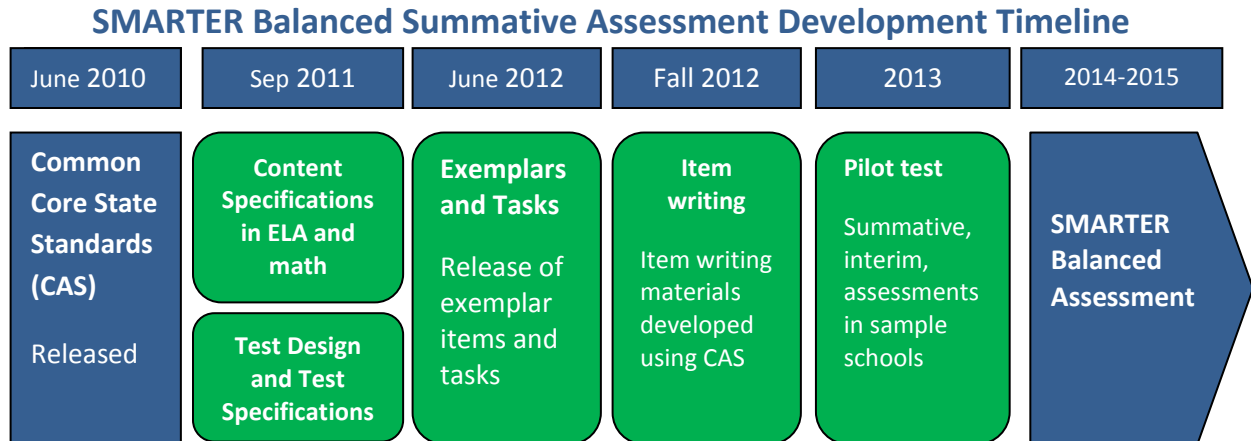


SMARTER Balanced Assessment 3rd Grade Mathematics

As 2015 approaches and we transition from Missouri's traditional MAP testing to the Smarter Balanced Assessments, many teachers and administrators have been asking for information. What is the implementation timeline? What kinds of items will be on the test? What do assessment items look like? How are the tests scored? How will technology be utilized? While not every detail is known, information is available.

First, an implementation time line:



From <http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/05/TaskItemSpecifications/ItemSpecifications/GeneralItemSpecifications.pdf>

Item Types

SBAC assessments are made up of four item types: Selected-Response, Constructed-Response, Technology-Enhanced, and Performance Task. A description of those items follows.

Selected-Response Items (SR)

Traditionally known as multiple choice, selected-response items include a stimulus and stem followed by three to five options from which a student is directed to choose only one.

Constructed-Response Items (CR)

The main purpose of a constructed-response item is to address targets and claims that are of greater complexity. They ask students to develop answers without suggested answer choices.

Technology-enhanced Items/Tasks (TE)

Technology-enhanced items can provide evidence for mathematics practices that could not be as reliably obtained from traditional SRs and CRs. Technology-enhanced items may stand alone or may be a tool used as part of the Performance Task and/or Constructed-Response items.

Performance Tasks (PT)

Performance tasks, the most complex of all items, include the following elements:

- Integrate knowledge and skills across multiple claims.
- Measure capacities such as depth of understanding, research skills, and/or complex analysis with relevant evidence.
- Require student-initiated planning, management of information/data and ideas, and/or interaction with other materials.
- Reflect a real-world task and/or scenario-based problem.

- Allow for multiple approaches.
- Represent content that is relevant and meaningful to students.
- Allow for demonstration of important knowledge and skills.
- Require scoring that focuses on the essence of the Claim(s) for which the task was written.
- Seem feasible for the school/classroom environment.

Claims

The Smarter Balanced summative assessments in mathematics are designed to measure the full range of student abilities in the Common Core State Standards or Core Academic Standards (CAS). Evidence will be gathered in support of four major claims: (1) Concepts and Procedures, (2) Problem Solving, (3) Communicating Reasoning, and (4) Modeling and Data Analysis. Students will receive an overall mathematics composite score. For the enhanced assessment, students will receive a score for each of three major claim areas. (Math claims 2 and 4 are combined for the purposes of score reporting.)

Claim 1 — Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.

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

Claim 3 — Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.

Claim 4 — Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

Glossary

Distracter: the incorrect response options to an SR item.

Distracter Analysis: the item writer’s analysis of the options or rationale for inclusion of specific options.

Item: the entire item, including the stimulus, question/prompt, answer/options, scoring criteria, and metadata.

Key: the correct response(s) to an item.

Options: the responses to a selected-response (SR) item from which the student selects one or more answers.

Scoring Rubric: the descriptions for each score point for an item/task that scores more than one point for a correct response.

Stem: the statement of the question or prompt to which the student responds.

Stimulus: the text, source (e.g., video clip), and/or graphic about which the item is written. The stimulus provides the context of the item/task to which the student must respond.

Task: similar to an item, yet typically more involved and usually associated with constructed-response, extended-response, and performance tasks.

Top-Score Response: one example of a complete and correct response to an item/task.

Additional information (including Scoring Rubrics) is available at:

<http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/03/DRAFTMathItemSpecsShowcase2.pdf>

<http://www.smarterbalanced.org/wordpress/wp-content/uploads/2012/05/TaskItemSpecifications/ItemSpecifications/GeneralItemSpecifications.pdf>

Additional Sample Items are available:

[3rd GRADE SAMPLE
ELA ITEMS](#)

[4th GRADE SAMPLE
ELA ITEMS](#)

[5th GRADE SAMPLE
ELA ITEMS](#)

[6th GRADE SAMPLE
ELA ITEMS](#)

[7th GRADE SAMPLE
ELA ITEMS](#)

[8th GRADE SAMPLE
ELA ITEMS](#)

[9th GRADE SAMPLE
ELA ITEMS](#)

[10th GRADE SAMPLE
ELA ITEMS](#)

[11th GRADE SAMPLE
ELA ITEMS](#)

[4th GRADE SAMPLE
MATHEMATICS ITEMS](#)

[5th GRADE SAMPLE
MATHEMATICS ITEMS](#)

[6th GRADE SAMPLE
MATHEMATICS ITEMS](#)

[7th GRADE SAMPLE
MATHEMATICS ITEMS](#)

[8th GRADE SAMPLE
MATHEMATICS ITEMS](#)

[HIGH SCHOOL SAMPLE
MATHEMATICS ITEMS](#)

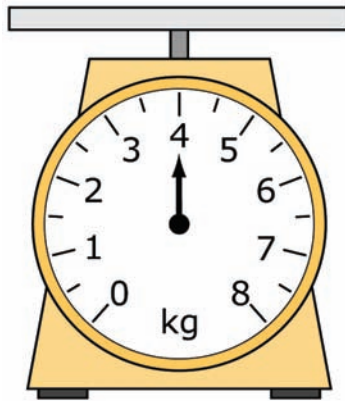
Grade 3 Mathematics Sample CR Item C1 T1



MAT.03.CR.1.000MD.G.277 C1 T1

Sample Item ID:	MAT.03.CR.1.000MD.G.277
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 G: Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
Content Domain:	Measurement and Data
Standard(s):	3.MD.2
Mathematical Practice(s):	1, 4, 5
DOK:	1
Item Type:	CR
Score Points:	1
Difficulty:	L
Key:	6
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	Response box will accept up to 4 numeric digits.

Ms. Clancy uses a backpack on a hiking trip. She took about 2 kg of food out of her backpack to make it lighter. The scale below shows how much the backpack weighed after she took out the food.



How much did the backpack weigh, in kg, before she took the food out?

kg

Grade 3 Mathematics Sample CR Item C1 T1

MAT.03.CR.1.0000A.A.230 C1 T1

Sample Item ID:	MAT.03.CR.1.0000A.A.230
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 A: Represent and solve problems involving multiplication and division. 1 E: Use place value understanding and properties of arithmetic to perform multi-digit arithmetic.
Content Domain:	Operations and Algebraic Thinking
Standard(s):	3.OA.2, 3.OA.7, 3.NBT.3
Mathematical Practice(s):	1
DOK:	1
Item Type:	CR
Score Points:	1
Difficulty:	L
Key:	6
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	The response box will only accept up to 3 digits.

Cali had 60 pounds of sand. The sand was measured equally into bags. Each bag held 10 pounds of sand. How many bags of sand did Cali have?

Bags

MAT.03.CR.1.0000A.D.234 C1 T1

Sample Item ID:	MAT.03.CR.1.0000A.D.234
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.
Content Domain:	Operations and Algebraic Thinking
Standard(s):	3.OA.8, 3.OA.5, 3.NBT.3
Mathematical Practice(s):	1, 2, 6
DOK:	2
Item Type:	CR
Score Points:	1
Difficulty:	M
Key:	80
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	Response box will accept up to 4 numeric digits.

A roller skating team has 10 members. Each team member has 2 skates. Each skate has 4 wheels.

What is the total number of skate wheels that the team has?

wheels

Key and Rationale:

80 (10 x 2 x 4)

Grade 3 Mathematics Sample ER Item Claim 2



MAT.03.CR.2.00NBT.D.219 Claim 2

Sample Item ID:	MAT.03.CR.2.00NBT.D.219
Grade:	03
Primary Claim:	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.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Number and Operations in Base Ten
Secondary Content Domain(s):	
Assessment Target(s):	2 D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). 1 E: Use place value understanding and properties of operations to perform multi-digit arithmetic.
Standard(s):	3.NBT.2
Mathematical Practice(s):	1, 2, 6
DOK:	2, 3
Item Type:	CR
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	Response boxes will accept up to 4 numeric digits.

The digits in a three-digit number represent the amounts of hundreds, tens, and ones. Fill in the chart to show the amounts of hundreds, tens, and ones in the number 523.

Number	Hundreds	Tens	Ones
523			

In the box below, write a number that meets the following conditions.

- The number must be between 1 and 9.
- When the number is subtracted from 523, the digit in the ones place of the difference is **greater** than the ones place of 523.

Sample Top-Score Response:

Number	Hundreds	Tens	Ones
523	5	2	3

4, 5, 6, 7, 8, or 9

Scoring Rubric:

Responses to this item will receive 0–2 points based on the following:

- 2 points:** The student demonstrates thorough understanding of subtracting numbers using place value by naming each place value correctly in the chart and writing the number in the ones place of the difference that is greater than 3.
- 1 point:** The student demonstrates a partial understanding of subtracting numbers using place value by either naming each value of 523 correctly in the chart or by writing the number in the ones place of the difference that is greater than 3.
- 0 points:** The student demonstrates inconsistent or no understanding place value and of subtracting numbers using place value and place value when solving multi-digit arithmetic.

MAT.03.ER.1.0000A.D.567 C1 T1

Sample Item ID:	MAT.03.ER.1.0000A.D.567
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.
Content Domain:	Operations and Algebraic Thinking
Standard(s):	3.OA.8
Mathematical Practice(s):	1, 2, 4, 7
DOK:	1
Item Type:	ER
Score Points:	1
Difficulty:	H
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	The response box accepts a maximum of 3 numeric characters.

Brandon learned that, beginning at age 2, children grow about 6 centimeters per year. Brandon's brother is 2 years old today and 80 centimeters tall.

Brandon wants to estimate what his brother's height would be at age 7. Use pictures, math, or words to explain the work needed to find his brother's height.

Brother's height at age 7 will be about centimeters.

Sample Top-Score Response:

Brandon multiplied 5 times 6 to find the number of centimeters his brother grew in 5 years. $5 \times 6 = 30$.

