

# The Common Core: a closer look

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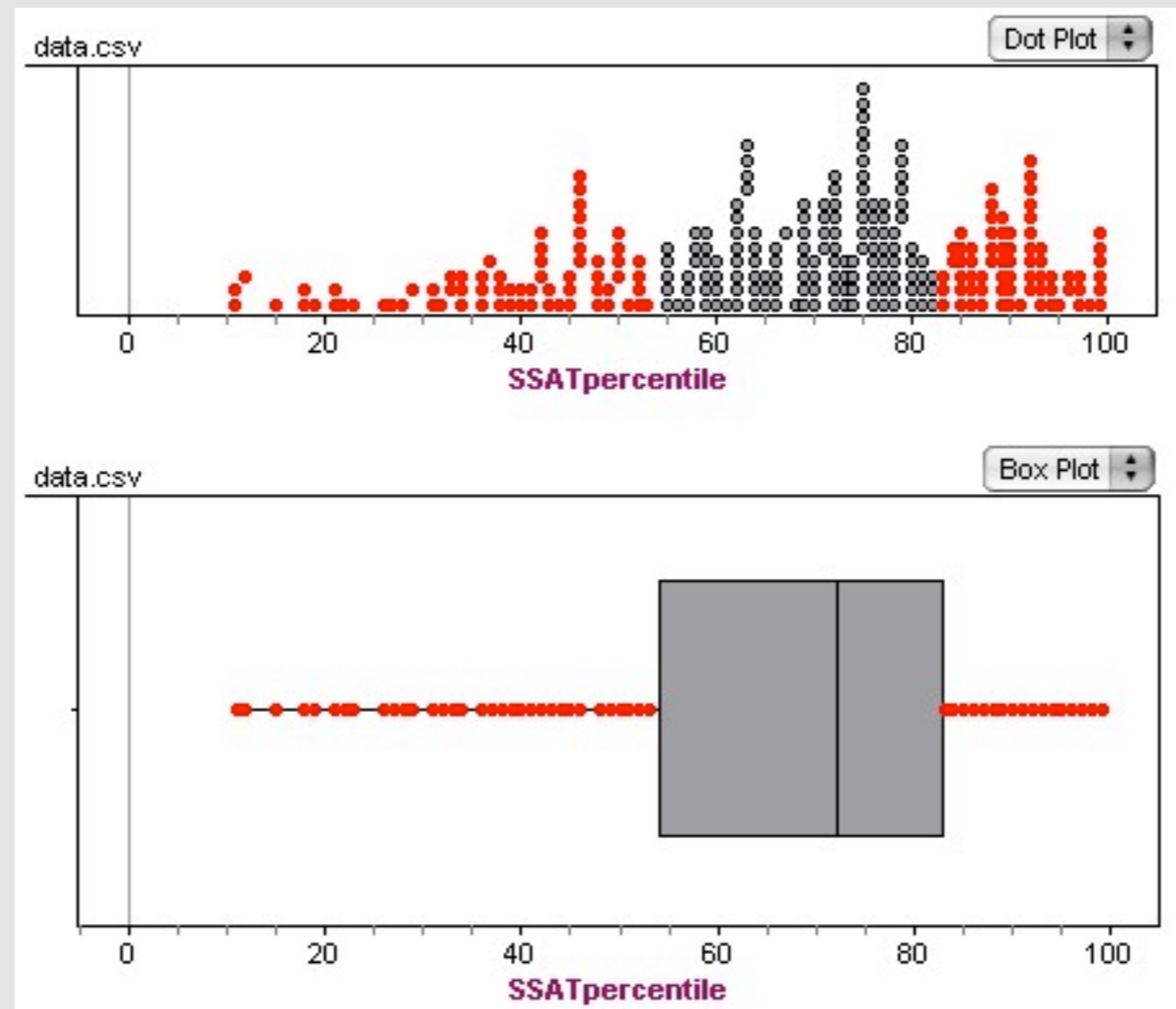
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# This talk

