Smarter Balanced Assessment Consortium:

Mathematics Practice Test Scoring Guide
Grade 4

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 grade 4. A separate document is available that provides a grade 4 sample performance task and scoring guide.

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[1] Most of these terms (Claim, Domain, Target, DOK, etc.) are 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	OA	A	1	4.OA.A, 4.NBT.B.4	N/A

A baker has 159 cups of brown sugar and 264 cups of white sugar. How many total cups of sugar does the baker have?

Key: 423

Rubric: (1 point) The student enters the correct number of cups.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#2	3	NF	E	2	4.NF.B.3	6

Jarrod is adding $3\frac{2}{6}$ and $7\frac{5}{6}$.

He uses these steps to find the sum.

Step 1: $3 + 7 = 10$

Step 2: $\frac{2}{6} + \frac{5}{6} = \frac{7}{12}$

Step 3: $10 + \frac{7}{12} = 10\frac{7}{12}$

Jarrod made a mistake. Select the statement that corrects his mistake.

Ⓐ In Step 1, he should have multiplied 3 and 7 by 6 before adding.

Ⓑ In Step 2, he should not have added the denominators.

Ⓒ In Step 2, he should have multiplied 2 and 5 instead of adding them.

Ⓓ In Step 3, he should not have added the whole number and fraction.

Key: B

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

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#3	1	OA	A	1	4.OA.A.2	N/A

Danielle's full-grown dog weighs 10 times as much as her puppy. The puppy weighs 9 pounds.

Enter the number of pounds the full-grown dog weighs.

1	2	3
4	5	6
7	8	9
0	.	□/□

Key: 90

Rubric: (1 point) The student enters the correct number of pounds.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#4	1	NF	G	2	4.NF.B.3	5

Choose the fraction model that represents the following equation:

$$\frac{3}{7} + \frac{2}{7} + \frac{1}{7} = \frac{6}{7}$$

Ⓐ

0   1

Ⓑ

0   1

Ⓒ

0   1

Ⓓ

0   1
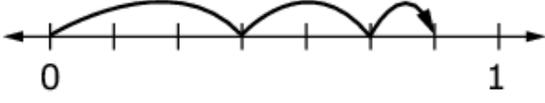
Key: C

Rubric: (1 point) The student identifies the fraction model that represents the equation.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#5	1	OA	B	1	4.OA.B.4	N/A

Select the list of numbers that are **all** multiples of 9.

Ⓐ 9, 27, 35, 63

Ⓑ 9, 48, 81, 90

Ⓒ 18, 36, 45, 64

Ⓓ 18, 54, 72, 99

Key: D

Rubric: (1 point) The student selects the correct list of multiples.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#6	1	NF	F	2	4.NF.A.2	N/A

Select True if the comparison is true. Select False if the comparison is **not** true.

	True	False
$\dfrac{89}{100} > \dfrac{9}{10}$	☐	☐
$\dfrac{7}{12} < \dfrac{2}{3}$	☐	☐
$\dfrac{3}{5} > \dfrac{4}{10}$	☐	☐

Key: F, T, T

Rubric: (1 point) The student correctly identifies the true comparisons.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#7	4	OA	E	3	4.OA.A.1	4

Susan has 3 times as many books as Mary. Mary has 18 books. Which equation can be solved to figure out how many books Susan has?
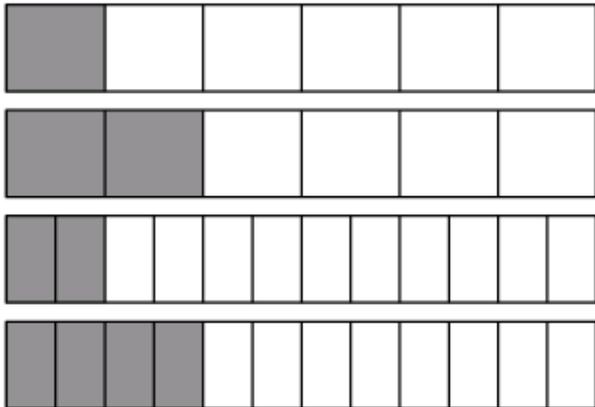
Ⓐ $\square - 3 = 18$

Ⓑ $3 + 18 = \square$

Ⓒ $18 \div \square = 3$

Ⓓ $3 \times 18 = \square$

Key: D

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

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#8	3	NF	F	2	4.NF.A.2	2

Anna is using four models to compare fractions. She shades each rectangle to represent a fraction of a whole.

