dimensional shapes. For example, can the student name</p>	
	<input type="checkbox"/> MP #1			face, 3-dimensional			
	<input type="checkbox"/> MP #2			similar, 2-dimensional			



### Grade 2 Unit 1: PLACE VALUE week 2

Thinking Skill: Fluency—Generating multiple responses to a problem or an idea. & Academic Success Skill: Collaboration—Working effectively and respectfully to reach a group goal.

Name of SLT	Possible Pacing	CCSS	Suggested Vocabulary	Resources		Notes
<p>Use drawings and numerals to represent three-digit numbers (MID) (Part 1 week 2)</p> <p><input type="checkbox"/> MP #1</p> <p><input type="checkbox"/> MP #2</p> <p><input type="checkbox"/> MP #3</p> <p><input type="checkbox"/> MP #4</p> <p><input type="checkbox"/> MP #5</p> <p><input type="checkbox"/> MP #6</p> <p><input type="checkbox"/> MP #7</p> <p><input type="checkbox"/> MP #8</p> <p>Aligned Engagement Strategy</p>	2-3 days	NBT.1, NBT.3	Digit(s), Expanded Form, Numeral(s), Place Value	<p>Grade 2 Envisions Resources: Unit 1 Topics 5 &amp; 10</p> <p>Forward Additional Resources Unit 1 Place Value</p>	<p>Formative Assessments: See Formative Assessments Unit 1 Place Value</p> <p>Learning Targets: *I can explain 3 digit numbers using hundreds, tens and ones. *I can explain 100 as a bundle of ten tens. * I can explain how many hundreds are in multiples of 100. * I can read numbers to 1000.</p>	<p>Daily Math Skills- Place value (Ones, Tens, Hundreds) -Skip Counting (2, 5, 10, 100). -Fact fluency</p> <p><b>Instructional Recommendations:</b></p> <p>Allocate 15 minutes of fluency practice time each day to teach and practice fluency practice SLT</p>
<p>Represent three-digit numbers in expanded form (MID)(Part 1 week 2)</p> <p><input type="checkbox"/> MP #1</p> <p><input type="checkbox"/> MP #2</p> <p><input type="checkbox"/> MP #3</p> <p><input type="checkbox"/> MP #4</p> <p><input type="checkbox"/> MP #5</p> <p><input type="checkbox"/> MP #6</p>	2-3 days	NBT.1, NBT.3	Digit(s), Expanded Form, Numeral(s), Place Value	<p>Grade 2 Envisions Resources: Unit 1 Topics 5 &amp; 10</p> <p>Forward Additional Resources Unit 1 Place Value</p>	<p>Formative Assessments: See Formative Assessments Unit 1 Place Value</p> <p>Learning Targets: *I can explain 3 digit numbers using hundreds, tens and ones.</p>	



## Grade 6 Math Scope & Sequence – Stage 1 Decimals and Fractions

First Unit	Textbook Lessons	Resources	Example/Commentary (www.illustrativemathematics.com)
<p><b>Decimals &amp; Fractions</b></p> <p><u>Block 1:</u> Understanding Decimals</p>	<p><u>Required Lessons:</u> Lessons 1.5 - 1.6</p> <p><u>Optional Lessons:</u> Lessons 1.1 – 1.4</p>	<p><u>District Resources</u> Core Focus Curriculum Resources</p> <p><u>Online Resources</u>  <a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a>  <a href="http://www.insidemathematics.org">www.insidemathematics.org</a>  <a href="http://www.ccssmath.org">www.ccssmath.org</a>  <a href="http://www.commoncoreconversation.com">www.commoncoreconversation.com</a>  <a href="http://www.smarterbalanced.org">www.smarterbalanced.org</a>  <a href="http://map.mathshell.org">http://map.mathshell.org</a>  <a href="http://www.engageny.org">www.engageny.org</a></p> <p><u>Interactive Sites</u>  <a href="http://www.xpmath.com">www.xpmath.com</a>  <a href="http://www.khanacademy.org">www.khanacademy.org</a>  <a href="http://www.ixl.com">www.ixl.com</a></p> <p><u>Sixth Grade IXL Skills Practice</u> (J.1, J.2, J.3, J.4)</p>	<p><u>Example</u> Jayden has \$20.56. He buys an apple for 79 cents and a granola bar for \$1.76.</p> <ul style="list-style-type: none"> <li>• How much money did Jayden spend?</li> <li>• How much money does Jayden have now?</li> </ul> <p><u>Commentary</u> Building on their fifth grade experiences with operations on decimal numbers, sixth grade students should find the task to be relatively easy. The emphasis here is on whether students are actually fluent with the computations, so teachers could use this as a formative assessment task if they monitor how students solve the problem. Students who struggle with this task in sixth grade will need extra support.</p>
<p><b>Days/Weeks</b></p> <p><i>Timeline assumes A/B Block Schedule.</i></p> <p>Minimum: 4 days Maximum: 6 days</p>	<p><b>Mathematical Practices</b></p> <p>MP 2: Reason abstractly and quantitatively.</p> <p>MP 7: Look for and make use of structure.</p> <p>MP 8: Look for and express regularity in repeated reasoning.</p>		
<p><b>Common Core Math Standard:</b> 6.NS.3 – Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p>			
<p><b>Vocabulary:</b> Compatible Numbers Equivalent Decimals</p>		<p><b>Unit Learning Targets:</b></p> <ul style="list-style-type: none"> <li>• I can estimate sums, differences, products or quotients of expressions involving decimals.</li> <li>• I can find sums or differences of expressions involving decimals.</li> </ul>	

