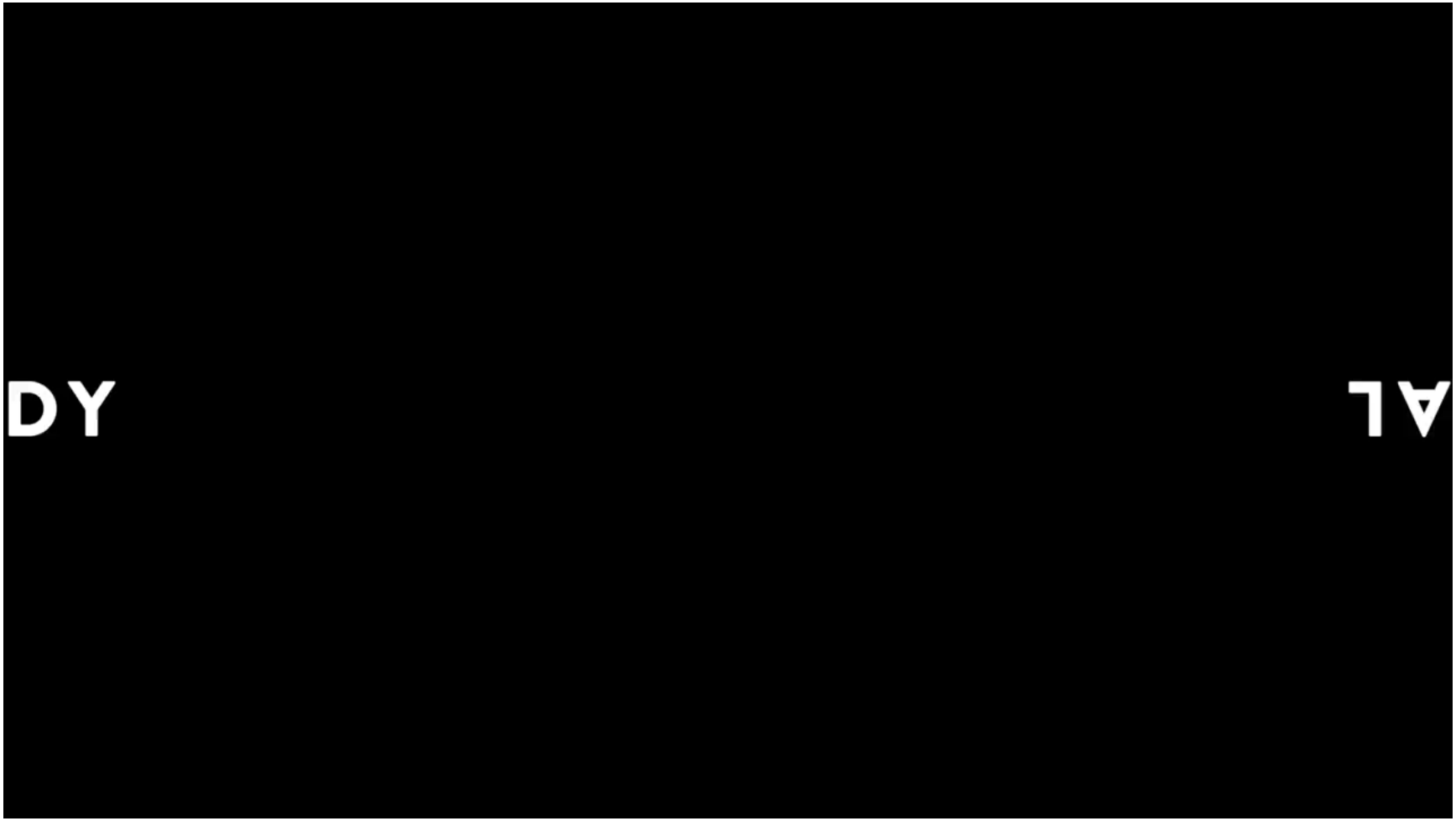
Building *Your* 21st Century Math Program

Chris Shore
The Math Projects Journal
Murrieta Valley USD
shore@mathprojects.com **@MathProjects**

What is Your Million-Dollar Talent?



What is Your Million-Dollar Talent?

Our Norms

E X C E L

- **Advance the Vision**
- **All Voices**
- **Be Present**
- **Consensus, Not Compromise**

What is Your Million-Dollar Talent?

Mindset

of students

of teachers!

They are that smart

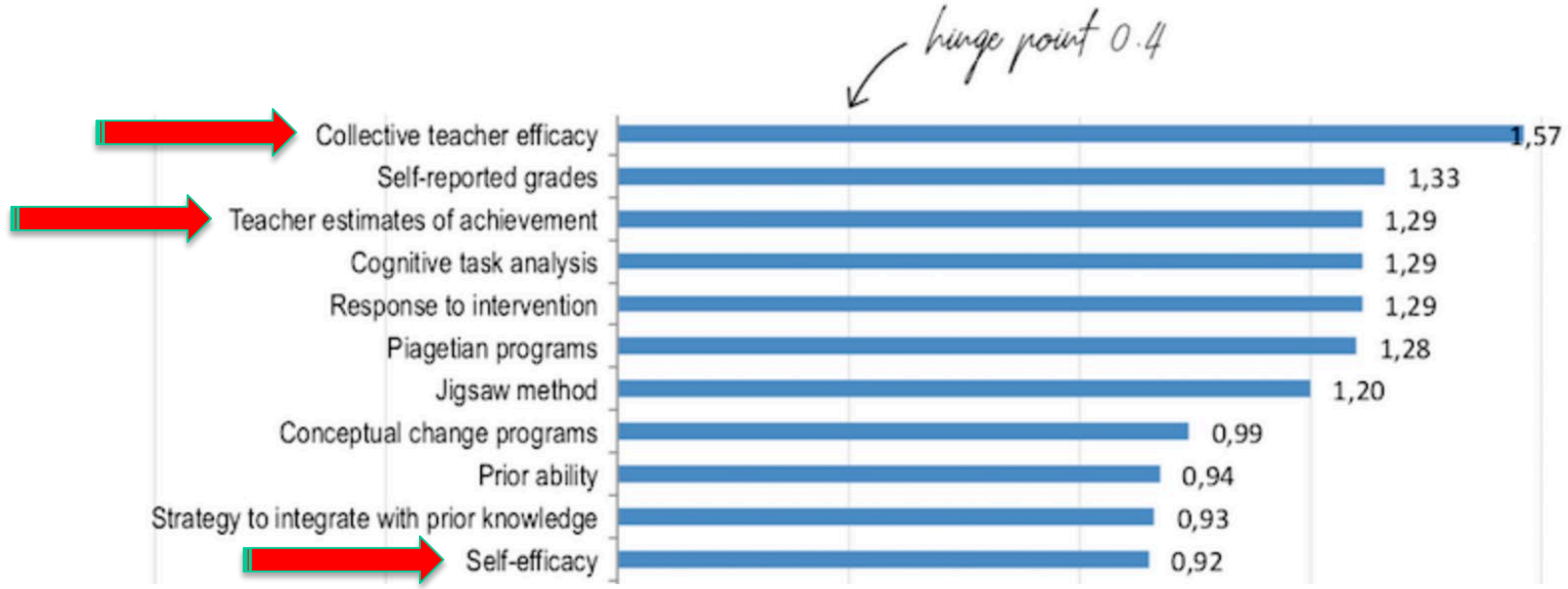
&

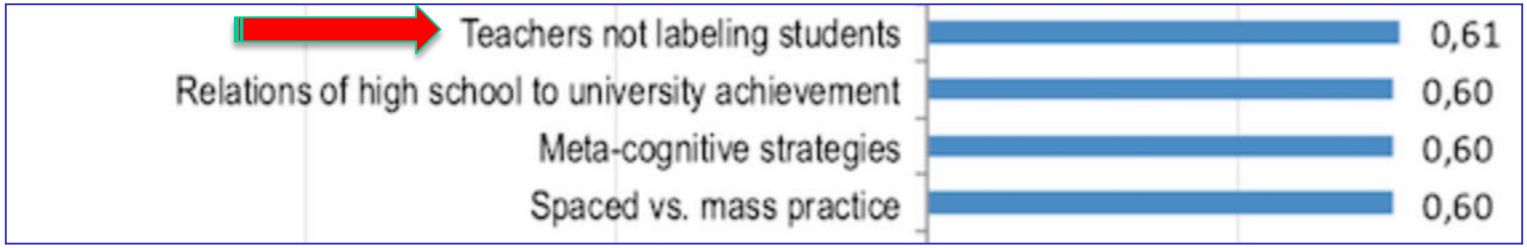
We are that good!

