

Computer-Based Released Items

Grade 5 Mathematics

Spring 2019

The spring 2019 grade 5 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 Elementary and Secondary 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 mcas.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 5 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 5 Mathematics
Spring 2019 Computer-Based Released Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer**
1	Geometry	5.G.A.2	SA	Determine the coordinates of a point in the first quadrant that will create a rectangle when the first three points of the rectangle are given.	<i>see page 6</i>
2	Operations and Algebraic Thinking	5.OA.A.2	SA	Match numerical expressions that involve two operations with equivalent word expressions.	<i>see page 6</i>
3	Number and Operations-Fractions	5.NF.B.6	SA	Solve a real-world problem that involves multiplying a fraction by a mixed number.	<i>see page 6</i>
4	Measurement and Data	5.MD.C.4	CR	Determine the volume of right rectangular prisms by counting unit cubes and using volume to solve problems.	<i>see page 7</i>
5	Number and Operations in Base Ten	5.NBT.A.4	SA	Round decimals to the nearest hundredth.	<i>see page 8</i>
6	Number and Operations-Fractions	5.NF.A.2	SR	Estimate the sum of two fractions that are both less than one.	B
7	Number and Operations in Base Ten	5.NBT.A.2	SA	Determine the quotient of a decimal and a power of ten.	0.075
8	Operations and Algebraic Thinking	5.OA.B.3	SR	Determine which statement describes two given number patterns.	A
9	Number and Operations-Fractions	5.NF.B.4	SA	Create a fraction model to represent the product of a fraction and a whole number.	<i>see page 8</i>
10	Geometry	5.G.A.2	SR	Interpret coordinate values of given points on a coordinate plane to solve a real-world problem.	C
11	Geometry	5.G.B.4	SR	Given drawings of shapes, determine which shape is a rhombus.	A
12	Number and Operations in Base Ten	5.NBT.A.3	SR	Compare two decimals to the thousandths place.	<i>see page 8</i>
13	Number and Operations in Base Ten	5.NBT.B.5	CR	Solve a problem involving multiplying whole numbers and estimating products of larger numbers.	<i>see page 9</i>

14	Measurement and Data	5.MD.A.1	SR	Solve a multi-step real-world word problem by converting milliliters to liters.	B
15	Measurement and Data	5.MD.B.2	SA	Complete a line plot with given fractions and mixed numbers.	<i>see page 10</i>
16	Number and Operations-Fractions	5.NF.B.7	SA	Solve real-world problems involving division of a whole number by a unit fraction and division of a unit fraction by a whole number.	<i>Part A: A Part B: see page 10</i>
17	Operations and Algebraic Thinking	5.OA.A.1	SR	Evaluate a numerical expression that contains parentheses.	A
18	Number and Operations-Fractions	5.NF.B.4	SR	Determine the area of a rectangle with fractional side lengths.	B
19	Number and Operations in Base Ten	5.NBT.A.1	SR	Compare the value of a digit in one number to the value of the same digit in another number.	A
20	Number and Operations in Base Ten	5.NBT.B.6	SR	Determine the equation that can be used to solve a problem by dividing whole numbers.	A

* 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 5 Mathematics
Spring 2019 Computer-Based Unreleased Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	Number and Operations in Base Ten	5.NBT.B.6	SR	Solve a word problem by finding the quotient of a four-digit dividend and a two-digit divisor.
22	Number and Operations in Base Ten	5.NBT.B.7	SR	Determine the product of a whole number and a decimal to hundredths.
23	Measurement and Data	5.MD.B.2	SR	Use information from a given line plot to solve problems that involve adding and dividing fractions.
24	Operations and Algebraic Thinking	5.OA.A.1	CR	Identify and correct an error in the computation of a numerical expression and place parentheses to make the numerical expression equivalent to a different given value.
25	Measurement and Data	5.MD.C.5	SR	Determine the total volume of two non-overlapping right rectangular prisms.
26	Number and Operations in Base Ten	5.NBT.A.3	SR	Compare values from a table that include mixed numbers and decimals.
27	Measurement and Data	5.MD.A.1	SR	Solve a multi-step real-world problem converting yards to inches.
28	Number and Operations-Fractions	5.NF.B.3	SA	Solve a problem involving division of two whole numbers that results in a fraction as an answer.
29	Number and Operations in Base Ten	5.NBT.A.3	SA	Determine a missing value in the expanded form of a given decimal to thousandths.
30	Geometry	5.G.B.3	SR	Select statements that correctly compare categories of two-dimensional figures, and then determine whether given shapes belong to specific subcategories.
31	Measurement and Data	5.MD.C.5	SR	Determine the volume of a right rectangular prism.
32	Geometry	5.G.A.1	SR	Describe the relationships between the coordinates of a given point graphed on a coordinate plane and the origin and the x- and y-axes.
33	Number and Operations-Fractions	5.NF.A.2	SR	To solve a word problem, estimate the difference of two fractions that are less than one.
34	Number and Operations-Fractions	5.NF.B.3	SR	Choose the numbers and operation needed to write an expression that represents a fractional relationship in a word problem.
35	Number and Operations in Base Ten	5.NBT.B.5	SA	Multiply a three-digit whole number by a two-digit whole number.

