

DRAFT CCSS RUBRIC FOR INTERIM/BENCHMARK ASSESSMENTS – MATHEMATICS (Grades K-HS)

Use this draft rubric to evaluate or to create interim/benchmark assessments for alignment to the CCSS—whether fixed form or computer-adaptive. At the heart of the Common Core State Standards for Mathematics (CCSSM) are three shifts in mathematics:

- 1) Focus strongly where the Standards focus.
- 2) Coherence: Think across grades and link to major topics within grade.
- 3) Rigor: In major topics, pursue conceptual understanding, procedural skill and fluency, and application with equal intensity.

The following draft rubric provides the implication of these three shifts for interim/benchmark assessments. This rubric requires differentiating between the major and supporting work of the grade,¹ recognizing how content fits into the progressions in the Standards and understanding the expectations of the Standards with respect to conceptual understanding, fluency, and application. The K-8 Publishers’ Criteria will be a helpful reference while using this tool (http://www.corestandards.org/assets/Math_Publishers_Criteria_K-8_Summer%202012_FINAL.pdf).

ORGANIZATION OF THE DRAFT CCSS RUBRIC FOR INTERIM/BENCHMARK ASSESSMENTS – MATHEMATICS

SECTION 1: NON-NEGOTIABLE ALIGNMENT CRITERIA
All sets of interim/benchmark assessments must meet the six non-negotiable criteria at each grade level to be considered aligned to the CCSS.

SECTION 2: ADDITIONAL ALIGNMENT CRITERIA AND INDICATORS OF QUALITY
The criteria included in section two are essential for the alignment of interim/benchmark assessments to the CCSS; however, these criteria are best evaluated using a scale for the purposes of evaluating individual assessment programs and comparing across interim/benchmark assessment programs.

SECTION 1. NON-NEGOTIABLES: If the assessments do not meet each of the following criteria, they should be considered not aligned.

CRITERIA FOR MATH ASSESSMENT	SAMPLE EVALUATION INFORMATION					
<p>NON-NEGOTIABLE 1. Focus on Major Work. In every covered grade/course, the set of interim/Benchmark assessments devote at least:</p> <ul style="list-style-type: none"> • 85% of the total points in K-2 exclusively to the major work of the grade; • 75% of the total points in grades 3-5 exclusively to the major work of the grade; • 70% of the total points in grades 6-8 exclusively to the major work of the grade • 50% of the points in high school to widely applicable prerequisites for postsecondary work. <p>Use the test blueprints for the assessments and this Sample Worksheet to verify that the percentage for every tested grade/course meets the minimum for the applicable grade band. [Refer also to criterion #1 in the K-8 Publishers' Criteria for Mathematics]</p>	<p>Sample Worksheet for #1 – Verify that the set of assessments for each grade/course is focused on the major clusters for each grade.</p>					
	Grade/ Course	Major Clusters	Points	Additional or Supporting Clusters	Points	Percentage of Points from Major Clusters
	Kindergarten	K.CC.A – C				Minimum: 85%
		K.OA		K.MD.A-B		
		K.NBT		K.G.A-B		
		Major Total:		Supporting Total:		
	Grade 1	1.OA.A-D				Minimum: 85%
		1.NBT.A-C		1.MD.B-C		
		1.MD.A		1.G.A		
		Major Total:		Supporting Total:		
	Grade 2	2.OA.A-B		2.OA.C		Minimum: 85%
		2.NBT.A-B		2.MD.C-D		
		2.MD.A-B		2.G.A		
		Major Total:		Supporting Total:		
	Grade 3	3.OA.A-D		3.NBT.A		Minimum: 75%
		3.NF.A		3.MD.B & C		
		3.MD.A & C		3.G.A		

¹ For the distinction between Major, Additional, and Supporting work, see “Where to Focus: Math Shifts, Key Fluencies, and Major Work of Grade” here: http://www.achievethecore.org/downloads/deep-dive-into-the-math-shifts/17.deep_dive_into_math_shifts_math_shifts_and_major_work_of_grade.pdf. (In grades 3-8, major cluster designations can also be found in both PARCC and Smarter/Balanced documentation.)