Mindset

Hattie's 2018 updated list of factors related to student achievement: 252 influences and effect sizes (Cohen's d)

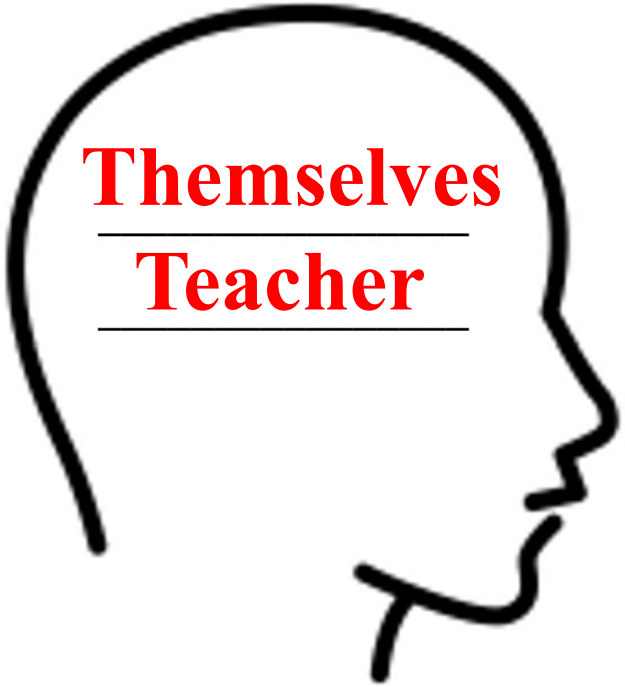
Source: J. Hattie (December 2017) visiblelearningplus.com
Diagram: S. Waack (2018) visible-learning.org



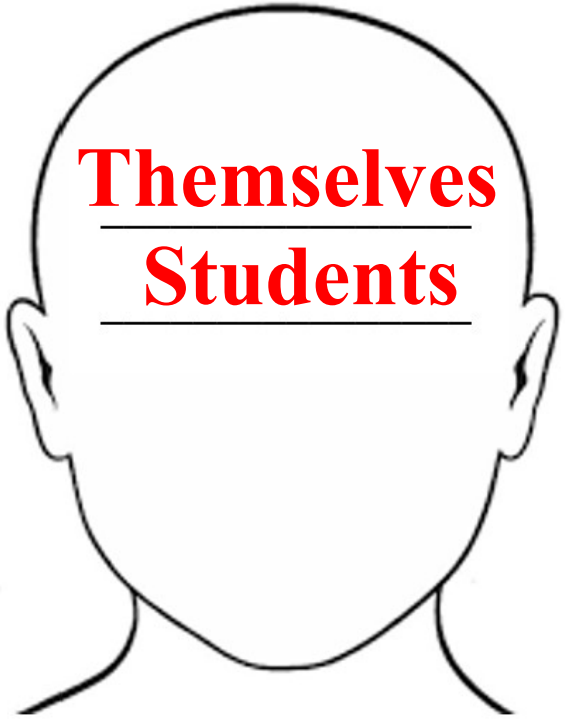


Mindset

Student must believe in…

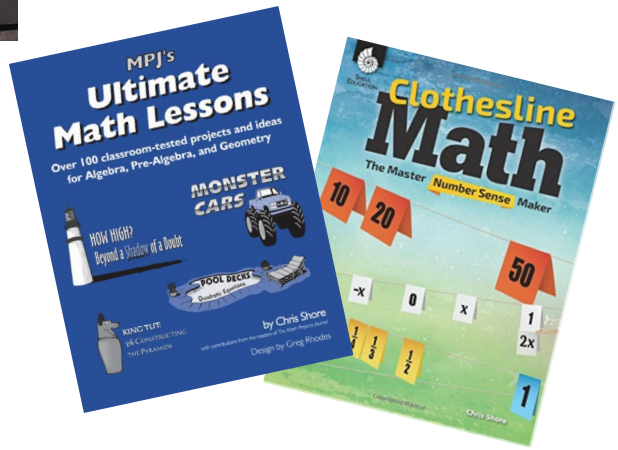


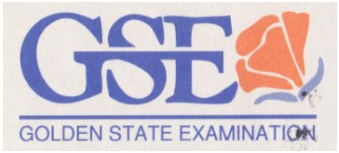
Teacher must believe in…



#1 Effect Size is Collective Teacher Efficacy

My Teaching Experience





My Math Coaching Experience

My Math Leadership Team













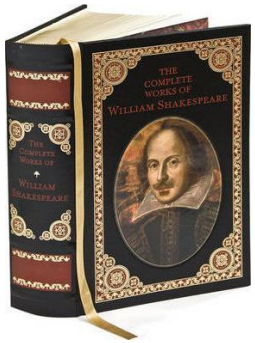


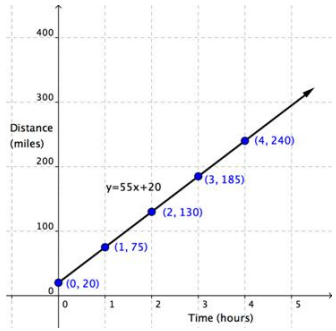

My Math TOSA Role

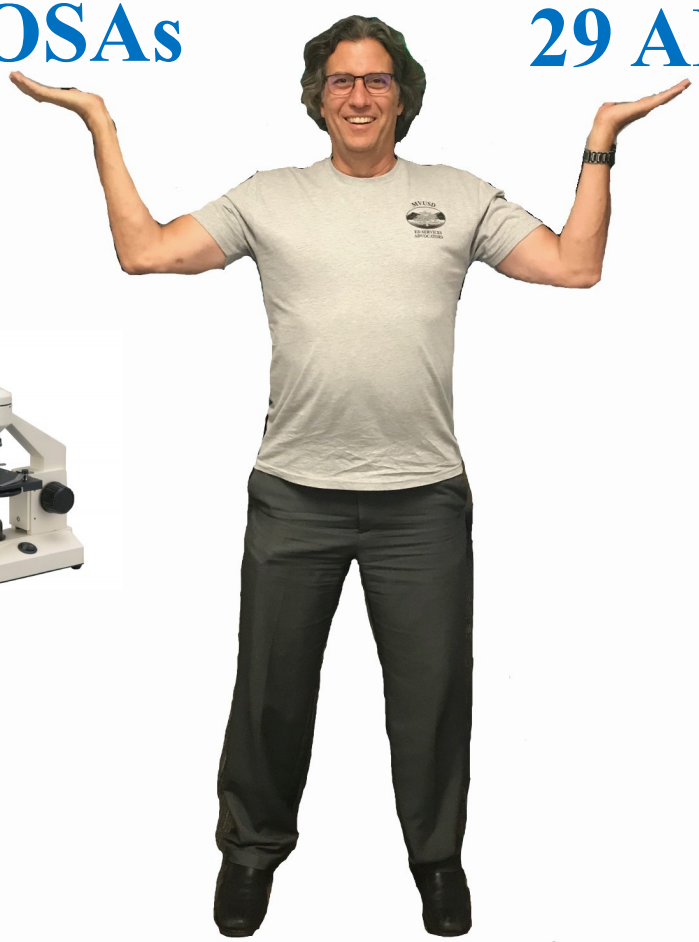
- K-12 Common Curriculum
- Middle School Intervention
- Elementary Lesson Study

My Current Coordinator Role

23 TOSAs **29 ADMIN**







Murrieta Valley Unified School District

CURRICULUM & PLC

MPJ

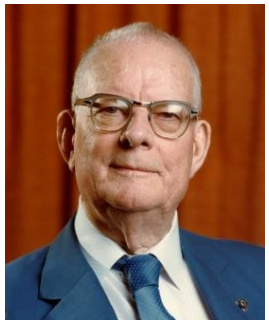
Our Key Principles

Students don't improve until teachers improve.

-- Dr. William Schmidt, University of Michigan

Teachers don't improve until leaders improve.

-- Dr. Kenneth Leithwood, University of Toronto

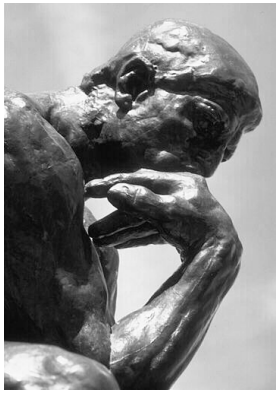


Our Systems are producing the exact results they are designed to get.

-- Dr. W. Edwards Deming

Your 21st Century Math Program

Our 3 Days

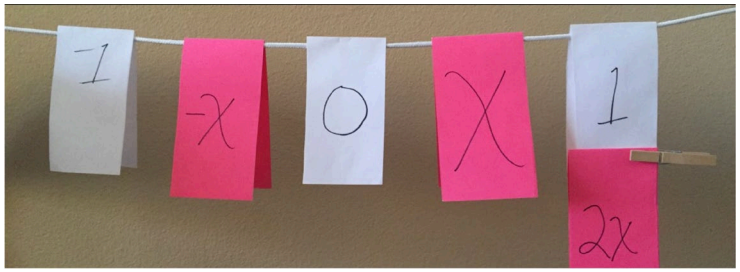


Question #1

Nov 1

Question #2

Feb 4



Questions #3 & 4

May 21

Your 21st Century Math Program
Our Goals Today

- **Math Expectations**

  Question #1, "X"

- **Current Reality: How close are you?**

- **Model Lessons**

  Question #1, "E & C"

- **PLC Structures**

Your 21st Century Math Program?

