Preview of Common Core State Standards Sample EAGLE Items

Grade 3
Mathematics

July 11, 2012

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Grade 3

Technology-enabled, multiple-part, constructed-response item types use a common context and contain several prompts that increase in difficulty or cognitive complexity and guide students to a culminating activity. This type of item can show where a student is within the difficulty or cognitive complexity ranges within a particular standard. It can also be a very effective item type to connect content and practices and assess both conceptual and procedural skills.

The first item in this set provides an opportunity to connect mathematical content (3.MD.1) with several practices (MP.1, MP.2, MP.3, MP.6, MP.8). First, the student makes sense of the problem (MP.1) by adding 15 minutes to the starting time and then continuing to add 15 minutes to each subsequent arrival time. The student can demonstrate the ability to reason abstractly (MP.2) and to express regularity in repeated reasoning (MP.8) by explaining (MP.3) that the bus comes at the same times each hour or by explaining that they added 15 minutes to each subsequent arrival time until they reached an arrival time that is past the current time. The student reasons quantitatively by comparing the current time with the arrival times. The student attends to precision (MP.6) throughout the item by using the correct time periods of A.M. and P.M.

The second item illustrates a technology enhancement that enables an efficient approach to drawing quadrilaterals on a grid. Instead of requiring students to drag line segments to the grid, connect them, and then manipulate their orientation, this item enables students to click on the grid to create the vertices of the quadrilateral. After each vertex is chosen by the student, a line segment is automatically drawn, connecting the last two vertices chosen. After a quadrilateral has been created, it can be moved or modified by dragging the lines and vertices. Another technology enhancement that can be selected for this type of item is the "snap-to" functionality. "Snap-to" functionality automatically moves the selected point to the nearest grid intersection point. This option can be very helpful, especially to lower-grade students, when precision is not one of the intended measurements.
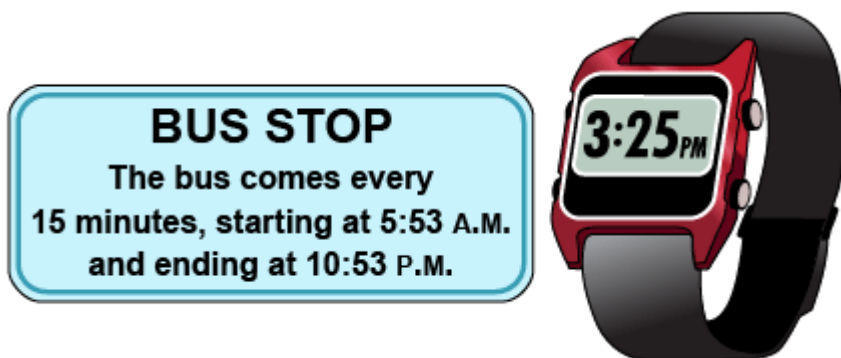
The third item assesses fluency expectations given by 3.OA.7. This item asks the student to select all of the single-digit multiplication facts that are true. The format of the item greatly reduces the probability that the student can obtain credit by guessing. Also, the item elicits five statements of evidence regarding the student's fluency. Standards involving fluency may be assessed directly or indirectly. To directly assess fluency, both speed and accuracy need to be assessed. This item is an example of a task model that assesses fluency indirectly because it does not measure the speed. Direct task models may be similar to this item but they also include a timer so that a student is scored by their accuracy within time intervals.

The fourth item represents an in-depth focus on standard 3.MD.7. Part A assesses the student's multiplicative reasoning skills by asking for a mathematical sentence showing the distributive property of multiplication that matches a given area model (MP.4). Part B assesses whether the student can decompose a rectilinear figure into non-overlapping parts to find the total area. Part B also elicits evidence of the student's ability to look for and make use of structure (MP.7) and to explain their reasoning (MP.3).

The fifth item utilizes drop-down menus and drag-and-drop functionality to generate measurement data and represent the data in a line plot. The item also connects content (3.MD.4) with a practice (MP.6) by asking the student to attend to precision by approximating the shell lengths to the nearest quarter inch.

UIN:	E13001	Subject:	Math	Grade:	3	Item Type:	CR
CCSS:	3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.					
Practice Standards:		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 6. Attend to precision. 8. Look for and express regularity in repeated reasoning.					

MC Key:	NA	Item Name:	Bus Stop	Calculator:	NC	Est. Difficulty:	H	DOK	3
Points:	0–3	Accommodations:				Scoring Method:	Mixed		

Passage Title(s):	
Source info:	

Use the bus stop sign and the watch to answer the question.

The time is 3:25 P.M. When is the bus scheduled to arrive next?

Explain your answer.

Rubric

<u>Exemplary Response</u>

3:38 p.m.

The bus comes every 15 minutes, so it makes a pattern, coming at the same times each hour.