Then he added 30 to his current height, 80. $30 + 80 = 110$.

Brother's height at age 7 will be about **110** centimeters.

OR

Brandon started with his brother's current height, 80, and added 6 centimeters for every year until Brandon's brother reached age 7.

Age 2	Age 3	Age 4	Age 5	Age 6	Age 7
80	86	92	98	104	110

Brother's height at age 7 will be about **110** centimeters.

Scoring Rubric:

Responses to this item will receive 0–2 points, based on the following:

2 points: The student shows thorough understanding of explaining patterns in arithmetic by finding Brandon's brother's height at age 7 and showing work that supports the answer. Supporting work can either be a pattern, multiple additions of 6, or combining multiplication (5×6) and addition ($30 + 80$).

Note: If a student gives an answer of 116 cm, it is acceptable for full credit if an explanation includes that Brandon's brother grows another 6 cm before the age of 8.

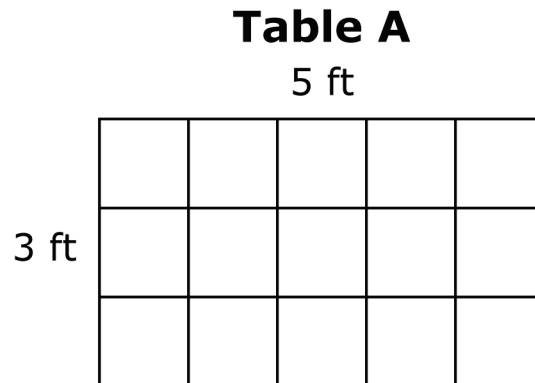
1 point: The student shows some understanding of explaining patterns in arithmetic by finding Brandon's brother's height at age 7, but the supporting work is incomplete or missing. **OR** The student is able to demonstrate a strategy that would result in a correct height but makes an error in completing the work.

0 points: The student shows limited or no understanding of explaining patterns in arithmetic and is not successful in completing any part of the item.

MAT.03.ER.2.000MD.A.024 Claim 2

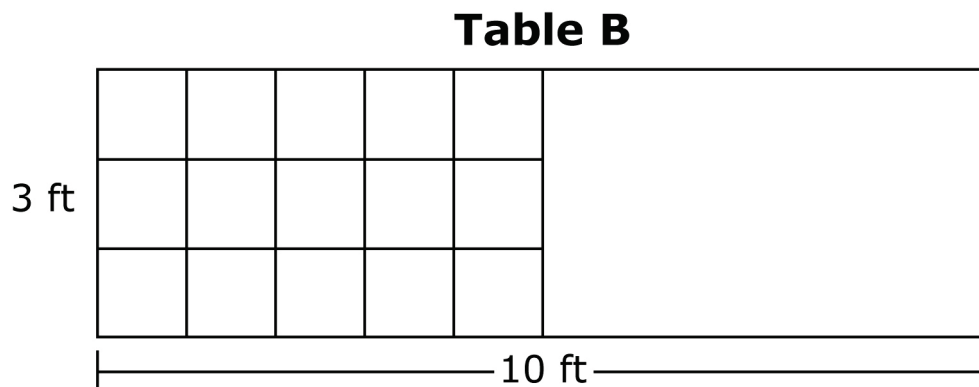
Sample Item ID:	MAT.03.ER.2.000MD.A.024
Grade:	03
Primary Claim:	Claim 2: Problem Solving Students can solve a range of well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Measurement and Data
Secondary Content Domain(s):	
Assessment Target(s):	2 A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. 1 I: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Standard(s):	3.MD.7
Mathematical Practice(s):	1, 2, 4, 6
DOK:	3
Item Type:	ER
Score Points:	4
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	Part of PT set

The top of Table A is a rectangle that is 5 feet long and 3 feet wide.



What is the area of Table A? _____ square feet

Table B is larger than Table A. Table B is also 3 ft wide, but it's 10 feet long.



Using what you already know about the area of Table A, show one way to find the area of Table B. You may use words and/or mathematical expressions/equations.

Another table, Table C, is added to Table B. The total area of these two tables is 54 square feet.

What could be the length and width of Table C?

Length: _____ feet

Width: _____ feet

Show how you got your answer. You may use drawings, mathematical expressions/equations, and words.

Sample Top-score Response:

15

$2(3 \times 5)$; $2 \times 3 + 2 \times 5$; 2×15 ; 10×3 (NOTE: words are also acceptable)

24×1 ; 12×2 ; 8×3 ; 6×4

I subtracted $54 - 30$ and got 24. Then I found a length and width that multiplied to be 24.

Scoring Rubric:

Responses to this item will receive 0–4 points, based on the following:

4 points: The student shows thorough understanding of concepts of area and relates area to multiplication and to addition by doing the following:

- Writes 15
- Writes one way to find the area of Table B
- Writes a length and width for Table C
- Shows a strategy that explains how the length and width were calculated.

3 points: The student shows understanding of concepts of area and relates area to multiplication and to addition by doing 3 of the following OR makes one calculation error and follows through.

- Writes 15
- Writes one way to find the area of Table B
- Writes a length and width for Table C
- Shows a strategy that explains how the length and width were calculated.

2 points: The student shows partial understanding of concepts of area and relates area to multiplication and to addition by doing 2 of the following OR makes two calculation errors with follow through.

- Writes 15
- Writes one way to find the area of Table B
- Writes a length and width for Table C
- Shows a strategy that explains how the length and width were calculated.

1 point: The student shows limited understanding of concepts of area and relates area to multiplication and to addition by doing 1 of the following OR makes more than two calculation errors but shows a strategy that could lead to a correct answer.

- Writes 15
- Writes one way to find the area of Table B
- Writes a length and width for Table C
- Shows a strategy that explains how the length and width were calculated.

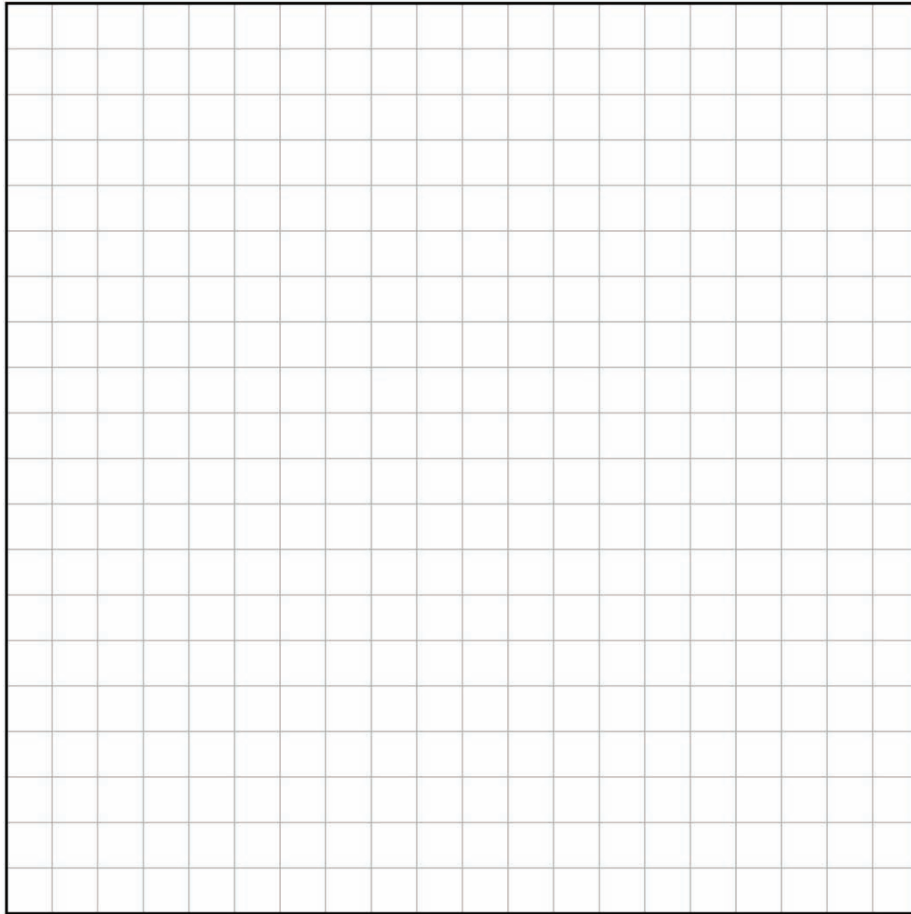
0 points: Shows little or no understanding of concepts of area and relates area to multiplication and to addition.

MAT.03.ER.2.000MD.C.022 Claim 2

Sample Item ID:	MAT.03.ER.2.000MD.C.022
Grade:	03
Primary Claim:	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.
Secondary Claim(s):	<p>Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.</p> <p>Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.</p>
Primary Content Domain:	Measurement and Data
Secondary Content Domain(s):	Operations and Algebra
Assessment Target(s):	<p>2C: Interpret results in the context of a situation.</p> <p>2D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).</p> <p>3A: Test propositions or conjectures with specific examples.</p> <p>3F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions.</p> <p>2A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <p>1J: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.</p> <p>1D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.</p>
Standard(s):	3.MD.7, 3.OA.8
Mathematical Practice(s):	1, 2, 4, 6
DOK:	3
Item Type:	ER
Score Points:	4
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	Part of PT set

Jasper used the expression $5 \times (10 + 3)$ to find the area of a rectangular closet floor, in square feet.

On the grid, draw a rectangle that Jasper could have measured.



What is the area of the closet floor? _____ square feet

Jasper has 200 square feet of tile. He will use some of the tile to cover the closet floor. He will only use whole tiles.

How many square feet of tile will Jasper have left after covering the closet floor with tile?

_____ square feet

Jasper wants to use some of the remaining tile to cover the floor of a kitchen. The kitchen is 12 feet long and 12 feet wide.

Does Jasper have enough tiles to cover the kitchen floor? Circle your answer.

Yes

No

Show how you got your answer. You may use drawings, mathematical expressions/equations, and words.

Sample Top-Score Response:

Draws a 5x13 rectangle

65

135

11

No

He only has 135 square feet of tile. $12 \times 12 = 144$, this is more than 135.

Scoring Rubric:

Responses to this item will receive 0–4 points, based on the following:

4 points: The student shows thorough understanding of solving word problems involving the concepts of area by doing the following:

- Draws a 5x13 rectangle
- Writes 65
- Writes 135
- Writes 11
- Circles "No" (or if not responding here, states no in the work that follows)
- Shows work that leads to the answer that Jasper does not have enough tile (or that he needs more)

Grade 3 Mathematics Sample ER Item Claim 2

3 points: The student shows understanding of solving word problems involving the concepts of area by doing 4 or 5 of the following **OR** makes one calculation error with supporting follow-through.

- Draws a 5x13 rectangle
- Writes 65
- Writes 135
- Writes 11
- Circles "No"
- Shows work that could lead to the answer that Jasper does not have enough tile (or that he needs more)

2 points: The student shows partial understanding of solving word problems involving the concepts of area by doing 3 of the following **OR** makes two calculation errors with follow-through.

- Draws a 5x13 rectangle
- Writes 65
- Writes 135
- Writes 11
- Circles "No"
- Shows work that could lead to the answer that Jasper does not have enough tile (or that he needs more)

1 point: The student shows limited understanding of solving word problems involving the concepts of area by doing 2 of the following **OR** makes more than two calculation errors but shows a strategy that could lead to a correct answer.

