7th Grade Math
Claim, Target, Standard Matrix (31 CAT & 6 PT Items)
Compiled by Sandy Sanford 2-10-15

This Matrix Covers ALL Claims, Targets, & Standards taught in 7th Gd Math that are shown as "Tested" on Smarter Balanced Item Specifications (2-4-14) & the Blueprint (4-21-14)
The 7th 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.

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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.

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6th Grade Math Standards Domain Abbreviations

Ratios & Proportional Relationships = RP
Number System = NS
Expressions & Equations = EE
Geometry = G
Statistics & Probability = SP

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

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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—Analyze proportional relationships and use them to solve real-world and mathematical problems.	7.RP.1, 2, 3	2	9	EQ, MS, TM
Target D—Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	7.EE.3, 4	1, 2		MC, EQ, MS, DD
Target B—Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	7.NS.1, 2, 3	1, 2	6	GR, EQ, MS, TM, MC, DD
Target C—Use properties of operations to generate equivalent expressions.	7.EE.1, 2	1, 2		MC, MS, EQ
Claim 1 Supporting CLUSTER Targets (5 CAT Items)	**Standards Addressed**	**DOK**	**CAT Items**	**Item Types**
Target E—Draw, construct, and describe geometrical figures and describe the relationships between them.	7.G.1, 2, 3	1, 2	3	MS, TM, EQ, GR
Target F—Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	7.G.4, 5, 6	1, 2		EQ, TM
Target G—Use random sampling to draw inferences about a population.	7.SP.1, 2	1, 2	2	MC, MS
Target H—Draw informal comparative inferences about two populations.	7.SP.3, 4	2		TM, EQ
Target I—Investigate chance processes and develop, use, and evaluate probability models.	7.SP.5, 6, 7, 8	1, 2		MC, EQ, TM

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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 (5 CAT & 4 PT Items)

Claim 2: PROBLEM SOLVING (2 CAT & 1-2 PT Items)	Standards Addressed[1]	DOK	CAT Items	PT Items	Item Types
Target A—Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.	**7.RP.1, 2, 3** **7.NS.1, 2, 3** **7.EE.1, 2, 3, 4** 7.G.1, 2, 3, 4, 5, 6	2, 3	1	1-2	MC, MS, EQ, DD, HS, GR, TM, TI
Target B—Select and use appropriate tools strategically					
Target C—Interpret results in the context of a situation					**ST (PT only)**
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		

Claim 4: MODELING AND DATA ANALYSIS (3 CAT & 2-3 PT Items)	Standards Addressed[1]	DOK	CAT Items	PT Items	Item Types
Target A—Apply mathematics to solve problems arising in everyday life, society, and the workplace. Target D—Interpret results in the context of a situation	**7.RP.1, 2, 3** **7.NS.1, 2, 3** **7.EE.3, 4** 7.G.1, 2, 3, 4, 5, 6 7.SP.1, 2, 3, 4, 5, 6, 7, 8	2, 3	1	2-3	MC, MS, EQ, DD, HS, GR, TM, TI
Target B— Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. Target E—Analyze the adequacy of, and make improvements to, an existing model or develop a mathematical model of a real phenomenon.		2, 3, 4	1		**ST (PT & Tgt B only)**
Target C—State logical assumptions being used 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).		1, 2	1		
Target G—Identify, analyze and synthesize relevant external resources to pose or solve problems. **(PT ONLY)**		3, 4	0		

NOTE 1: The standards that are designated "Primary Emphasis" are bolded

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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[2]**	**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	7.RP.2 7.NS.1, 7.NS.2 7.EE.1, 7.EE.2	2,3	2-3	2	MC, MS, EQ, DD, HS, GR, TM, TI **ST (PT & Tgt B 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	1-2		
Target C—State logical assumptions being used Target F—Base arguments on concrete referents such as objects, drawings, diagrams, and actions Target G—At later grades, determine conditions under which an argument does and does not apply. (For example, area increases with perimeter for squares, but not for all plane figures.)		2, 3, 4	2-3		

NOTE 2: Claim 3 does not designate standards for primary emphasis, as do Claims 2 & 4