Model Lesson Make-Over

Lemonade at the Pool

The concession stand at a local swimming pool sells small and large glasses of freshly squeezed lemonade. This weekend, they made more than $250 selling glasses of lemonade. A large glass of lemonade sells for $4.00, and the total sales generated from selling small glasses of lemonade was $65.

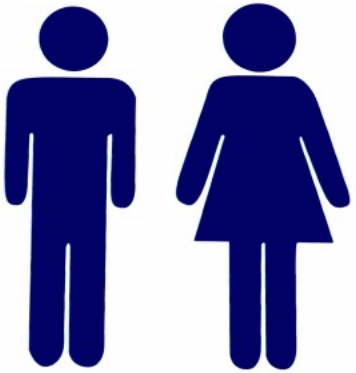
1. Write an inequality to represent the relationship between the amount they made and the number of large glasses they sold.

2. Solve the inequality. Interpret the solution in terms of the problem situation.

3. Graph the solution set on the number line.

We will write and solve inequalities by decontextualizing the problem and contextualizing the solution.

Break



10 minutes, until...

we learn the WHY?

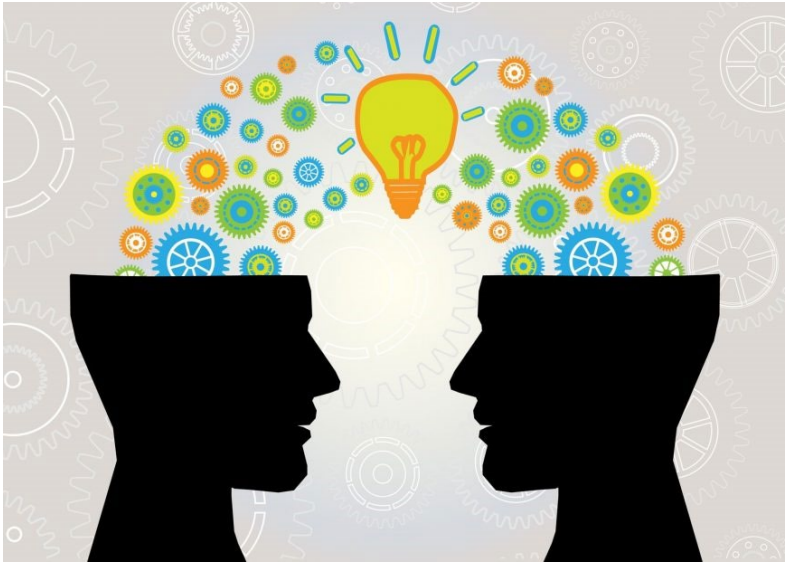
Why a 21st Century Math Program?

According to the District

The vision for RUSD 2025 will focus on five key areas:

- **E** ENHANCED LEARNING THROUGH INNOVATION
- **X** EXCELLENCE IN ACADEMICS
- **C** COLLABORATIVE COMMUNITY AND PARENT PARTNERSHIPS
- **E** EQUALITY THROUGH EQUITY
- **L** LEARNING IN SAFE AND SECURE ENVIRONMENTS

Thoughts on
YOUR 21st Century Math Program



In what ways is your math program advancing the vision? Or not?

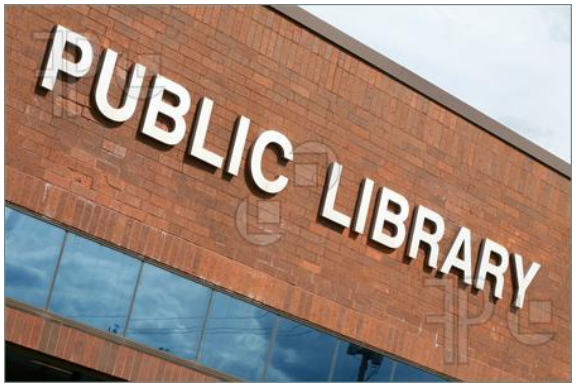
In what ways would the Lemonade Stand Lesson advance the vision? Or would not?

Why a 21st Century Math Program?
According to the World

Teach students to THINK and COMMUNICATE their thinking.

These are the 21st Century Skills.

Why a 21st Century Math Program?
According to the World



Why a 21st Century Math Program?
According to the World

Think & Communicate

are the 21st Century Skills.

Obtain & Retain

were the 20th Century Skills.

Why a 21st Century Math Program?

According to the World

The 4 C's

EdLeader21

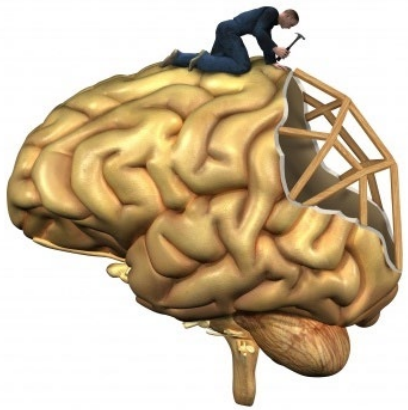
We are redefining LEARNING and SCHOOL.

Critical Thinking

Communication

Collaboration

Creativity



60%

Why a 21st Century Math Program

According to the World

IEA

TIMSS

Why a 21st Century Math Program?

According to the World

Our Students' FUTURE is redefining itself.

Critical Thinking, Communication, Collaboration, Creativity

Top 10 skills

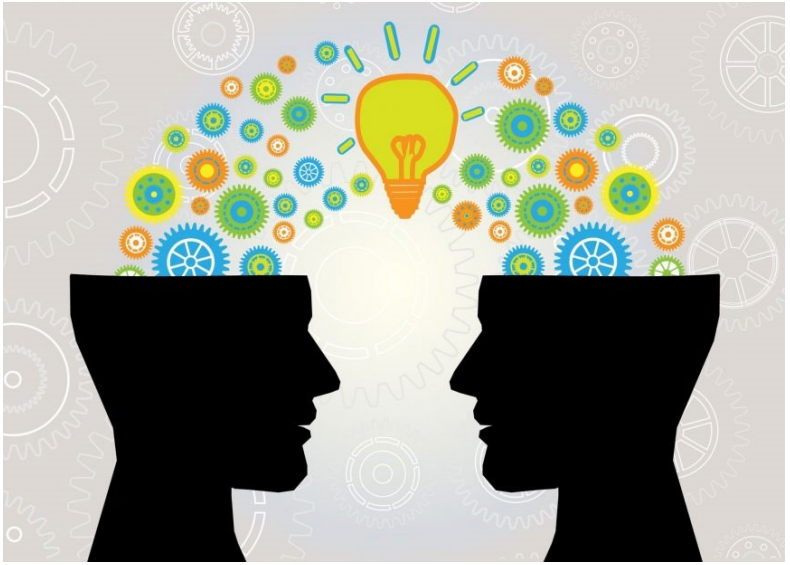
WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

in 2020	in 2015
1. Complex Problem Solving	1. Complex Problem Solving
2. Critical Thinking	2. Coordinating with Others
3. Creativity	3. People Management
4. People Management	4. Critical Thinking
5. Coordinating with Others	5. Negotiation
6. Emotional Intelligence	6. Quality Control
7. Judgment and Decision Making	7. Service Orientation
8. Service Orientation	8. Judgment and Decision Making
9. Negotiation	9. Active Listening
10. Cognitive Flexibility	10. Creativity

MPJ

Thoughts on
YOUR 21st Century Math Program



How often and in what ways are we teaching and assessing Critical Thinking, Communication, Collaboration and Creativity?

Why a 21st Century Math Program?

According to the State

30%

Claim #1 – Concepts & Procedures

"Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency."

Claim #2 – Problem Solving

"Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies."