To be aligned to the CCSSM, the percentage of points aligned to the Major Clusters must meet or exceed the given percentage for each grade/course.

	Major Total:		Supporting Total:	
Grade 4	4.OA.A		4.OA.B & C	Minimum: 75%
	4.NBT.A-B		4.MD.A-C	
	4.NF.A-C		4.G.A	
	Major Total:		Supporting Total:	
Grade 5	5.NBT.A-B		5.OA.A-B	Minimum: 75%
	5.NF.A-B		5.MD.A-B	
	5.MD.A		5.G.A-B	
	Major Total:		Supporting Total:	
Grade 6	6.RP.A		6.NS.B	Minimum: 70%
	6.NS.A & C		6.G.A	
	6.EE.A-C		6.SP.A-B	
	Major Total:		Supporting Total:	
Grade 7	7.RP.A			Minimum: 70%
	7.NS.A		7.G.A-B	
	7.EE.A-B		7.SP.A-C	
	Major Total:		Supporting Total:	
Grade 8	8.EE.A-C		8.NS.A	Minimum: 70%
	8.F.A-B		8.G.C	
	8.G.A-B		8.SP.A	
	Major Total:		Supporting Total:	
HS- Course 1				Minimum: 50%
	Major Total:		Supporting Total:	
HS- Course 2				Minimum: 50%
	Major Total:		Supporting Total:	
HS- Course 3				Minimum: 50%
	Major Total:		Supporting Total:	
HS- Course 4				Minimum: 50%
	Major Total:		Supporting Total:	

NON-NEGOTIABLE 2. Focus in K-8. No item on an assessment or within an item bank requires knowledge of the following topics before the grade level indicated in the CCSSM. Compliance with this criterion is determined by this Sample Worksheet.

[Refer also to criterion #2 in the K-8 Publishers' Criteria for Mathematics]

To be aligned to the CCSSM, the interim/benchmark assessments cannot assess certain topics before they are introduced in the CCSSM.

Topic	Grade level introduced in the Standards	Items on these topics occur only at, or after, the indicated grade level	Evidence
Symmetry of shapes, including line/reflection symmetry, rotational symmetry.	4	T F	
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	T F	
Probability , including chance, likely outcomes, probability models.	7	T F	
Similarity, congruence, or geometric transformations.	8	T F	

NON-NEGOTIABLE 3. Alignment to the CCSSM. The items are designed to elicit direct, observable evidence of the degree to which a student can independently demonstrate the targeted standard. Items should exhibit alignment to the letter and spirit of the CCSSM.

Developers of assessments can annotate a subset of items to describe how items are aligned, or a state/district may organize their own review process to evaluate the interim/benchmark assessments using the Sample Worksheet.

To be aligned to the CCSSM, all items must be aligned to the CCSSM.

3. Select a significant representation of items (at least 10% or 10 items per grade/course) by sampling across the standards represented at each grade. For each item, verify that the CCSS alignment listed is accurate and the item addresses the specific language of the standard.

Sample Worksheet for #3 – Documenting the alignment review for a subset of items.

	Number of Items Reviewed	Number of Items Aligned	Percent Aligned
Kindergarten			
Grade 1			
Grade 2			
Grade 3			
Grade 4			
Grade 5			
Grade 6			
Grade 7			
Grade 8			
HS – Course 1			
HS – Course 2			
HS – Course 3			
HS – Course 4			
Totals			_____ %