Select **all** the statements that can be supported using Anna's fraction models.

☐ $\dfrac{2}{6} = \dfrac{4}{12}$

☐ $\dfrac{2}{12} = \dfrac{4}{12}$

☐ $\dfrac{2}{6} > \dfrac{1}{6}$

☐ $\dfrac{2}{12} > \dfrac{2}{6}$

Exemplar: (shown at right)

Rubric: (1 point) The student correctly identifies the supporting statements.

☑ $\dfrac{2}{6} = \dfrac{4}{12}$

☐ $\dfrac{2}{12} = \dfrac{4}{12}$

☑ $\dfrac{2}{6} > \dfrac{1}{6}$

☐ $\dfrac{2}{12} > \dfrac{2}{6}$

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#9	1	OA	A	1	4.OA.A.2	N/A

Isabella has 2 times as many DVDs as Emma. Emma has 6 DVDs.

Enter the number of DVDs Isabella has.

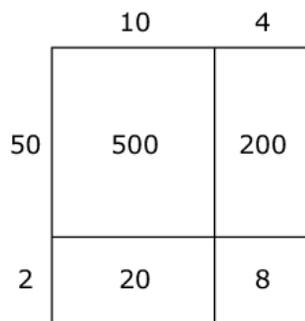**Key:** 12 or equivalent

Rubric: (1 point) The student enters the correct number of DVDs.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#10	3	NBT	A	2	4.NBT.C.5	7

Brittany solves 52 × 14 using an area model.

	10	4
50	500	200
2	20	8

500 + 200 + 20 + 8 = 728

Use the same reasoning as Brittany to solve 39 × 17. Drag numbers to complete the equation.

You may use the area model to help you.

| 7 |
| 9 |
| 10 |
| 16 |
| 21 |
| 30 |
| 63 |
| 90 |
| 210 |
| 300 |
| 510 |
| 663 |

Delete ✕

	10	7
30		
9		

☐ + ☐ + ☐ + ☐ = ☐

Exemplar: (shown at right)

Rubric: (1 point) Student enters four correct addends (order doesn't matter) and the correct sum. One possible response is shown.
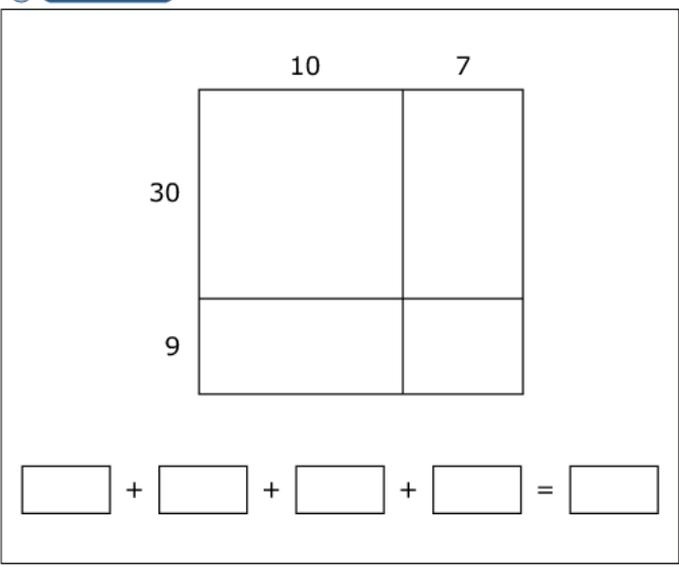
| 7 |
| 9 |
| 10 |
| 16 |
| 21 |
| 30 |
| 63 |
| 90 |
| 210 |
| 300 |
| 510 |
| 663 |