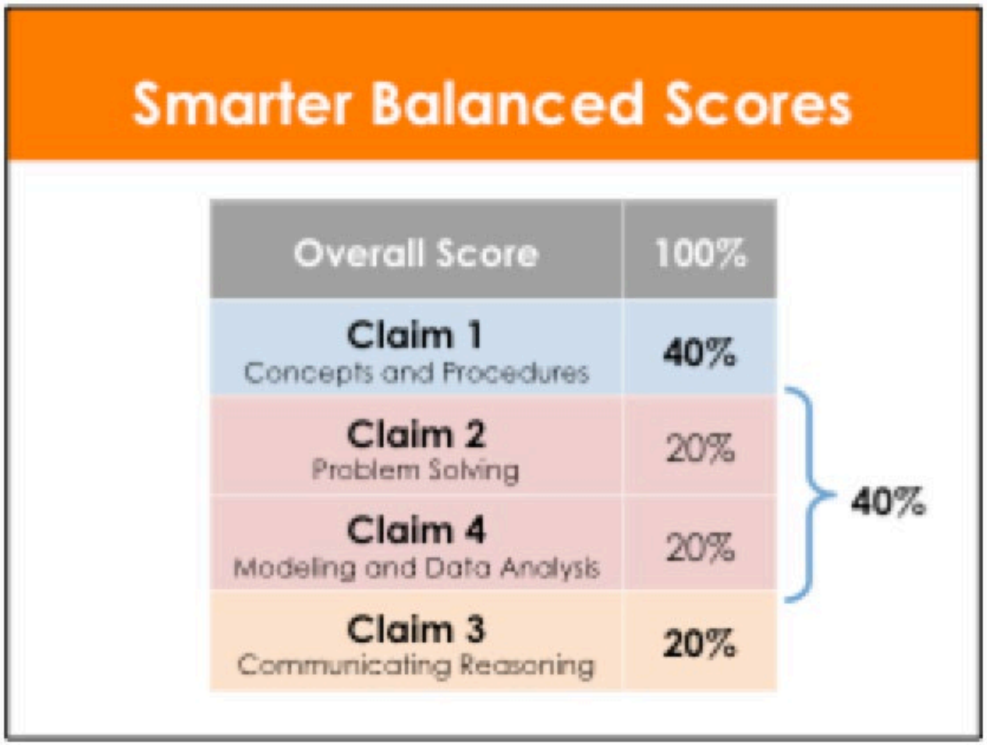
Claim #3 – Communicating Reasoning

"Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others."

Claim #4 – Modeling and Data Analysis

"Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems."

Why a 21st Century Math Program
According to the State



Why a 21st Century Math Program?

According to the State

SMARTER Balanced Assessment Consortium

Content Specifications: Claims and Targets

CLAIM 1: CONCEPTS AND PROCEDURES
Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.

Target	6th	7th	8th	High School
A	Understand ratio concepts and use ratio reasoning to solve problems. ***DOK 1, 2***	Analyze proportional relationships and use them to solve real-world and mathematical problems. ***DOK 1, 2***	Know that there are numbers that are not rational, and approximate them by rational numbers. ***DOK 1***	Extend the properties of exponents to rational exponents. ***DOK 1, 2***
B	Apply and extend previous understandings of multiplication and division to divide fractions by fractions. ***DOK 1, 2***	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. ***DOK 1, 2***	Work with radicals and integer exponents. ***DOK 1***	Use properties of rational and irrational numbers. ***DOK 1, 2***
C	Compute fluently with multi-digit numbers and find common factors and multiples. ***DOK 1***	Use properties of operations to generate equivalent expressions. ***DOK 1***	Understand the connections between relationships, lines and linear equations. ***DOK 2***	Reason quantitatively and use units to solve problems. ***DOK 1, 2***
D	Apply and extend previous understandings of numbers to the system of rational numbers. ***DOK 1, 2***	Solve real-life and mathematical problems using numerical and algebraic expressions and equations. ***DOK 1, 2***	Analyze and solve linear equations and pairs of simultaneous linear equations. ***DOK 2***	Interpret the structure of expressions. ***DOK 1***
E	Apply and extend previous understandings of arithmetic to algebraic expressions. ***DOK 1, 2***	Draw, construct and describe geometrical figures and describe the relationships between them. ***DOK 2, 3***	Define, evaluate, and compare functions. ***DOK 1, 2***	Write expressions in equivalent forms to solve problems. ***DOK 1, 2***
F	Reason about and solve one-variable equations and inequalities. ***DOK 1, 2***	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. ***DOK 1, 2***	Use functions to model relationships between quantities. ***DOK 1, 2***	Perform arithmetic operations on polynomials. ***DOK 1***
G	Represent and analyze quantitative relationships between dependent and independent variables. ***DOK 1, 2***	Use random sampling to draw inferences about a population. ***DOK 1, 2***	Understand congruence and similarity using physical models, transparencies, or geometry software. ***DOK 2***	Create equations that describe numbers or relationships. ***DOK 1, 2***
H	Solve real-world and mathematical problems involving area, surface area, and volume. ***DOK 2***	Draw informal comparative inferences about two populations. ***DOK 1, 2***	Understand and apply the Pythagorean theorem. ***DOK 2***	Understand solving equations as a process of reasoning and explain the reasoning. ***DOK 1, 2***
I	Develop understanding of statistical variability. ***DOK 1, 2***	Investigate chance processes and develop, use, and evaluate probability models. ***DOK 1, 2***	Solve real-world and mathematical problems involving volume of cylinders, cones and spheres. ***DOK 2***	Solve equations and inequalities in one variable. ***DOK 1, 2***
J	Summarize and describe distributions. ***DOK 1, 2***		Investigate patterns of association in bivariate data. ***DOK 1, 2***	Represent and solve equations and inequalities graphically. ***DOK 1, 2***
K				Understand the concept of a function and use function notation. ***DOK 1***
L				Interpret functions that arise in applications in terms of a context. ***DOK 1, 2***

Why a 21st Century Math Program?

According to the State

CLAIM 2: PROBLEM SOLVING
Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.

Target	ALL GRADES
A	Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. ***DOK 2, 3***
B	Select and use appropriate tools strategically. ***DOK 1, 2***
C	Interpret results in the context of a situation. ***DOK 2***
D	Identify important quantities in a practical situation and map their relationships (e.g. using diagrams, two-way tables, graphs, flowcharts, or formulas). ***DOK 1, 2, 3***

CLAIM 3: COMMUNICATING REASONING
Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

Target	ALL GRADES
A	Test propositions or conjectures with specific examples. ***DOK 2***
B	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. ***DOK 3, 4***
C	State logical assumptions being used. ***DOK 2, 3***
D	Use the technique of breaking an argument into cases. ***DOK 2, 3***
E	Distinguish correct logic or reasoning from that which is flawed, and – if there is a flaw in the argument – explain what it is. ***DOK 2, 3, 4***
F	Base arguments on concrete referents such as objects, drawings, diagrams, and actions. ***DOK 2, 3***
G	At later grades, determine conditions under which an argument does and does not apply. (For example, area increases with perimeter for squares, but not all plane figures.) ***DOK 3, 4***

CLAIM 4: MODELING AND DATA ANALYSIS
Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

Target	ALL GRADES
A	Apply mathematics to solve problems arising in everyday life, society, and the workplace. ***DOK 2, 3***
B	Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. ***DOK 2, 3, 4***
C	State logical assumptions being used. ***DOK 1, 2***
D	Interpret results in the context of a situation. ***DOK 2, 3***
E	Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. ***DOK 3, 4***
F	Identify important quantities in a practical situation and map their relationships (e.g. using diagrams, two-way tables, graphs, flowcharts, or formulas). ***DOK 1, 2, 3***
G	Identify, analyze and synthesize relevant external resources to pose or solve problems. ***DOK 3, 4***

What do you notice about the D.O.K. Levels?

Your 21st Century Math Program
How Close Are You?

Target	Strength/ Weakness Indicator	Areas Where Performance Indicates Standard Met
Concepts and Procedures		
Target A - Represent and solve problems involving multiplication and division.	+	↑
Target B - Understand properties of multiplication and the relationship between multiplication and division.	−	=
Target C - Multiply and divide within 100.	−	↑
Target D - Solve problems involving the four operations, and identify and explain patterns in arithmetic.	+	↑
Target E - Use place value understanding and properties of operations to perform multi-digit arithmetic.	=	↑
Target F - Develop understanding of fractions as numbers.	+	↑
Target G - Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	+	↑
Target H - Represent and interpret data.	−	↑
Target I - Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	+	↑
Target J - Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	+	↑
Target K - Reason with shapes and their attributes.	−	↓

Legend: Strength And Weakness Indicator

- + Better than performance on the test as a whole
- = Similar to performance on the test as a whole
- − Worse than performance on the test as a whole
- ◆ Insufficient Information