- ◇ Focus on math curriculum
- ◇ Grades 9-12 only
- ◇ Not exactly as advertised

Where I'm coming from

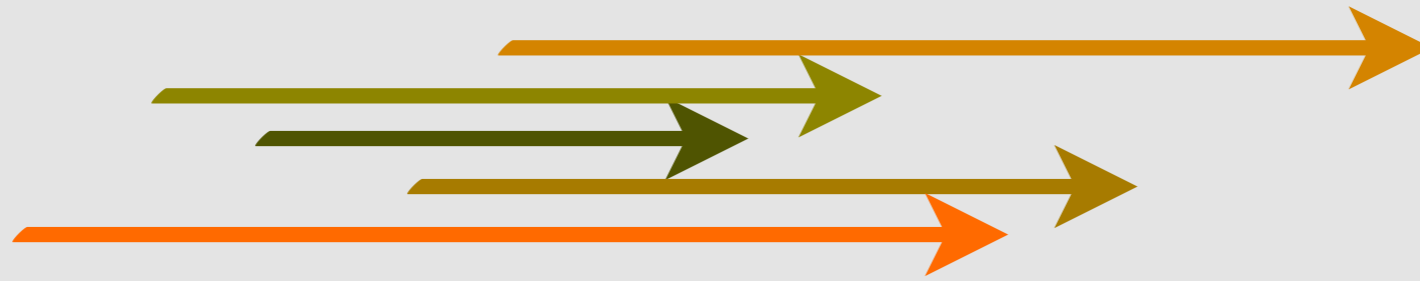
half our SSAT scores fell between the 54<sup>th</sup> and 83<sup>rd</sup> percentiles



How I prepared for this talk:  
a thought experiment —  
from standards to curriculum

# The Common Core

- ◇ National standards, at last
- ◇ Written by math educators



Good: coherence



Good: truce in the “math wars”





Bad: no questioning of test mania



Bad: unrealistic implementation timetables

Needed: professional development

◇ math content

◇ mathematical 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.

A hard sell!

- ◇ test anxiety
- ◇ culture of pragmatism
- ◇ underprepared teachers

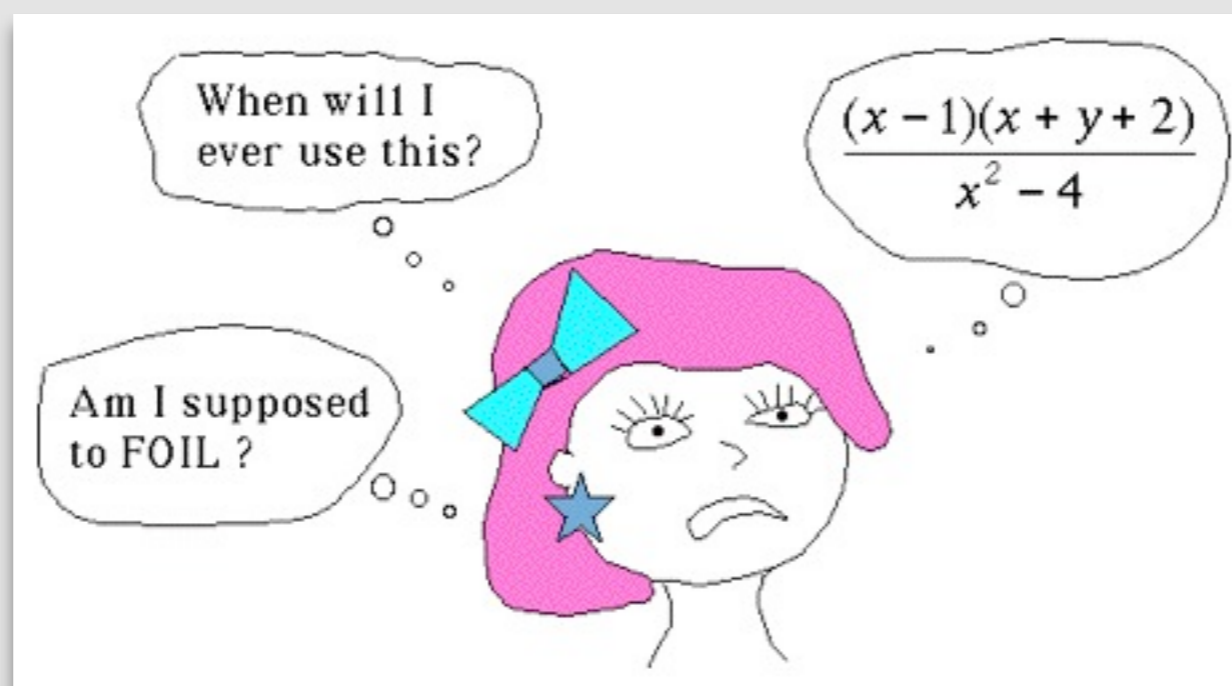
# CCSS High School Specs

First the good news...