36	Number and Operations-Fractions	5.NF.A.1	CR	Use a fraction model to solve real-world problems involving addition and subtraction of fractions.
37	Number and Operations in Base Ten	5.NBT.A.4	SR	Round a given decimal number in thousandths to the nearest tenth.
38	Number and Operations in Base Ten	5.NBT.A.2	SR	Identify which whole number is equivalent to a given power of ten.
39	Number and Operations in Base Ten	5.NBT.B.7	SA	Solve a word problem by dividing a decimal by a whole number.
40	Operations and Algebraic Thinking	5.OA.B.3	SA	Create ordered pairs using corresponding terms from two given patterns and plot the points on a coordinate plane.

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

Correct Answer for CBT Item #1: Technology-Enhanced Item

(6, 5)

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

<p>add 3 to the product of 6 and 5</p> <p>$6 \times 5 + 3$</p>	<p>5 greater than the sum of 6 and 3</p> <p>$5 + 6 + 3$</p>	<p>add 3 and 6, then multiply by 5</p> <p>$5 \times (3 + 6)$</p>	<p>5 times as large as the product of 3 and 6</p> <p>$3 \times 6 \times 5$</p>
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Correct Answer for CBT Item #3: Technology-Enhanced Item

3

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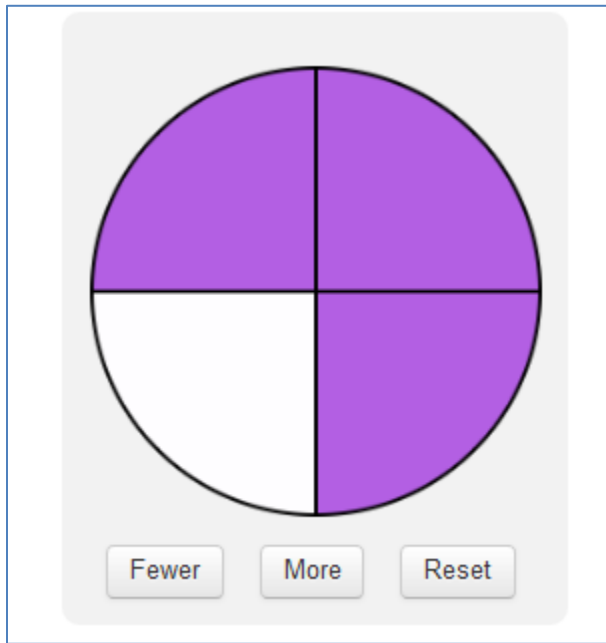
Rubric for CBT Item #4: Constructed Response

Scoring Guide	
Score	Description
4	The student response demonstrates an exemplary understanding of the Measurement and Data concepts involved in measuring volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units. The student correctly finds the volume of figures in 1-inch cubic units and compares the volumes.
3	The student response demonstrates a good understanding of the Measurement and Data concepts involved in measuring volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units. 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 3 points.
2	The student response demonstrates a fair understanding of the Measurement and Data concepts involved in measuring volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
1	The student response demonstrates a minimal understanding of the Measurement and Data concepts involved in measuring volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units.
0	The student response contains insufficient evidence of an understanding of the Measurement and Data concepts involved in measuring volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units to merit any points.