Delete ✕

	10	7
30		
9		
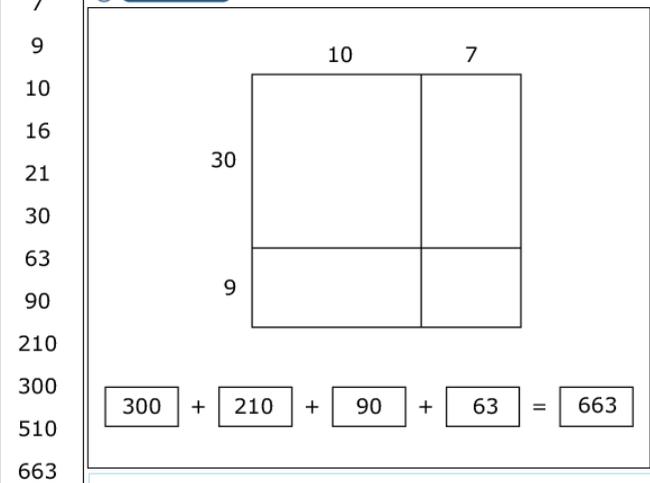
300 + 210 + 90 + 63 = 663

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#11	1	NF	G	2	4.NF.B.4	2

Decide whether each expression is equal to $4 \times \frac{2}{3}$. Click in the table to respond.

	Equal to $4 \times \frac{2}{3}$	Not Equal to $4 \times \frac{2}{3}$
$2 \times \frac{4}{3}$	☐	☐
$3 \times \frac{2}{4}$	☐	☐
$8 \times \frac{1}{3}$	☐	☐

Exemplar: (shown below)

	Equal to $4 \times \frac{2}{3}$	Not Equal to $4 \times \frac{2}{3}$
$2 \times \frac{4}{3}$	☑	☐
$3 \times \frac{2}{4}$	☐	☑
$8 \times \frac{1}{3}$	☑	☐

Rubric: (1 point) The student correctly identifies the equal expressions.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#12	3	NBT	E	2	4.NBT.B.5	3

Conner solves 8 × 16. He says, "I can find the product if I multiply 8 × 15 and then add 8."

Select the statement that **best** explains if Connor's strategy is correct.

Ⓐ Connor is correct, because he can change the 16 to use an easier number to multiply, like 15.

Ⓑ Connor is incorrect, because 8 × 16 is the same as 4 groups of 8, plus 4 groups of 8.

Ⓒ Connor is correct, because 8 × 16 is the same as 15 groups of 8, plus 1 group of 8.

Ⓓ Connor is incorrect, because he should add 16 instead of 8.

Key: C

Rubric: (1 point) The student selects the best statement.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#13	1	NBT	D	2	4.NBT.A.2	7

Select True or False for each comparison.

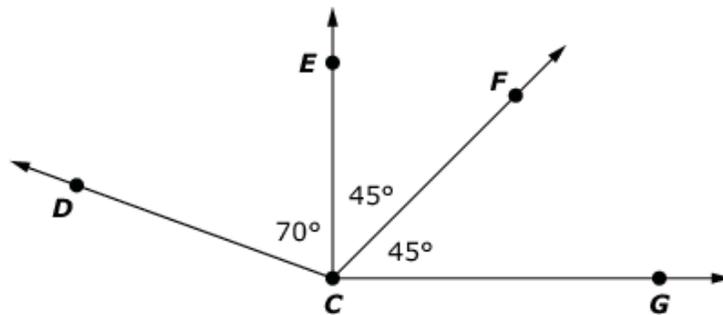|	True	False
4581 > 4000 + 800 + 50 + 1	☐	☐
40 hundreds + 50 tens + 81 ones = 4581	☐	☐
4 thousands + 8 hundreds + 1 ten + 5 ones < 4581	☐	☐

Key: F, T, F

Rubric: (1 point) The student correctly identifies the true and false comparisons.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#14	1	MD	K	2	4.MD.C.7	N/A

Use the diagram to solve the problem.

- The measure of ∠DCE = 70°
- The measure of ∠ECF = 45°
- The measure of ∠FCG = 45°

Enter the measure, in degrees, of ∠DCF.

Key: 115

Rubric: (1 point) The student enters the correct measure of ∠DCF in degrees.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#15	1	NF	F	1	4.NF.A.1	N/A

Select True if the equation is true. Select False if the equation is **not** true.

	True	False
$\dfrac{1}{4} = \dfrac{3}{12}$	☐	☐
$\dfrac{1}{2} = \dfrac{50}{100}$	☐	☐
$\dfrac{9}{10} = \dfrac{99}{100}$	☐	☐

Key: T, T, F

Rubric: (1 point) The student correctly identifies the true and false equations.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#16	3	NBT	C	3	4.NBT.B	1

Carlos uses this information to plan the number of packages of juice to buy:

- He needs 480 juice boxes.

- Some packages have 6 juice boxes.

- Some packages have 8 juice boxes.

Carlos claims, "To buy exactly 480 juice boxes, I need to buy 30 packages of apple juice and 40 packages of orange juice."