- Draws a 5x13 rectangle
- Writes 65
- Writes 135
- Writes 11
- Circles "No"
- Shows work that could lead to the answer that Jasper does not have enough tile (or that he needs more)

0 points: The student shows inconsistent or little or no understanding of solving word problems involving the concepts of area.

MAT.03.ER.3.000MD.E.606 Claim 3

Sample Item ID:	MAT.03.ER.3.000MD.E.606
Grade:	03
Primary Claim:	Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Measurement and Data
Secondary Content Domain(s):	
Assessment Target(s):	3 E: Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is. 1 I: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
Standard(s):	3.MD.5, 3.MD.6, 3.MD.8
Mathematical Practice(s):	1, 2, 3, 4, 6, 7
DOK:	2
Item Type:	ER
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	Part of PT set

Look at Figure Q and Figure R below.

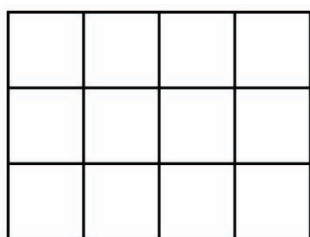


Figure Q

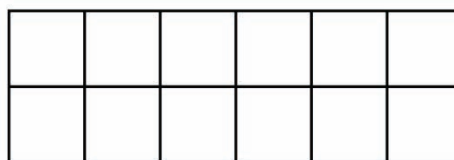


Figure R

 = 1 square centimeter

Mia said Figure Q and Figure R have equal areas and equal perimeters. She supported her thinking by saying that any two figures made of an equal number of unit squares always have equal areas and equal perimeters.

Is Mia correct? In the space below, use pictures, numbers, and words to explain why or why not.

Sample Top-Score Response:

No

Only the areas of the two figures are equal. Both figures have an area of 12 square units. The perimeters of the figures are not equal. Figure Q has a perimeter of 14 centimeters, but Figure R has a perimeter of 16 centimeters. Any two figures with an equal number of unit squares have to have equal areas but not equal perimeters.

Scoring Rubric:

Responses to this item will receive 0–2 points, based on the following:

2 points: The student demonstrates thorough understanding of distinguishing and explaining reasoning from that which is flawed and exhibits rectangles with the same areas and different perimeters by recognizing that Mia’s reasoning is incorrect and identifying the correct perimeters of both figures and providing a complete explanation.

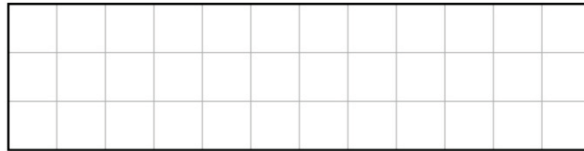
1 point: The student demonstrates partial understanding of distinguishing and explaining reasoning from that which is flawed and exhibits rectangles with the same areas and different perimeters by recognizing that Mia’s reasoning is incorrect, but provides a partial explanation about the perimeters and areas of both figures. OR The student answers Yes and thinks Mia is correct, but provides a complete explanation with the incorrect answer.

0 points: The student shows little or no understanding of distinguishing and explaining correct reasoning from that which is flawed. The student does not recognize that rectangles can have equal areas, but different perimeters.

MAT.03.ER.3.000MD.F.602 Claim 3

Sample Item ID:	MAT.03.ER.3.000MD.F.602
Grade:	03
Primary Claim:	Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	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 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Measurement and Data
Secondary Content Domain(s):	Number and Operations in Base Ten, Operations and Algebraic Thinking
Assessment Target(s):	3F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions. 2A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. 2D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). 1J: Geometric measurement: recognizing perimeter as an attribute of plane figures and distinguish between linear and area measures.
Standard(s):	3.MD.08, 3.MD.7, 3.OA.8, 3.NBT.2
Mathematical Practice(s):	1, 2, 3, 4, 5, 6
DOK:	3
Item Type:	ER
Score Points:	3
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	Part of PT set

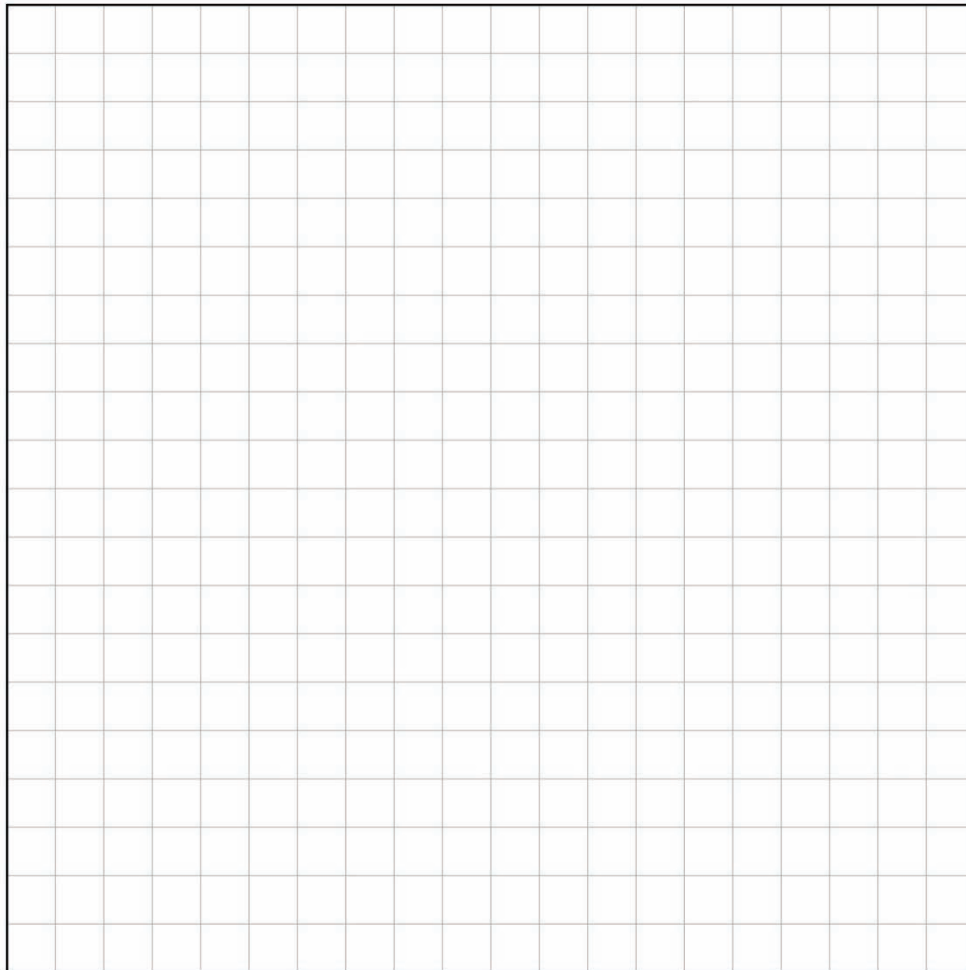
Ms. Flinn has a garden that is 12 feet long and 3 feet wide.



What is the area of Ms. Flinn's garden? _____ square feet

She wants to make another garden that has the same area, but a different perimeter.

Use the grid to show a rectangle that has the same area, but a different perimeter than Ms. Flinn's garden.



What are the length, width, and perimeter of the rectangle you drew?

Length = _____ feet

Width = _____ feet

Perimeter = _____ feet

Show how you know the two gardens have the same area using pictures, words, and/or numbers.

Sample Top-Score Response:

36 square feet

Draws a rectangle on the grid that has an area of 36 square feet, but a perimeter that is different from 30 feet (1x36, 2x18, 4x9, 6x6)

Writes the correct length, width, and perimeter (74, 40, 26, 24)

I counted the squares inside the first rectangle garden and there were 36. I counted the squares in the garden I drew and there were 36.

Scoring Rubric:

Responses to this item will receive 0–3 points, based on the following:

3 points: The student demonstrates thorough understanding of solving word problems involving the concepts of area by writing 36 as the area of the garden, drawing a rectangle with an area of 36 square feet with a different perimeter than 30, writing corresponding length, width, and perimeter of the new rectangle and showing how the two gardens have the same area.

2 points: The student demonstrates understanding of solving word problems involving the concepts of area by writing 30 as the area of the garden, drawing a rectangle with an perimeter of 30 feet that is not 12×3 , writing corresponding length, width, and perimeter of the new rectangle and showing how the two gardens have the same area OR writing 36 as the area of the garden, drawing a rectangle with an area of 36 square feet, writing corresponding length, width, and perimeter of the new rectangle but not showing how the two gardens have the same area OR writing 36 as the area of the garden, drawing a rectangle with an area of 36 square feet, writing corresponding length, width, and perimeter of the new rectangle (with one error in notation) and showing how the two gardens have the same area OR writing a number other than 36 as the area of the garden, drawing a rectangle with an area of the number of square feet written, writing corresponding length, width, and perimeter of the new rectangle and showing how the two gardens have the same area.

1 point: The student demonstrates partial understanding of solving word problems involving the concepts of area writing 36 as the area of the garden OR drawing a rectangle with an area of the number of square feet written and writing corresponding length, width, and perimeter of the new rectangle.

0 points: The student shows little or no understanding of solving word problems involving the concepts of area.

Grade 3 Mathematics Sample ER Item Claim 3

MAT.03.ER.3.000NF.B.229 Claim 3

Sample Item ID:	MAT.03.ER.3.000NF.B.229
Grade:	03
Primary Claim:	Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Number and Operations—Fractions
Secondary Content Domain(s):	Geometry
Assessment Target(s):	3 B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. 1 F: Develop understandings of fractions as numbers. 1 K: Reason with shapes and their attributes.
Standard(s):	3.NF.3, 3.G.2
Mathematical Practice(s):	3, 6
DOK:	3
Item Type:	ER
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., Accessibility Issues):	
Notes:	Part of a PT set

Rectangle F is divided into 4 equal areas, as shown.



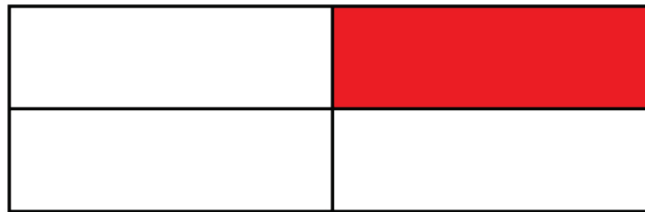
Rectangle F

Part A

What fraction is represented by the shaded area of Rectangle F?



Rectangle G is divided into 4 equal areas, as shown.



Rectangle G

Part B

What fraction is represented by the shaded area of Rectangle G?

**Part C**

Is the shaded area of Rectangle F equal to the shaded area of Rectangle G? Explain your thinking. Use what you know about the **area** of Rectangle F and Rectangle G to explain.

Sample Top-Score Response:

Part A: $\frac{1}{4}$

Part B: $\frac{1}{4}$

Part C: The areas are different. Rectangle F and Rectangle G are not the same whole. Also, the area noted by the red-shaded area of Rectangle G is greater than the area of Rectangle F.

Scoring Rubric:

Responses to this item will receive 0–2 points, based on the following:

2 points: The student demonstrates partial understanding of explaining fractions as numbers and reasoning with shapes and their attributes to support their own reasoning by expressing the area of the shaded region of Rectangle F and Rectangle G each as $\frac{1}{4}$ the area of the given rectangle and giving a complete explanation about why the shaded areas of the two rectangles are not equal.

