Smarter Balanced Assessment Consortium:

Mathematics Practice Test Scoring Guide
Grade 11 Braille Version

08/14/2019

About the Practice Test Scoring Guides

The Smarter Balanced Mathematics Practice Test Scoring Guides provide details about the items, student response types, correct responses, and related scoring considerations for the Smarter Balanced Practice Test items. The items selected for the Practice Test are designed to reflect

- a broad coverage of claims and targets that closely mirror the summative blueprint.

- a range of student response types.

- a breadth of difficulty levels across the items, ranging from easier to more difficult items.

It is important to note that all student response types are not fully represented on every practice test, but a distribution can be observed across all the practice tests. The items presented are reflective of refinements and adjustments to language based on pilot test results and expert recommendations from both content and accessibility perspectives.

Within this guide, each item is presented with the following information[1]:

- Claim: statement derived from evidence about college and career readiness

- Domain: a broad content area that contains related targets and standards (i.e., Geometry)

- Target: statement that bridges the content standards and the assessment evidence that supports the claim

- Depth of Knowledge (DOK): measure of complexity considering the student's cognitive process in response to an item. There are four DOK levels, a 4 being the highest level.

- Common Core State Standards for Mathematical Content (CCSS-MC)

- Common Core State Standards for Mathematical Practice (CCSS-MP)

- Static presentation of the item: static presentation of item from test administration system

- Static presentation of student response field(s): static presentation of response field from test administration system

- Answer key or exemplar: expected student response or example response from score point value

- Rubric and applicable score points for each item: score point representations for student responses

The following items are representative of the kinds of items that students can expect to experience when taking the Computer Adaptive Test (CAT) portion of the summative assessment for high school. A separate document is available that provides a high school sample performance task and scoring guide.

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[1] Most of these terms (Claim, Domain, Target, DOK, etc.) are further defined in various other Smarter Balanced documents, as well as the Common Core State Standards for Mathematics. Refer to the *Content Specifications for the Summative Assessment of the Common Core State Standards for Mathematics* for more information.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#1	1	A-SSE	D	1	A-SSE.A.2	7

Select the expression that is equivalent to $(m^2 - 25)$.

Ⓐ $(m^2 - 10m + 25)$

Ⓑ $(m^2 + 10m + 25)$

Ⓒ $(m - 5)(m + 5)$

Ⓓ $(m - 5)^2$

Key: C

Rubric: (1 point) The student selects the correct equivalent expression.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#2	1	N-RN	A	1	N-RN.A.2	7

Select an expression that is equivalent to $\sqrt{3^8}$.

(A) $3^{\frac{1}{4}}$

(B) 3^3

(C) 3^4

(D) 3^6

Key: C

Rubric: (1 point) Student selects the correct equivalent expression.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#3	1	A-APR	F	2	A-APR.A.1	7

Enter an expression equivalent to
$(3x^2 + 2y^2 - 3x) + (2x^2 + y^2 - 2x) - (x^2 + 3y^2 + x)$
using the fewest number of possible terms.

1	2	3	x	y

| 4 | 5 | 6 | + | - | * | ÷ |

| 7 | 8 | 9 | < | ≤ | = | ≥ | > |

| 0 | . | - |

$\frac{\square}{\square}$ | $\square^{\square}$ | $\square_\square$ | ( ) | | | | $\sqrt{\square}$ | $\sqrt[\square]{\square}$ | π | i

sin | cos | tan | arcsin | arccos | arctan

Key: $4x^2 - 6x$ or $-6x + 4x^2$

Rubric: (1 point) The student enters a correct equivalent expression.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#4	1	A-REI	I	1	A-REI.B.3	7

Which inequality represents all possible solutions of $-6n < -12$?
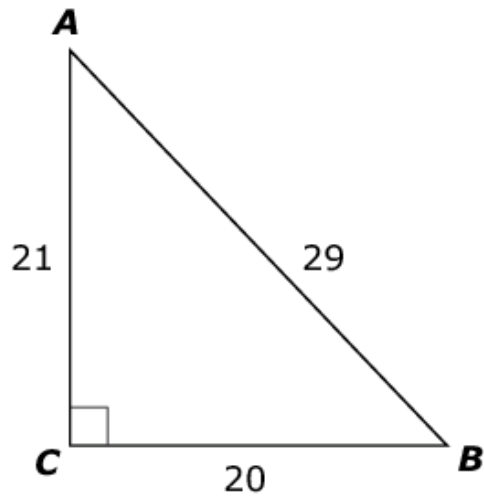
Ⓐ $n < 72$

Ⓑ $n > 2$

Ⓒ $n < 2$

Ⓓ $n > 72$

Key: B

Rubric: (1 point) Student selects the correct inequality.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#5	1	G-SRT	0	1	G-SRT.C.6	6

Consider this right triangle.