Select **two** statements that must be true for Carlos's claim to be correct.

☐ There are 6 juice boxes in a package of apple juice.

☐ There are 8 juice boxes in a package of apple juice.

☐ There are 6 juice boxes in a package of orange juice.

☐ There are 8 juice boxes in a package of orange juice.

Key: B and C

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

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#17	2	NF	A	2	4.NF.B.4	2

Steven made snack mix.

- He used $\frac{1}{4}$ cup of raisins and $\frac{2}{4}$ cup of nuts to make one serving.

Steven wants to make 5 servings of snack mix. How many cups of snack mix are in 5 servings?

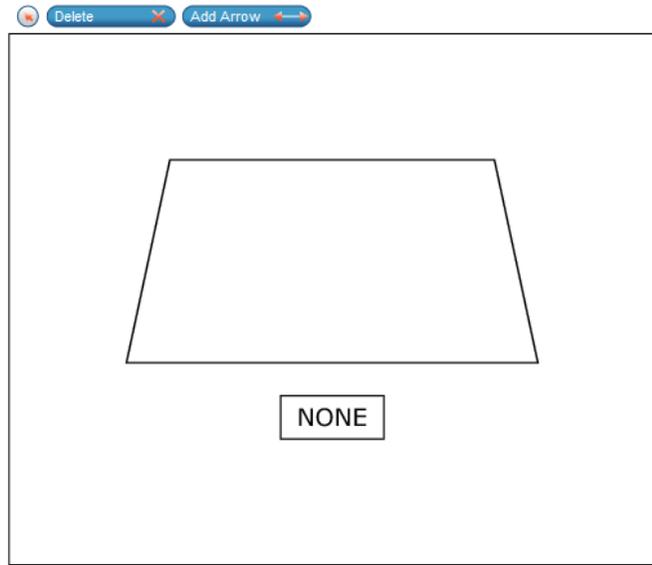|	

← → ↶ ↷ ⌫

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

Key: 3 ¾ or 15/4 or 3.75 or equivalent

Rubric: (1 point) The student enters the correct number of cups of snack mix.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#18	1	G	L	2	4.G.A.3	N/A

Use the Add Arrow tool to draw **all** the lines of symmetry for the shape. If there are no lines of symmetry, click None.

Exemplar: (shown below)
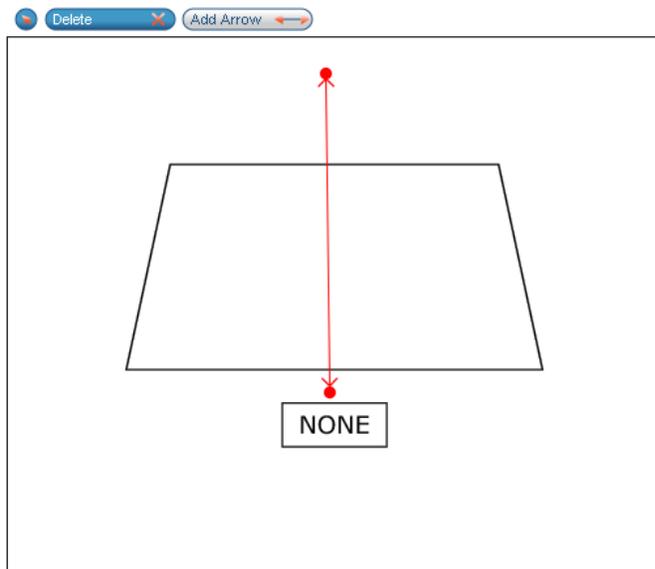
Rubric: (1 point) The student draws one line of symmetry.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#19	2	NBT	A	3	4.NBT.C.5	1

Casey multiplies two numbers.

- The first number is 178.
- The second number is a whole number that is greater than 0 but less than 10.
- The product of the two numbers has a 2 in the ones place.

Part A: What is a possible number that Casey multiplies 178 by? Enter your answer in the first response box.

Part B: What is the product of Casey's two numbers? Enter your answer in the second response box.

Part A: [   ]

Part B: [   ]

Key: Part A: 4

Part B: 712

Other correct responses: Part A: 9, or any number equivalent to 4 or 9

Part B: 1602, or any number equivalent to 712 or 1602

Rubric: (2 points) The student enters a correct value in Part A and Part B.

