Three Steps: Align Your Math Curriculum to the Common Core

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GREAT LAKES
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Agenda

- What do you know about the Common Core?
- Step One: Make your **curriculum** guaranteed and viable
- Step Two: Align your **instructional materials** to the new curriculum
- Step Three: Change your **instruction and assessments** so that they are standards led and incorporate the mathematical practices

Let's Play!

Using your smartphone, iPad, tablet, or laptop, go online to https://kahoot.it/#/

Move up front: attach to Lisa's iPhone: i2muy2vlz4kc

"We just finished our meeting on raising educational standards. Please call maintenance and have them vacuum up all the educational buzzwords left on the carpeting."

Step One

Guaranteed and Viable Curriculum

Factors that Impact Achievement

Rank	School Level Factor
1	**Guaranteed and Viable Curriculum**
2	Challenging Goals and Effective Feedback
3	Parental and Community Involvement
4	Safe and Orderly Environment
5	Collegiality and Professionalism

Source: Marzano, B. (2003). *What works in schools: Translating research into action.* Alexandria, VA: Association for Supervision and Curriculum Development.

Guaranteed Curriculum

- Opportunity to learn (a guarantee)
  - Strongest relationship to student achievement
  - Introduced into research literature over thirty years ago
  - Without opportunity, students can't learn
  - Requires clear guidance on the "expected curriculum"
  - Required content is not disregarded or replaced

Source: Marzano, B. (2003). *What works in schools: Translating research into action.* Alexandria, VA: Association for Supervision and Curriculum Development.

Viable Curriculum

- Time (viability)
  - *The amount of content expected to be covered must be doable in the amount of time devoted to instruction*

(# of school days) * (# of hours per day)

6 (hours of instruction for proficiency) = total achievable benchmarks

Example:

186 school days * 1 hour of daily instruction

6 (hours of instruction for proficiency) = 31

31 benchmarks = a viable curriculum

Source: Marzano, B. (2003). *What works in schools: Translating research into action.* Alexandria, VA: Association for Supervision and Curriculum Development.

Marzano's Recommended Action Steps

- Identify and communicate the content consider essential for all students
- Ensure the essential content can be addressed in the amount of time available
- Sequence and organize content so students have ample opportunity to learn
- Ensure that all teachers address the essential conten
- Protect instructional time

- *Source:* Marzano, B. (2003). *What works in schools: Translating research into action.* Alexandria, VA: Association for Supervision and Curriculum Development.

Step Two

Align your **instructional materials** to the new curriculum

Fortunately

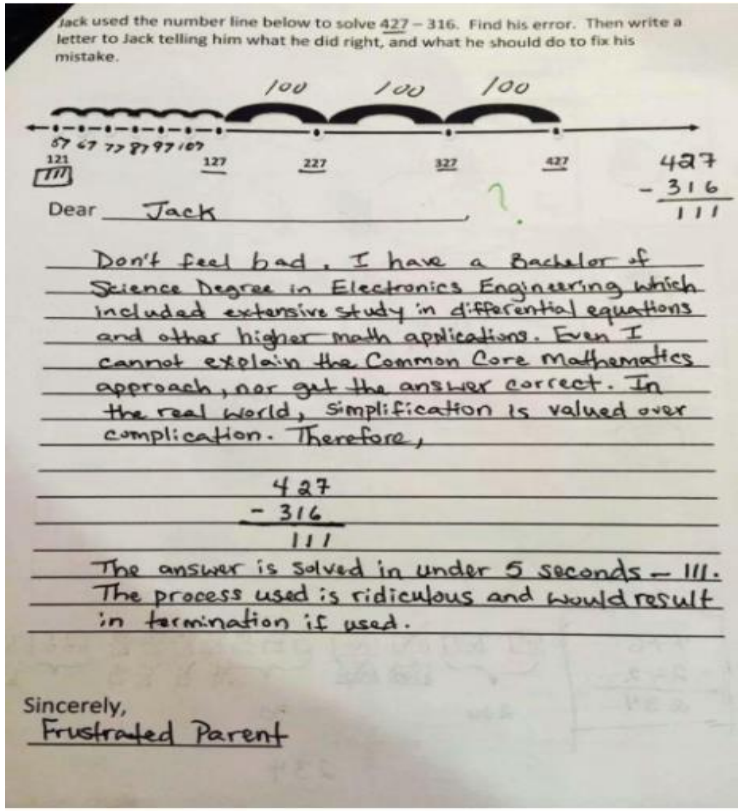
- Most textbooks now focus on the how and why of math, not just the algorithm and rote practice
- Many teachers have switched up their instruction to let students struggle to find the answer, share the various ways students came to an answer, and then talk about the easiest way.