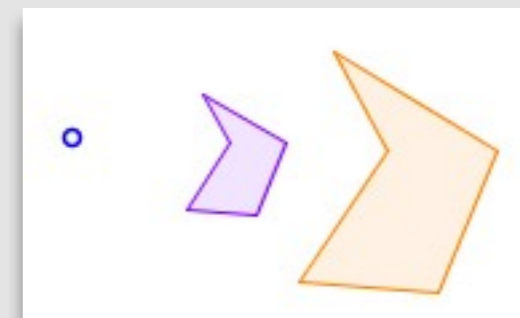
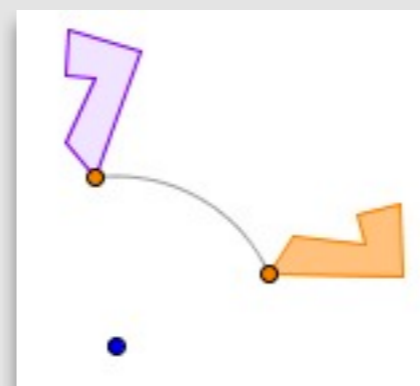
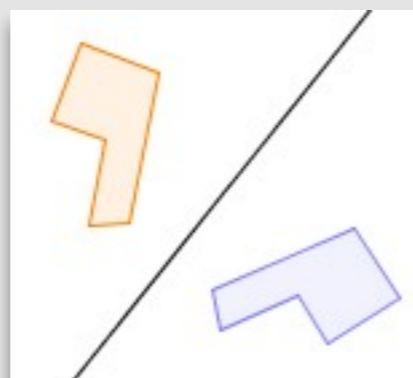
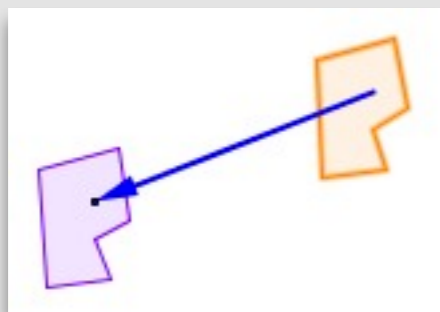
Good: in algebra,

◇ emphasize modeling,

◇ deemphasize symbol manipulation

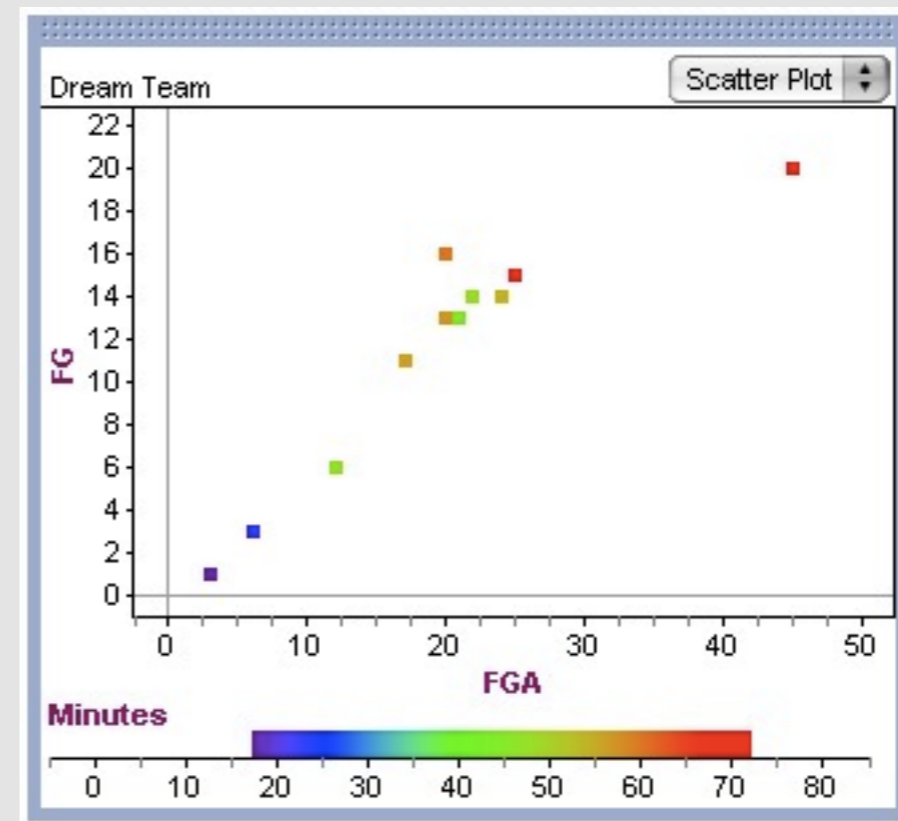
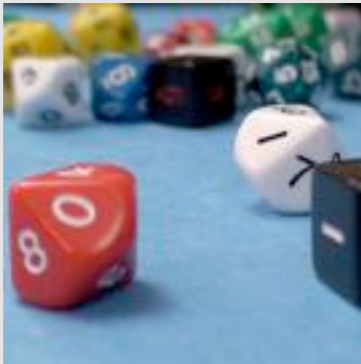


# Good: transformational geometry





Good:  
probability and statistics in the core



Good:

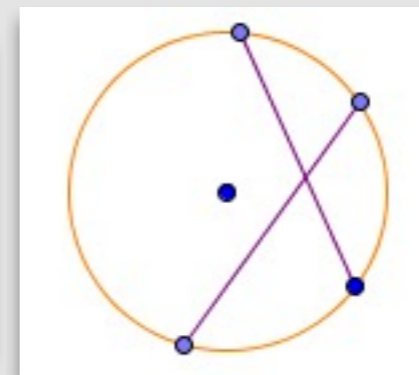
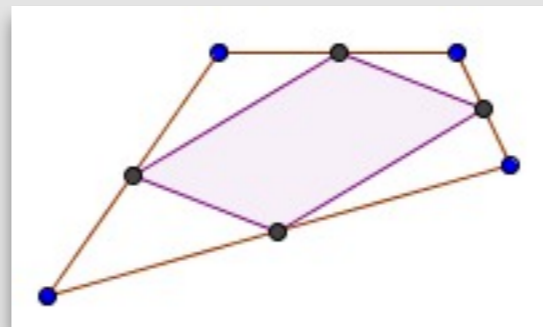
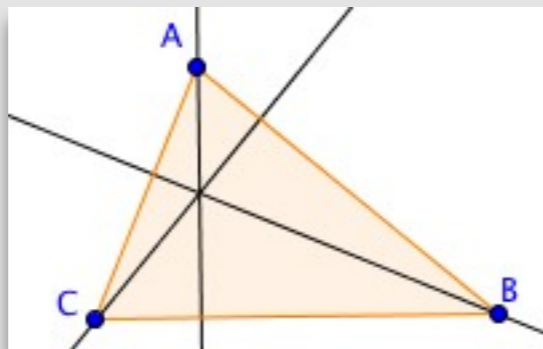
high school sequence not mandated

... and now the bad news:

- ◇ Geometry shrinkage
- ◇ Too many standards
- ◇ Too much, too soon

# Geometry shrinkage

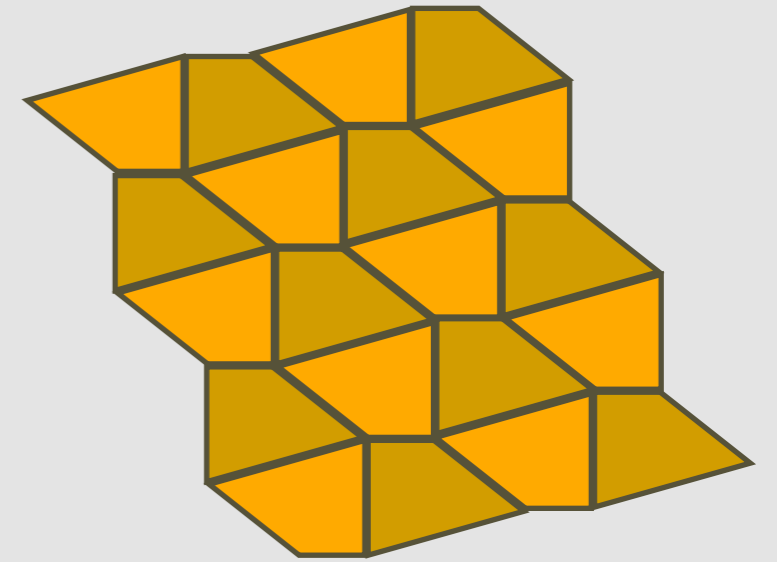
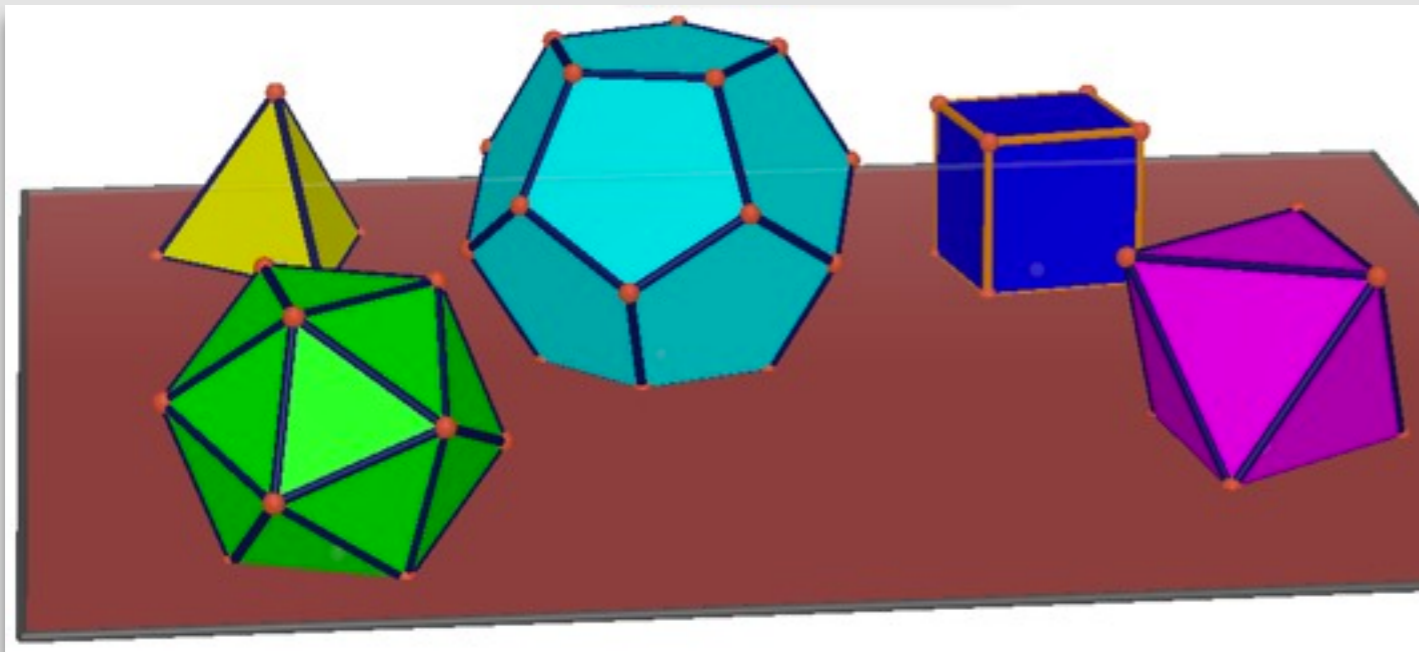
Some basic topics disappear...