Enter the ratio equivalent to sin(B).

Key: 21/29

Rubric: (1 point) The student enters the correct ratio.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#6	1	A-CED	G	2	A-CED.A.1	N/A

A train travels 250 miles at a constant speed (*x*), in miles per hour.

Enter an equation that can be used to find the speed of the train, if the time to travel 250 miles is 5 hours.

Key: $x = \frac{250}{5}$ or equivalent. However, do not accept *x* = 50 only.

Rubric: (1 point) The student enters a correct equation.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#7	1	A-Q	C	2	A-Q.A.1	N/A

The formula for the rate at which water is flowing is $R = \dfrac{V}{t}$, where

- R is the rate,
- V is the volume of water measured in gallons (g), and
- t is the amount of time, in seconds (s), for which the water was measured.

Select an appropriate measurement unit for the rate.

(A) gs

(B) $\dfrac{g}{s}$

(C) $\dfrac{s}{g}$

(D) $\dfrac{1}{sg}$

Key: B

Rubric: (1 point) The student selects a correct measurement unit.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#8	4	A-REI	D	3	A-REI.C	1

A store sells used and new video games. New video games cost more than used video games. All used video games cost the same. All new video games also cost the same.

Omar spent a total of $84 on 4 used video games and 2 new video games. Sally spent a total of $78 on 6 used video games and 1 new video game. Janet has $120 to spend.

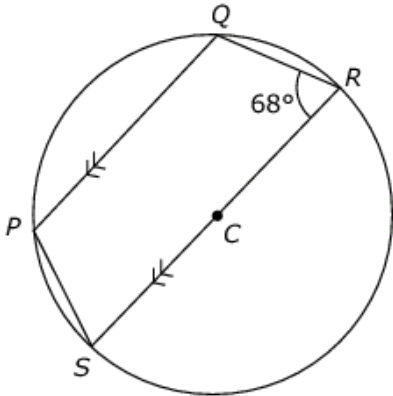Enter the number of used video games Janet can purchase after she purchases 3 new video games.

1	2	3
4	5	6
7	8	9
0	.	-

Key: 5

Rubric: (1 point) The student enters the number of used video games that Janet can purchase.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#9	3	G-C	G	2	G-C.A.3	6, 7

Use the circle below to answer the question.

The circle is centered at point *C*. Line segment *PQ* is parallel to *SR*. What is the measure of angle *QPS*?
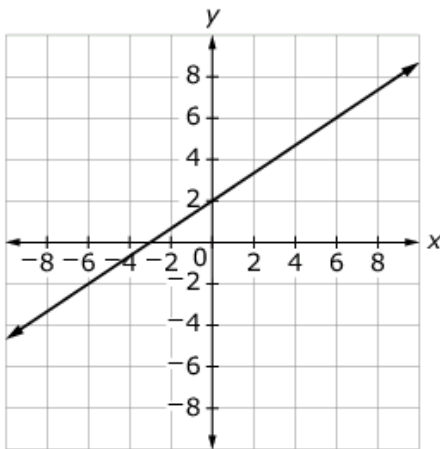
Ⓐ 68°

Ⓑ 112°

Ⓒ 136°

Ⓓ 158°

Key: B

Rubric: (1 point) The student selects the correct angle measure.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#10	1	A-REI	J	2	A-REI.D.10	N/A

Choose the ordered pair that is a solution to the equation represented by the graph.

- (A) $(0, -3)$

- (B) $(2, 0)$

- (C) $(2, 2)$

- (D) $(-3, 0)$

Key: D

Rubric: (1 point) The student selects the correct ordered pair.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#11	3	A-REI	E	3	A-REI.B.3	3

Consider this solution to a problem.