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Valuable Facts
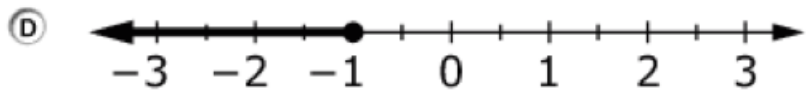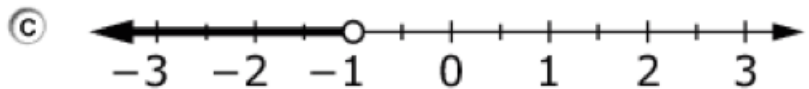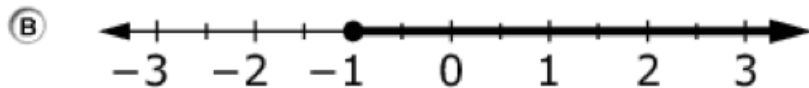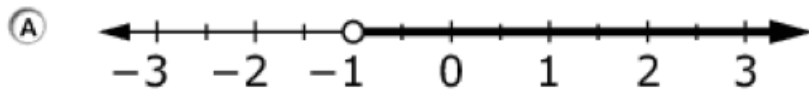(From SBAC Blueprint dtd 4-21-14)

1. Number of items per Claim is not necessarily proportional to Claim weight for scoring
2. In grades 6-8 on the CAT, 1 item per student (from either Claim 3 Target B or Claim 4 Target B) is designed for hand-scoring, i.e., a Short Text (ST) item type.
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 CAT items at DOK 2 or higher.
   - For combined Claims 2 & 4, each student will receive at least 2 CAT items at DOK 3 or higher
   - For Claim 3, a student will receive a least 2 CAT items at DOK 3 or higher

All Example Items are from 7th grade Smarter Balanced Practice Test (unless otherwise noted)
MC (Multiple Choice Item)

Which number line shows the solution to the inequality $-3x - 5 < -2$?

(A)

```
  -3  -2  -1   0   1   2   3
```

(B)

```
  -3  -2  -1   0   1   2   3
```

(C)

```
  -3  -2  -1   0   1   2   3
```

(D)

```
  -3  -2  -1   0   1   2   3
```

MS (Multiple Select Item)

George earns $455 per week. George receives a 20% raise.

How can George calculate his new weekly pay rate?

Select **all** calculations that will result in George's new weekly pay rate.

☐ divide $455 by 0.20

☐ divide $455 by 1.20

☐ multiply $455 by 0.20

☐ multiply $455 by 1.20

☐ solve for x: $\dfrac{x}{455} = \dfrac{120}{100}$

☐ solve for x: $\dfrac{455}{x} = \dfrac{20}{100}$

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EQ (Equation-Numeric) requiring a "numeric" response

Enter the value of $\frac{3}{4} + \frac{7}{12} - (-4)$.

EQ (Equation-Numeric) requiring an "equation" response, 6th Grade Level

In the morning, Emily studied 40 minutes for a math exam. Later that evening, Emily studied for x more minutes.

Enter an **equation** that represents the total number of minutes, y, Emily studied for the math exam.

1	2	3	x	y
4	5	6	+	-	*	÷
7	8	9	<	=	>
0	.	-	$\frac{\square}{\square}$	$\square^{\square}$	( )	| |

DD (Drag & Drop)

1877

Alex claims that when $\frac{1}{4}$ is divided by a fraction, the result will be greater than $\frac{1}{4}$.

To convince Alex that this statement is only sometimes true:

Part A: Drag one digit into each box to create an expression that is greater than $\frac{1}{4}$.

Part B: Drag one digit into each box to create an expression that is **not** greater than $\frac{1}{4}$.