(1 point) The student enters a correct value in Part A AND any 3- or 4-digit number with a 2 in the ones place in Part B.

(1 point) The student enters a correct value in Part B AND any 3- or 4-digit number with a 2 in the ones place in Part A.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#20	3	OA	B	3	4.OA.B.4	3

Jose made this statement:

"All whole numbers except 1 have an even number of factors because factors always come in pairs."

Select a whole number between 1 and 10 that proves Jose's statement is **incorrect**.

Part A: Drag numbers into the empty boxes to justify your answer.

Part B: Drag the factors for your number into the box.

1
2
3
4
5
6
7
8
9
10

Delete ✕

Part A:

The number ☐ proves Jose is incorrect because it has ☐ factors, which is an odd number of factors.

Part B:

☐

Exemplar: (shown below)

1
2
3
4
5
6
7
8
9
10

Delete ✕

Part A:

The number 4 proves Jose is incorrect because it has 3 factors, which is an odd number of factors.

Part B:

1 2 4

OR

1
2
3
4
5
6
7
8
9
10

Delete ✕

Part A:

The number 9 proves Jose is incorrect because it has 3 factors, which is an odd number of factors.

Part B:

1 3 9

Rubric: (1 point) The student enters one of the two correct combinations shown in the exemplar.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#21	4	NF	C,F	2	4.NF.B.3d	6

Mrs. Taylor's class is measuring the wingspans of butterflies, in inches.

They record their results in this table.

Butterfly	Wingspan (in)
Monarch	$3\frac{2}{4}$
Zebra	$2\frac{3}{4}$
Checkered White	$1\frac{2}{4}$
Tiger	?

The wingspan of the Tiger Butterfly is $\frac{3}{4}$ inch longer than that of the Monarch Butterfly.

What is the difference, in inches, between the longest and shortest wingspans? Enter your answer in the response box.
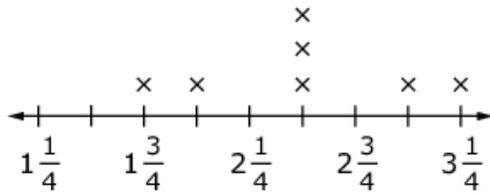

Key: 2.75 or 2¾

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

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#22	4	MD	D	2	4.MD.B.4	6

The line plot shows the distances, in miles, Rex walked on seven days.

$$\begin{array}{c} \times \\ \times \\ \times \quad \times \quad \times \quad \times \quad \times \end{array}$$

$$1\frac{1}{4} \qquad 1\frac{3}{4} \qquad 2\frac{1}{4} \qquad 2\frac{3}{4} \qquad 3\frac{1}{4}$$

Each × represents one day.

Distances Rex Walked (mi)

Enter the total distance, in miles, Rex walked for all seven days.

1	2	3
4	5	6
7	8	9
0	.	□/□

Key: 17 ½ or equivalent

Rubric: (1 point) The student correctly identifies the number of miles Rex walked.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#23	1	NF	G	2	4.NF.B.3	N/A

At the beginning of June, a bean plant was $3\frac{4}{5}$ inches tall.

By the beginning of July, the plant was $6\frac{2}{5}$ inches tall.

How many inches did the plant grow during June? Enter your answer in the response box.

1	2	3
4	5	6
7	8	9
0	.	▢/▢

Key: 2 3/5 or 2.6 or equivalent

Rubric: (1 point) The student enters the amount the plant has grown.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#24	1	MD	I	1	4.MD.A.1	N/A

Enter the unknown number that makes the equation true.

15 meters = □ centimeters

Key: 1500

Rubric: (1 point) The student enters the correct number of centimeters.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#25	1	NBT	E	1	4.NBT.B.6	2

Enter the unknown number to make the equation true.
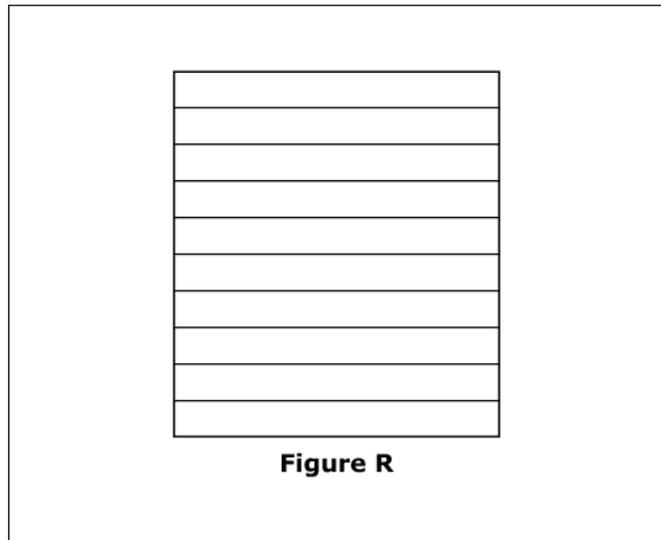
$$348 \div 6 = (\square \div 6) + (48 \div 6)$$

