

Computer-Based Released Items Grade 3 Mathematics Spring 2019

The spring 2019 grade 3 Mathematics test was administered in two primary formats: a computer-based version and a paper-based version. The vast majority of students took the computer-based test. The paper-based test was offered as an accommodation for students with disabilities who are unable to use a computer, as well as for English learners who are new to the country and are unfamiliar with technology.

The Department of Education is releasing items from both versions of the test to provide information about the knowledge and skills that students are expected to demonstrate.

- Released items from the **computer-based test** are available online at ricas.pearsonsupport.com/released-items. The computer-based released items are collected in a mini test called an ePAT (electronic practice assessment tool). Items in the ePAT are displayed in TestNav 8, the testing platform for the computer-based tests.
- Released items from the **paper-based test** are available in PDF format on the Department's website at www.doe.mass.edu/mcas/testitems.html.

This document provides information about each released item from the *computer-based test*, including: reporting category, standard(s) covered, item type, item description, and correct answer (for selected-response items only). Information about unreleased operational items is also presented here, and scoring rubrics are provided for released constructed-response items.

A Note about Testing Mode

Most of the operational items on the grade 3 Mathematics test were the same, regardless of whether a student took the computer-based version or the paper-based version. In places where a technology-enhanced item was used on the computer-based test, an adapted version of the item was created for use on the paper test. These adapted paper items were multiple-choice, multiple-select, or short-answer items that tested the same Mathematics content and assessed the same standard as the technology-enhanced item.

Grade 3 Mathematics
Spring 2019 Computer-Based Released Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer**
1	Number and Operations-Fractions	3.NF.A.1	SR	Determine the fraction that is represented by a given fraction model.	A
2	Measurement and Data	3.MD.B.4	SA	Complete a line plot using given measurements with fractions and mixed numbers.	<i>see page 6</i>
3	Geometry	3.G.A.1	SR	Determine which shape in a given set of shapes is not a rectangle.	C
4	Operations and Algebraic Thinking	3.OA.D.8	SR	Solve a two-step word problem using multiplication and subtraction.	C
5	Number and Operations-Fractions	3.NF.A.3	SR	Select the fractions that are equivalent to a given fraction.	<i>see page 6</i>
6	Measurement and Data	3.MD.D.8	CR	Determine the perimeter of a square and then determine a length and a width of a rectangle with the same perimeter as the square, but with different dimensions.	<i>see page 7</i>
7	Number and Operations in Base Ten	3.NBT.A.3	SA	Solve a real-world problem by finding the product of a one-digit number and a multiple of 10.	120
8	Operations and Algebraic Thinking	3.OA.A.2	SR	Choose word problems that can be solved using a given division expression.	A,E
9	Number and Operations in Base Ten	3.NBT.A.3	SA	Determine the product of a one-digit number and a multiple of 10 to solve a word problem.	240
10	Number and Operations in Base Ten	3.NBT.A.2	SR	Determine which number completes a given addition equation.	C
11	Number and Operations-Fractions	3.NF.A.2	SA	Write the fraction that is represented by the location of a given point on a number line.	<i>see page 8</i>
12	Measurement and Data	3.MD.B.4	SR	Use a ruler to measure the length of an item to the nearest half-inch.	B
13	Measurement and Data	3.MD.B.3	SA	Complete a scaled picture graph based on a given data set with three categories.	<i>see page 8</i>

14	Number and Operations in Base Ten	3.NBT.A.1	SR	Determine which two-digit whole number, when rounded to the nearest ten, rounds to a given number.	C
15	Operations and Algebraic Thinking	3.OA.B.5	CR	Show how to use the distributive property to solve a multiplication problem and critique the reasoning of another student who wants to use a different method.	<i>see page 9</i>
16	Number and Operations-Fractions	3.NF.A.2	SR	Plot a point on a partitioned number line to show the location of a fraction that is greater than 1.	<i>see page 10</i>
17	Operations and Algebraic Thinking	3.OA.D.9	SA	Determine the next number of a given pattern in a multiplication table.	16
18	Operations and Algebraic Thinking	3.OA.B.6	SR	Determine the multiplication equation that could be used to solve a given division equation.	A
19	Operations and Algebraic Thinking	3.OA.A.4	SR	Determine the missing factor in a multiplication equation that represents a given word problem.	D
20	Geometry	3.G.A.2	SA	Determine what fraction of the area of the whole figure one part is.	<i>see page 10</i>

* Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).