... just as technology makes the subject  
more accessible than ever!

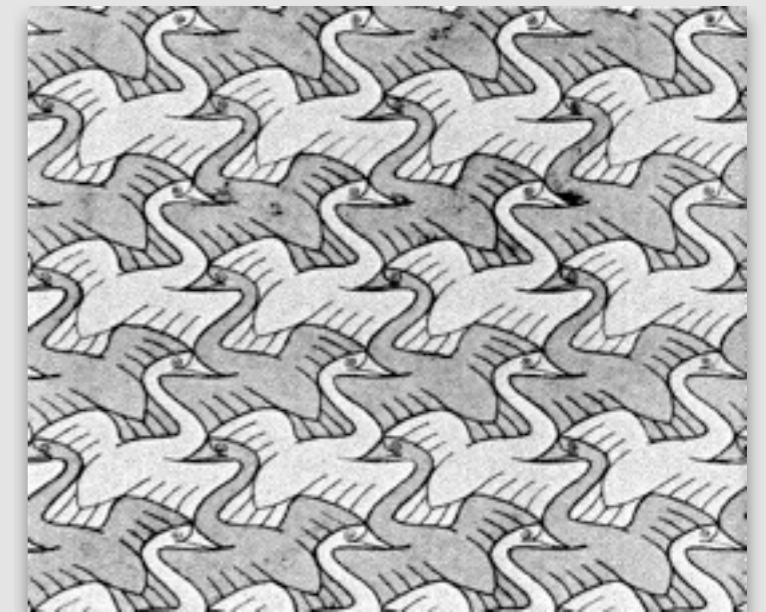
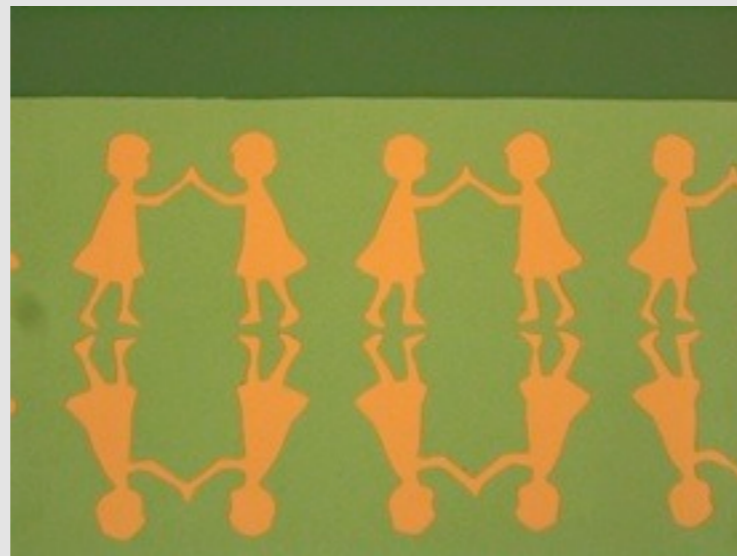
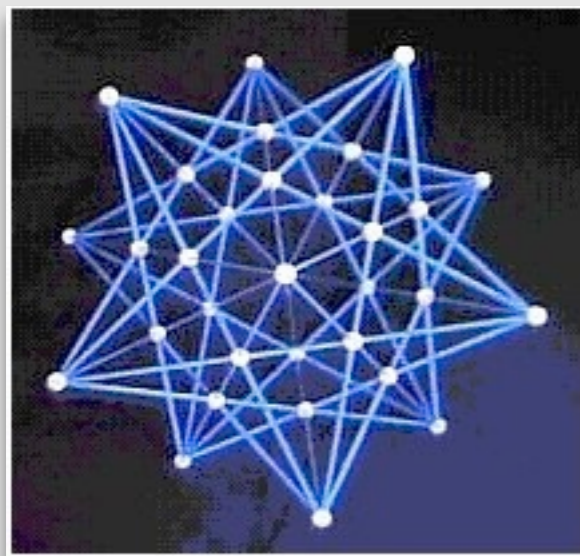
## Why it's wrong

