

## **Computer-Based Released Items**

### **Grade 4 Mathematics**

### **Spring 2023**

The spring 2023 grade 4 Mathematics test was administered in two formats: a computer-based version and a paper-based version. Most students took the computer-based test. The paper-based test was offered as an accommodation for eligible students who were unable to use a computer.

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](https://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](http://www.doe.mass.edu/mcas/testitems.html).

This document provides information about each released item from the *computer-based test*, including the following: reporting category, standard(s) covered, item type, item description, and correct answer (for released selected-response and short-answer items only). Information about unreleased operational items is also presented here. Sample student responses and scoring rubrics for released constructed-response items will be posted at [www.doe.mass.edu/mcas/student/](http://www.doe.mass.edu/mcas/student/).

### **A Note about Testing Mode**

Most of the operational items on the grade 4 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 4 Mathematics**  
**Spring 2023 Computer-Based Released Operational Items**

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer**
1	Operations and Algebraic Thinking	4.OA.A.2	SR	Solve a word problem involving a multiplicative comparison.	A
2	Operations and Algebraic Thinking	4.OA.C.5	SR	Solve a word problem by determining additional terms in a given pattern.	C
3	Geometry	4.G.A.3	SR	Identify a given shape that has a specified number of lines of symmetry.	D
4	Number and Operations-Fractions	4.NF.A.2	CR	Write a fraction comparison using symbols, compare fractions with different denominators, and critique the reasoning of others about different-sized wholes in a word problem.	
5	Geometry	4.G.A.1	SA	Identify the number of acute angles in a given figure.	2
6	Number and Operations-Fractions	4.NF.C.6	SA	Convert a given fraction, with a denominator of 100, to a decimal and plot the point that represents the location of the decimal on a zoom number line.	<i>see page 5</i>
7	Geometry	4.G.A.2	SR	Determine which given shape is a quadrilateral with perpendicular sides.	B
8	Measurement and Data	4.MD.B.4	SR	Solve a word problem with addition of whole numbers and fractions by using data from a dot plot.	A
9	Number and Operations in Base Ten	4.NBT.B.4	SR	Determine the difference of a six-digit number and a four-digit number.	A
10	Measurement and Data	4.MD.C.5	SR	Determine the measure of an angle that turns through a given fraction of a circle.	C
11	Number and Operations-Fractions	4.NF.C.7	SR	Create comparison statements of two decimals to hundredths and tenths using the symbols $>$ or $<$ .	<i>see page 5</i>
12	Measurement and Data	4.MD.C.7	SR	Determine the angle measure of a larger angle given the measures of the individual angles that make up the larger angle.	A
13	Number and Operations in Base Ten	4.NBT.B.5	CR	Solve word problems by multiplying whole numbers: two digits by one digit, two digits by two digits, and four digits by one digit.	
14	Measurement and Data	4.MD.A.1	SR	Convert kilograms to grams.	C
15	Measurement and Data	4.MD.A.3	SR	Select the equation that shows how to find the perimeter of a rectangle given the length and width.	D
16	Number and Operations in Base Ten	4.NBT.A.3	SR	Round a multi-digit whole number to the nearest hundred, thousand, and ten thousand.	<i>see page 5</i>
17	Operations and Algebraic Thinking	4.OA.B.4	SR	Solve a word problem by identifying a multiple of a given whole number.	B
18	Operations and Algebraic Thinking	4.OA.A.1	SA	Write a multiplication equation to represent a given word comparison and a word comparison to represent a given multiplication equation.	<i>see page 6</i>

19	Number and Operations-Fractions	4.NF.B.3	SA	Create a model to represent the answer to a real-world problem involving addition and subtraction of fractions with like denominators.	<i>see page 6</i>
20	Number and Operations-Fractions	4.NF.B.4	SR	Solve a word problem by multiplying a fraction by a whole number.	B

