Computer-Based Released Items
Grade 5 Mathematics
Spring 2022

The spring 2022 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 and short-answer items only). Information about unreleased operational items is also presented here.

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 2022 Computer-Based Released Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer**
1	Measurement and Data	5.MD.C.5	SR	Determine the expression that can be used to find the volume of a right rectangular prism that is packed with unit cubes.	B
2	Number and Operations in Base Ten	5.NBT.A.4	SA	Round a decimal to the nearest whole number.	18
3	Number and Operations-Fractions	5.NF.B.5	SR	Determine the relationship between the value of an expression and its factors by comparing the size of the factor to 1.	A
4	Operations and Algebraic Thinking	5.OA.A.1	SA	Place parentheses in an expression to make the expression equivalent to a given value.	*see page 6*
5	Measurement and Data	5.MD.C.5	SR	Determine the number of cubes that are used to create a figure when the length of one edge of the cube and the volume of the figure are given.	A
6	Number and Operations in Base Ten	5.NBT.A.3	SA	Write a decimal number given in word form in number form.	63.546
7	Number and Operations-Fractions	5.NF.B.4	SR	Write the product of a whole number and a fraction as an equivalent expression with multiplication and division of whole numbers.	A
8	Number and Operations in Base Ten	5.NBT.B.6	SR	Find the quotient of a 4-digit dividend and a 1-digit divisor.	D
9	Number and Operations in Base Ten	5.NBT.B.7	CR	Solve multi-step real-world problems using the four operations with given whole numbers and decimals to hundredths.	
10	Operations and Algebraic Thinking	5.OA.A.1	SR	Determine the value of a given expression that has two operations and parentheses.	C
11	Number and Operations in Base Ten	5.NBT.A.1	SR	Compare the values of a digit in two different four-digit whole numbers.	*see page 6*
12	Measurement and Data	5.MD.B.2	SR	Subtract mixed numbers to solve a problem involving information presented in a line plot.	B
13	Geometry	5.G.A.2	CR	Graph a given ordered pair on a coordinate plane, give the ordered pair of a point on a coordinate plane, and interpret coordinate values of points in the context of the situation.	

14	Number and Operations-Fractions	5.NF.B.7	SR	Determine the quotient of a unit fraction divided by a whole number in a real-world context.	B
15	Operations and Algebraic Thinking	5.OA.A.2	SR	Identify equivalent numerical and word expressions.	D;A
16	Measurement and Data	5.MD.A.1	SA	Compare lengths with measurements given in yards, feet, and inches and order from least to greatest.	*see page 6*
17	Number and Operations-Fractions	5.NF.A.1	SA	Find the difference of two mixed numbers with unlike denominators.	*see page 6*
18	Number and Operations-Fractions	5.NF.B.7	SR	Determine the quotients of whole numbers divided by fractions in real-world contexts.	*see page 6*
19	Measurement and Data	5.MD.C.5	SR	Determine the total volume of two non-overlapping right rectangular prisms.	A
20	Number and Operations-Fractions	5.NF.A.2	SR	Solve a word problem by finding the sum of two mixed numbers with unlike denominators.	D

* 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. Page 6 of this document provides correct answers for technology-enhanced (TE) items. Sample responses and scoring guidelines for constructed-response items will be posted at www.doe.mass.edu/mcas/student/default.html.

Grade 5 Mathematics
Spring 2022 Computer-Based Unreleased Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	Number and Operations in Base Ten	5.NBT.A.2	SR	Find the multiple of 10 that makes an equation true when multiplying a decimal by an unknown factor.
22	Measurement and Data	5.MD.B.2	SA	Create a line plot with data given in the form of fractions with different denominators.
23	Number and Operations in Base Ten	5.NBT.A.2	SR	Identify which whole number is equivalent to a given power of ten.
24	Operations and Algebraic Thinking	5.OA.B.3	CR	Extend two different addition patterns and explain the relationship between corresponding terms in the patterns.
25	Number and Operations in Base Ten	5.NBT.B.7	SR	Add, subtract, multiply, and divide decimals to hundredths.
26	Number and Operations-Fractions	5.NF.B.6	CR	Solve real-world problems by finding the products of a whole number and a fraction, two fractions, a mixed number and a fraction, and two mixed numbers.
27	Measurement and Data	5.MD.B.2	SR	Use information from a given line plot to solve problems that involve adding and dividing fractions.
28	Number and Operations in Base Ten	5.NBT.B.5	SA	Determine the product of a two-digit whole number and a four-digit whole number.
29	Number and Operations in Base Ten	5.NBT.B.6	SR	Write a division equation with a 4-digit dividend, a 1-digit divisor, and a variable quotient and then use the equation to solve a word problem.
30	Number and Operations-Fractions	5.NF.B.3	SR	Identify a fraction as division of the numerator by the denominator and solve a word problem with division of two whole numbers with a mixed number answer.
31	Geometry	5.G.B.3	SR	Given a set of two-dimensional figures, identify which figures are rectangles.
32	Number and Operations-Fractions	5.NF.B.7	SR	Determine the word problem that can be solved by dividing a unit fraction by a whole number.
33	Measurement and Data	5.MD.C.4	SR	Solve a word problem involving finding the volume of a right rectangular prism by counting unit cubes.
34	Geometry	5.G.A.1	SA	Write the ordered pair that describes the location of a point plotted on a coordinate plane.

35	Number and Operations in Base Ten	5.NBT.A.4	SR	Round a given decimal number in thousandths to the nearest tenth.
36	Geometry	5.G.B.4	SR	Determine if sets of quadrilaterals can also be classified as another quadrilateral.
37	Measurement and Data	5.MD.C.4	SR	Determine the volume of a right rectangular prism, with dimensions in metric units, by counting the cubes that make up the prism.
38	Number and Operations in Base Ten	5.NBT.A.3	SR	Compare values from a table that include mixed numbers and decimals.
39	Number and Operations-Fractions	5.NF.B.4	SR	Identify a real-world problem that represents a given multiplication equation with a unit fraction and a whole number.
40	Number and Operations in Base Ten	5.NBT.B.5	SA	Multiply a three-digit whole number by a two-digit whole number.

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

Correct Answer for CBT Item #4: Technology-Enhanced Item
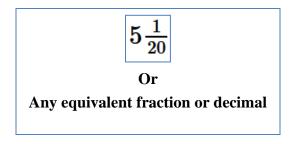
| 64 | ÷ | (| 2 | × | 4 |) | − | 3 |

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

The value of the 3 in 4,358 is [ten times ▾] the value of the 3 in 6,932.

The value of the 3 in 1,783 is [one-tenth ▾] the value of the 3 in 6,932.

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

Least ⟶ Greatest

| 2 feet | 35 inches | 1 yard | $3\frac{1}{2}$ feet |

Correct Answer for CBT Item #17: Technology-Enhanced Item

$$5\frac{1}{20}$$

Or

Any equivalent fraction or decimal

Correct Answer for CBT Item #18: Technology-Enhanced Item

Cookie Recipe

Ingredients	Number of $\frac{1}{4}$-Cup Scoops
3 cups of flour	12
1 cup of brown sugar	4
2 cups of coconut	8