

4th Grade Math
Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

This Matrix Covers ALL Claims, Targets, & Standards taught in 4th Gd Math that are shown as “Tested” on Smarter Balanced Item Specifications (2-4-14) & the Blueprint (4-21-14)
The 4th Grade Summative Assessment has 31 CAT & 6 PT Items

Background: Smarter Balanced publishes mountains of specification information regarding Summative Assessment (SA) Claims, Targets, Standards, DOK, & Item Types/Numbers. The problem is that no published document welds together all this information in a format friendly to educators. The CTS Matrix solves that problem by populating the rows and columns in a table that emulates the design configuration of the SA.

Matrix Guide: Use the Matrix as a resource document to acquire greater understanding of the organization and composition of the Summative Assessment (SA), which is more complicated in design than previous high-stakes assessments. The four Claims are general descriptions regarding learning expectations for each grade level. In the Matrix, each Claim is displayed in a separate table with a description in the top row followed by multiple Targets underneath the parent Claim. The Targets are more specific with regard to expected learning and usually vary in description at each grade level. The SA will report results overall and for each of the four Claims.

For any Claim/Target combination, cells to the right show the tested standards, the assessed DOK level(s), the number of items tested (both Computer Adaptive Test (CAT) & Performance Task (PT), and the Item Types that may be used. Note that each Target will normally involve testing multiple standards, and any particular standard may be tested in multiple Claims and/or Targets. A section titled “Valuable Facts” follows the conclusion of the Matrix with additional pertinent information about the SA. The final pages of this document contain examples of the different Item Types.

4th Grade Math
Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

Table of Contents

Math Standards, Domain, & Item Type Abbreviations.....	page 3
Claim 1: Concepts & Procedures—Priority Cluster.....	page 4
Claim 1: Concepts & Procedures—Supporting Cluster...	page 4
Claim 2: Problem Solving.....	page 5
Claim 4: Modeling & Data Analysis.....	page 5
Claim 3: Communicating Reasoning.....	page 6
Valuable Facts.....	page 7
4 th Gd Level Example Math Item Types	pages 8 to 14

I have tried hard to make this Matrix as accurate as possible, but I'm not infallible and the information is complicated and constantly changing. I will continuously review the available sources and make corrections/updates as required and distribute the corrected Matrices with new dates. If you notice errors, please report them to me at sandy@youasksandy.com.

4th Grade Math
Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

4th Grade Math Standards Domain Abbreviations

Operations & Algebraic Thinking = OA
Number & Operations in Base Ten = NBT
Number & Operations—Fractions = NF
Measurement & Data = MD
Geometry = G

Item Response Type Abbreviations

(Many examples of each Item Response Type are included in the Item Specifications)

MC = multiple-choice, single correct response
MS = multiple-choice, multiple choice responses
EQ = equation/numeric
TM = matching tables
TI = fill-in table
DD = drag & drop
HS = hot spot
GR = graphing
ST = short text
PT = performance task

4th Grade Math
 Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
 Compiled by Sandy Sanford 10-18-14

Claim 1: CONCEPTS and PROCEDURES—Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency (20 CAT Items)				
Claim 1 PRIORITY CLUSTER Targets (15 CAT Items)	Standards Addressed	DOK	CAT Items	Item Types
Target A —Use the four operations with whole numbers to solve problems	4.OA.1, 4.OA.2, 4.OA.3	1, 2	9	MC, EQ
Target E —Use place value understanding and properties of operations to perform multi-digit arithmetic	4.NBT.4, 4.NBT.5, 4.NBT.6	1, 2		MC, EQ
Target F —Extend understanding of fraction equivalence and ordering	4.NF.1, 4.NF.2	1, 2		MT, EQ, HS
Target G —Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers	4.NF.3, 4.NF.4	1, 2	3	MC, EQ, MT, DD, HS
Target D —Generalize place value understanding for multi-digit whole numbers	4.NBT.1, 4.NBT.2, 4.NBT.3	1, 2	2	MT, HS, EQ
Target H —Understand decimal notation for fractions, and compare decimal fractions	4.NF.5, 4.NF.6, 4.NF.7	1, 2	1	MT, HS, EQ, GR
Claim 1 Supporting CLUSTER Targets (5 CAT Items)	Standards Addressed	DOK	CAT Items	Item Types
Target I —Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit	4.MD.1, 4.MD.2, 4.MD.3	1, 2	3	EQ, GR, MT, TI
Target K —Geometric measurement: understand concepts of angle and measure angles	4.MD.5, 4.MD.6, 4.MD.7	1, 2		EQ, GR, DD
Target B —Gain familiarity with factors and multiples	4.OA.4	1, 2	1	MC, DD, MT, HS, TI
Target C —Generate and analyze patterns	4.OA.5	2, 3		MC DD, EQ, MT, HS, TI, MT,
Target J —Represent and interpret data	4.MD.4	1, 2		MT, HS, EQ
Target L —Draw and identify lines and angles, and classify shapes by properties of their lines and angles	4.G.1, 4.G.2, 4.G.3	1, 2	1	MT, GR, HS

Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

Claim 2: PROBLEM SOLVING—Students can solve a range of well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.

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.

CLAIMS 2 & 4 are combined for reporting purposes

Claim 2: PROBLEM SOLVING (2 CAT & 1-2 PT Items)	Standards Addressed	DOK	CAT Items	PT Items	Item Types
Target A—Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.	4.OA.1, 2, 3 4.NF.1, 2, 3, 4, 5, 6, 7 4.NBT.4, 5, 6 4.MD.1, 2, 3, 5, 6, 7	2, 3	1	1-2	MC, MS, EQ, DD, HS, GR, MT, TI
Target B—Select and use appropriate tools strategically					
Target C—Interpret results in the context of a situation					
Target D—Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas).		1, 2, 3	1	ST (PT only)	
Claim 4: MODELING AND DATA ANALYSIS (3 CAT & 2-3 PT Items)	Standards Addressed	DOK	CAT Items	PT Items	Item Types
Target A—Apply mathematics to solve problems arising in everyday life, society, and the workplace.	4.OA.1, 2, 3 4.NF.3, 4 4.MD.1, 2, 3, 4, 5, 6, 7	2, 3	1	2-3	MC, MS, EQ, DD, HS, GR, MT, TI
Target D—Interpret results in the context of a situation					
Target B—Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem.		2, 3, 4	1		
Target E—Analyze the adequacy of, and make improvements to, an existing model or develop a mathematical model of a real phenomenon.					
Target C—State logical assumptions being used		1, 2	1		
Target F—Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas).					
Target G—Identify, analyze and synthesize relevant external resources to pose or solve problems. (PT ONLY)		3, 4	0		ST (PT only)

Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

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: COMMUNICATING REASONING (6 CAT & 2 PT Items)	Standards Addressed	DOK	CAT Items	PT Items	Item Types
Target A—Test propositions or conjectures with specific examples Target D—Use the technique of breaking an argument into cases	4.OA.3 4.NF.1, 2, 3, 4, 7 4.NBT.5, 6	2,3	2	2	MC, MS, EQ, DD, HS, GR, MT, TI ST (PT & Tgt E only)
Target B— Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Target E—Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.		2, 3, 4	2		
Target C—State logical assumptions being used Target F—Base arguments on concrete referents such as objects, drawings, diagrams, and actions		2, 3	2		

4th Grade Math
Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

Valuable Facts

(From SBAC Blueprint dtd 4-21-14)

1. Number of items per Claim is not necessarily proportional to Claim weight for scoring
2. All CAT Item in grades 3-5 are designed to be machine scored (i.e., NO ST Items for grades 3-5 on CAT portion)
3. Claim 2 (Problem Solving) and Claim 4 (Modeling & Data Analysis) have been combined for reporting purposes
4. On the **CAT** portion of the test...
 - For Claim 1, each student will receive at least 7 items at DOK 2 or higher.
 - For combined Claims 2 & 4, each student will receive at least 2 items at DOK 3 or higher
 - For Claim 3, a student will receive a least 2 items at DOK 3 or higher

4th Grade Math
Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

All Example Items are from 4th grade Smarter Balanced Practice Test (unless otherwise noted)

MC (Multiple Choice Item)

Select the statement that explains how the values of the numbers 420 and 4200 are different.