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

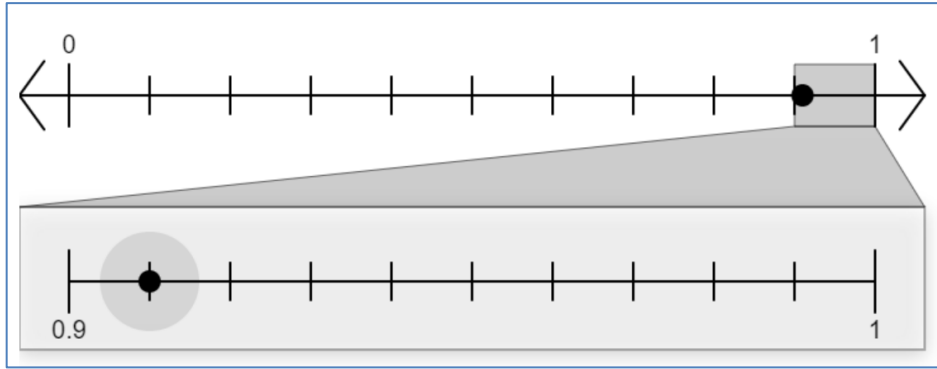
\*\* Answers are provided here for selected-response and short-answer items only. Pages 5 and 6 of this document provide correct answers for technology-enhanced (TE) items. Sample responses and scoring guidelines for constructed-response items will be posted at [www.doe.mass.edu/mcas/student/default.html](http://www.doe.mass.edu/mcas/student/default.html).

**Grade 4 Mathematics**  
**Spring 2023 Computer-Based Unreleased Operational Items**

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	Geometry	4.G.A.1	SR	Identify which visual representation of an angle is an obtuse angle.
22	Number and Operations in Base Ten	4.NBT.B.6	SR	Determine the whole number quotient of a four-digit dividend and a one-digit divisor.
23	Number and Operations-Fractions	4.NF.A.1	SA	Create a fraction model that represents an equivalent fraction of a given fraction with a denominator of 100.
24	Measurement and Data	4.MD.C.6	SR	Determine measures of angles using a protractor.
25	Number and Operations-Fractions	4.NF.C.7	SA	Write a comparison of two decimals to hundredths using the symbols $<$ , $>$ , or $=$ .
26	Number and Operations-Fractions	4.NF.B.3	SR	Identify the addition expressions with fractions and mixed numbers that are equivalent to a given mixed number sum.
27	Operations and Algebraic Thinking	4.OA.A.3	CR	Solve multi-step word problems using addition, multiplication, and division of whole numbers and by writing and solving an equation.
28	Number and Operations-Fractions	4.NF.B.4	SR	Identify the expression that is equivalent to the product of a fraction multiplied by a whole number.
29	Number and Operations in Base Ten	4.NBT.A.2	SA	Match numbers written in expanded form to their equivalent numbers written in word form and compare numbers written in word form to a number in standard form.
30	Operations and Algebraic Thinking	4.OA.A.1	SA	Complete a verbal statement of multiplicative comparison that represents a given equation in a word problem.
31	Number and Operations-Fractions	4.NF.A.1	SR	Determine which fraction is equivalent to a given fraction using a picture.
32	Geometry	4.G.A.2	SR	Identify shapes that contain right angles.
33	Number and Operations in Base Ten	4.NBT.A.1	SR	Determine the relationship between digits in multi-digit whole numbers.
34	Number and Operations-Fractions	4.NF.C.6	SA	Write a fraction with a denominator of 100 as a decimal.
35	Measurement and Data	4.MD.A.2	CR	Use a ruler to measure given objects to the nearest centimeter and solve word problems involving multiplication and addition of measurements and the conversion of meters to centimeters.
36	Measurement and Data	4.MD.C.5	SR	Identify the mathematical name for a given definition.
37	Number and Operations-Fractions	4.NF.C.5	SR	Determine which fraction is equivalent to a given fraction with a denominator of 100.
38	Number and Operations in Base Ten	4.NBT.A.2	SR	Put four six-digit numbers in order from least to greatest.
39	Operations and Algebraic Thinking	4.OA.B.4	SR	Select the factor pairs of a given two-digit number.
40	Number and Operations-Fractions	4.NF.C.5	SR	Interpret two given fraction models, one in tenths and one in hundredths, and identify the equivalent addition expression using fractions with denominators of 100.

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

**Correct Answer for CBT Item #6: Technology-Enhanced Item**



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

0.54 >

0.6 <

0.76 >

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

Statement	True	False
44,285 rounded to the nearest <b>hundred</b> is 44,200.	<input type="radio"/>	<input checked="" type="radio"/>
44,285 rounded to the nearest <b>thousand</b> is 44,000.	<input checked="" type="radio"/>	<input type="radio"/>
44,285 rounded to the nearest <b>ten thousand</b> is 40,000.	<input checked="" type="radio"/>	<input type="radio"/>

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

**Part A:**

$14 = 7 \times 2$  or equivalent equation

**The numbers 7 and 2 with a multiplication symbol are required. The number 14 must be used and isolated.**

**Part B:**

The number  is 6 times as many as the number .

**Correct Answer for CBT Item #19: Technology-Enhanced Item**