1
2
3
4
5
6
7
8
9

Delete ✕

Part A: Expression greater than $\frac{1}{4}$

$$\frac{1}{4} \div \frac{\square}{\square}$$

Part B: Expression not greater than $\frac{1}{4}$

$$\frac{1}{4} \div \frac{\square}{\square}$$
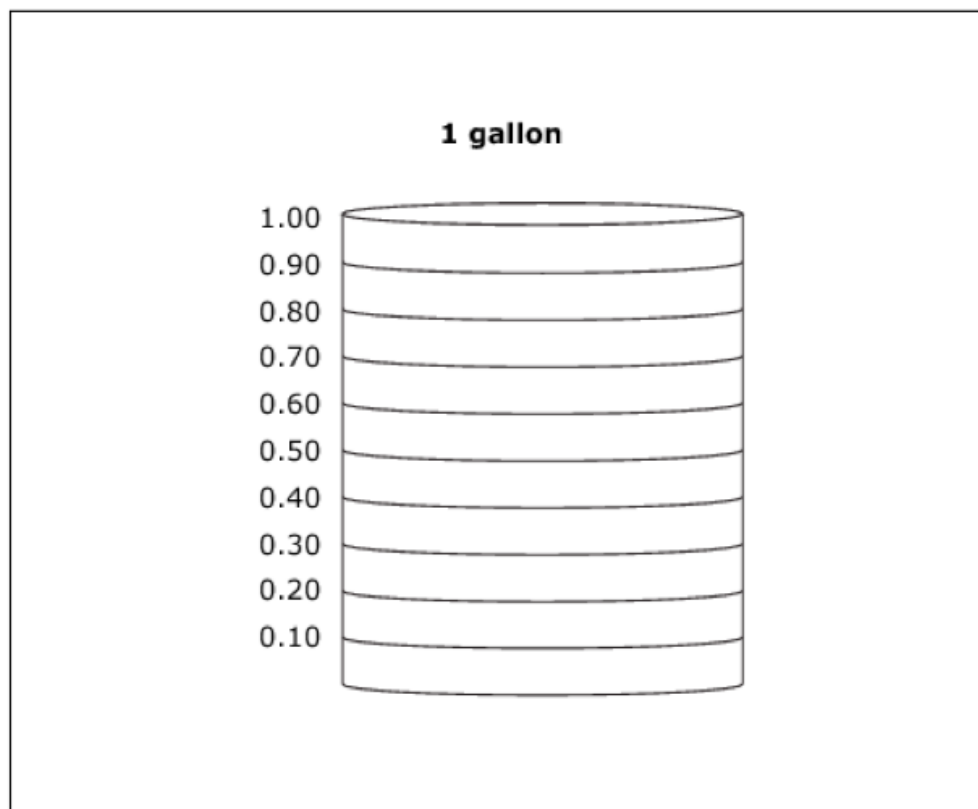
HS (Hot Spot)

1876

Tim makes 80 gallons of paint by mixing 48 gallons of gray paint with 32 gallons of white paint.

What part of every gallon is gray paint?

The model represents 1 gallon of mixed paint.

Select the bars to show how much of the gallon is gray paint.