- ◇ Geometry makes sense to different students
- ◇ Geometry is the part of math where you look at the whole
- ◇ Geometry connects with art and culture



It could have gone the other way:

- ◇ The third dimension
- ◇ Symmetry, tiling
- ◇ Advanced work on transformations



“The CCSS do not prevent you  
from teaching other topics”

Alas, that is not true.

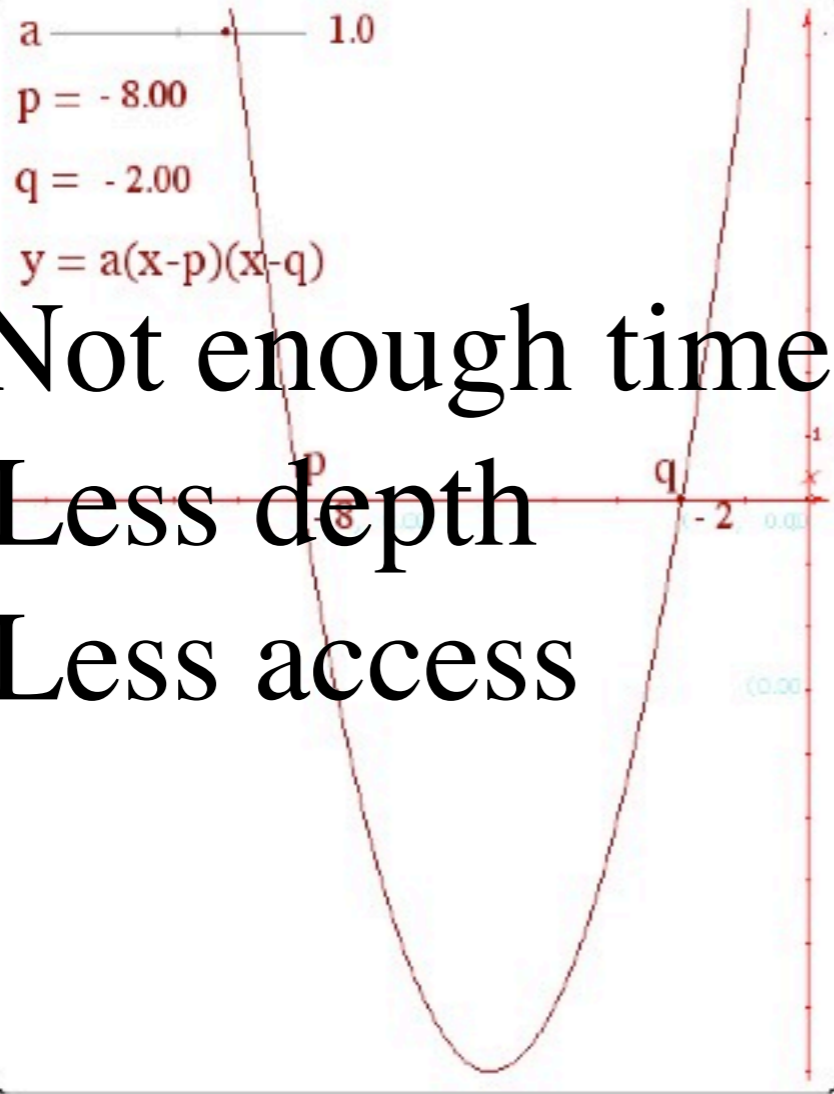