Legend: Areas Where Performance Indicates Standard Met

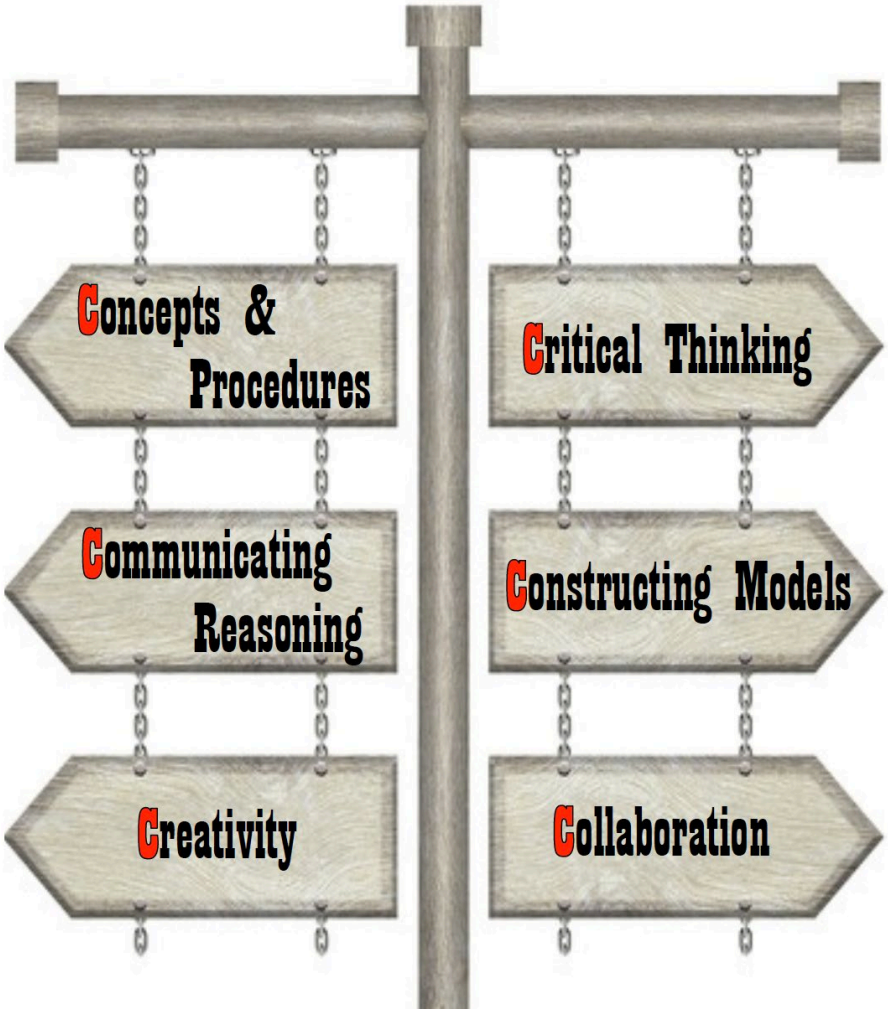
- ↑ Above Standard Met
- = Near Standard Met
- ↓ Below Standard Met
- ◆ Insufficient Information

The 6 C's: Value–Based Grading

(my one original thought)

#7 Structure
#8 Patterns

#2 Reasoning
#3 Conjectures



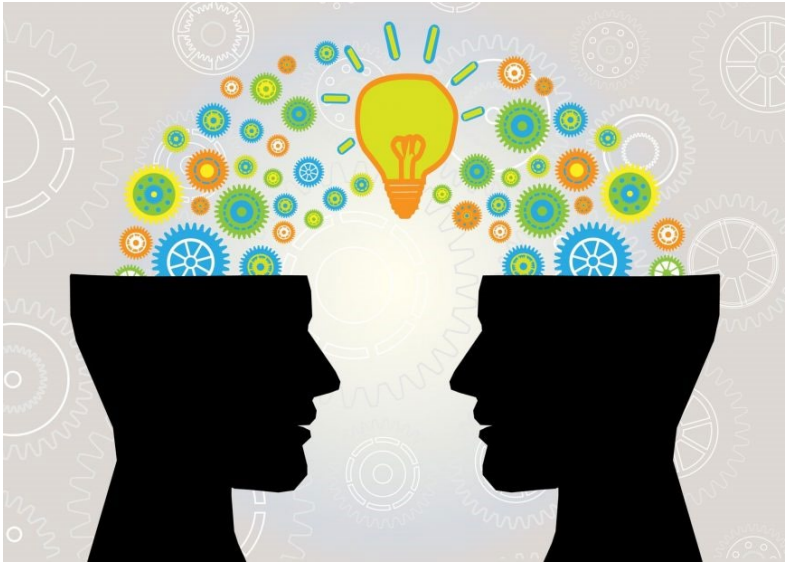
#1 Solving
#6 Precision

#4 Models
#5 Tools

Self-Evaluated
w/ veto

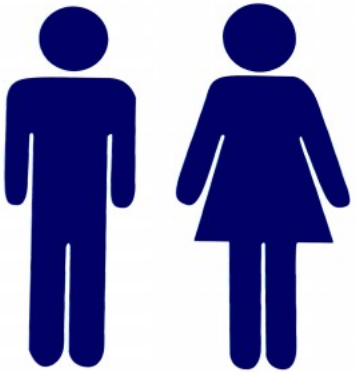
MPJ

Thoughts on
YOUR 21st Century Math Program



How often and in what ways are you teaching and assessing the Claims & Targets?

Break



15 minutes, until...

we ramp up the RIGOR!

Explicit Teaching of Thinking

HOTS

Dr. John Star

"Math does not teach Problem Solving."

"Only the explicit teaching of thinking teaches thinking."

Defining Problem Solving

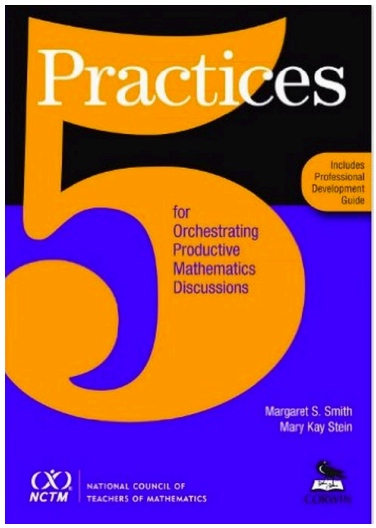
Exercise

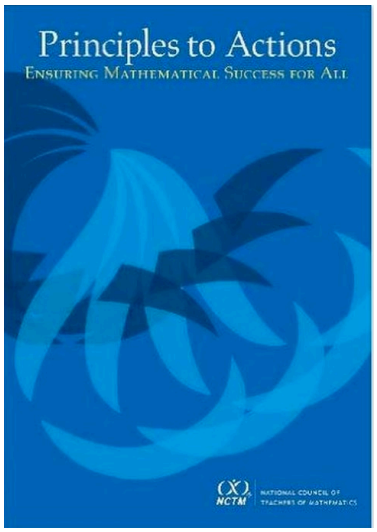
Problem

Don't Know How
Don't Have the Ability

Crisis

Explicit Teaching of H.O.T.S.





Dr. Peg Smith

"It's all about the task.

It's all about the task.

It's all about the task."

Being Task-Oriented

30%

What is a Task?

70%

"A *mathematical task* is a problem or set of problems that focuses students' attention on a particular mathematical idea and/or provides an opportunity to develop or use a particular mathematical habit of mind."

-- Adding it up (2001)

8 Practice Standards

MPJ

Being Task-Oriented

What is a Task?

"a problem that provides an opportunity to develop mathematical ideas and [thinking]."

-- Adding it up (2001)

Tasks = Problems used to teach Content & Practices

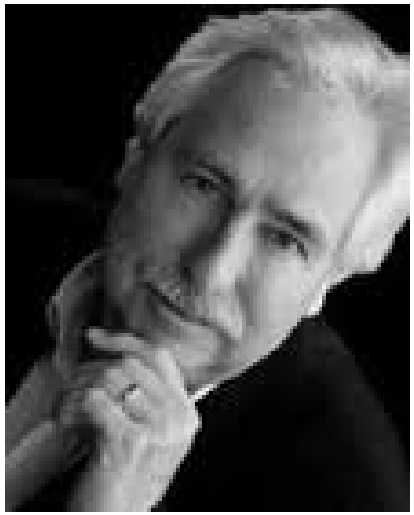
H.O.T.S. For Which Kids?

"Accelerated" Remedial Math Students with Rich & Robust Tasks

ALL!

Dr. Uri Treisman

Dave Foster



50% False Positives
Among 8th Grade Geometry
From CST to SBAC

Why a 21st Century Math Program?
According to the State

Table 1: Applying Webb's Depth of Knowledge Levels for Arts and Humanities – (Adapted from Karin Hess, Center for Assessment/NCIEA by the Kentucky Department of Education, 2005)

Webb's DOK Levels			
Recall & Reproduction (DOK 1)	**Skills & Concepts/ Basic Reasoning (DOK 2)**	**Strategic Thinking/ Complex Reasoning (DOK 3)**	**Extended Thinking/ Reasoning (DOK 4)**
• Identify who, when, what where, and why • Recall facts, terms, concepts, trends, generalizations and theories • Use a variety of tools • Recognize or identify specific information contained in graphics. • Identify specific information in artworks • Define • Describe (recall, recite or reproduce	• Describe or explain how or why • Give an example • Describe and explain issues and problems, purposes, patterns, sources, reasons, points of view or processes • Compare artworks and concepts used in artworks • Classify, sort items into meaningful categories • Convert information from one form to another	• Use concepts to solve problems • Use evidence to justify • Propose and evaluate solutions to problems • Recognize and explain misconceptions • Cite evidence and develop a logical argument for concepts • Reason and draw conclusions • Disseminate among plausible answers • Analyze similarities and differences in issues and problems • Apply concepts to new situations • Make connections across time and place to explain a concept or big idea	• Connect and relate ideas and concepts within the content area or among content areas • Examine and explain alternative perspectives across a variety of sources • Describe and illustrate how common themes and concepts are found across time and place • Make predictions with evidence as support • Develop a logical argument • Plan and develop solutions to problems • Analyze and synthesize information from multiple sources • Complex reasoning with planning, investigating or developing a product that will most likely require an extended period of time-must require applying significant conceptual

Why a 21st Century Math Program?

