Materials Review - CCSM Parent Input

Office of Learning

Background…

For years national reports have called for greater focus in U.S mathematics education. With the advent of the Common Core, a decade's worth of recommendations for greater focus and coherence finally have a chance to bear fruit.

Focus – Focus strongly where the standards focus

Coherence – making math sense - think across grades, and link to major topics in each grade

Rigor – in major topics, pursue with equal intensity

- Conceptual understanding
- Procedural skill and fluency, and
- applications

Focus

- Significantly narrow scope of content in each grade

Take a look at the 'critical areas of focus in the CCSM' documents

Criterion

- By attending first to FOCUS, coherence and rigor may realistically develop.

Instructional resources - materials and tools may be of very different forms, including digital.

Standards meant to be accessible for all –
an over-arching criterion for material and tools is that they provide for students with disabilities, English language learners, and gifted students.

Focus on Major Work

- Materials concentrate on students spending the large majority of their time, approximately ¾ on the major work of each grade. **Given the particular clusters that are designated major in grade 7, the criterion for that grade is approximately two-thirds*

Focus in Early Grades

Focus in Early Grades: Materials do not assess any of the following topics before the grade level indicated.

Table 2

Topic	Grade Introduced in the Standards
Probability, including chance, likely outcomes, probability models.	7
Statistical distributions, including center, variation, clumping, outliers, mean, median, mode, range, quartiles; and **statistical association or trends**, including two-way tables, bivariate measurement data, scatter plots, trend line, line of best fit, correlation.	6
Similarity, congruence, or geometric transformations.	8
Symmetry of shapes, including line/reflection symmetry, rotational symmetry.	4

Alignment to Standards!

The single most important flaw in the US mathematics instruction is that the curriculum is "a mile wide and an inch deep."

This finding comes from the research comparing the U.S curriculum to high performing countries, surveys of college faculty and teacher, the National Math Panel, the Early Childhood Learning report, and all the testimony the CCSS writers heard. The standards are meant to be a blueprint for math instruction that is more focused and coherent…Crosswalks and alignments and pacing plans and such cannot be allowed to throw away the focus and coherence and regress to the mile-wide curriculum."

- Daro, McCallum, and Zimba, 2012

Rigor

CCSS are very concerned with rigor. Materials should balance with equal intensity:

- Conceptual understanding – “understand”
- Procedural skill and fluency – “fluently”
- Application – “real-world problems”

Conceptual Understanding

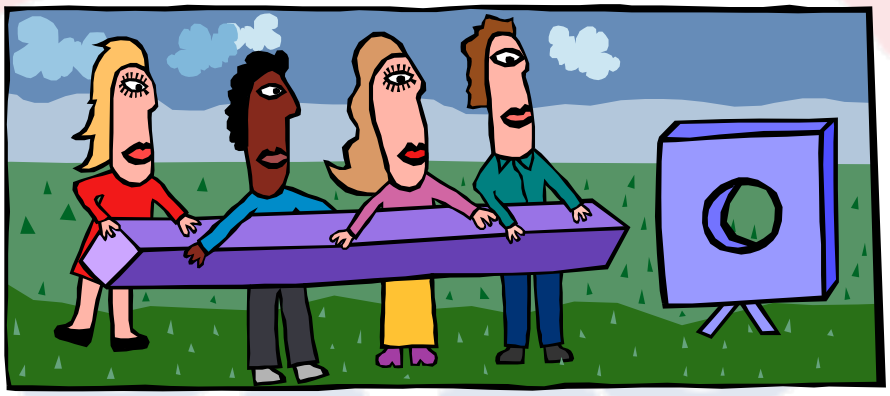
- Developing students' ***conceptual understanding*** of key mathematical concepts, where called for in specific content standards or cluster headings.

Fluency

- Giving attention throughout the year to individual standards that set an expectation of ***fluency***.

Applications

- Allowing teachers and students using the materials as designed to spend sufficient time working with engaging ***applications***, without losing focus on the major work of each grade.



Practice-Content Connections

- Materials meaningfully connect content standards and practice standards.
- Materials attend to the full meaning of each practice standard.

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.

Emphasis on Mathematical Reasoning:

- Teachers and students using the materials as designed spend from a quarter to a half of their classroom time communicating reasoning, (by constructing viable arguments and explanations and critiquing those of others' concerning key grade-level mathematics)
- Materials provide examples of student explanations and arguments (e.g fictitious student characters may be portrayed)

Problem Solving

- Materials attend thoroughly to those places in the content standards that set expectations for multi step problems – there should be variety in these.

Dimensions of Quality

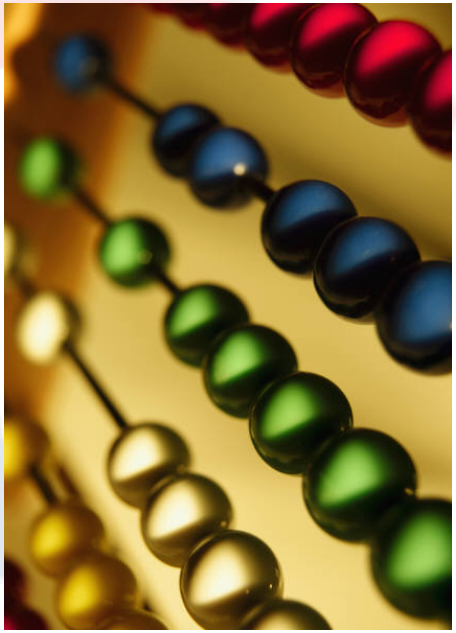
- Problems in the materials are ***worth doing***.
  - Problems and exercises
  - Each problem or exercise has a purpose
  - Assignments aren't haphazardly designed
  - Language is carefully considered

Dimensions of Quality

- There is variety in what students produce:
  - Answers and solutions but also arguments and explanations, diagrams, mathematical models etc.

Manipulatives

- Faithful representations of the mathematical objects they represent
- Manipulatives are closely connected to written methods



Visual Design

- Serves to support young students in engaging thoughtfully – not distracting or chaotic or aimed at adult purchasers
- Materials structure interaction with pairs, small groups and in large groups
- If paper based – a textbook that is focused is short. Elementary should be no longer than 200 pages; Middle no longer than 500.

Home Learning Implications

- What support is provided by the materials for parents?

- What might home learning look like?