Problem: $-4(6 - y) + 4 = -4$
Step 1: $-24 - 4y + 4 = -4$
Step 2: $-20 - 4y = -4$
Step 3: $-4y = 16$
Step 4: $y = -4$

In the first response box, enter the number of the step where the mistake is made.

In the second response box, enter the correct solution to the problem.

1	2	3	y
4	5	6	+	-	*	÷
7	8	9	<	≤	=	≥	>
0	.	-						( )				√		π	i

sin | cos | tan | arcsin | arccos | arctan

Key: Part 1: Step 1

Part 2: $y = 4$ (or 4)

Rubric: (1 point) The student enters the step where the mistake occurs and enters the correct solution.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#12	1	F-IF	K	2	F-IF.A.3	N/A

Consider a sequence whose first five terms are: $-1.75, \ -0.5, \ 0.75, \ 2, \ 3.25$

Which function (with domain all integers $n \geq 1$) could be used to define and continue this sequence?

Ⓐ $\quad f(n) = \dfrac{7}{4}(n-1) - \dfrac{5}{4}$

Ⓑ $\quad f(n) = \dfrac{5}{4}(n-1) - \dfrac{7}{4}$

Ⓒ $\quad f(n) = \dfrac{7}{4}n - \dfrac{5}{4}$

Ⓓ $\quad f(n) = \dfrac{5}{4}n - \dfrac{7}{4}$

Key: B

Rubric: (1 point) The student selects the correct function.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#13	1	A-SSE	E	2	A-SSE.B.3	7

Write an expression equivalent to $\dfrac{b^{11}}{b^4}$ in the form b^m.

Key: b^7

Rubric: (1 point) The student enters the correct expression.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#14	4	A-REI	E	3	A-REI.B.3	6

Nina has some money saved for a vacation she has planned.

- The vacation will cost a total of $1600.
- She will put $150 every week into her account to help pay for the vacation.
- She will have enough money for the vacation in 8 weeks.

If Nina was able to save $200 a week instead of $150 a week, how many fewer weeks would it take her to save enough money for the vacation? Enter the result in the response box.

Key: 2

Rubric: (1 point) Student enters the correct number of weeks.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#15	3	G-CO	A	2	G-CO.C.11	3

Consider parallelogram *ABCD* with point *X* at the intersection of diagonal segments *AC* and *BD*.
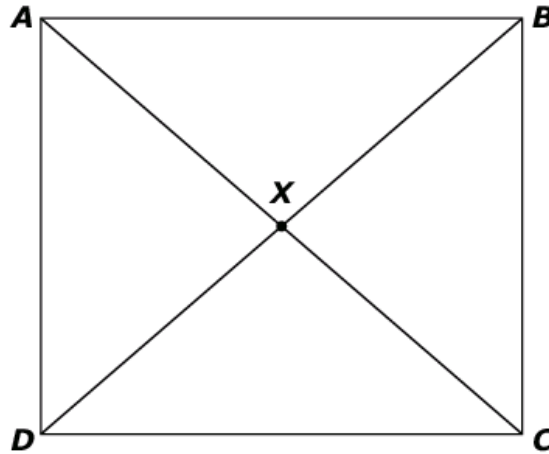
Evelyn claims that *ABCD* is a square. Select **all** statements that must be true for Evelyn's claim to be true.

☐ *AB* = *BD*

☐ *AD* = *AB*

☐ *AC* = *BX*

☐ *m∠ABC* ≠ 90°

☐ *m∠AXB* = 90°

Exemplar: (shown at right)

Rubric: (1 point) The student selects the statements that must be true.

☐ *AB* = *BD*

☑ *AD* = *AB*

☐ *AC* = *BX*

☐ *m∠ABC* ≠ 90°

☑ *m∠AXB* = 90°

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#16	2	A-CED	A	2	A-CED.A.1	2

A student earns $7.50 per hour at her part-time job. She wants to earn at least $200.

Enter an inequality that represents all of the possible numbers of hours (h) the student could work to meet her goal. Enter your response in the first response box.