<p>NON-NEGOTIABLE 4. Rigor and Balance. Test blueprints or CAT item pools reflect the balances in the Standards and help students meet the Standards' rigorous expectations.</p> <p>The Sample Worksheet for #4 requires the developer to produce or the reviewer to calculate the percentage of items that meet each description. Then assess whether there is balance in the attention to rigor.</p> <p>[Refer also to criterion #4 in the K-8 Mathematics Publishers' Criteria]</p> <p><i>To be aligned to the CCSSM, each grade/course must have items that assess each element of rigor and those items must represent the balance reflected in the Standards.</i></p>	<p align="center">Sample Worksheet for #4 – Rigor and Balance within each grade/course</p> <table border="1"> <thead> <tr> <th align="center">Balancing the Aspects of Rigor</th> <th align="center">True/False</th> <th align="center">Evidence</th> </tr> </thead> <tbody> <tr> <td>Attention to Conceptual Understanding: For every grade/course, there are items that require students to demonstrate conceptual understanding of key mathematical concepts, especially where called for in specific content standards or cluster headings.</td> <td align="center">T F</td> <td></td> </tr> <tr> <td>Attention to Fluency and Procedural Skill: For every grade/course, there are items that assess individual standards that set an expectation of fluency.</td> <td align="center">T F</td> <td></td> </tr> <tr> <td>Attention to Applications: For every grade/course, there are items that require students to work with engaging applications.</td> <td align="center">T F</td> <td></td> </tr> </tbody> </table>	Balancing the Aspects of Rigor	True/False	Evidence	Attention to Conceptual Understanding: For every grade/course, there are items that require students to demonstrate conceptual understanding of key mathematical concepts, especially where called for in specific content standards or cluster headings.	T F		Attention to Fluency and Procedural Skill: For every grade/course, there are items that assess individual standards that set an expectation of fluency.	T F		Attention to Applications: For every grade/course, there are items that require students to work with engaging applications.	T F	
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<p>NON-NEGOTIABLE 5. Practice-Content Connections: The assessments include items that connect practice standards and content standards.</p> <p>The developer of the assessment will provide alignment information describing the approach for each practice standard in relation to the content within each grade/course.</p> <p><i>To be aligned to the CCSSM, there must be items that connect the practice standards and content standards and the developer must provide a narrative that describes how the two sets of standards are meaningfully connected within the set of assessments for each grade.</i></p>	<p align="center">Sample Worksheet for #5 – Connections between the Standards for Mathematical Practice and Standards for Mathematical Content</p> <table border="1"> <thead> <tr> <th align="center">Practice-Content Connections</th> <th align="center">True / False</th> <th align="center">Evidence</th> </tr> </thead> <tbody> <tr> <td>5A. The assessments include items that connect the Standards for Mathematical Practice and the Standards for Mathematical Content.</td> <td align="center">T F</td> <td></td> </tr> <tr> <td>5B. The developer of the assessments provides a description or analysis that shows how each set of assessments meaningfully connects the Standards for Mathematical Practice to the Standards for Mathematical Content within each applicable grade/course.²</td> <td align="center">T F</td> <td></td> </tr> </tbody> </table>	Practice-Content Connections	True / False	Evidence	5A. The assessments include items that connect the Standards for Mathematical Practice and the Standards for Mathematical Content.	T F		5B. The developer of the assessments provides a description or analysis that shows how each set of assessments meaningfully connects the Standards for Mathematical Practice to the Standards for Mathematical Content within each applicable grade/course. ²	T F				
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5B. The developer of the assessments provides a description or analysis that shows how each set of assessments meaningfully connects the Standards for Mathematical Practice to the Standards for Mathematical Content within each applicable grade/course. ²	T F												

² All items do not need to align to a Mathematical Practice. In addition, there is no requirement to have an equal balance among the Mathematical Practices in any test, set of items, or grade/course.

<p>NON-NEGOTIABLE 6. Assess College and Career Readiness: The Standards are organized so that students will be ready for college and career paths. A well-designed set of Interim/Benchmark assessments will support this through focused test blueprints as well as instructionally actionable and usable information.</p> <p><i>To be aligned to the CCSSM, the set of assessments must provide information about student growth toward college and career readiness that is actionable and easy to use.</i></p>	Sample Worksheet for #6 – Assessing College and Career Readiness		
	Assessing College and Career Readiness	True/False	Evidence
	6A. The developer of the assessment explicitly states what the possible student scores mean. Scores from the assessment will provide teachers information that is easy to use and actionable. In K-8, the information presents information about each student's Progress to Algebra (see K-8 Publisher's Criteria, Table 1). In HS, the information explicitly states periodic, reliable claims about each student's progress toward College and Career Readiness.	T F	
6B. The assessments for high school include high-school-level problems that involve selected content first introduced in grades 6-8 (such as, for example, “applying ratio reasoning in real-world and mathematical problems, computing fluently with positive and negative fractions and decimals, and solving real-world and mathematical problems involving angle measure, area, surface area, and volume” (p. 84)).	T F		