It comes at 5:53 a.m., 6:08 a.m., 6:23 a.m., 6:38 a.m., 6:53 a.m., etc. Since it is 3:25 p.m., the next time it will come is 3:38 p.m.

<u>Points Assigned</u>

- 1 point for correct time of 3:38 P.M.
- 1 point for explaining that the bus comes at the same times each hour or by explaining that they added 15 minutes to each subsequent time until they reached 3:38 P.M.
- 1 point for attending to precision by using correct time periods of A.M. and P.M.
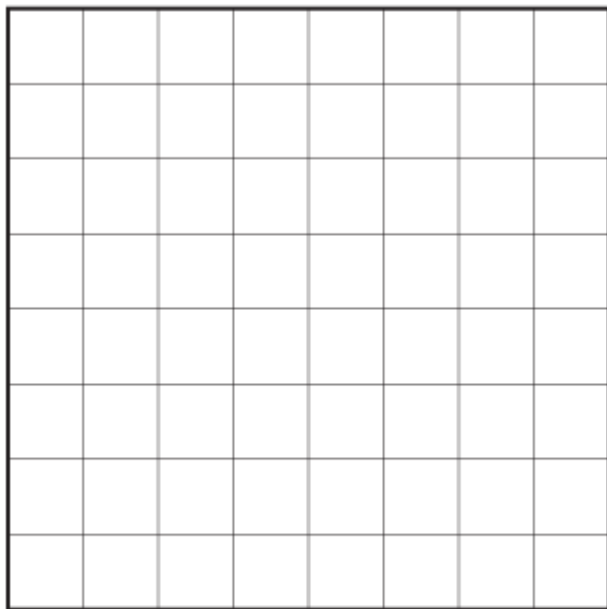
<u>Scoring Rubric</u>

Score	Description
3	3 points
2	2 points
1	1 point or demonstrates minimal understanding of adding time intervals
0	The student's response is incorrect, irrelevant, too brief to evaluate, or blank.

UIN:	E13002		Subject:	Math	Grade:		3	Item Type:	CR

CCSS:	3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Practice Standards:	

MC Key:	NA	Item Name:	Categorizing quadrilaterals	Calculator:	NC	Est. Difficulty:	M	DOK	2

Points:	0–1	Accommodations:		Scoring Method:	AS

Passage Title(s):	

Source info:	

A student writes, "All quadrilaterals are squares, rectangles, or rhombuses." Draw a quadrilateral on the grid that proves this statement is false.

Create a quadrilateral by clicking on four points on the grid to represent the corners of the quadrilateral. The sides of the quadrilateral will be automatically drawn as each corner is selected. To move the quadrilateral, click and drag any of the sides. To change the shape, click and drag any of the corners. To start over, click the Reset button below the grid.

RESET

Rubric

Exemplary Response
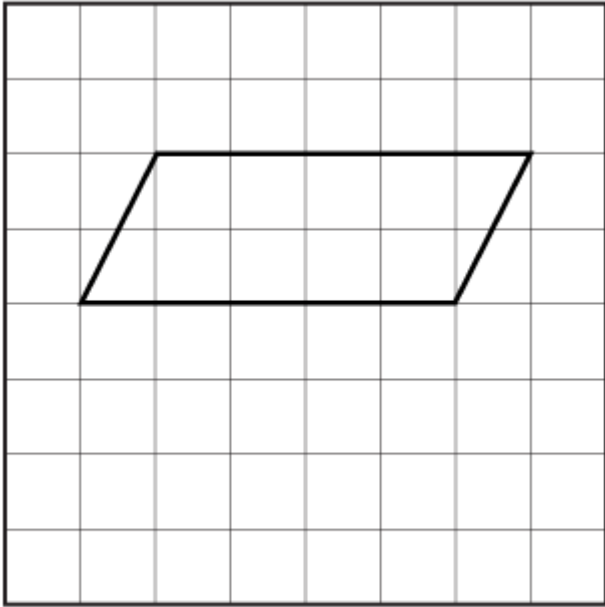
RESET

Points Assigned

- 1 point for a quadrilateral that is not a square, rectangle, or rhombus

Scoring Rubric

Score	Description
1	1 point
0	The student's response is incorrect, incomplete, or blank.

Click the box next to each true equation.

☐ 5 × 8 = 40
☐ 6 × 7 = 48
☐ 9 × 4 = 34
☐ 8 × 8 = 64
☐ 9 × 7 = 63

Rubric

Exemplary Response

☒ 5 × 8 = 40
☐ 6 × 7 = 48
☐ 9 × 4 = 34
☒ 8 × 8 = 64
☒ 9 × 7 = 63

Points Assigned

- 1 point for each box correctly checked
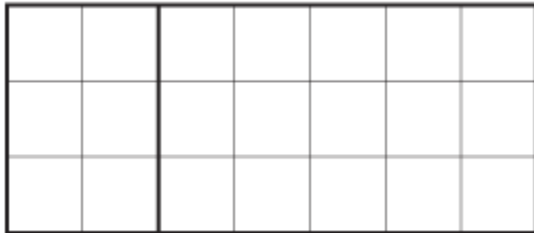- 1 point for each box correctly unchecked

Scoring Rubric

Score	Description
2	5 points
1	4 points
0	The student's response is incorrect.