According to the State

D.O.K. Levels	Reasoning
1: Recall & Reproduction	---
2: Skill & Concept	Basic
3: Strategic Thinking	Complex
4: Extended Thinking	Extended

34%

Why a 21st Century Math Program?

According to the State

Which D.O.K Levels? (1-4)

Consider the inequality $x > -1.5$.

Determine whether each value of x makes this inequality true. Select Yes or No for each value.

	Yes	No
$-2\frac{1}{2}$	☐	☐
15	☐	☐
4	☐	☐
-2	☐	☐
0.2	☐	☐

Julia needs to make a box in the shape of a rectangular prism with a height of 3 inches and a volume of 243 cubic inches. The dimensions, in inches, must be whole numbers greater than 1.

Julia claims that the length and width of the box must be equal.

Part A
What dimensions would support Julia's claim about the length and width of the box? Enter your answer in the boxes labeled Part A.

Part B
What dimensions would not support Julia's claim about the length and width of the box? Enter your answer in the boxes labeled Part B.

Your principal surprises you by buying your class a turtle. He brings the turtle to your class along with a sheet from the pet store titled "Turtle Tank Rules."

The rules state:

- Tank walls must be at least 1 foot tall so the turtle can't climb out.
- There must be at least 400 square inches of floor space for the turtle to walk around on.

Your teacher says the volume of the tank must be smaller than 5000 cubic inches so it doesn't take up too much room in the classroom.

Give the dimensions of a tank that would work for your new turtle. Use words and numbers to explain how your tank satisfies the "Turtle Tank Rules" and your teacher's requirement.

Consider the points plotted on the number line.

Select True or False for each statement about the points on the number line.

	True	False
The value of Point *A* is less than -3.	☐	☐
The value of Point *B* is greater than the value of point *A*.	☐	☐
The value of Point *D* is -4.	☐	☐

Why a 21st Century Math Program?

According to the State

Depth of Knowledge Matrix - Elementary Math

Topic	Subtracting 3-Digit Numbers	Operations with Time	Comparing Fractions	Multiplying Decimals
CCSS Stand.	• 3.NBT.2	• 3.MD.1	• 4.NF.2	• 5.NBT.7
DOK 1 Example	Solve. $821 - 357 =$	What time will it be 14 minutes after 1:27 pm?	Place a < or > between the two fractions to make a true number sentence. $\frac{4}{7} \quad \frac{3}{5}$	Solve. $3.4 \times 2.5 =$
DOK 2 Example	Use the digits 1 to 9, at most one time each, to fill in the boxes to make two different pairs of three-digit numbers that form a true number sentence. □□□-291=□□□	Use the digits 1 to 9, at most one time each, to fill in the boxes to make a time that is 4:37 pm. □□ minutes after □:□□ pm	Use the digits 1 to 9, at most one time each, to fill in the boxes to create two different fractions: one that is less than one half and one that is more than one half. $\frac{\square}{\square} < \frac{1}{2}$ and $\frac{\square}{\square} > \frac{1}{2}$	Use the digits 1 to 9, at most one time each, to fill in the boxes to make a true number sentence. □.□ × 3.2=□.□
DOK 3 Example	Use the digits 1 to 9, at most one time each, to fill in the boxes to make a difference that is as close to 329 as possible. □□□-□□□=	Use the digits 1 to 9, at most one time each, to fill in the boxes to make the latest possible time. □□ minutes after □:□□ pm	Use the digits 1 to 9, at most one time each, to fill in the boxes to create a fraction that is as close to 5/11 as possible. $\frac{\square}{\square}$	Use the digits 1 to 9, at most one time each, so that the product is as close to 50 as possible. □.□ × □.□ =

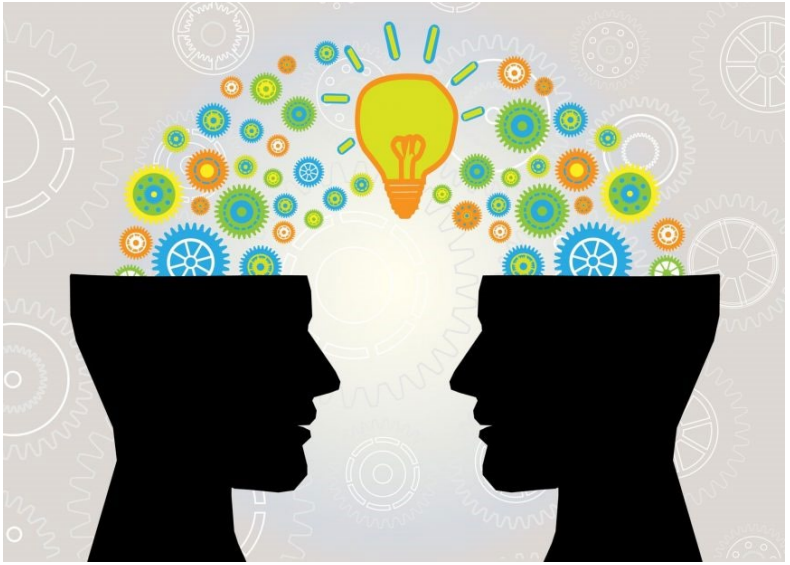
Robert Kaplinsky

More free DOK 2 & 3 problems available at openmiddle.com

Version 1.2

MPJ

Thoughts on
YOUR 21st Century Math Program



How often and in what ways are you teaching and assessing H.O.T.S. at D.O.K. Levels 3 & 4?

Why a 21st Century Math Program?
According to Our State

The Practices are for the students.

21st Century Math is all about the Practices.

Mathematical Practices

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

Practices Posters

Make Sense of Problems and Persevere in Solving Them

I can understand a problem, devise a strategy, execute a plan and evaluate it s success.

SOLVE

Organize

Strategize

Change Strategies

Evaluate

- Understand
- Plan
- Execute
- Check
- Repeat until successful.

What exactly is this problem asking of me?

What information do I have?

What information do I need and how do I get it?

What is the best plan?

Is my answer reasonable?

If not how should I change my strategy?

Think and don't give up.

The Math Projects Journal, 2014

MPJ

Practices Posters




What did these posters teach you about the 8 Standards of Practice?




Why a 21st Century Math Program?
According to Our State

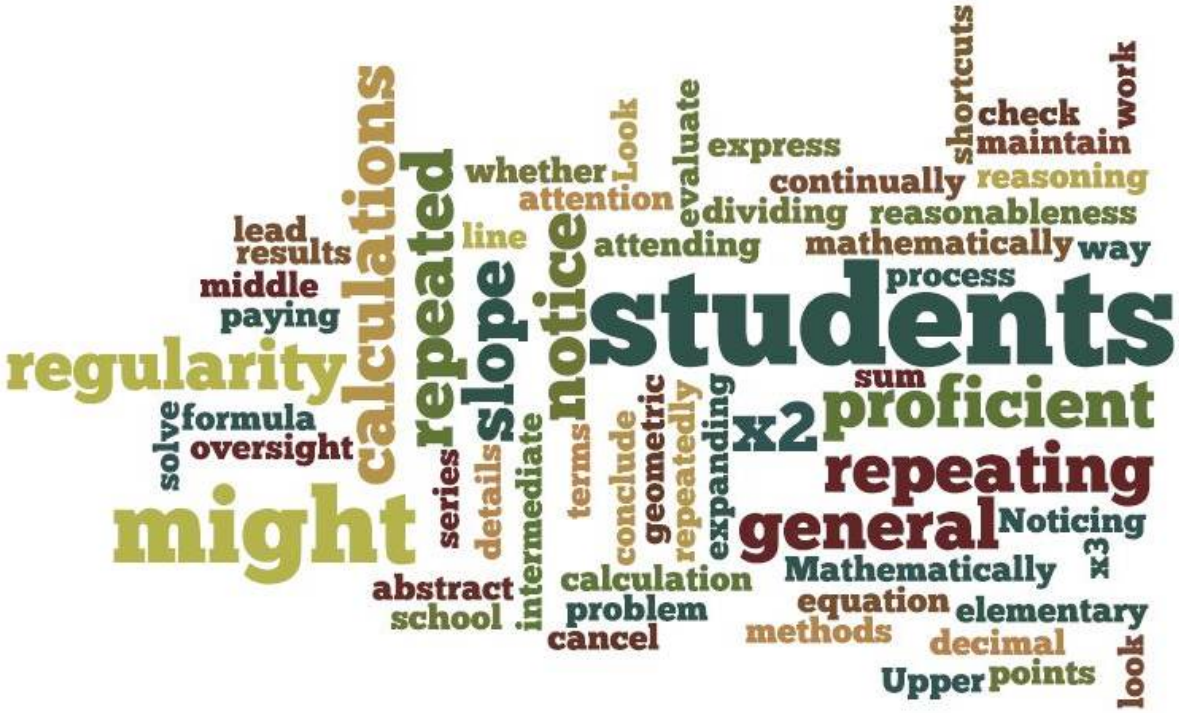
How many of the

8 SMP

do you remember?