# Too Many Standards

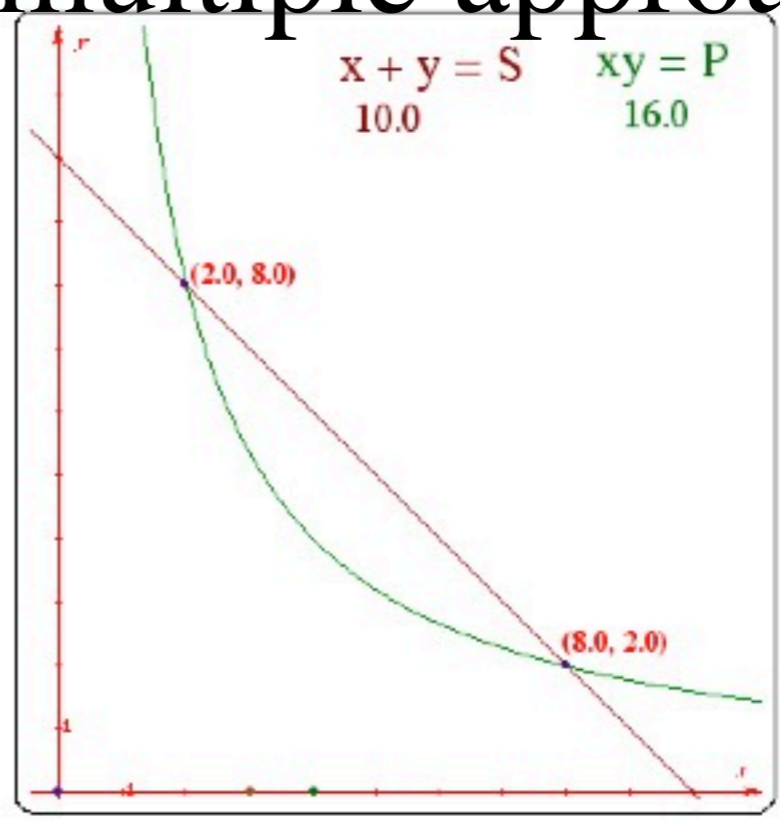
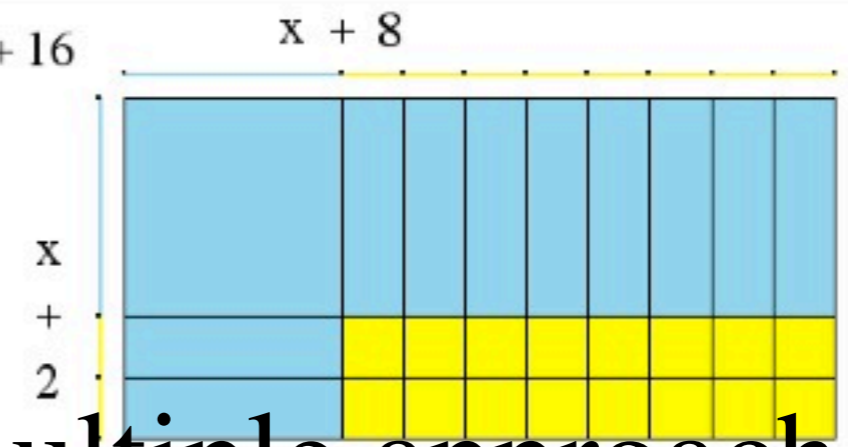
Mile-wide, and therefore inch-deep, still  
(e.g. 13 fewer high school standards than CA Standards)

The drive to “cover” will undermine teaching for understanding.

$$y = (x+2)(x+8) = x^2 + 10x + 16$$



$$x^2 + 10x + 16$$

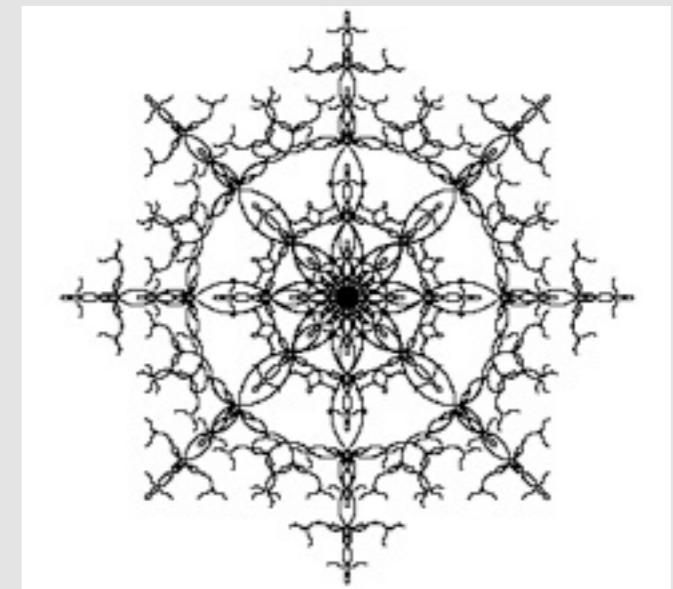
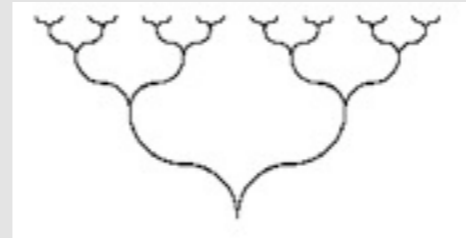
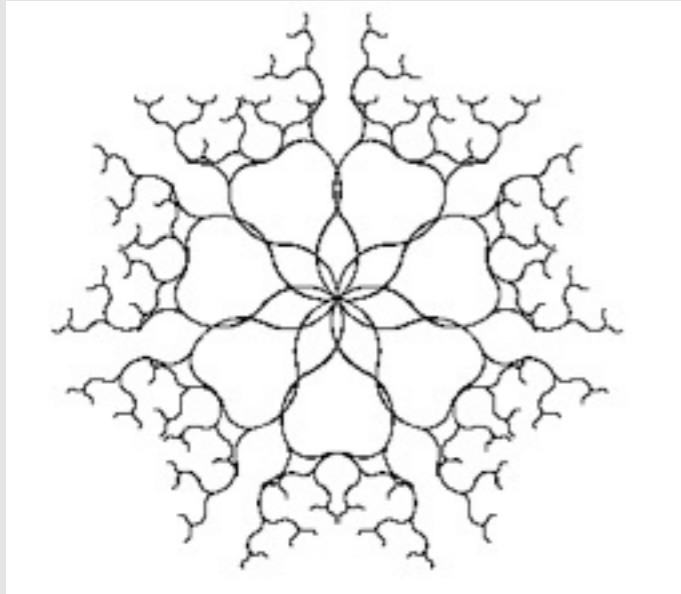