Into which facets of the Leadership Framework for the CCSM does the alignment to CCSSM and the creation of comprehensive curriculum guides fall?

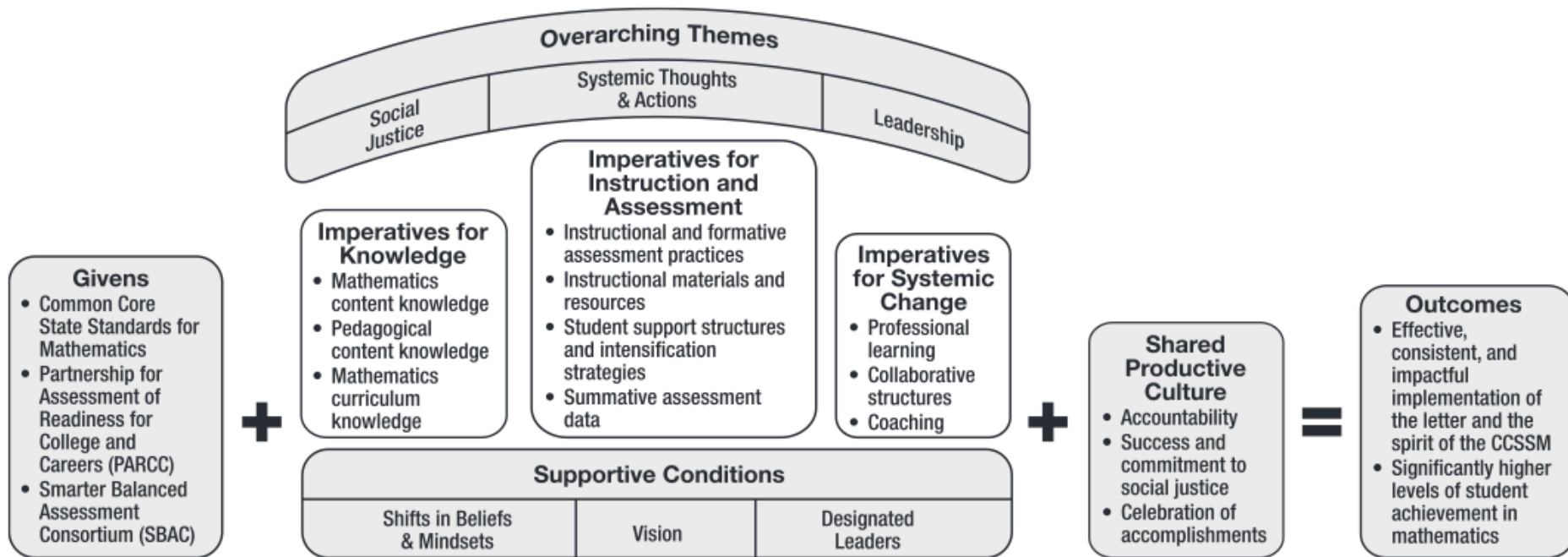


Figure 1.1: Leadership framework for Common Core mathematics.



# Next Steps

## Phase 3: High Quality Mathematics Instruction

- Shared vision of high quality mathematics instruction
- Instruction is monitored and on-going PD is provided
- Formative assessment process is used to guide instructional practice
- Common assessment data is used to collaboratively make instructional decisions



## Phase 4: Assessment System

- Data-based decision making cycle is used to inform practice at multiple levels
- Common assessments for a variety of purposes
- Universal Screening