1 point: The student demonstrates limited understanding of explaining fractions as numbers and reasoning with shapes and their attributes to support their own reasoning by expressing the area of the shaded region of Rectangle F and Rectangle G each as $\frac{1}{4}$ the area of the given rectangle and giving a partial or incomplete explanation about why the shaded areas of the two rectangles are not equal.

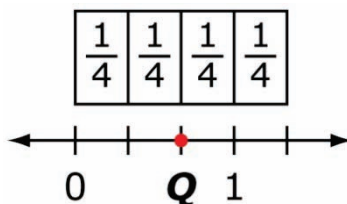
0 points: The student shows little or no understanding of explaining fractions as numbers and reasoning with shapes and their attributes to support their own reasoning by not expressing the area of the shaded region of Rectangle F and Rectangle G each as $\frac{1}{4}$ the area of the given rectangle and not providing an explanation about why the shaded areas of the two rectangles are not equal. OR The student states that the areas of the two shaded regions are equal.

Grade 3 Mathematics Sample ER Item Claim 3

MAT.03.ER.3.000NF.E.216 Claim 3

Sample Item ID:	MAT.03.ER.3.000NF.E.216
Grade:	03
Primary Claim:	Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Number and Operations—Fractions
Secondary Content Domain(s):	
Assessment Target(s):	3 E: Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. 1 F: Develop understanding of fractions as numbers.
Standard(s):	03.NF.2
Mathematical Practice(s):	1, 2, 4, 5
DOK:	3, 6
Item Type:	ER
Score Points:	2
Difficulty:	L
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	

Eva thinks that Q shows $\frac{2}{4}$ on the number line. Eva labeled the number line with unit fractions to show how she determined her answer.



Is Eva's drawing correct? Explain your reasoning using words, numbers, and/or pictures.

Sample Top-Score Response:

Eva's drawing is not correct. The point that is represented on the number line is $\frac{2}{3}$.

$\frac{2}{4}$ would be represented on a number-line diagram by marking off 2 lengths, each of

length $\frac{1}{4}$ from 0. As shown, the endpoint would be $\frac{2}{3}$ because the intervals are in thirds.

Scoring Rubric:

Responses to this item will receive 0–2 points based on the following:

2 points: The student shows thorough communication of distinguishing correct reasoning from that which is flawed by giving a clear explanation using words, numbers, and/or pictures of fractions and their representation on the number line.

1 point: The student shows partial communication of distinguishing correct reasoning from that which is flawed by giving a partial or incomplete explanation that may not clearly explain fractions and their representation on the number line.

0 points: The student demonstrates little or no communication of distinguishing correct reasoning from that which is flawed on the number line and representation of the fraction.

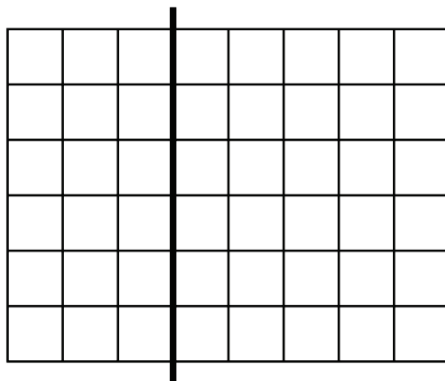
Grade 3 Mathematics Sample ER Item Claim 3



MAT.03.ER.3.0000A.B.235 Claim 3

Sample Item ID:	MAT.03.ER.3.0000A.B.235
Grade:	03
Primary Claim:	Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Operations and Algebraic Thinking
Secondary Content Domain(s):	
Assessment Target(s):	3 B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. 1 I: Understand concepts of area and relates area to multiplication and to addition.
Standard(s):	3.OA.9
Mathematical Practice(s):	1, 2, 3, 4, 6, 7
DOK:	2
Item Type:	ER
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	
Notes:	Part of PT set

The large rectangle below is divided into 2 smaller rectangles by a thick black line.



Use words, numbers, and/or pictures to show that the sum of the areas of the two smaller rectangles is equal to the area of the large rectangle.

Sample Top-Score Response:

$6 \times 3 = 18$ and $6 \times 5 = 30$. If I count up all the squares in the large rectangle I get 48, which is $18 + 30$.

Scoring Rubric:

Responses to this item will receive 0–2 points, based on the following:

2 points: The student shows thorough understanding of patterns in arithmetic by relating multiplication to addition while finding areas of rectangles. The student clearly and precisely constructs viable arguments to support reasoning, completely explaining that the sum of the areas of the two smaller rectangles is equal to the area of the large rectangle.

- 1 point:** The student shows partial understanding of patterns in arithmetic by relating multiplication to addition while finding areas of rectangles. The student does not provide a complete explanation (i.e., shows the areas of the two smaller rectangles but does not relate it to the large rectangle; shows the area of the large rectangle but does not relate it to the sum of the areas of the two smaller rectangles; or makes an error in calculation).
- 0 points:** The student shows inconsistent or no understanding of explaining patterns in arithmetic by relating the three expressions of the areas of the rectangles and clearly and precisely constructing viable arguments to support reasoning.

MAT.03.PT.4.TOOLK.A.411 Claim 4

Sample Item ID:	MAT.03.PT.4.TOOLK.A.411
Title:	Classroom Tool Kits
Grade:	03
Primary Claim:	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.
Secondary Claim(s):	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 1: Concepts and Procedures Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Primary Content Domain	Number and Operations
Secondary Content Domain(s):	Measurement and Data
Assessment Target(s):	4 A: Apply mathematics to solve problems arising in everyday life, society, and the workplace. 4 D: Interpret results in the context of a situation. 3 A: Test propositions or conjectures with specific examples. 3 B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. 1 D: Solve problems involving the four operations, and identify and explain patterns in arithmetic 1 E: Use place value understanding and properties of operations to perform multi-digit arithmetic. 1 H: Represent and interpret data.
Standard(s):	3.OA.8, 3.NBT.3, 3.MD.3
Mathematical Practice(s):	1, 2, 3, 6, 7
DOK:	3
Item Type:	PT
Score Points:	12
Difficulty:	M
How this task addresses the “sufficient evidence” for this claim:	Students are asked to gather and organize data, graph the data, and use the data to solve real-world scenarios. Students will use this information from graphs to justify a conclusion.
Target-Specific Attributes (e.g., accessibility issues):	
Stimulus/Source:	Custom Created List of Tools
Notes:	Multi-part performance task; requires some TE components as part of the task.
Task Overview:	Students collect and analyze data in order to determine total

	cost of school-wide tool kits in comparison to budgets.
Teacher preparation / Resource requirements:	Teacher creates survey for students to conduct and assists students in creating table/tally chart of survey results.
Teacher Responsibilities During Administration:	Monitor individual student work
Time Requirements:	80-100 minutes

Prework: Students are to conduct a survey of the top 5 out of 7 items to include in a math tool kit and to include in a science tool kit. Students are to hand out the survey (below) to each classroom teacher at their campus by either delivering the survey to the classroom or by placing the survey in the teacher’s mailbox in the office. Teachers should be asked to return the survey within two days after receipt. Once all (or most) of the teacher surveys are returned, the class, with teacher assistance, will create a tally chart that shows the number of teachers that selected each of the 7 math tools and the number of teachers that selected each of the 7 science tools. An example of the tally chart for math tools is shown in *Part A*, and an example of the tally chart for science tools is shown in *Part B*. These charts must be completed prior to the start of Session 1.

Teacher Survey

Directions: For each tool kit, circle the top five tools, based on usefulness for the class, that you believe should be in each teacher’s tool kit.

Please return your survey to _____ by _____.

Math Tool Kit	Science Tool Kit
Clock	Thermometers
Place Value Blocks	Beakers
Calculator	Safety Goggles
Pattern Blocks	Tape Measure
Fraction Set	Magnets
Coins	Magnifying Lens
Tangrams	Compass

Tool Kits

Session 1

The teachers at your school have just completed the survey you sent to them about the tools they would like in a math and a science tool kit.

Part A

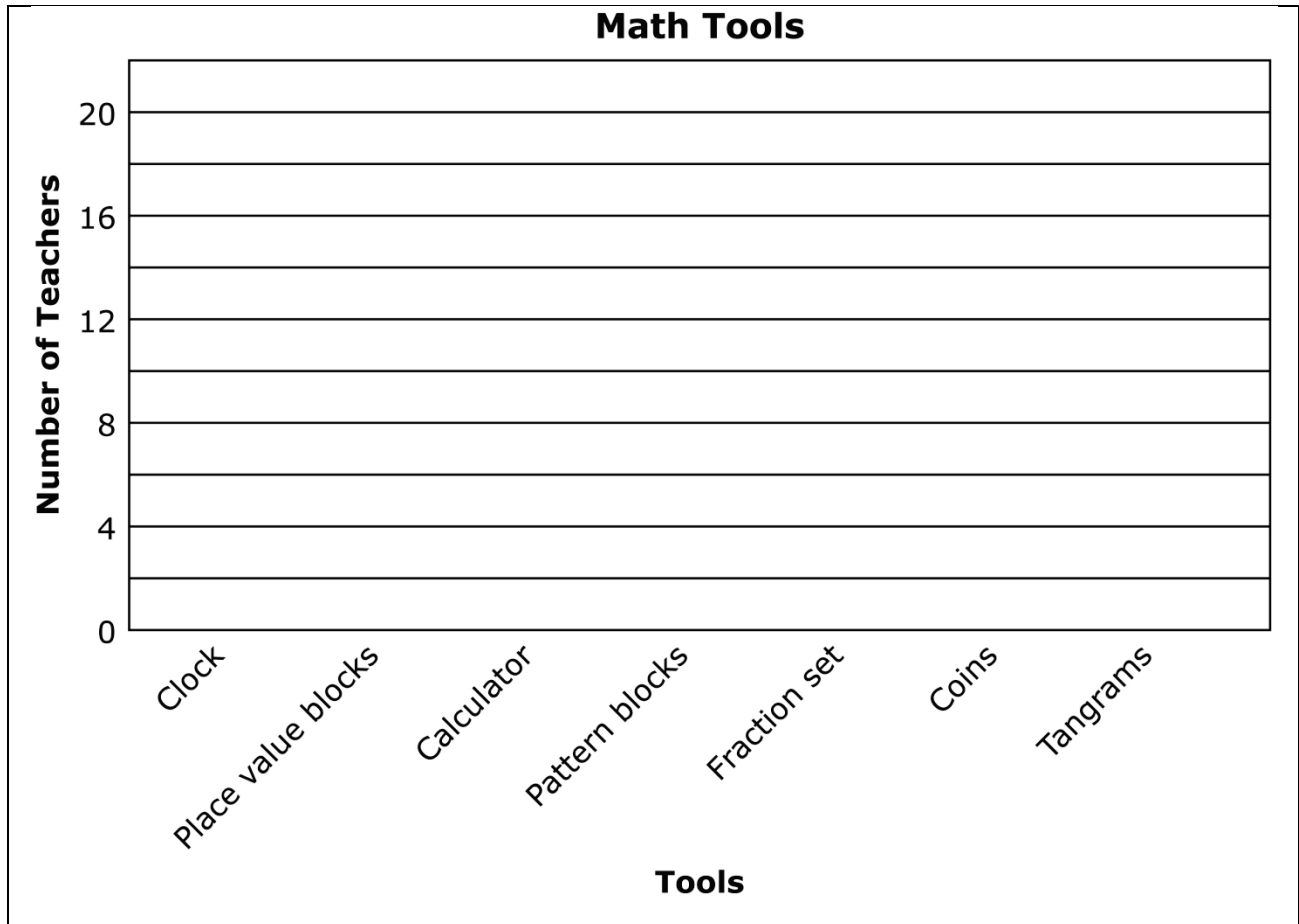
Use the Math Tools Survey Results to answer questions in *Part A* of this task.