1 gallon

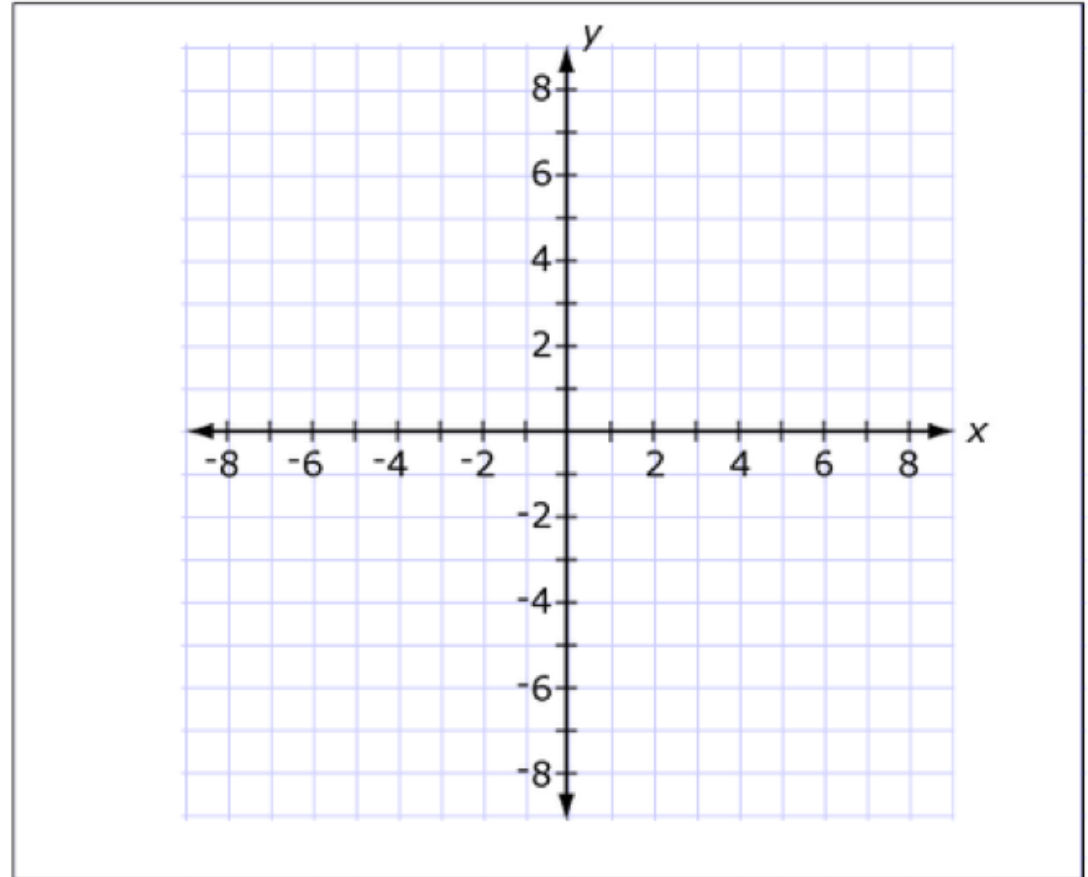| |
|---|
| 1.00 |
| 0.90 |
| 0.80 |
| 0.70 |
| 0.60 |
| 0.50 |
| 0.40 |
| 0.30 |
| 0.20 |
| 0.10 |

GR (Graphing) 8th Grade Level

1867

John and Kim wrote down two different functions that have the same rate of change.

John's function is represented by the table shown.

x	y
-1	-5
1	-1
3	3

Use the Add Arrow tool to graph a function that could be Kim's function.

Delete ✕   Add Point ●※   Add Arrow ◄──►

TM (Matching Tables)

Determine whether each statement is true for all cases, true for some cases, or not true for any case.

	True for all cases	True for some cases	Not true for any cases
Two vertical angles form a linear pair.	☐	☐	☐
If two angles are supplementary and congruent, then they are right angles.	☐	☐	☐
The sum of two adjacent angles is 90°.	☐	☐	☐
The measure of an exterior angle of a triangle is greater than every interior angle of the triangle.	☐	☐	☐

TI (Insert Table) 6th Grade Level

This table contains x and y values in equivalent ratios. Fill in the missing value in the table.

x	y
2	6
5	
7	21
9	27

ST (Short Text)

You are a volunteer at International Food Assistance. This organization delivers "food baskets" to help people around the world. The requirements for each food basket are shown below.

> Here are the requirements for each food basket:
> - Contains grains such as rice, wheat or oatmeal
> - Contains legumes such as kidney beans, nuts, or lentils
> - Contains exactly 35 grams (g) of oil for cooking
> - Contains exactly 50 grams (g) of Super Cereal
> - Has a minimum of 2100 total calories
> - At least 8% of the total calories come from protein
> - At least 10% of the total calories come from fat
> - The cost of each basket cannot exceed $0.75

Here are the contents and quantities of a **Sample Food Basket:**

Food	Quantity	Calories	Protein (1 g = 4 calories)	Fat (1 g = 9 calories)	Cost per kilogram
Rice	800 g	920	9 g	2 g	$0.58
Lentils	240 g	812	34 g	2 g	$0.90
Oil	35 g	315	0 g	35 g	$1.20
Super Cereal	50 g	200	10 g	5 g	$0.12

Explain how the **Sample Food Basket** does or does not meet all of the requirements for a food basket.

Type your answer in the space provided. Use specific numbers in your explanation.