Wordle Practices

Match the *Wordle* poster to its corresponding CC Standard of Mathematical Practice?



Why a 21st Century Math Program?
According to Our State

Mathematical Practices

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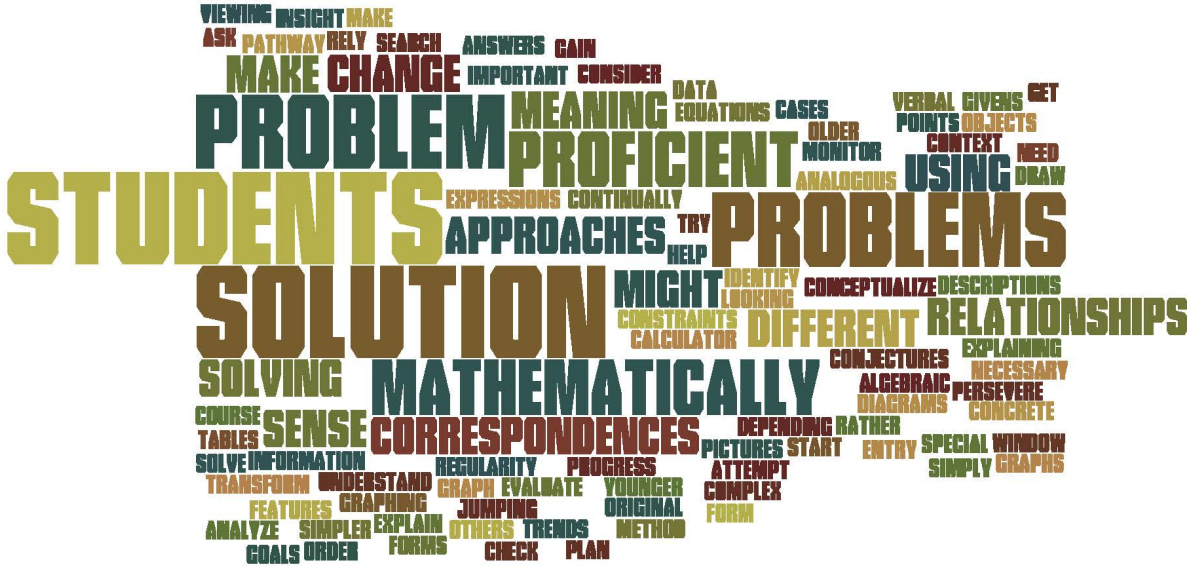
Wordle Practices



Re-Orientation

Notes-Oriented → **Task-Oriented**

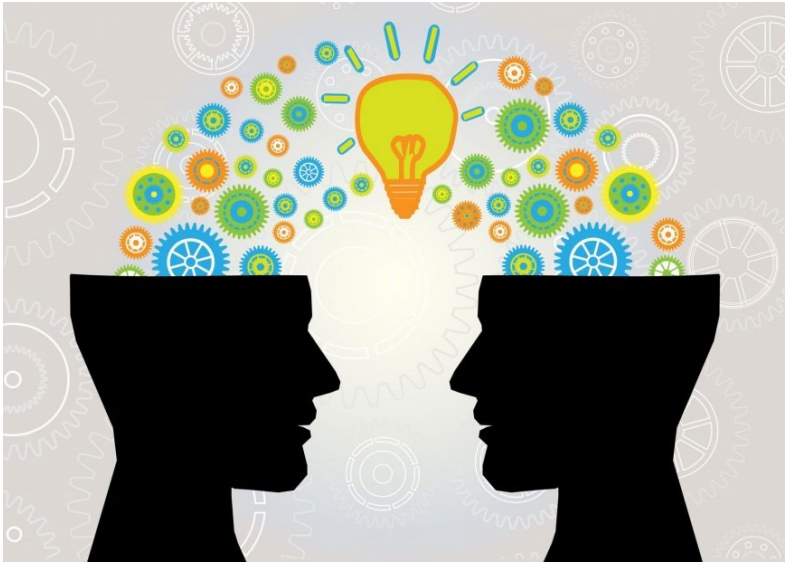
40% **60%**

Dual Targets

Content & Processes

Daily!

Thoughts on
YOUR 21st Century Math Program



How often and in what ways are you teaching and assessing the Math Practices?

Lunch

Back At 1:05

Up next:

The Structures that will get the results to match your talents.

The Rigor of 21st Century Math

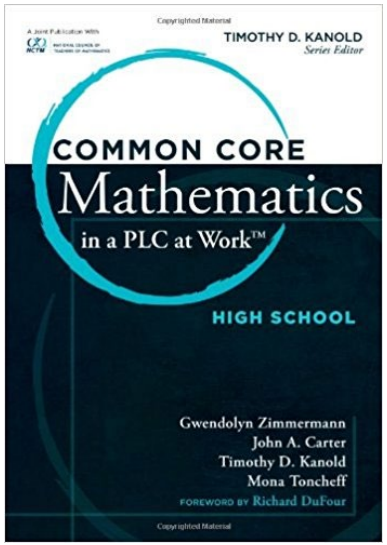
SBAC Review?

Smarter Balanced Assessment Consortium:

Mathematics Practice Test Scoring Guide
Grade 7

For which questions are you preparing the students?
For which questions are you not?

PLC Booster



- **Definition**
- **Vision**
- **Protocols**
- **The Four Questions**

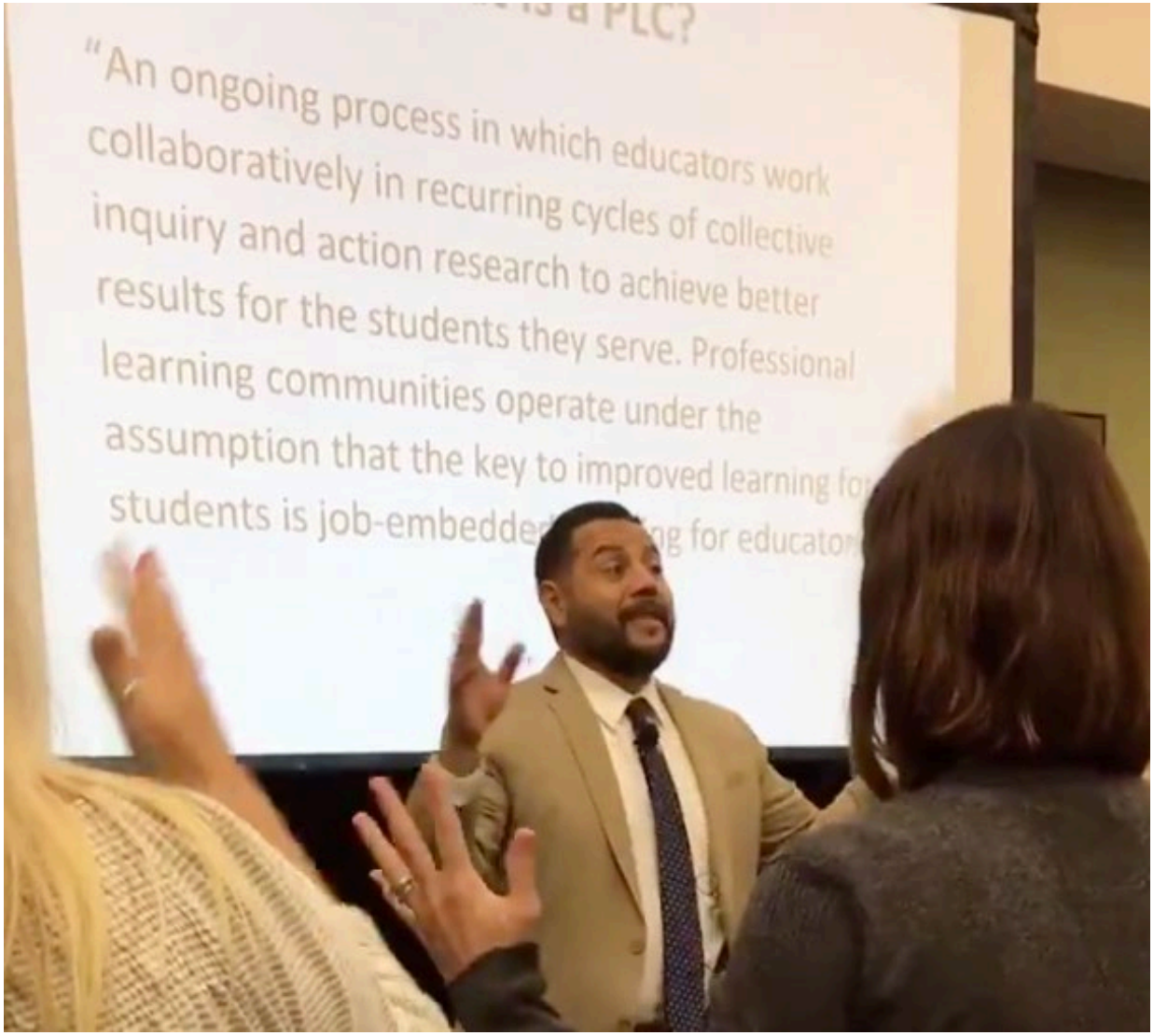
Systems & Structures

Definition

What is a PLC?