Math Tools Survey Results

Math Tools	Tally Marks
Clock	
Place Value Blocks	
Calculator	
Pattern Block	
Fraction Set	
Coins	
Tangrams	

[Note: This tally chart is blank. A completed chart, based on the survey results from your school, must be made available to all students in order to complete their task. Both of the charts (math and science) can be combined on one sheet of paper and distributed to students prior to the start of Session 1. If too few results are obtained, please proportionally increase the numbers so it appears that at least 10 teachers responded.]

Refer to the math tools tally chart to complete the bar graph below.



Use the information from your bar graph to answer the questions below.

1. Which math tool received the most number of votes?

2. Which math tool received the least number of votes?

3. What is the difference between the math tool that received the most number of votes and the math tool that received the least number of votes?

Part B

Use the Science Tools Survey Results to answer questions in *Part B* of this task.

Science Tools Survey Results


Science Tools	Tally Marks
Thermometers	
Beakers	
Safety Goggles	
Tape Measure	
Magnets	
Magnifying Lens	
Compass	

[Note: This tally chart is blank. A completed chart, based on the survey results from your school, must be made available to all students in order to complete their task. Both of the charts (math and science) can be combined on one sheet of paper and distributed to students prior to the start of Session 1.]

Refer to the science tools tally chart to complete the picture graph below.

Science Tools


Thermometers	
Beakers	
Safety Goggles	
Tape Measure	
Magnets	
Magnifying Lens	
Compass	


Each  means 2 teachers

Use the information from your picture graph to answer the questions below.

4. Which two tools received the most number of votes?

5. What is the total number of votes these two tools received?

The key for the picture graph has changed to:
"Each  means 4 teachers".

6. Using the new key, how many  s are needed to fill in the chart for the tool selected by the greatest number of teachers?



End of Session 1

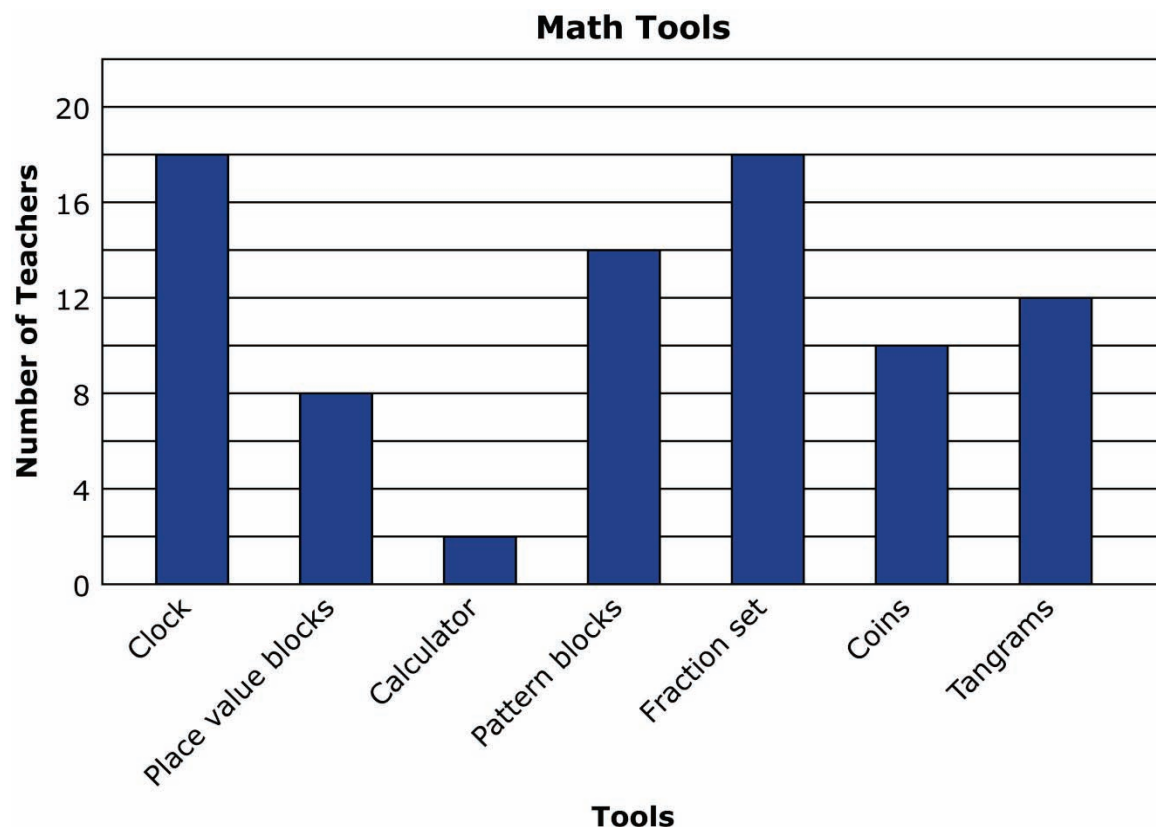
You will not be able to go back to **Part A** or **Part B** after this session.

Session 2

In Session 1, you worked with the survey results from your school. In this session, you will work with the results from Clearwater Elementary School.

Part C

Below is a bar graph that shows the results of the survey from Clearwater Elementary School.



Using this bar graph, select the five math tools in the table below that received the most number of votes.

[TE interaction: As a student clicks on a tool, the tool will be highlighted.]

Math Tools

Tools	Costs
Clock	\$4
Place Value Blocks	\$10
Calculator	\$8
Pattern Blocks	\$4
Fraction Set	\$2
Coins	\$2
Tangrams	\$1

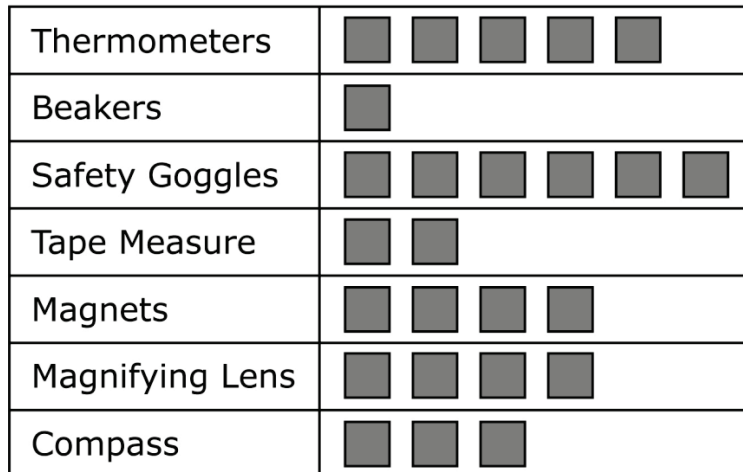
A math tool kit contains 10 each of the top 5 tools.


What is the total cost of 1 math tool kit?

\$

Below is a picture graph that shows the results of the survey from Clearwater Elementary School.

Science Tools



Each  means 2 teachers

Using this graph, select the five science tools in the table below that received the most number of votes.

[TE interaction: As a student clicks on a tool, the tool will be highlighted.]

Science Tools

Tools	Costs
Thermometers	\$2
Beakers	\$4
Safety Goggles	\$6
Tape Measure	\$4 for 5 tape measures
Magnets	\$1
Magnifying Lens	\$1
Compass	\$2

A science tool kit contains 10 each of the top 5 tools.

What is the total cost of 1 science tool kit?

\$

Part D

Look at the costs above for each tool kit. What is the total cost of 4 math tool kits and 4 science tool kits?

\$

The principal at Clearwater Elementary can spend up to \$750 to purchase 4 math tool kits and 4 science tool kits.

Is \$750 enough money to purchase 4 math tool kits and 4 science tool kits for the school? Click on your answer.

Yes

No

[Technology interaction: If the student clicks "Yes", the next question for the student will be the following: "You responded that the principal has enough money to purchase 4 math tool kits and 4 science tool kits. How much money is left over after he purchases the tool kits? Be sure to show the work needed to support your answer."]

[Technology interaction: If the student clicks "No", the next question for the student will be the following: "You responded that the principal does not have enough money to purchase 4 math tool kits and 4 science tool kits. How much more money does he need to purchase the tool kits? Be sure to show the work needed to support your answer."]

End of Session 2

Sample Top-Score Response:

Part A

Students should have created a bar graph to represent the information from the math tools survey results chart.

1. This answer should match the highest bar on the graph the student created.
2. This answer should match the lowest bar on the graph the student created.
3. This answer should show that students understand they need to compare the most and least math tools to solve for a difference, according to the graph they created.

Part B

Students should have created a picture graph to represent the information from the science tools survey results chart.

4. This answer should name the top two science tools according to the graph the students created.
5. This answer should show the sum of the top two science tools according to the graph the students created.
6. This answer should show that students divided the value of the top science tool by 4 and identified the number of blocks and partial blocks required. The answer may require partial blocks.

Part C

The student should select *clock, pattern blocks, fraction set, coins, and tangrams*.

Cost of 1 math tool kit \$130

The student should select *thermometers, safety goggles, magnets, magnifying lens, and compass*.

Cost of 1 science tool kit \$120

Part D

The total cost of 4 math tool kits and 4 science tool kits is \$1000.

Students should click on *no*.

Below is an explanation using numbers:

$$130 + 130 + 130 + 130 = 520$$

$$120 + 120 + 120 + 120 = 480$$

$$520 + 480 = 1000$$

$$1000 > 750$$

Grade 3 Mathematics Sample PT Form Claim 4

Below is an explanation using words:

I added 130 four times to get a total for the 4 math kits. That total is 520. Then I added 120 four times to get a total for the 4 science kits. That total is 480. I added 520 and 480 to find the total of 4 math kits and 4 science kits. That total is 1000. I know that 1000 is greater than 750, so I know the principal did not have enough money in the budget.

OR

I multiplied 130×4 to find the total of 4 math kits. That total is 520. Then I multiplied 120×4 to find the total of 4 science kits. That total is 480. I added 520 and 480 and got a total of 1000. I know that 1000 is greater than 750, so I know the principal did not have enough money in the budget.

The principal needs \$250 more.

Scoring Rubric:

Responses to this item will receive 0–11 points, based on the following:

Part A

3 points: The student demonstrates thorough understanding of how to draw a bar graph and use the information to answer questions about the graph. The student draws the correct graph using the information provided and answers all questions correctly.

2 points: The student demonstrates partial understanding of how to draw a bar graph and use the information to answer questions about the graph. The student draws the correct graph and answers one or two questions correctly, but not all three. **OR** The student makes an error in the graph, but answers the questions according to the error made in the graph.

1 point: The student demonstrates limited understanding of how to draw a bar graph and use the information to answer questions about the graph. The student draws the correct graph but does not answer the questions correctly or makes more than one error in the graph and completes one or two questions correctly, based on the error made in the graph.

0 points: The student demonstrates inconsistent or no understanding of how to draw a bar graph and use the information to answer questions about the graph.

Part B

4 points: The student demonstrates thorough understanding of how to draw a picture graph and use the information to answer questions about the graph. The student draws the correct graph using the information provided and answers all questions correctly.

3 points: The student demonstrates good understanding of how to draw a picture graph and use the information to answer questions about the graph. The student draws the correct graph and answers one of the two questions correctly.