ASSESSMENTS MUST MEET ALL SIX NON-NEGOTIABLE CRITERIA LISTED ABOVE TO BE ALIGNED TO THE CCSS AND TO CONTINUE THE EVALUATION TO SECTION 2.

SECTION 2: ADDITIONAL ALIGNMENT CRITERIA AND INDICATORS OF QUALITY

Section 2 includes additional criteria for alignment to the Standards as well as indicators of quality. Interim/Benchmark assessments evaluated against the criteria in Section 2 will be rated on the following scale.

- 2 – (meets criteria): A score of 2 means that the assessments meet the full intention of the criterion in all courses/grades.
- 1 – (partially meets criteria): A score of 1 means that the assessments meet the full intention of the criterion for some courses/grades or meets the criterion in many aspects but not the full intent of the criterion.
- 0– (does not meet criteria): A score of 0 means that the assessments do not meet many aspects of the criterion.

2A. ALIGNMENT TO THE STANDARDS FOR MATHEMATICAL CONTENT

CRITERIA FOR MATH	SAMPLE EVALUATION INFORMATION		
<p>CRITERION 7. Test blueprints or CAT item pools reflect balance among the aspects of rigor in the Standards. The Sample Worksheet for #7 requires the developer to produce or the reviewer to calculate the percentage of items that meet each description. A score of 0, 1, or 2 is based on the percentage listed.</p>	Sample Worksheet for #7 – Balancing Aspects of Rigor ³		
	Balancing Aspects of Rigor	%	Score
	13A. For each grade/course, at least 10% of the points on the set of assessments explicitly assess demonstration of conceptual understanding. (Partially meeting this standard means that 5%-9% of the points on a grade/course worth of assessment. Less than 5% means a score of 0.)		2 1 0

³ The percentages listed in this table represent a minimum requirement to ensure that each aspect of rigor is addressed. Please note that for each grade/course, these percentages do not add up to 100%. This is intentional to give developers of assessments flexibility in their designs.

<p>[Refer also to criterion #4 in the K-8 Mathematics Publishers' Criteria]</p>	<p>13B. At least 10% of the points in the set of assessments for each grade/course explicitly assess expressing/communicating mathematical reasoning. (Partially meeting this standard means that 5%-9% of the points on a grade/course worth of assessment. Less than 5% means a score of 0.)</p>		2	1	0
	<p>13C. For K-6, at least 10% of the points on the set of assessments for each grade explicitly assess grade-level fluency AND another 10% of the points on the set of assessments for each grade explicitly assess procedural skill. (Partially meeting this standard means that 5%-9% of the points on a grade/course worth of assessment. Less than 5% means a score of 0.)</p>		2	1	0
	<p>13D. For 7-8 and HS, at least 20% of the points on the set of assessments for each grade/course explicitly assess procedural skill. (Partially meeting this standard means that 5%-9% of the points on a grade/course worth of assessment. Less than 5% means a score of 0.)</p>		2	1	0
	<p>13E. At least 25% of the points in the set of assessments for each High School course explicitly assess multi-step application/modeling. (Partially meeting this standard means that 10%-24% of the points on a grade/course worth of assessment. Less than 5% means a score of 0.)</p>		2	1	0
	<p>13F. For K-8, at least 15% of the points on the set of assessments for each grade explicitly assess solving word problems. (Partially meeting this standard means that 5%-14% of the points on a grade/course worth of assessment. Less than 5% means a score of 0.)</p>		2	1	0
<p>CRITERION 8. Assessment of supporting content does not detract from focus, but rather enhances focus and coherence simultaneously by engaging students in major work of the grade. [Refer also to criterion #3 in the K-8 Publishers' Criteria for Mathematics]</p>					
<p>CRITERION 9. In each grade/course, there are items aligned to the cluster level and items aligned to the domain level.</p>					
<p>CRITERION 10. The items for each grade/course use grade-appropriate numbers and number systems.</p> <ul style="list-style-type: none"> • In grades 3-5, fractions are approached as numbers, not only as pictures. • In grades 6-8, many items use fractions and decimals. • High school items include rational numbers, irrational numbers, and numbers represented in 					