Unfortunately

- Many textbooks now “teach” some incomprehensible strategies to find an answer
- Students are learning these strategies by rote instead of discovering for themselves why and how some strategies work and others don’t
- Also, most textbooks that are now labeled “Common Core” aren’t—they’re the same books, with the same ridiculous amount of content that they held before

CCSS Go Facebook Viral…

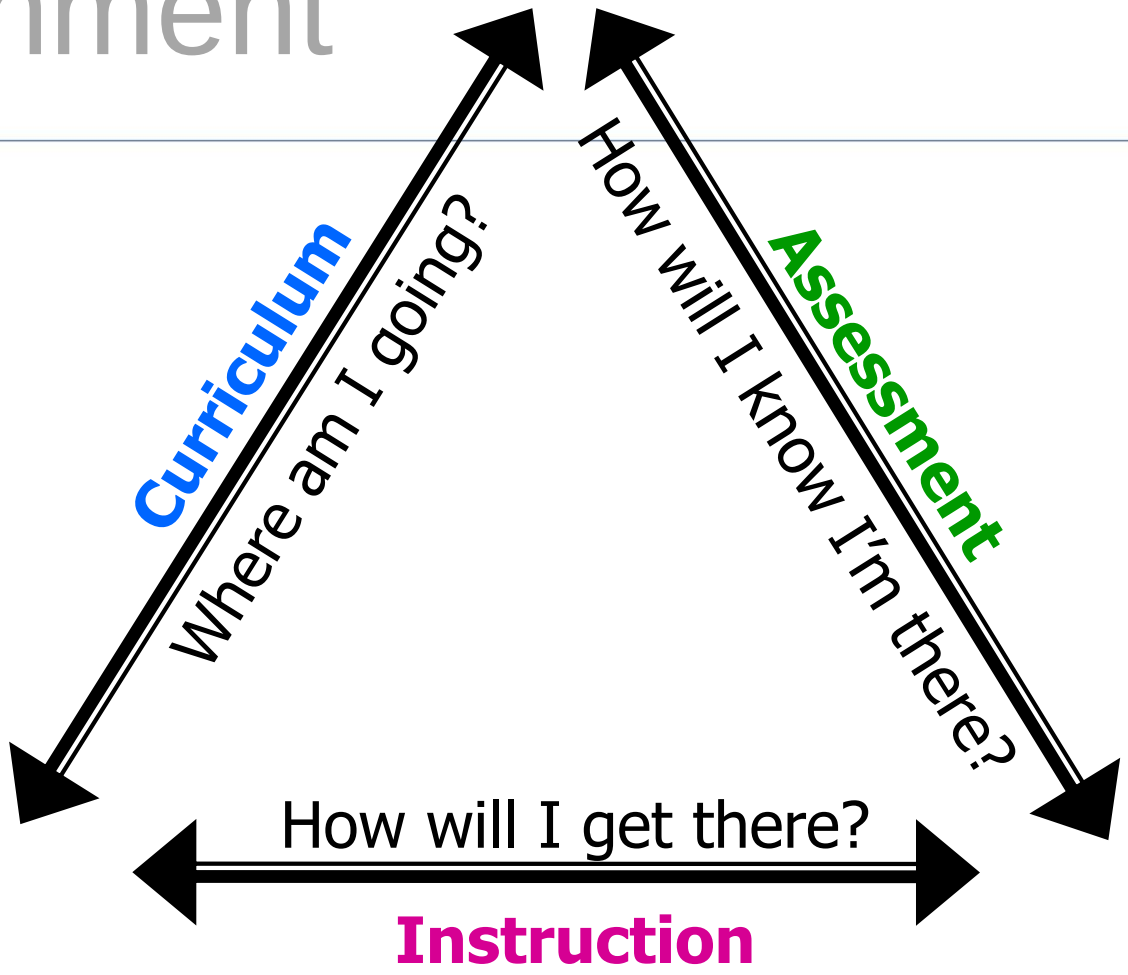
- What is wrong with the methodology suggested in the problem?
- What is wrong with the parent's response?



DIY Math Curriculum

- Using Marzano's formula and the set of standards for your grade level, map out the guaranteed and viable curriculum—the essential content
- Map that out through a year's instruction
- Find your instructional materials (beg, borrow, steal, rip out, go online, etc.)
- Figure out your three types of assessments
- Embed mathematical practices
- Template

Alignment


Curriculum
Where am I going?
Assessment
How will I know I'm there?
How will I get there?
Instruction

Theme, Enduring Understandings, & Essential Questions for this Unit	How Students will Demonstrate Their Understanding	Standards-based Essential Skills & Concepts to be Targeted Throughout the Unit	Strategies / Best Practices Used to Explicitly Teach the Skills & Concepts	Resources for this Unit
Theme/Unit: Enduring Understandings: Essential Questions:	Diagnostic Assessment (at the beginning of the unit): Formative Assessments (throughout the unit): Summative Assessment (at the end of the unit):	**PRACTICE STANDARDS** **CONTENT STANDARDS**		Textbook Lessons: Manipulatives: Technology: Support Materials: Personally Designed Materials: Other Resources:

Step Three

Change your **instruction and assessments** so that they are standards led and incorporate the mathematical practices

In Math You Have to Remember

- Numerous studies over the past thirty years have shown that when people of any age and any ability level are faced with mathematical challenges that arise naturally in a real-world context that has meaning for them, and where the outcome directly matters to them, they rapidly achieve a high level (98%) of competence
- Those same people, when presented with the very same mathematical challenges in a traditional paper-and-pencil classroom fashion, perform at a 37% level of competence

In Math You Have to Remember

- The evidence is clear. It's not that people cannot think mathematically. It's that they have enormous trouble doing it in a de-contextualized, abstract setting

Extreme Couponing

(start at 5:35)

In Math You Have to Remember

- So why the continued focus on skills? Because many people not only are totally unaware of these findings, they don't even understand what mathematics is and how it works. All they see are the skills, and they think, wrongly, that is what mathematics is about. But to confuse mathematics with mastery of skills is the same as thinking architecture is about bricklaying, or confusing music with mastering the musical scale

In Math You Have to Remember

- Students think math is a set of rules to be memorized. The ones that were successful did so not by understanding the mathematical ideas but by learning to follow cues. The biggest cue telling them how to solve a problem was the method the teacher had just explained on the board, or the worked example that immediately preceded it in the textbook. That strategy can be made to work well until the examination at the end of the year, when those cues are not present

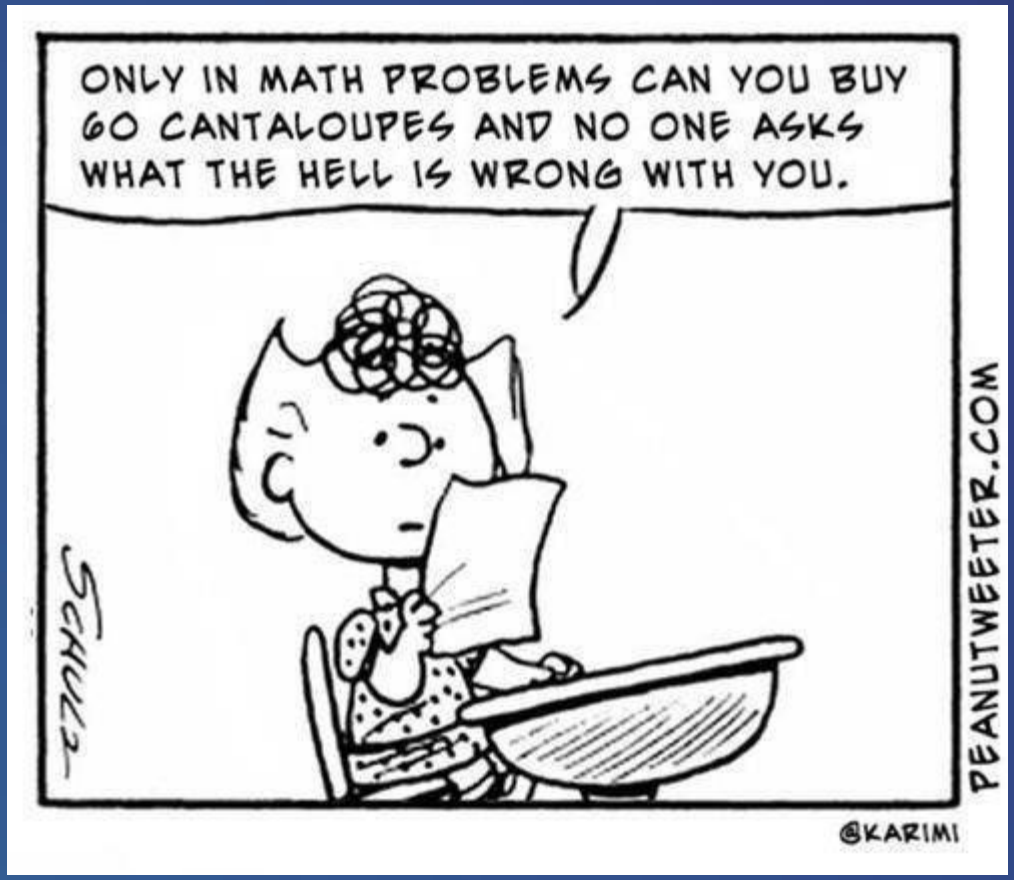
COMMON CORE
STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

Mathematical Practice

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.

Place Value: A True Life Story

- Decimals appear in late elementary grades
- How do children learn about decimals?
- The logical sequence in real life
- The importance of place value—a story



Talk Aloud Problem Solving

What problem based learning looks like…

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