2 points: The student demonstrates partial understanding of how to draw a picture graph and use the information to answer questions about the graph. The student draws the correct graph, but is unable to answer either question correctly. **OR** The student does not take into account the scale of 2 teachers per box, but answers the questions according to the error made in the scale.

1 point: The student demonstrates limited understanding of how to draw a picture graph and use the information to answer questions about the graph. The response contains several errors, but some understanding is shown (e.g., most of the graph is correct, answers match incorrect graph, etc.).

0 points: The student demonstrates inconsistent or no understanding of how to draw a picture graph and use the information to answer questions about the graph.

Part C

2 points: The student demonstrates understanding of how to use a bar graph and picture graph to answer questions about the graphs and how to use the four operations to calculate the total cost of a tool kit. The student correctly identifies the top-five tools for both the math tool kit and science tool kit. The student also correctly calculates the cost of one math tool kit and one science tool kit.

1 point: The student demonstrates partial understanding of how to use a bar graph and picture graph to answer questions about the graphs and how to use the four operations to calculate the total cost of a tool kit. The student correctly identifies the top-five tools for either the math tool kit or science tool kit. The student also correctly calculates the cost of either one math tool kit or one science tool kit.

0 points: The student demonstrates inconsistent or no understanding of how to use a bar graph and picture graph to answer questions about the graphs and how to use the four operations to calculate the total cost of a tool kit.

Part D

3 points: The student demonstrates thorough understanding of how to use the four operations to calculate the total for the required number of tool kits, determine whether the principal has sufficient money and justifies that decision, and to determine how much more money the principal requires.

2 points: The student demonstrates partial understanding of how to use the four operations to calculate the total for the required number of tool kits, determine whether the principal has sufficient money and justifies that decision, and to determine how much more money the principal requires. The student calculates the correct total cost and makes an incorrect judgment. **OR** The student calculates the incorrect total cost, makes a judgment based on the incorrect cost, and provides sufficient justification.

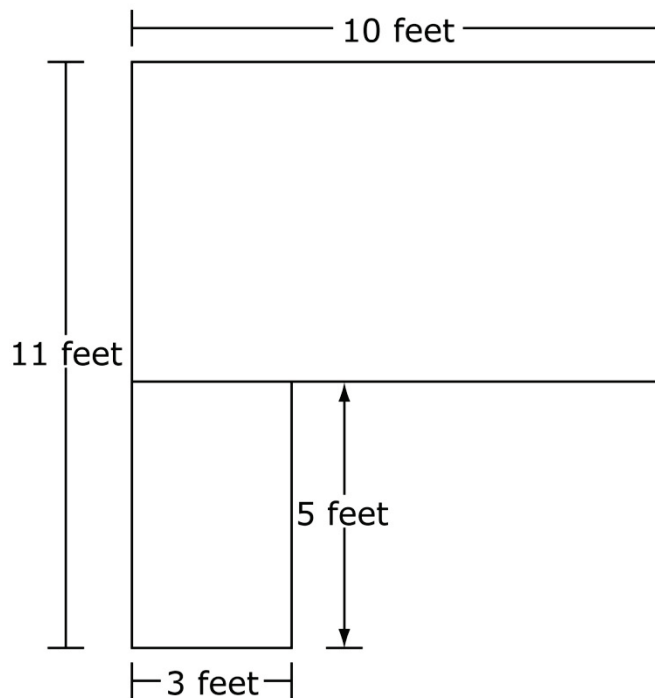
1 point: The student demonstrates limited understanding of how to use the four operations to calculate the total for the required number of tool kits, determine whether the principal has sufficient money and justifies that decision, and to determine how much more money the principal requires. The student calculates the incorrect total cost and provides insufficient justification.

0 points: The student demonstrates inconsistent or no understanding of how to use the four operations to calculate the total cost for the required number of tool kits.

MAT.03.SR.1.000MD.I.236 C1 T1

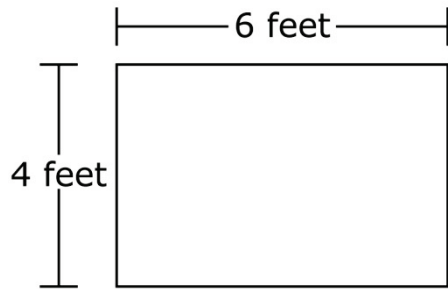
Sample Item ID:	MAT.03.SR.1.000MD.I.236
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 I: Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
Content Domain:	Measurement and Data
Standard(s):	03.MD.7
Mathematical Practice(s):	1, 2, 4, 6
DOK:	2
Item Type:	SR
Score Points:	1
Difficulty:	H
Key:	YNNY
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	

Below are two rectangles that are joined together.



For numbers 1a–1d, choose Yes or No to indicate whether joining each rectangle to the existing two rectangles would total exactly 99 square feet.

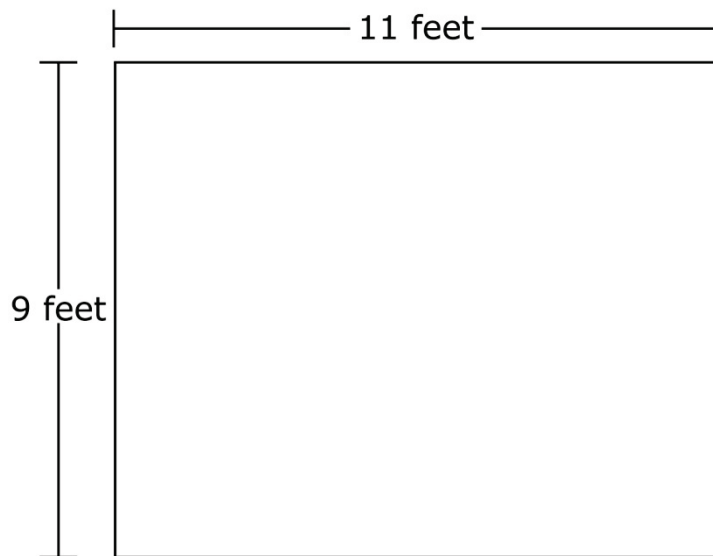
1a.



Yes

No

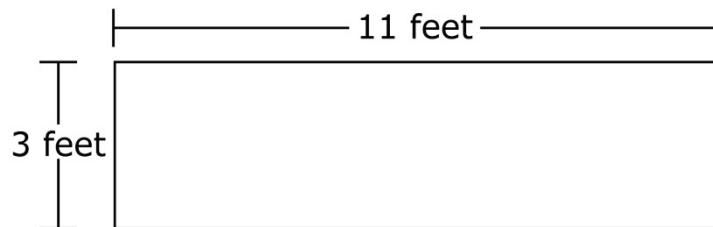
1b.



Yes

No

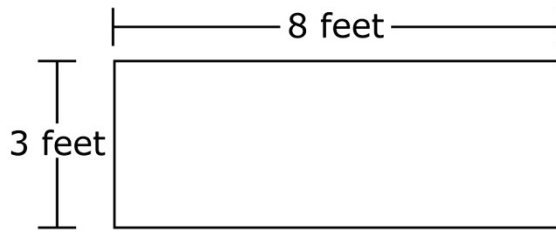
1c.



Yes

No

1d.



Yes

No

MAT.03.SR.1.000MD.J.023 C1 T1

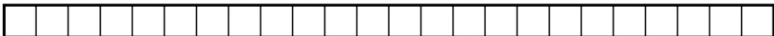
Sample Item ID:	MAT.03.SR.1.000MD.J.023
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 J: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.
Content Domain:	Measurement and Data
Standard(s):	3.MD.8
Mathematical Practice(s):	1, 2, 4
DOK:	2
Item Type:	SR
Score Points:	1
Difficulty:	M
Key:	NYN
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	Multi-part item

Amber has 24 inches of ribbon to attach to the sides of a rectangular box top. The ribbon must go around the perimeter of the rectangular box top with no overlap.

For numbers 1a–1c, select Yes or No to indicate whether Amber has exactly enough ribbon for each rectangular box top shown below.

Key

= 1 square inch

1a.  Yes No

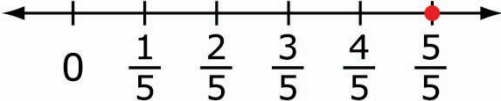
1b.  Yes No

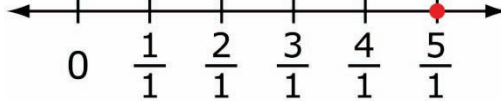
1c.  Yes No


MAT.03.SR.1.000NF.F.266 C1 T1

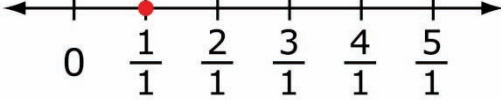
Sample Item ID:	MAT.03.SR.1.000NF.F.266
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 F: Develop understanding of fractions as numbers.
Content Domain:	Numbers and Operations
Standard(s):	3.NF.1, 3.NF.2
Mathematical Practice(s):	3, 6
DOK:	1
Item Type:	SR
Score Points:	1
Difficulty:	M
Key:	YNYN
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	Multi-part item

For numbers 1a to 1d, choose Yes or No to indicate whether each number graphed on the number line represents one whole.

1a.  Yes No

1b.  Yes No

1c.  Yes No

1d.  Yes No

MAT.03.SR.1.0000A.A.220 C1 T1

Sample Item ID:	MAT.03.SR.1.0000A.A.220
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 A: Represent and solve problems involving multiplication and division.
Content Domain:	Operations and Algebraic Thinking
Standard(s):	3.OA.3
Mathematical Practice(s):	1, 4
DOK:	2
Item Type:	SR
Score Points:	1
Difficulty:	M
Key:	NYYN
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	
Notes:	Multi-part item

Marcus has 36 marbles. He is putting an equal number of marbles into 4 bags.

For 1a–1d, choose Yes or No to indicate whether each number sentence could be used to find the number of marbles Marcus puts in each bag.

1a. $36 \times 4 = \square$ Yes No

1b. $36 \div 4 = \square$ Yes No

1c. $4 \times \square = 36$ Yes No

1d. $4 \div \square = 36$ Yes No

Grade 3 Mathematics Sample SR Item C1 T1

MAT.03.SR.1.0000A.B.222 C1 T1

Sample Item ID:	MAT.03.SR.1.0000A.B.222
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 B: Understand properties of multiplication and the relationship between multiplication and division.
Content Domain:	Operations and Algebraic Thinking
Standard(s):	3.OA.5
Mathematical Practice(s):	1, 2, 3
DOK:	1
Item Type:	SR
Score Points:	1
Difficulty:	M
Key:	YNNY
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	Multi-part item

For each expression in 1a–1d, answer Yes or No if the expression is equivalent to the product of 7 and 9.

- 1a. $7 \times (1 + 8)$ Yes No
- 1b. $9 \times (3 + 6)$ Yes No
- 1c. $(2 \times 5) + (5 \times 4)$ Yes No
- 1d. $(9 \times 2) + (9 \times 5)$ Yes No

Grade 3 Mathematics Sample SR Item C1 T1

MAT.03.SR.1.0000A.C.237 C1 T1

Sample Item ID:	MAT.03.SR.1.0000A.C.237
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 C: Multiply and divide within 100.
Content Domain:	Operations and Algebraic Thinking
Standard(s):	3.OA.7
Mathematical Practice(s):	1, 2, 6
DOK:	1
Item Type:	SR
Score Points:	1
Difficulty:	L
Key:	YNY
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	Multi-Part Item

For items 1a–1c, choose Yes or No to show whether putting the number 7 in the box would make the equation true.

