

## Overall Claims for Mathematics Summative Assessment

Grades 3-8: “Students can demonstrate progress toward college and career readiness in mathematics.”

Grade 11: “Students can demonstrate college and career readiness in mathematics.”

More specifically, there are four distinct “Claims” to assess the mathematical content and process standards.

MP = Mathematical Practices

### Claim 1 - 4 Descriptions

**Claim #1: Concepts and Procedures** “Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.”

Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency. This claim addresses procedural skills and the conceptual understanding on which developing skills depend. It is important to assess student understanding of how concepts link together and why mathematical procedures work the way they do. This relates to the structural nature of mathematics. MP: 5, 6, 7, 8

**Claim #2: Problem Solving** “Students can solve a range of complex well posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.”

Assessment items and tasks focused on Claim 2 include problems in pure mathematics and problems set in context. Problems are presented as items and tasks that are wellposed (that is, problem formulation is not necessary) and for which a solution path is not immediately obvious. These problems require students to construct their own solution pathway rather than follow a provided one. Such problems will therefore be unstructured, and students will need to select appropriate conceptual and physical tools to use. MP: 1, 5, 7, 8

**Claim #3: Communicating Reasoning** “Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.”

Claim 3 refers to a recurring theme in the content and practice standards—the ability to construct and present a clear, logical, convincing argument. For older students, this may take the form of a rigorous, deductive proof based on clearly stated axioms. For younger students, this will involve more informal justifications. Assessment tasks that address this claim will typically present a claim and ask students to provide, for example, a justification or counterexample. MP: 3, 6

**Claim #4: Modeling and Data Analysis** “Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.”  
 Modeling links classroom mathematics and statistics to everyday life, work and decision-making. Students use modeling and data analysis to choose and use appropriate mathematics and statistics to analyze and understand situations, to make predictions, find solutions and improve decision-making based on results from the model. The standards feature modeling as both a mathematical practice at all grades and a content focus in high school. MP: 2, 4, 5

**Reporting Categories for Claims 1 - 4 for Summative Mathematics Assessment**

Claim 1: 50 % of the test items

Claim 3: 25% of the test items

Claim 2 & 4: 25% of the test items

Blueprint Table Mathematics Grades 3–5 Estimated Total Testing Time: 3:00 (with Classroom Activity) <sup>1</sup>						
Claim/Score Reporting Category	Content Category <sup>2</sup>	Stimuli		Items		Total Items by Claim <sup>3</sup>
		CAT	PT	CAT <sup>4</sup>	PT <sup>5</sup>	
1. Concepts and Procedures	Priority Cluster	0	0	13-15	0	17-20
	Supporting Cluster	0		4-5		
2. Problem Solving 4. Modeling and Data Analysis <sup>6</sup>	Problem Solving	0	1	6	2-4	8-10
	Modeling and Data Analysis	0				
3. Communicating Reasoning	Communicating Reasoning	0		8	0-2	8-10

Blueprint Table Mathematics Grades 6–8 Estimated Total Testing Time: 3:30 (with Classroom Activity) <sup>1</sup>						
Claim/Score Reporting Category	Content Category <sup>2</sup>	Stimuli		Items		Total Items by Claim <sup>3</sup>
		CAT	PT	CAT <sup>4</sup>	PT <sup>5</sup>	
1. Concepts and Procedures	Priority Cluster	0	0	12-15	0	16-20
	Supporting Cluster	0		4-5		
2. Problem Solving 4. Modeling and Data Analysis <sup>6</sup>	Problem Solving	0	1	6	2-4	8-10
	Modeling and Data Analysis	0				
3. Communicating Reasoning	Communicating Reasoning	0		8	0-2	8-10

Blueprint Table Mathematics Grade 11 Estimated Total Testing Time: 4:00 (with Classroom Activity) <sup>1</sup>						
Claim/Score Reporting Category	Content Category <sup>2</sup>	Stimuli		Items		Total Items by Claim <sup>3</sup>
		CAT	PT	CAT <sup>4</sup>	PT <sup>5</sup>	
1. Concepts and Procedures	Priority Cluster	0	0	14-16	0	19-22
	Supporting Cluster	0		5-6		
2. Problem Solving 4. Modeling and Data Analysis <sup>5</sup>	Problem Solving	0	1	6	2-4	8-10
	Modeling and Data Analysis	0				
3. Communicating Reasoning	Communicating Reasoning	0		8	0-2	8-10

These pages were adapted from open source documents available on the Smarter Balanced Website: <http://www.smarterbalanced.org/assessments/development/> August 2016