scientific notation.				
CRITERION 11. In middle school, there are word problems that invite algebraic approaches as opposed to arithmetic approaches. ⁴		2	1	0
CRITERION 12. In middle and high school, the focus is on mindfully manipulating expressions for a specific purpose, not mechanically simplifying or expanding expressions.		2	1	0
CRITERION 13. In middle and high school, algebra items use non-integer rational numbers at least as often as integers.		2	1	0
TOTAL OF POINTS EARNED FOR 2A. ALIGNMENT TO STANDARDS FOR MATHEMATICAL CONTENT.				
ADD UP TOTAL POINTS EARNED FOR EACH CRITERION.				
2B. ALIGNMENT TO THE STANDARDS FOR MATHEMATICAL PRACTICE				
CRITERION 14. Emphasis on Mathematical Reasoning: Assessments support the Standards' emphasis on mathematical reasoning by requiring that 15%-20% of the assessment specifically assess Mathematical Reasoning, including, whether students can construct viable arguments, critique the arguments of other, use problem solving as a form of argument, and/or use the specialized language explicitly required by the grade/course. [Refer also to criterion #10 in the K-8 Publishers' Criteria for Mathematics]		2	1	0
CRITERION 15. Focus and Coherence via the Standards for Mathematical Practice: Assessments promote focus and coherence by connecting the Standards for Mathematical Practice most often to the major work of the grade (K-8) or to widely applicable prerequisites (HS). [Refer also to criterion #8 in the K-8 Publishers' Criteria for Mathematics]		2	1	0
CRITERION 16. In each grade/course, every Standard for Mathematical Practice is represented within the item bank for a grade/course or within the set of blueprints for each grade/course. [Refer also to criterion #9 in the K-8 Publishers' Criteria for Mathematics]		2	1	0

⁴ See Table F.e on p. 12 of Appendix F available here: www.tinyurl.com/parccappf.

TOTAL OF POINTS EARNED FOR 2B. ALIGNMENT TO STANDARDS FOR MATHEMATICAL PRACTICE. ADD UP TOTAL POINTS EARNED FOR EACH CRITERION. _____				
2C. INDICATORS OF QUALITY [Refer to pp.17-21 in the K-8 Publishers' Criteria for Mathematics for background information on many of the criteria in this section]				
CRITERION 17. The assessment items, answer keys and documentation are free from mathematical errors.		2	1	0
CRITERION 18. The sequence of items does not cue the student to use a certain solution process during problem solving. That means that problems require different types of solution processes need to be put in the same section of assessments.		2	1	0
CRITERION 19. There is variety in what students produce. For example, students are assigned to produce answers and solutions, but also arguments and explanations, diagrams, mathematical models, etc.		2	1	0
CRITERION 20. There are items in the sets of assessments that use tools other than calculators, rulers and protractors to meaningfully assess the major work of the grade.		2	1	0
CRITERION 21. The visual design isn't distracting or chaotic, but supports students in engaging thoughtfully with the content of the assessments.		2	1	0
TOTAL OF POINTS EARNED FOR 2C. INDICATORS OF QUALITY. ADD UP TOTAL POINTS EARNED FOR EACH CRITERION. _____				
List the scores for each Sections 2A, 2B, and 2C here:				
Section A – Alignment to the Standards for Mathematical Content: _____				
Section B – Alignment to the Standards for Mathematical Practices: _____				
Section C – Indicators of Quality: _____				