- 1a. $10 \times \square = 70$ Yes No
- 1b. $48 \div \square = 6$ Yes No
- 1c. $63 \div \square = 9$ Yes No

MAT.03.SR.1.00NBT.A.217 C1 T1

Sample Item ID:	MAT.03.SR.1.00NBT.A.217
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 E: Use place-value understanding and properties of operations to perform multi-digit arithmetic.
Content Domain:	Number and Operations in Base Ten
Standard(s):	3.NBT.2
Mathematical Practice(s):	2, 4, 6
DOK:	1
Item Type:	SR
Score Points:	1
Difficulty:	L
Key:	9 from tens and 2 from ones OR 8 from tens and 12 from ones
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	Add and subtract within 1000.
Notes:	

The number sentence below can be solved using tens and ones.

$$67 + 25 = \underline{\quad? \quad} \text{ tens and } \underline{\quad? \quad} \text{ ones.}$$

Select one number from each column to make the number sentence true.

Tens	Ones
<input type="radio"/> 2	<input type="radio"/> 2
<input type="radio"/> 6	<input type="radio"/> 5
<input type="radio"/> 8	<input type="radio"/> 10
<input type="radio"/> 9	<input type="radio"/> 12

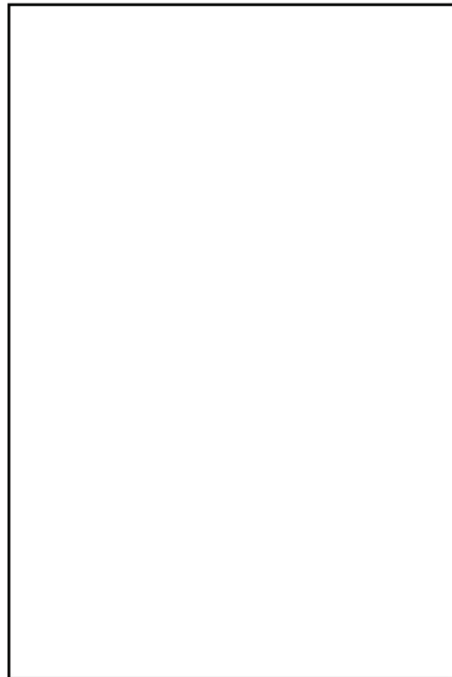
Key and Distractor Analysis:

Tens:	Ones:
2: Thinks ones place 6: Tens place for first addend 8: Key (with 12 from ones) 9: Key (with 2 from ones)	2: Key (with 9 from tens) 5: Ones place of second addend 10: Subtracts 10 ones, but does not add to tens place 12: Key (with 8 from tens)

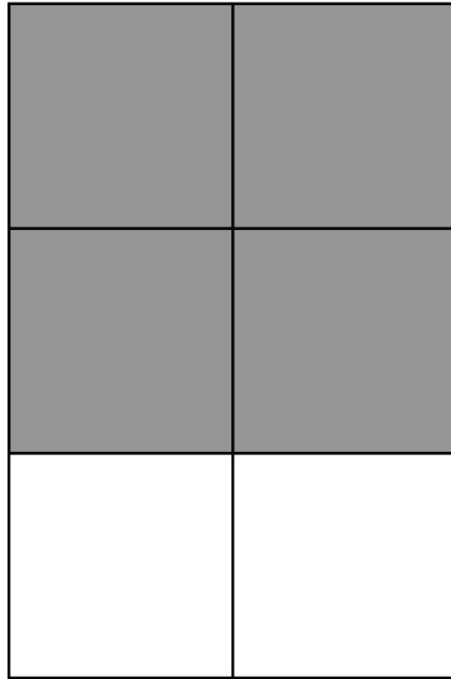
MAT.03.TE.1.0000G.K.231 C1 T1

Sample Item ID:	MAT.03.TE.1.0000G.K.231
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 K: Reason with shape and their attributes.
Content Domain:	Geometry
Standard(s):	3.G.2
Mathematical Practice(s):	1, 2, 4
DOK:	1
Item Type:	TE
Score Points:	1
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	Students with fine motor skill disabilities may have difficulty with this item.
Notes:	TE Template: Partition Object Then Select

Shade $\frac{4}{6}$ of the rectangle below. Use the line tool to divide the rectangle by creating horizontal and vertical lines.



Sample Top-Score Response:



TE Information:

Item Code: MAT.03.TE.1.0000G.K.231

Template: Partition Object Then Select

Interaction Space Parameters:

- A. Rectangle ($w=100$, $h=200$)
- B. True (allow horizontal partitions)
- C. True (allow vertical partitions)
- D. True (limit the number of segments that can be created)
- E. 10 (a maximum of 12 segments can be created)
- F. False (do not limit the number of segments that can be selected)

Scoring Data:

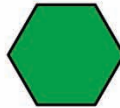
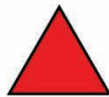
{ Number of Segments, Number Selected, Score }
{ 6, 4, 1 }

MAT.03.TE.1.0000G.K.232 C1 T1

Sample Item ID:	MAT.03.TE.1.0000G.K.232
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 K: Reason with shapes and their attributes.
Content Domain:	Geometry
Standard(s):	3.G.1
Mathematical Practice(s):	1, 4, 5
DOK:	2
Item Type:	TE
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	Students with visual impairments may have accessibility issues.
Notes:	TE Template: Classification

Sort the following three shapes according to the categories in the boxes below.

Click on a shape and then click inside a box to place the shape.

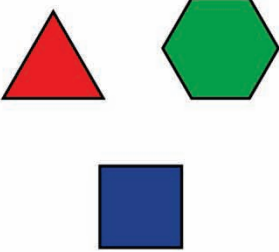




**Can Be Divided
into Triangles**

**Is a
Quadrilateral**

**Has at Least
4 Angles**

Sample Top-Score Response:

Can Be Divided into Triangles	Is a Quadrilateral	Has at Least 4 Angles
		

Scoring Rubric:

Responses to this item will receive 0-2 points based on the following:

2 points: The student demonstrates thorough reasoning with shapes and their attributes by doing the following:

- Sorts the triangle, hexagon, and square into the “Can Be Divided into Triangles” category.
- Sorts the square into the “Is a Quadrilateral” category.
- Sorts the square and hexagon into the “Has at Least 4 Angles” category.

1 point: The student has partial understanding of reasoning with shapes and their attributes. The student correctly sorts the 3 shapes into 2 out of 3 of the categories correctly.

0 points: The student has little or no understanding of reasoning with shapes and their attributes. The student’s sorting does not show any understanding about reasoning and sorting shapes into different categories.

Template: Classification

Item ID: MAT.03.TE.1.0000G.K.232

Interaction Space Parameters: A. Three boxes B. Three shapes

Scoring Data: *The first box is Region 1, the second box is Region 2, and the third box is Region 3. The triangle is A, the hexagon is B, and the square is C.*

{1=ABC}; {2=C}; {3=BC}; {0 errors=2}; {1 error=1}

MAT.03.TE.1.0000G.K.238 C1 T1

Sample Item ID:	MAT.03.TE.1.0000G.K.238
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 K: Reason with shapes and their attributes.
Content Domain:	Geometry
Standard(s):	03.G.2
Mathematical Practice(s):	1, 2, 4
DOK:	1
Item Type:	TE
Score Points:	2
Difficulty:	L
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	Students with visual impairments may have accessibility issues.
Notes:	Template: Partition Object Then Select; require AI scoring for fraction.

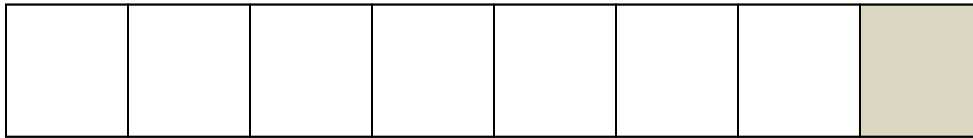
Use the line tool to separate the rectangle below into 8 equal parts.



Use the shading tool to shade one part of the whole rectangle.

What fraction of the whole rectangle is represented by the part of the rectangle you shaded? Type your answer in the space provided.

Sample Top-Score Response:



1

8

Scoring Rubric:

Responses to this item will receive 0–2 points, based on the following:

2 points: The student shows thorough understanding of partitioning shapes into parts with equal areas and expressing the area of each part as a unit fraction as a whole by dividing the rectangle into 8 equal pieces, shading one of the pieces, and writing $1/8$.

1 point: The student shows partial understanding of partitioning shapes into parts with equal areas and expressing the area of each part as a unit fraction as a whole by dividing the rectangle into 8 equal pieces and shading one of the pieces OR writing $1/8$ OR dividing the rectangle into a number of pieces other than 8 and shading one part, but writing the correct unit fraction based on the error.

0 points: The student shows little or no understanding of partitioning shapes into parts with equal areas and expressing the area of each part as a unit fraction as a whole.

Item Code: MAT.03.TE.1.0000G.K.238

Template: Partition Object Then Select

Interaction Space Parameters:

- A. Rectangle (w=200,h=100)
- B. True
- C. True
- D. True
- E. 10
- F. False
- G. N/A

Scoring Data:

{Number of Partitions, Number Selected, Score}

{8, 1, 1}

MAT.03.TE.1.000MD.H.239 C1 T1

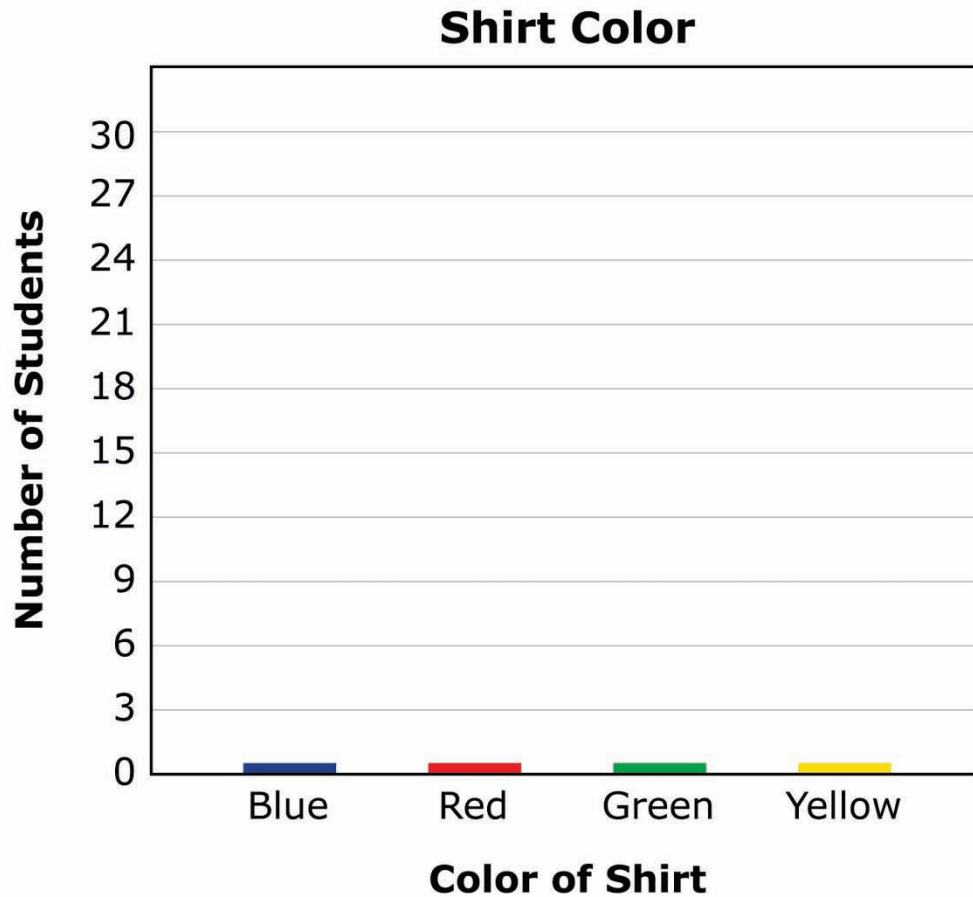
Sample Item ID:	MAT.03.TE.1.000MD.H.239
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 H: Represent and interpret data.
Content Domain:	Measurement and Data
Standard(s):	3.MD.3
Mathematical Practice(s):	1, 2, 4, 5, 6
DOK:	2
Item Type:	TE
Score Points:	2
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	Students with visual impairments may have accessibility issues.
Notes:	TE Template: Select Defined Partitions

Ms. Hayden made a table to show the number of students in the third grade who were wearing each color of shirt.