UIN:	E13004		Subject:	Math	Grade:	3	Item Type:	CR		

CCSS:	3.MD.7	Relate area to the operations of multiplication and addition. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning. d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Practice Standards:	3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 7. Look for and make use of structure.

MC Key:	NA	Item Name:	Relating area to multiplicative reasoning	Calculator:	NC	Est. Difficulty:	H	DOK	3

Points:	0–6	Accommodations:				Scoring Method:	Mixed		

Passage Title(s):	

Source info:	

Part A
Use the shape to answer the question.
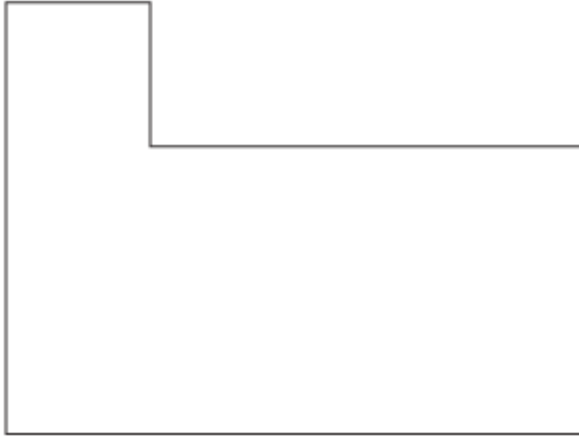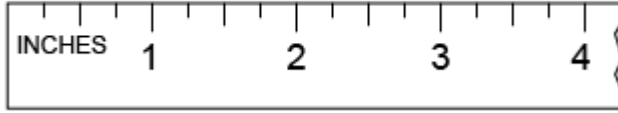

Put numbers in the boxes to show the math sentence the shape can model.

$\square \times \square + \square \times \square = \square \times (\square + \square)$

Part B

Use the ruler tool to find the area of the shape below. The ruler can be rotated to measure horizontal and vertical lines by clicking and dragging the ends of the ruler.

Ruler Tool

INCHES 1 2 3 4

What is the area of the shape? Include the correct units.

What steps did you take to find your answer?

Rubric

Exemplary Response

Part A

$$3 \times 2 + 3 \times 5 = 3 \times (2 + 5)$$

Part B

9 square inches

I divided the shape into a square and a rectangle. I measured the side lengths of the square and found them to be equal to 1 inch. I measured the rectangle and found one side length to be 4 inches and one side to be 2 inches. Then, I found the area of each shape. The area of the square is 1 inch x 1 inch = 1 square inch. The area of the rectangle is 4 inches x 2 inches = 8 square inches. To find the area of the whole shape, I added the two areas together, 8 square inches + 1 square inch = 9 square inches.

Points Assigned

- 2 points for 3 x 2 + 3 x 5 = 3 x (2 + 5)
  OR
- 1 point for providing an equation that correctly demonstrates the distributive property, but does not correspond to the given area model
- 1 point for finding 9 square inches
- 1 point for finding the correct side lengths
- 1 point for decomposing the shape into two rectangles
- 1 point for finding the area of each non-overlapping part

Note: Students will lose only 1 point if they use the wrong side measurements consistently through the process of finding the area.

Scoring Rubric

| Score	Description
6	6 points
5	5 points
4	4 points
3	3 points
2	2 points
1	1 point or demonstrates minimal understanding of finding the area of rectilinear figures
0	The student's response is incorrect, incomplete, or blank.

UIN:	E13005		Subject:	Math	Grade:		3	Item Type:	CR		
CCSS:	3.MD.4		Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.								
Practice Standards:			6. Attend to precision.								
MC Key:	NA		Item Name:	Fossil Shells	Calculator:		NC	Est. Difficulty:	M	DOK	2
Points:	0–3		Accommodations:					Scoring Method:	AS		
Passage Title(s):											
Source info:											

A scientist discovered fossil shells of different lengths. She wants to show their lengths to the nearest quarter inch on a line plot. Help the scientist create a line plot.