One sentence!

What is a PLC?



bit.ly/PLCVideo

Definition

"An ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve. Professional learning communities operate under the assumption that the key to improved student learning is the job-embedded learning for educators."

- Ongoing Process
- Educators Work Collaboratively
- Cycles of Collective Inquiry
- Why? & How?
- Adult Action
- Increase Learning
- All Students
- THE Assumption

What is your PLC missing?

Vision

CHAPARRAL VISION

Our vision is to inspire, engage, and support ALL students in their success through knowledge, collaboration, and relationships.

Temecula Valley Unified School District

Teaching and Learning for All. Inspiring Excellence. Impacting the Future.

MURRIETA VALLEY UNIFIED SCHOOL DISTRICT

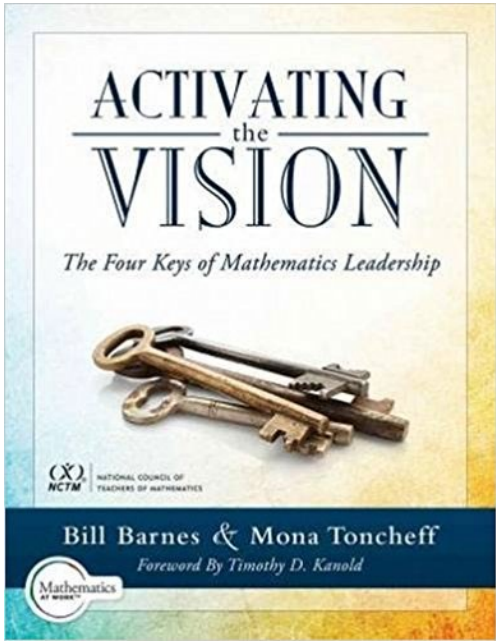
Inspiring every student to think, to learn, to achieve, to care.

Service And Commitment To Every Student, Every Day.

The vision for RUSD 2025 will focus on five key areas:

- **E** ENHANCED LEARNING THROUGH INNOVATION
- **X** EXCELLENCE IN ACADEMICS
- **C** COLLABORATIVE COMMUNITY AND PARENT PARTNERSHIPS
- **E** EQUALITY THROUGH EQUITY
- **L** LEARNING IN SAFE AND SECURE ENVIRONMENTS

Communicate Your VISION



"If you were to ask 10 people
'What is our vision?'
how many responses would you get?"

Focus on Your VISION

“How does this advance the vision?”

“What does our vision look like in your position?”

Vision

Every
Discussion, Deduction & Decision
Should
Advance the Vision

Develop, Communicate and Focus on Your VISION

Is your site communicating the Vision?

Protocols

MATH DEPARTMENT NORMS

- Agenda in Advance
- All Voices
- Consensus, not Compromise
- Be Present
- Advance the Vision

The Four Questions

① What do we want students to know and be able to do?
(Essential Standards)

② How will we know when they have learned it?
(Common Assessments & Data/Evidence)

③ What will we do when they haven't learned it?
(Intervention)

④ What will we do when they already know it?
(Extended Learning)

How often are these questions being asked by your teams?

Your 21st Century Math Program

Question #1

① What do we want students to know and be able to do?

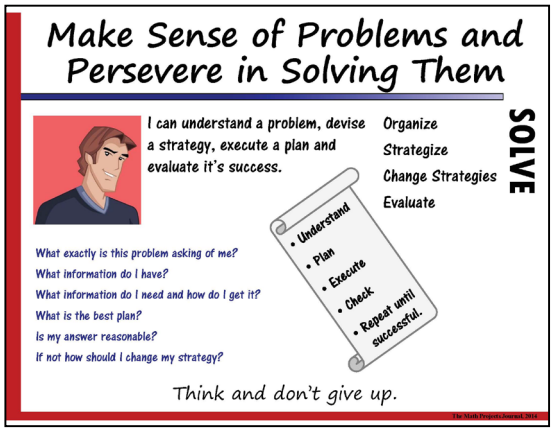
Smarter Balanced Scores

Overall Score	100%
Claim 1 Concepts and Procedures	40%
Claim 2 Problem Solving	20%
Claim 4 Modeling and Data Analysis	20%
Claim 3 Communicating Reasoning	20%

40%

Top 10 skills in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility



Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#14	3	RP	A	2	7.RP.A.2	3

Inoculate your PLC

- Definition
- Vision
- Protocols (Norms)
- The Four Questions

Which structures does your PLC have?

Which are you going to implement?

Your 21st Century Math Program

Tubicopter

STUDENT HANDOUT

TUBICOPTERS & MORE

HELICOPTER

1) Why does the graph plot horizontally when the helicopter stays stationary?

2) Why does the graph plot horizontally when the helicopter goes up?

3) Why does the graph plot oblique lines (diagonally) when the helicopter goes forward?

4) Why does the graph plot downward when the helicopter goes backwards? Is there a way to get the graph to "plot backwards?"

5) What determines the steepness of the graph?

6) If a horizontal line implies being in the same place at all times, what would a vertical line imply?

7) Sketch a graph of the time and distance for a helicopter that goes fast to the halfway point, hovers for awhile, then goes backwards fast until it is just shy of the starting point, then goes forward again slowly.

Your 21st Century Math Program

The vision for RUSD 2025 will focus on five key areas:

- **E** ENHANCED LEARNING THROUGH INNOVATION
- **X** EXCELLENCE IN ACADEMICS
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- **E** EQUALITY THROUGH EQUITY
- **L** LEARNING IN SAFE AND SECURE ENVIRONMENTS

In what ways did we advance the vision today?

Your 21st Century Math Program
Our Goals Today

- **Math Expectations**
  - **Question #1, "X"**
- **Current Reality: How close are you?**

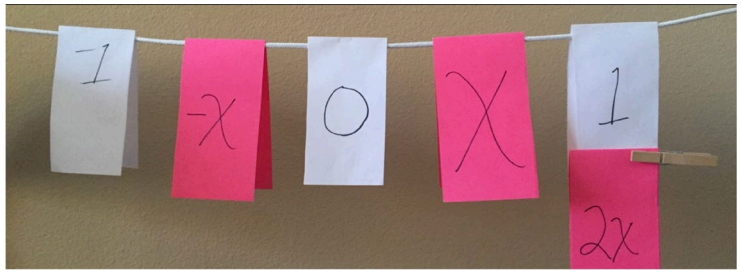
- **Model Lessons**
  - **Question #1, "E & C"**
- **PLC Structures**

Your 21st Century Math Program

Our Next 2 Days

Question #2

Feb 4



Questions #3 & 4

May 21

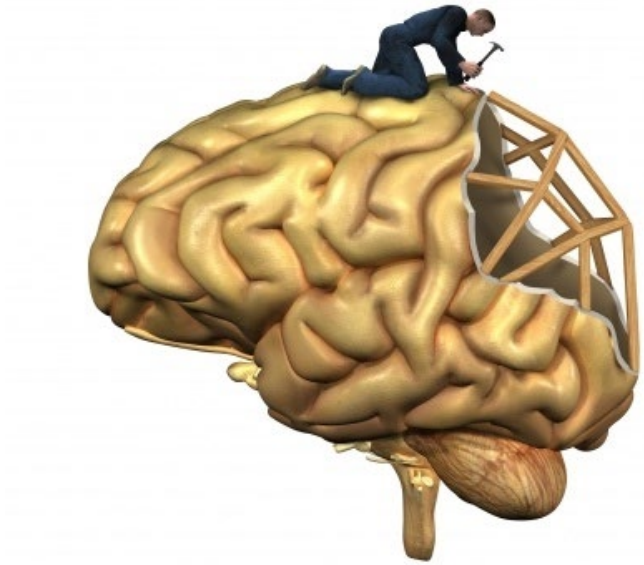
Plow Horse

or

Racehorse

Build Your
21st Century Math Program

…with the faith that they can learn it, and that we can teach it to them.



MPJ