Shirt Colors

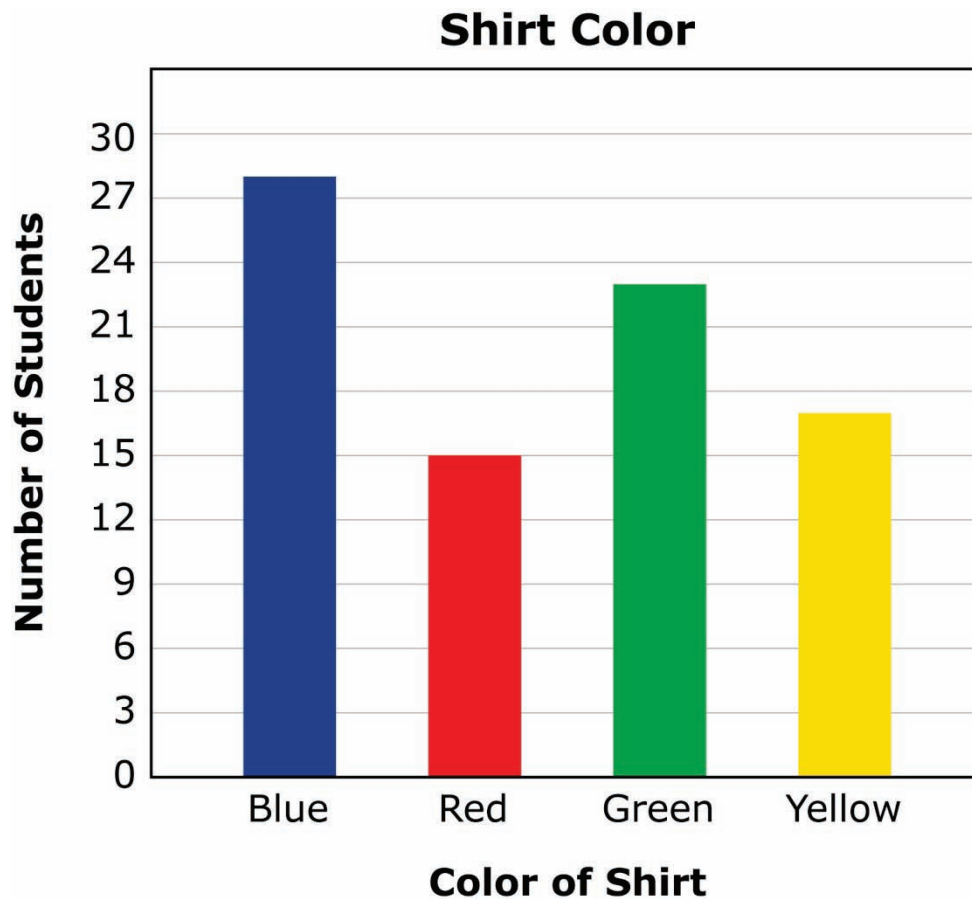
Color of Shirt	Number of Students
Blue	28
Red	15
Green	23
Yellow	17

Use the graphing tool to complete a bar graph that shows the information in the table.



[The graphing tool will allow students to pull up a blue line to create the blue bar. Same for all the colors labeled on the horizontal axis. They will be movable segments.]

Sample Top-Score Response:



Scoring Rubric:

Responses to this item will receive 0-2 points, based on the following:

2 points: The student shows thorough understanding of drawing a scaled bar graph to represent a data set with several categories by selecting the correct sections in the bar graph (28, 15, 23, 17).

1 point: The student shows partial understanding of drawing a scaled bar graph to represent a data set with several categories by selecting three out of four of the correct sections in the bar graph (28, 25, 23, 17).

0 points: The student shows little or inconsistent understanding of drawing a scaled bar graph to represent a data set with several categories.

Item Code: MAT.03.TE.1.000MD.H.239

Template: Select Defined Partitions

Interaction Space Parameters:

A: List of objects:

Bar: 33

Bar: 33

Bar: 33

Bar: 33

B: False (do not limit the number of segments that can be selected)

Scoring Data:

{Bar1: 28; Bar2: 15; Bar3: 23; Bar4: 17} = 2

{Bar1: 28; Bar2: 15; Bar3: 23; Bar4: *} = 1

{Bar1: 28; Bar2: 15; Bar3: *; Bar4: 17} = 1

{Bar1: 28; Bar2: *; Bar3: 23; Bar4: 17} = 1

{Bar1: *; Bar2: 15; Bar3: 23; Bar4: 17} = 1

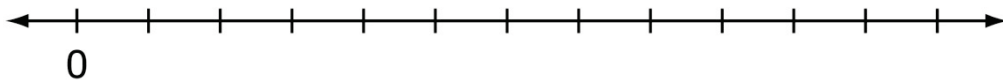
Scoring Rule Explanation:

Based on the scoring rule (common to all items that implement the template) and the scoring data for this particular item, students that select twenty eight of the segments of the first bar, fifteen of the segments of the second bar, twenty-three of the segments of the third bar, and seventeen of the segments of the fourth bar will receive full credit (2 points). This scoring data allows for partial scoring such that if a student makes one mistake but selects the correct number of segments from the other three bars, the student will receive partial credit (1 point). All other selections will receive a score of 0.

MAT.03.TE.1.000NF.F.233 C1 T1

Sample Item ID:	MAT.03.TE.1.000NF.F.233
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 F: Extend understanding of fraction equivalence and ordering.
Content Domain:	Number and Operations—Fractions
Standard(s):	4.NF.1, 4.NF.2
Mathematical Practice(s):	1, 2, 4, 5
DOK:	2
Item Type:	TE
Score Points:	1
Difficulty:	H
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	Students with visual impairments may have accessibility issues.
Notes:	TE Template: Select and Order

The number line below is divided into equal parts. The zero (0) is already placed on the number line.



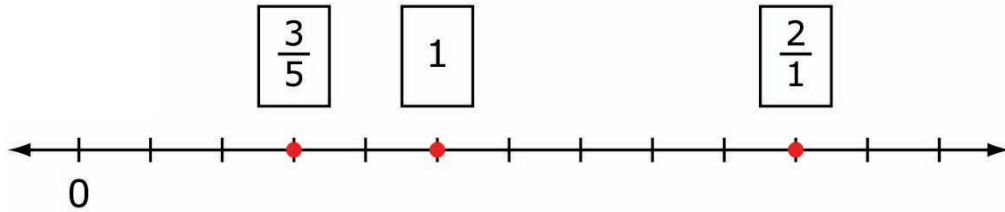
Place each of the following numbers in the proper place on number line. To place a number, click on a tile and then click on the number line. You may move and clear numbers as needed.

1

$\frac{2}{1}$

$\frac{3}{5}$

Sample Top-Score Response:



TE Information:

Item Code: MAT.03.TE.1.000NF.F.233

Template: Select and Order

Interaction Space Parameters:

- A. An image with 13 objects. Each line on the number line will be represented as 1 object.
- B. Three images of the numbers.

Scoring Data:

- { 1=C,4=D,6=A,11=B } = 1
- { 2=C,5=D,7=A,12=B } = 1
- { 3=C,6=D,8=A,13=B } = 1

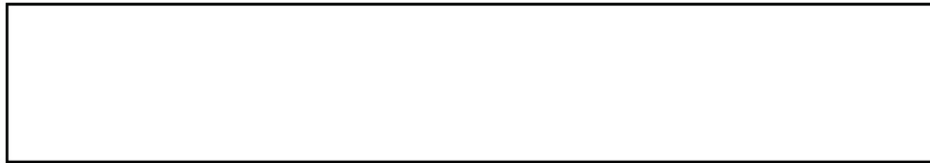
MAT.03.TE.1.000NF.F.240 C1 T1

Sample Item ID:	MAT.03.TE.1.000NF.F.240
Grade:	03
Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Assessment Target(s):	1 F: Develop understanding of fractions as numbers. 1 K: Reason with shapes and their attributes.
Content Domain:	Number and Operations—Fractions
Standard(s):	3.NF.3, 3.G.2
Mathematical Practice(s):	1, 2, 4
DOK:	2
Item Type:	TE
Score Points:	3
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-specific attributes (e.g., accessibility issues):	May present a challenge for students with visual or fine motor skill disabilities.
Notes:	TE Template: Partition Objects; then Select and Drop Down.

Use the line tool and shading tool to represent the following fractions. The rectangles can be divided using horizontal or vertical lines.

Part A

Shade $\frac{2}{3}$ of this rectangle.

**Part B**

Shade $\frac{2}{6}$ of this rectangle.

**Part C**

Correctly complete the statement below by using the choices in the drop-down box.

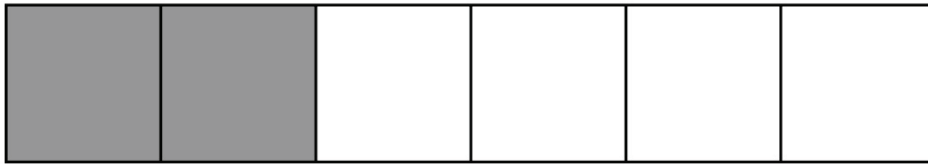
$$\frac{2}{3} \square \frac{2}{6}$$

(>, <, =)

Sample Top-Score Response:

Each part of this item is scored independently. Each correct answer receives 1 point.

Part A and Part B



Part C

$$\frac{2}{3} > \frac{2}{6}$$

TE Information:

Item Code: MAT.03.TE.1.000NF.F.240 Part A

Template: Partition Object Then Select

Interaction Space Parameters:

A: Rectangle, $w = 200$, $h = 100$

B: True

C: True

D: True

E: 5

F: True

G: 5

Scoring Data:

{3, 2, 1}

Item Code: MAT.03.TE.1.000NF.F.240 Part B

Template: Partition Object Then Select

Interaction Space Parameters:

A: Rectangle, $w = 200$, $h = 100$

B: True

C: True

D: True

E: 11

F: True

G: 11

Scoring Data:

{6, 2, 1}

Item Code: MAT.04.TE.1.000NF.F.407 Part C

Template: Drop Downs

Interaction Space Parameters:

A. 1

B. $>$, $<$, $=$

Scoring Data:

Menu 1 = $>$

Scoring Rule:

$(M1)=1$