Not enough time for multiple approaches



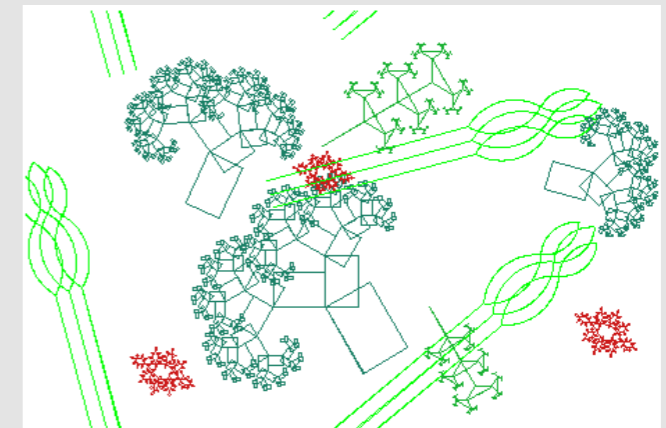
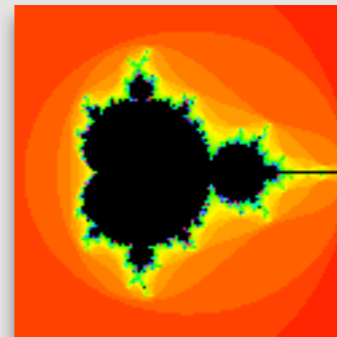
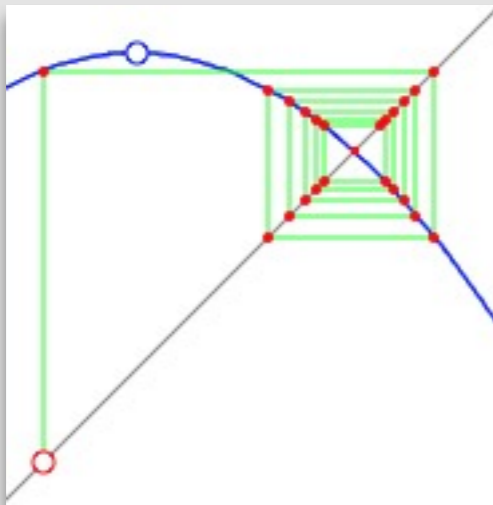
Less depth

Less access



## Not enough flexibility in content

- ◇ a big problem in transition years
- ◇ no time for projects, side trips, digging deeper
- ◇ no room for unorthodox electives



Only *core* concepts should be mandated,  
leaving room for effective pedagogy  
and curricular choices

Too much, too soon

# Topics best left for Math 3 / Algebra 2

- ◇ Quadratic formula
- ◇ Function notation
- ◇ Rational exponents
- ◇ Complex numbers

# Topics best left for Year 4 / Electives

- ◇ Rational and radical equations
- ◇ Remainder theorem
- ◇ Radians and trig identities
- ◇ Matrices



Pushing abstraction down the grades  
is counterproductive.

- ◇ Less depth
- ◇ Less access

Too many standards... too much too soon...  
many students will not be able to keep up.  
They, or their teachers, will get blamed.

# What To Do

Citizens

- ◇ Ask for periodic re-evaluation of the CCSS
- ◇ Join the movement to opt out of high-stake tests



# What To Do

Educators

## Heed the Common Core overall shift:

- ◇ More modeling, less symbol manipulation
- ◇ Foundational role for transformations in geometry

As a first approximation,  
choose the integrated path

# Topics can move

- ◇ Too abstract? Later!
- ◇ More accessible because of tech? Sooner!
- ◇ Too much on one topic at once? Spread it out!



- ◇ Prioritize foundational topics, taking time from less important standards
- ◇ Choose which (+) standards to drop altogether

- ◇ Do not sacrifice the practice standards to the content standards
- ◇ Prioritize understanding
- ◇ Do not lose sight of your core values

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