Part A

First, use the drop-down menus to complete the axis labels on the line plot.
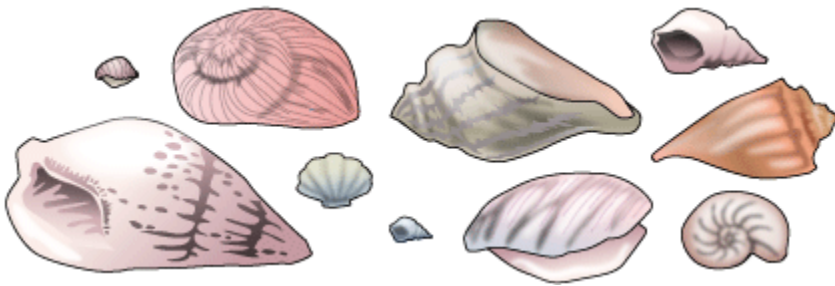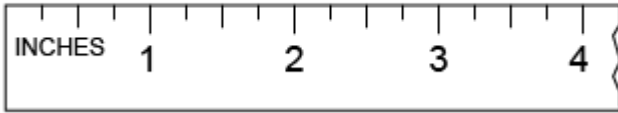
Fossil Shells

Length (inches)
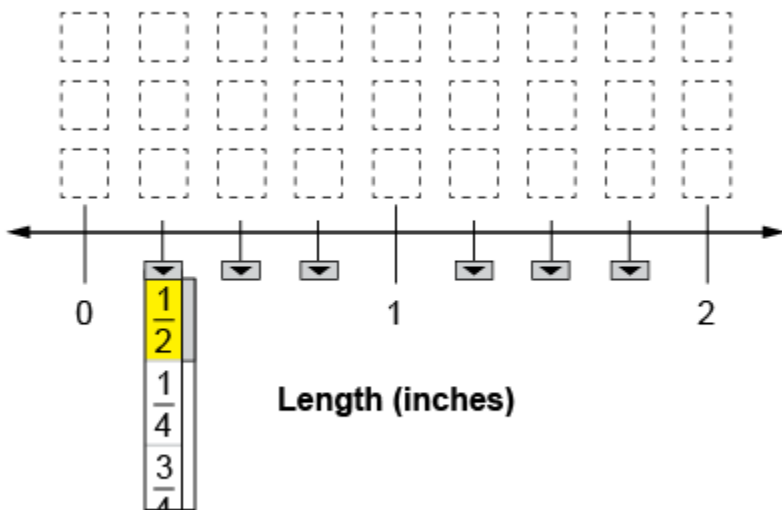
Note: Not to Scale

Part B

Use the ruler to measure the horizontal length of each shell to the nearest quarter inch. Then, click a box above the line plot at the length of each shell as you measure them.
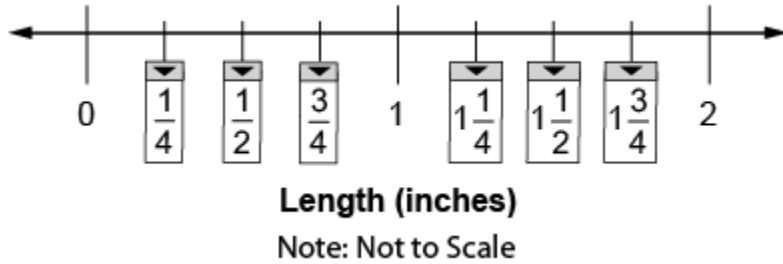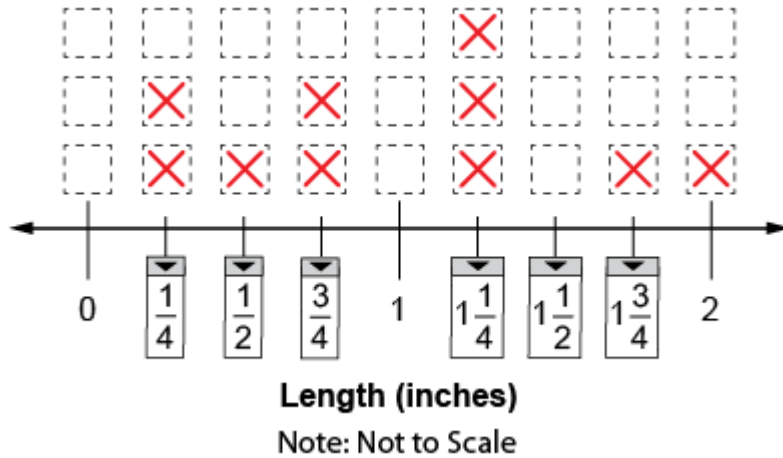
Ruler Tool

Exemplary Response

Part A

Length (inches)
Note: Not to Scale

Part B

Length (inches)
Note: Not to Scale

Points Assigned

- 1 point for correct axis labels
- 1 point for 7 to 9 correct values plotted
- 1 point for 10 correct values plotted

Scoring Rubric

Score	Description
3	3 points
2	2 points
1	1 point
0	The student's response is incorrect or blank.