- (A) 4200 is 1000 times as large as 420
- (B) 4200 is 100 times as large as 420
- (C) 4200 is 10 times as large as 420
- (D) 4200 is 1 time as large as 420

MS (Multiple Select Item) 5th Gd Level

Select two fractions that can be rewritten with a denominator of 24.


- $\frac{1}{6}$
- $\frac{1}{5}$
- $\frac{5}{7}$
- $\frac{9}{10}$
- $\frac{1}{9}$
- $\frac{7}{8}$

4th Grade Math
Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

EQ (Equation-Numeric)

Tanya ran 400 meters on Tuesday. She ran 800 meters on Wednesday.

What is the total number of meters Tanya ran on these two days? Enter your answer in the response box.



1	2	3
4	5	6
7	8	9
0	.	$\frac{\square}{\square}$

Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

DD (Drag & Drop)

1971



A student claims that all fractions greater than $\frac{3}{7}$ have a denominator less than 7.

Show that the student's claim is only sometimes true.

- A. Drag one number into each box to create a fraction greater than $\frac{3}{7}$ with a denominator less than 7.
- B. Drag one number into each box to create a fraction greater than $\frac{3}{7}$ with a denominator greater than 7.

0	
1	A. Denominator less than 7
2	
3	<input type="text"/>
4	<input type="text"/>
5	
6	
7	B. Denominator greater than 7
8	
9	<input type="text"/>
	<input type="text"/>

Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
 Compiled by Sandy Sanford 10-18-14




HS (Hot Spot)

592



Marcia read books over the summer. She created the picture graph shown.

Summer Reading

Month	Books
June	
July	
August	

 = 2 books

Create another picture graph that shows these data with a different key. You may use whole books and half books in your graph.

A. Select the key you will use.




B. Select books to complete your picture graph.

A. Select the key you will use.

 = 3 books  = 4 books  = 5 books  = 6 books

B. New picture graph

Summer Reading

Month	Books
June	
July	
August	

4th Grade Math
 Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
 Compiled by Sandy Sanford 10-18-14

GR (Graphing) 3rd Gd Level

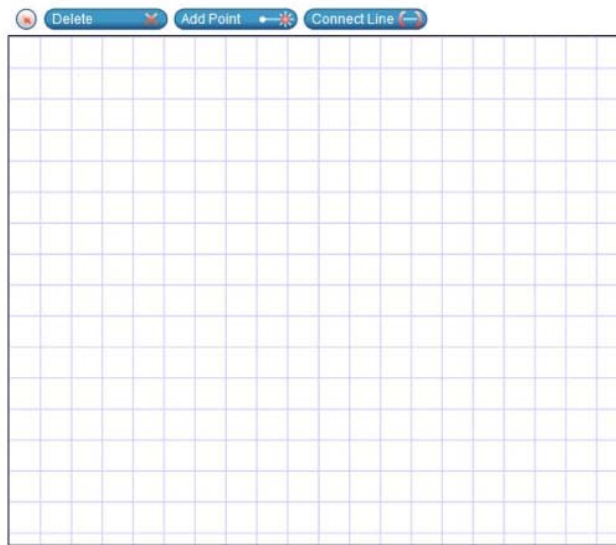
1966



Maya says that a rhombus cannot also be a rectangle.




Show Maya that her statement is **not** true.

Use the Connect Line tool to draw a rhombus that is also a rectangle.



MT (Matching Tables)

Click in the box that matches each figure with its description. Each figure may be matched to more than one description.

	Has at Least One Right Angle	Has at Least One Pair of Perpendicular Sides	Has at Least One Pair of Parallel Sides
 Rectangle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Rhombus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 Parallelogram	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 10-18-14

TI (Insert Table)

A pattern is generated using this rule:

Start with the number 7 as the first term and add 5.

Enter numbers into the boxes to complete the table.

Term	Number
First	7
Second	<input type="text"/>
Third	<input type="text"/>
Fourth	<input type="text"/>
Fifth	<input type="text"/>

ST (Short Text) 6th Grade Level—for grades 3-5 ST can only occur on the PT

The company proposes a new cereal box with dimensions 10.5 inches high, 7.5 inches wide, and 4 inches deep. The new cereal box is a rectangular prism. Determine if this new box meets each of the requirements. Explain why or why not.