**Answers are provided here for selected-response and short-answer items only. Correct answers for technology-enhanced (TE) items can be found on pages 6, 8, and 10 of this document. Scoring rubrics for constructed-response items are also provided in this document. Sample responses and scoring guidelines for constructed-response items will be posted to the Department's website later this year.

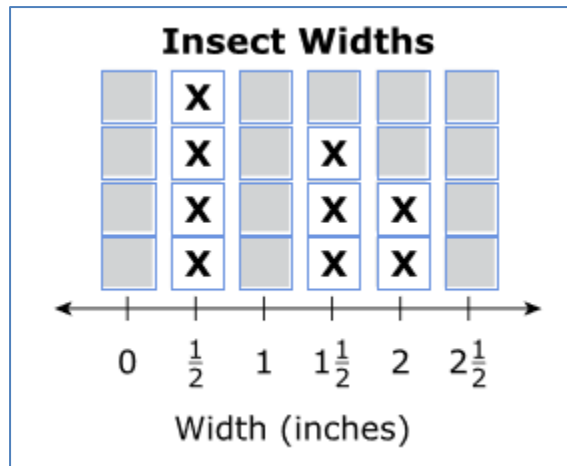
Grade 3 Mathematics
Spring 2018 Computer-Based Unreleased Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	Number and Operations in Base Ten	3.NBT.A.1	SR	Determine which number would result when a given whole number is rounded to the nearest hundred.
22	Operations and Algebraic Thinking	3.OA.D.9	SR	Determine the rule in a given number pattern.
23	Measurement and Data	3.MD.A.2	SA	Interpret a drawing of a container and use subtraction to solve a word problem involving liquid volume in metric units.
24	Geometry	3.G.A.2	SA	Write the fraction that represents one part of a given circle that is divided into equal parts.
25	Number and Operations-Fractions	3.NF.A.3	CR	Compare fractions in a real-world context and explain the reasoning to support the comparisons.
26	Measurement and Data	3.MD.C.7	SR	Complete an equation that can be used when decomposing a rectilinear figure to find the total area.
27	Operations and Algebraic Thinking	3.OA.B.6	SR	Find a related equation with a variable that can be used to solve a given division equation with the same variable.
28	Measurement and Data	3.MD.B.3	SA	Solve a one-step "how many more" problem using a given bar graph.
29	Measurement and Data	3.MD.C.6	SR	Determine the area of given figures by counting the unit squares.
30	Operations and Algebraic Thinking	3.OA.C.7	SA	Find the product of three one-digit whole numbers.
31	Geometry	3.G.A.1	SR	Determine which shape has the same number of angles as a given shape.
32	Operations and Algebraic Thinking	3.OA.A.2	SR	Determine the equation that can be used to solve a given division word problem.
33	Operations and Algebraic Thinking	3.OA.C.7	SR	Complete given division equations by choosing the correct quotients.
34	Measurement and Data	3.MD.C.5	SR	Identify the correct statement relating square units to what is measured.
35	Measurement and Data	3.MD.A.1	SA	Measure a time interval given starting and ending times shown on two different analog clocks.
36	Operations and Algebraic Thinking	3.OA.A.3	SA	Write a multiplication or division equation that can be used to solve a given word problem.
37	Number and Operations-Fractions	3.NF.A.1	SR	Determine the fraction that is represented by the shaded parts of a given fraction model.

38	Number and Operations in Base Ten	3.NBT.A.2	CR	Solve problems requiring addition and subtraction of two- and three-digit numbers and justify the thinking of another student.
39	Number and Operations- Fractions	3.NF.A.3	SA	Create a fraction model that represents a fraction with a value that is between two given fractions.
40	Operations and Algebraic Thinking	3.OA.A.1	SR	Determine the equation that can be used to solve a multiplication word problem.

* Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).

Correct Answer for CBT Item #2: Technology-Enhanced Item



Correct Answer for CBT Item #5: Technology-Enhanced Item

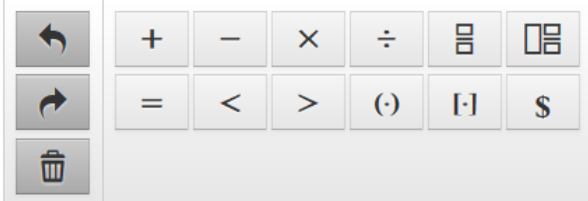
- $\frac{1}{2}$ $\frac{2}{3}$ $\frac{6}{3}$ $\frac{2}{4}$ $\frac{3}{8}$ $\frac{4}{8}$

Rubric for CBT Item #6: Constructed Response

Scoring Guide	
Score	Description
3	The student response demonstrates an exemplary understanding of the Measurement and Data concepts involved in solving real world problems involving perimeters of polygons, including finding perimeter given side lengths, and exhibiting rectangles with the same perimeter and different areas. The student correctly determines the perimeter of a rectangle and finds the length and width of another rectangle with the same perimeter but different dimensions.
2	The student response demonstrates a good understanding of the Measurement and Data concepts involved in solving real world problems involving perimeters of polygons, including finding perimeter given side lengths, and exhibiting rectangles with the same perimeter and different areas. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 2 points.
1	The student response demonstrates a minimal understanding of the Measurement and Data concepts involved in solving real world problems involving perimeters of polygons, including finding perimeter given side lengths, and exhibiting rectangles with the same perimeter and different areas. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 1 point.
0	The student response contains insufficient evidence of an understanding of the Measurement and Data concepts involved in solving real world problems involving perimeters of polygons, including finding perimeter given side lengths, and exhibiting rectangles with the same perimeter and different areas to merit any points.




Correct Answer for CBT Item #11: Technology-Enhanced Item

$\frac{7}{8}$



The image shows a digital calculator interface. At the top, the fraction $\frac{7}{8}$ is displayed in a large white box. Below this is a grid of buttons for mathematical operations: a left arrow, a right arrow, a trash can, and buttons for addition (+), subtraction (-), multiplication (×), division (÷), fraction (a box with a horizontal line), and decimal (a box with a decimal point). Below these are buttons for equals (=), less than (<), greater than (>), negative sign (⊖), left bracket ([), and dollar sign (\$) symbols.

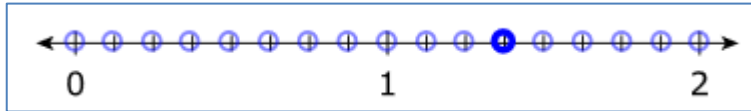
Correct Answer for CBT Item #13: Technology-Enhanced Item

Books Read	
Student	Number of Books
Kim	
Ted	
Jon	

Rubric for CBT Item #15: Constructed Response

Scoring Guide	
Score	Description
3	The student response demonstrates an exemplary understanding of the Operations and Algebraic Thinking concepts involved in applying properties of operations as strategies to multiply and divide. The student correctly shows how to use the distributive property to solve a multiplication problem and critiques the reasoning of another student who wants to use a different method.
2	The student response demonstrates a good understanding of the Operations and Algebraic Thinking concepts involved in applying properties of operations as strategies to multiply and divide. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 2 points.
1	The student response demonstrates a minimal understanding of the Operations and Algebraic Thinking concepts involved in applying properties of operations as strategies to multiply and divide. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 1 point.
0	The student response contains insufficient evidence of an understanding of the Operations and Algebraic Thinking concepts involved in applying properties of operations as strategies to multiply and divide to merit any points.

Correct Answer for CBT Item #16: Technology-Enhanced Item



Correct Answer for CBT Item #20: Technology-Enhanced Item

$\frac{1}{4}$

	+	-	×	÷	
		=	<	>	(-)
		\$			