## Phase 5: Intervention

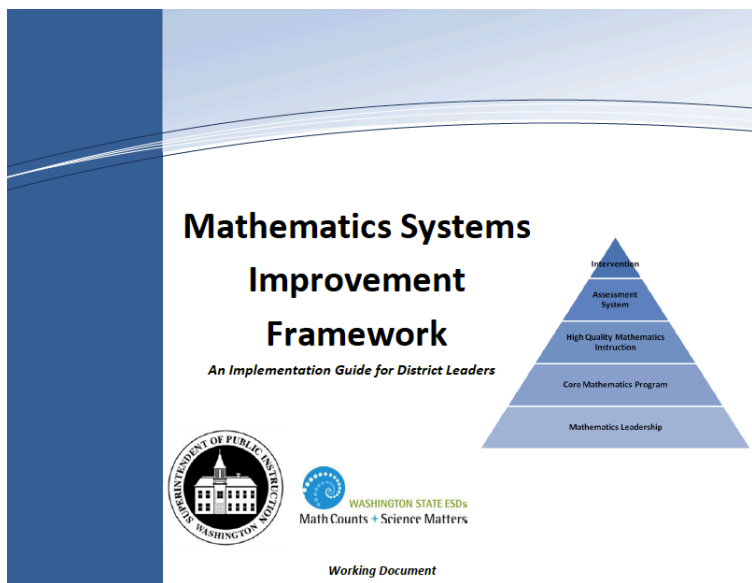
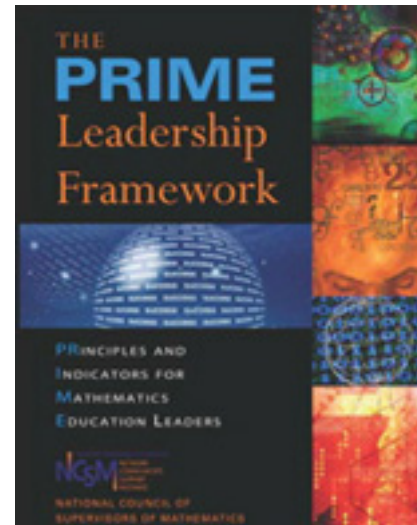
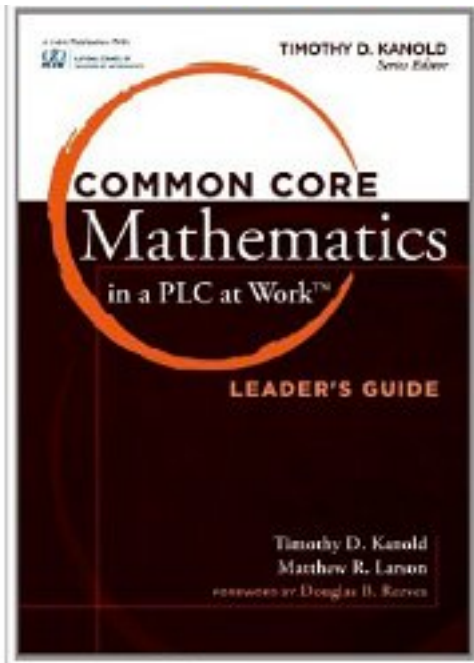
- Students identified in a tiered instructional system
- Diagnostic Assessments
- Instructional Interventions
- Progress Monitoring Assessments
- Instruction is monitored and adjusted based on assessment data

# 2014-15 Mathematics Leadership Team Plan

- Sharing and explanation of maps and resources for all grade levels/subject areas—August 27<sup>th</sup> and 28<sup>th</sup>.
- Mathematics Leadership Team Meeting in September for Phase 3 planning and implementation.
- MLT members attend Northwest Mathematics Conference in October.
- Quarterly district grade level/subject area PLTs meetings to share summer professional learning facilitated by MLT members.



# RESOURCES



# Resources (continued)

- Achieve the Core: <http://achievethecore.org/>
- Howard County Public School System Mathematics: <https://gradekcommoncoremath.wikispaces.hcpss.org/Kindergarten+Home>
- Illustrative Mathematics: <https://www.illustrativemathematics.org/>
- Mathematics Assessment Project: <http://map.mathshell.org/materials/index.php>
- Milwaukee Mathematics Partnership: <http://www4.uwm.edu/Org/mmp/>
- NCSM: <http://www.mathedleadership.org/index.html>
- North Carolina Mathematics: <http://maccss.ncdpi.wikispaces.net/>
- The Mathematics Common Core Toolbox: <http://ccsstoolbox.org/>



# The WHY!

- People cannot do what they cannot *envision*.
- People will not do what they do not *believe* is possible.
- People will not implement what they do not *understand*.
- People are unlikely to do well what they do not *practice*.
- People are unlikely to show much progress without *feedback*.
- People's efforts are unlikely to be sustained without *collaboration*.



# Exit Ticket



- As you reflect on being a leader around Teaching and Learning in Mathematics, how have your ideas changed or become more detailed compared to what you knew at the beginning of the session?
- I used to think... but now I know...