Key: 300

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

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#26	1	NF	F	2	4.NF.A.1	N/A

Click the spaces of the figure to shade $\frac{3}{5}$ of Figure R.

Figure R

Exemplar: (shown at right)

Rubric: (1 point) The student shades the correct number of spaces.

Figure R
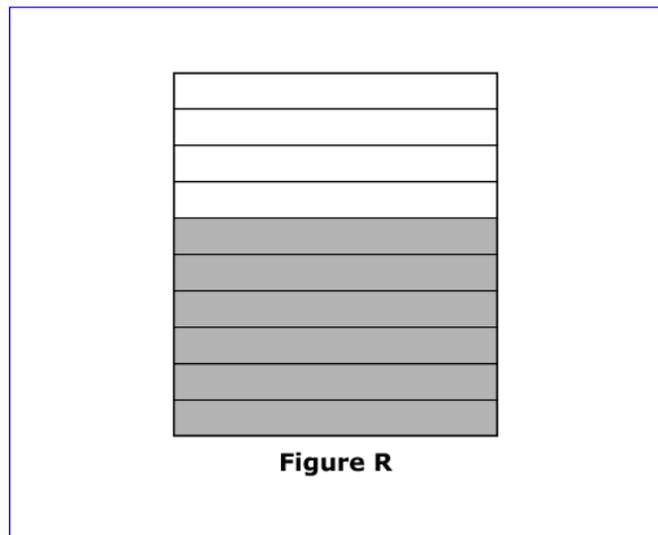
Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#27	1	NBT	E	1	4.NBT.B.5	N/A

Enter the product.

$$\begin{array}{r} 96 \\ \times\ 78 \\ \hline \end{array}$$

Key: 7488

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

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#28	1	NF	H	1	4.NF.C.6	N/A

Enter a decimal that is equivalent to $\frac{6}{100}$.

Key: 0.06

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

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#29	3	NF	A, D	2	4.NF.A.2	3

Phil writes these fraction comparisons: $\frac{1}{4} < \frac{1}{3}$ and $\frac{1}{3} < \frac{1}{2}$.

He says, "When comparing two fractions, the lesser fraction has the greater denominator."

Part A

Enter one digit to complete this comparison so that it supports Phil's claim:

$\frac{\Box}{6} < \frac{1}{3}$.

Part B

Enter one digit to complete this comparison and show that Phil's claim is **not** always true: $\frac{\Box}{6} > \frac{1}{3}$.

Part A [   ]

Part B [   ]

1	2	3
4	5	6
7	8	9
0	.	⊟

Key: Part A: 0 or 1

Part B: 2, 3, 4, 5, 6, 7, 8, or 9

Rubric: (1 point) The student enters a correct number in both parts.

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#30	3	OA	D	3	4.NF.A.2	7

Each piece of fruit weighs $\frac{3}{5}$ pound.

Drag enough fruit into each box so that the total weight, in pounds, is within the given range.

Delete ✕

Between 1 and $1\frac{1}{2}$ pounds

Between 2 and $2\frac{1}{2}$ pounds

Exemplar: (shown at right)

Rubric: (1 point) The student drags 2 pieces of fruit into the first box and 4 pieces of fruit into the second box.

Between 1 and $1\frac{1}{2}$ pounds

Between 2 and $2\frac{1}{2}$ pounds

Item	Claim	Domain	Target	DOK	CCSS-MC	CCSS-MP
#31	2	NF	C	2	4.NF.B.4	4

A class is making 7 flags. It takes $\frac{3}{4}$ of a yard of felt to make each flag.

The total number of yards of felt needed is between which two numbers?

Ⓐ 1 and 2

Ⓑ 3 and 4

Ⓒ 5 and 6

Ⓓ 7 and 8

Key: C

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