Enter the least whole number of hours the student needs to work in order to earn at least $200. Enter your response in the second response box.

1	2	3	h	
4	5	6	+	-	*	÷
7	8	9	<	≤	=	≥	>
0	.	-				()	| |	√☐	☐√☐	π	i
			sin	cos	tan	arcsin	arccos	arctan

Key: Part A: $7.5h \geq 200$ or equivalent

Part B: 27 or $h = 27$

Rubric: (2 points) The student enters the correct inequality and value.

(1 point) The student enters the correct inequality or correct value. OR The student enters the correct answers in the wrong box.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#17	1	S-ID	P	2	S-ID.A	7

Michael took 12 tests in his math class. His lowest test score was 78. His highest test score was 98. On the 13th test, he earned a 64. Select whether the value of each statistic for his test scores increased, decreased, or could not be determined when the last test score was added.

	Standard Deviation	Median	Mean
Increased	☐	☐	☐
Decreased	☐	☐	☐
Could Not Be Determined	☐	☐	☐

Exemplar: (shown below)

	Standard Deviation	Median	Mean
Increased	☑	☐	☐
Decreased	☐	☐	☑
Could Not Be Determined	☐	☑	☐

Rubric: (1 point) The student correctly selects the changes in statistics.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#18	2	G-SRT	D	2	G-SRT.C.8	3

Emma is standing 10 feet away from the base of a tree and tries to measure the angle of elevation to the top. She is unable to get an accurate measurement, but determines that the angle of elevation is between 55 degrees and 75 degrees.

Decide whether each value given in the table is a reasonable estimate for the tree height. Select Reasonable or Not Reasonable for each height.

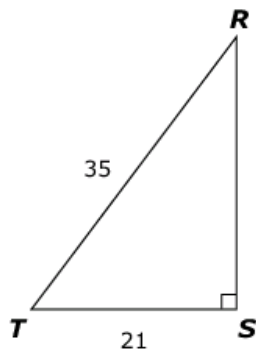|	Reasonable	Not Reasonable
4.2 feet	☐	☐
14.7 feet	☐	☐
24.4 feet	☐	☐
33.9 feet	☐	☐
39.1 feet	☐	☐
58.7 feet	☐	☐

Exemplar: (shown at right)

Rubric: (1 point) The student correctly identifies the reasonable estimates.

	Reasonable	Not Reasonable
4.2 feet	☐	☑
14.7 feet	☑	☐
24.4 feet	☑	☐
33.9 feet	☑	☐
39.1 feet	☐	☑
58.7 feet	☐	☑

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#19	1	G-SRT	0	1	G-SRT.C.8	2

Consider this right triangle.

Determine whether each expression can be used to find the length of side RS. Select Yes or No for each expression.

	Yes	No
$35 \cdot sin(R)$	☐	☐
$21 \cdot tan(T)$	☐	☐
$35 \cdot cos(R)$	☐	☐
$21 \cdot tan(R)$	☐	☐

Exemplar: (shown at right)

Rubric: (1 point) The student correctly selects the expressions that can be used to find the length of the side.

	Yes	No
$35 \cdot sin(R)$	☐	☑
$21 \cdot tan(T)$	☑	☐
$35 \cdot cos(R)$	☑	☐
$21 \cdot tan(R)$	☐	☑

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#20	1	A-CED	G	2	A-CED.A.1	N/A

Mike earns $6.50 per hour plus 4% of his sales.

Enter an equation for Mike's total earnings, E, when he works x hours and has a total of y sales, in dollars.

Key: $E = 6.5x + 0.04y$ OR equivalent

Rubric: (1 point) The student enters the correct equation.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#21	2	A-REI	A	2	A-REI.C	6

The basketball team sold t-shirts and hats as a fund-raiser. They sold a total of 23 items and made a profit of $246. They made a profit of $10 for every t-shirt they sold and $12 for every hat they sold.

Determine the number of t-shirts and the number of hats the basketball team sold.

Enter the number of t-shirts in the first response box.

Enter the number of hats in the second response box.

1	2	3
4	5	6
7	8	9
0	.	-

Key: Part A: 15

Part B: 8

Rubric: (1 point) The student enters the correct number of t-shirts in the first response box and the correct number of hats in the second box.