Presentation of the Claims in Part III

Rationale for Claims: In Part III of this document, each claim is followed by a section describing what it is about this particular aspect of what students should know and be able to do that warrants a claim. The Rationale presents both the scope of the claim and its connection and alignment to the CCSS. In addition the claim is described in further detail than could be expected from the claim's single-sentence statement, and this description is provided in terms of what would be expected of a student who would demonstrate proficiency. In this way, the Rationale should be viewed as a starting point for the development of Achievement Level Descriptors.

Sufficient Evidence: Accompanying each claim in Part III is a description of the sufficient relevant evidence from which to draw inferences or conclusions about student attainment of the claim. Relevant and sufficient evidence needs to be collected in order to support each claim. The assessment system will provide the opportunity to use a variety of assessment items and tasks applied in different contexts. It is important that the Smarter Balanced pool of items and tasks for each claim be designed so the summative assessment can measure and be used to make interpretations about year-to-year student progress.

The sufficient evidence section for each claim includes a brief analysis of the assessment issues to be addressed to ensure accessibility to the assessment for all students, with particular attention to students with disabilities and English learners.

Assessment Targets: Finally, each claim is accompanied by a set of assessment targets that provide more detail about the range of content and Depth of Knowledge levels. The targets are intended to support the development of high-quality items and tasks that contribute evidence to the claims. We use the cluster level headings of the standards in the CCSSM, in order to allow for the creation and use of assessment tasks that require proficiency in a broad range of content and practices. Use of more fine-grained descriptions would risk a tendency to atomize the content, which might lead to assessments that would not meet the intent of the standards. It is important to keep in mind the importance of developing items and tasks that reflect the richness of the mathematics in the CCSSM.

Reporting Categories

As used here, "Reporting Categories" define the levels of aggregation of score points on the assessment that will be reported *at the individual student level*.

First and foremost, because the summative assessment will be used for school, district, and state accountability consistent with current ESEA requirements, there needs to be a composite **"Total Mathematics"** score at the individual student level. Also, consistent with the Smarter Balanced proposal and with requirements in the USED Notice Inviting Applications, the composite mathematics score will

need to have scaling properties that allow for the valid determination of student growth over time. This score will be a weighted composite from the four claims, with Claim #1 (Concepts and Procedures) contributing roughly 50%, claim 3 (Communicating Reasoning) contributing roughly 25%; and combined claims #2 and #4 (Problem Solving and Modeling and Data Analysis) contributing about 25%.

Will there be subscores below the claim level?

In its 2000 *Principles and Standards for School Mathematics*, the National Council of Teachers of Mathematics describes the Connections standard:

> Mathematics is not a collection of separate strands or standards, though it is often partitioned and presented in this manner. Rather, mathematics is an integrated field of study. Viewing mathematics as a whole highlights the need for studying and thinking about the connections within the discipline, as reflected both within the curriculum of a particular grade and between grade levels. (p. 64)

Large-scale assessments have contributed to the partitioning of mathematics into discrete topics by reporting scores on separate areas of mathematics (e.g., Algebra or Geometry), or in some cases even finer-grained detail (e.g., Computations with Fractions or Place Value). The implications of this approach to assessment on curriculum have been fairly evident in classrooms across the United States. The reporting of scores should not contribute to or exacerbate this problem. At the same time, as discussed in the principles, the sampling of items within each category should reflect the focus, coherence, and prioritization of core mathematics, as discussed in Part I.

Evidence-centered design provides a framework for re-thinking the reporting structure of summative assessments. If we agree that connections in mathematics are a critical component of curriculum, instruction, and assessment; then the potential for invalid inferences based on a reporting structure that partitions the content into separate areas of mathematics is quite high. Take the following Common Core Measurement & Data standard as an example:

> 3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves or quarters.

Traditionally, an item developed for this standard would fall into the “Measurement and Data” reporting category and be consumed in a subscore for that category. A student answering an item based on this standard incorrectly may be just as likely to have a weak foundation in Fractions as in Measurement and Data. The focus and coherence of the Common Core State Standards at each grade level maximize the connections within and across domains, an approach that is consistent with that of several high-achieving countries. Therefore, a traditional content-based approach to summative assessment reporting would not support the “interpretation” vertex of the evidence-centered design framework described earlier.

Based on Smarter Balanced's commitment to providing student-level data from which valid inferences can be made, the reporting categories for the summative mathematics assessment include four scores: a Total Mathematics composite score and a subscore for each claim, with claims 2 and 4 combined for the purposed of reporting. The table below provides a summary of these reporting categories.

Reporting Categories for Summative Mathematics Assessment

Total Mathematics Composite Score		
Claim 1: Concepts and Procedures Score	Claim 3: Communicating Reasoning Score	Claims 2 & 4: Problem Solving/ Modeling and Data Analysis Score