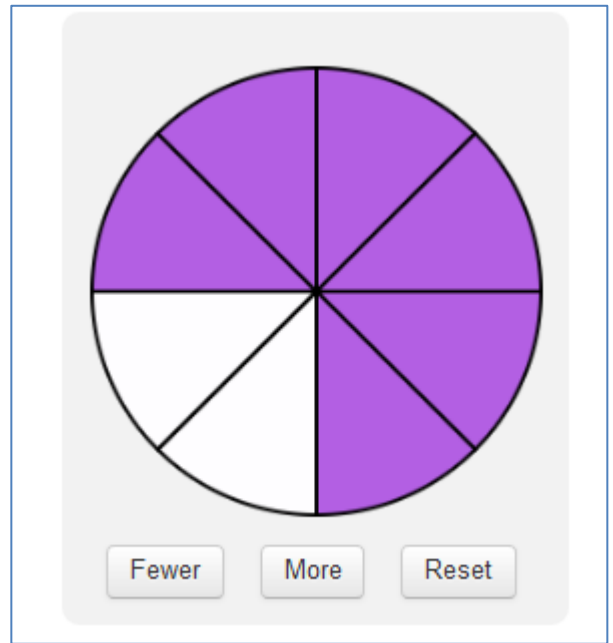
Correct Answer for CBT Item #5: Technology-Enhanced Item

10.826 rounds to 10.	<input type="text" value="8"/>	<input type="text" value="3"/>
23.647 rounds to 23.	<input type="text" value="6"/>	<input type="text" value="5"/>
54.182 rounds to 54.	<input type="text" value="1"/>	<input type="text" value="8"/>

Correct Answer for CBT Item #9: Technology-Enhanced Item



OR



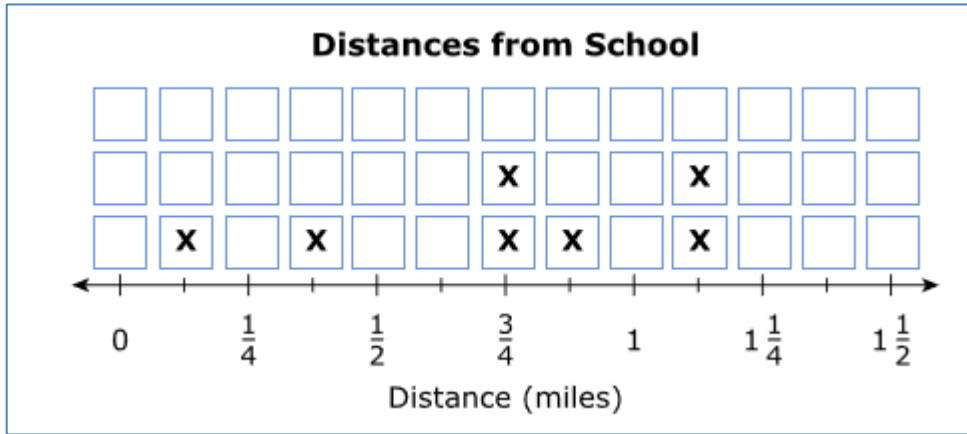
Correct Answer for CBT Item #12: Technology-Enhanced Item

3.372	<	<input type="text" value="3.381"/>
3.381	>	<input type="text" value="3.368"/>
3.368	<	<input type="text" value="3.372"/>

Rubric for CBT Item #13: Constructed Response

Scoring Guide	
Score	Description
4	The student response demonstrates an exemplary understanding of the Number and Operations in Base Ten concepts involved in fluently multiplying multi-digit whole numbers using the standard algorithm. The student correctly estimates using multiplication, writes a multiplication expression, and uses the expression to solve a problem.
3	The student response demonstrates a good understanding of the Number and Operations in Base Ten concepts involved in fluently multiplying multi-digit whole numbers using the standard algorithm. 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 3 points.
2	The student response demonstrates a fair understanding of the Number and Operations in Base Ten concepts involved in fluently multiplying multi-digit whole numbers using the standard algorithm. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
1	The student response demonstrates a minimal understanding of the Number and Operations in Base Ten concepts involved in fluently multiplying multi-digit whole numbers using the standard algorithm.
0	The student response contains insufficient evidence of an understanding of the Number and Operations in Base Ten concepts involved in fluently multiplying multi-digit whole numbers using the standard algorithm to merit any points.

Correct Answer for CBT Item #15: Technology-Enhanced Item



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

Part B:

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