

## **Computer-Based Released Items Grade 4 Mathematics Spring 2019**

The spring 2019 grade 4 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](https://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](http://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 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 2019 Computer-Based Released Operational Items**

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer**
1	Operations and Algebraic Thinking	4.OA.B.4	SR	Given a set of multiples of a number, determine the number.	B
2	Number and Operations-Fractions	4.NF.C.5	SR	Add fractions with denominators of 10 and 100.	A
3	Number and Operations-Fractions	4.NF.C.7	CR	Compare decimals given in tenths and hundredths in a list, order decimals from least to greatest, and determine which decimal from the list is closest in value to a given decimal.	<i>see page 6</i>
4	Number and Operations-Fractions	4.NF.B.3	SR	Determine which expression has a value that is not equivalent to a given expression.	B
5	Number and Operations-Fractions	4.NF.C.6	SA	Locate a decimal on a zoom number line.	<i>see page 7</i>
6	Operations and Algebraic Thinking	4.OA.A.2	CR	Write an equation with a symbol for the unknown number to represent a word problem involving multiplicative comparison and then multiply to solve problems.	<i>see page 8</i>
7	Number and Operations-Fractions	4.NF.A.2	SR	Identify the correct comparisons of two fractions that are represented by visual fraction models.	B,E
8	Measurement and Data	4.MD.B.4	SR	Solve a word problem with addition of fractions by using data from a dot plot.	D
9	Geometry	4.G.A.2	SR	Identify shapes that have at least one obtuse angle and justify why a shape is a right triangle.	<i>see page 9</i>
10	Measurement and Data	4.MD.A.1	SR	Convert dimensions measured in yards to feet.	B
11	Number and Operations in Base Ten	4.NBT.A.1	SA	In a given multi-digit number, recognize that the value of a digit is 10 times the value of the digit to its right.	10

12	Number and Operations in Base Ten	4.NBT.A.2	SA	Write the standard form of a number given in word form.	14205
13	Geometry	4.G.A.3	SR	Recognize a line of symmetry for a two-dimensional figure and identify how many lines of symmetry can be drawn on the figure.	<i>see page 9</i>
14	Measurement and Data	4.MD.C.7	SR	Determine an angle measure given the measures of two adjacent angles and the sum of all three angle measures.	B
15	Operations and Algebraic Thinking	4.OA.A.3	SA	Solve a multi-step word problem involving addition and division of whole numbers.	<i>see page 9</i>
16	Number and Operations in Base Ten	4.NBT.A.3	SR	Round multi-digit whole numbers to the nearest ten, hundred, and thousand.	<i>see page 10</i>
17	Measurement and Data	4.MD.C.6	SR	Determine measures of given angles shown on protractors.	<i>see page 10</i>
18	Number and Operations-Fractions	4.NF.B.4	SA	Solve a word problem by multiplying a fraction by a whole number.	<i>see page 10</i>
19	Number and Operations in Base Ten	4.NBT.B.4	SR	Determine the difference of two five-digit numbers.	A
20	Measurement and Data	4.MD.A.3	SR	Given the length and the width of a rectangle, determine its area.	C

\* 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 7, 9, 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 4 Mathematics**  
**Spring 2019 Computer-Based Unreleased Operational Items**

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	Number and Operations-Fractions	4.NF.B.3	SR	Solve a word problem involving subtraction of a given fraction from one whole.
22	Geometry	4.G.A.1	SR	Identify an acute angle.
23	Geometry	4.G.A.3	SR	Identify one, two, or three or more lines of symmetry for four different figures.
24	Operations and Algebraic Thinking	4.OA.C.5	SR	Choose the statement that correctly identifies a feature of a given shape pattern.
25	Number and Operations in Base Ten	4.NBT.A.2	SR	Compare multi-digit whole numbers given in word form and in number form.
26	Number and Operations in Base Ten	4.NBT.B.4	SA	Determine the sum of a five-digit number and a four-digit number.
27	Measurement and Data	4.MD.C.5	SR	Determine the measure of an angle that turns through a portion of a circle.
28	Number and Operations in Base Ten	4.NBT.B.6	SA	Solve a word problem by dividing a four-digit number by a one-digit number.
29	Number and Operations-Fractions	4.NF.B.4	SA	Use a visual fraction model to represent the product of a whole number and a unit fraction.
30	Operations and Algebraic Thinking	4.OA.B.4	SR	Identify multiples of a given number.
31	Number and Operations-Fractions	4.NF.A.1	SR	Identify a pair of equivalent fractions represented by a picture.
32	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.
33	Number and Operations-Fractions	4.NF.B.3	SR	Determine which expression has a value that is equivalent to a given fraction.
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	Number and Operations-Fractions	4.NF.A.1	SR	Determine which fraction is equivalent to a given fraction using a picture.
37	Number and Operations-Fractions	4.NF.C.7	SR	Determine which decimal is greater than a number shown on a visual model and is less than 1.

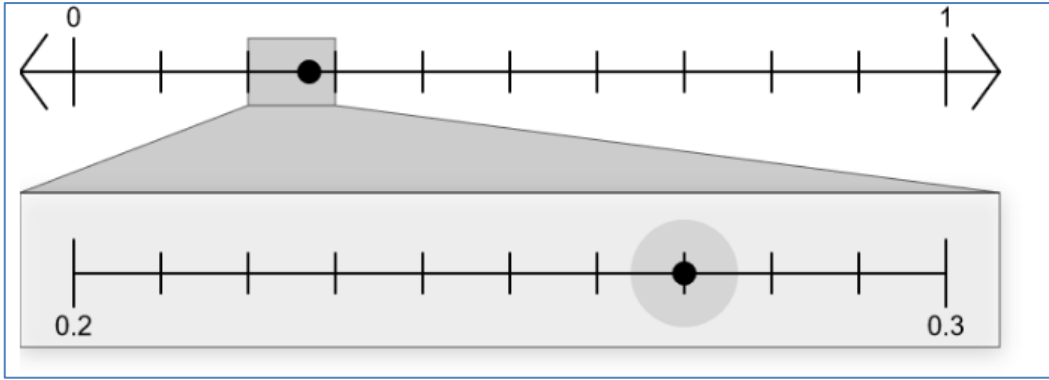
38	Operations and Algebraic Thinking	4.OA.A.1	SA	Write a multiplication equation to represent a word comparison and a word comparison to represent a multiplication equation.
39	Operations and Algebraic Thinking	4.OA.C.5	SR	Solve a word problem by determining additional terms of a given pattern.
40	Geometry	4.G.A.1	SR	Identify whether specified line segments and angles can be found in a given figure.

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

**Rubric for CBT Item #3: Constructed Response**

<b>Scoring Guide</b>	
<b>Score</b>	<b>Description</b>
<b>4</b>	The student response demonstrates an exemplary understanding of the Number and Operations - Fractions concepts involved in comparing two decimals to hundredths by reasoning about their size. The student correctly uses place value to compare decimals and explains the reasoning of their comparisons.
<b>3</b>	The student response demonstrates a good understanding of the Number and Operations - Fractions concepts involved in comparing two decimals to hundredths by reasoning about their size. 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.
<b>2</b>	The student response demonstrates a fair understanding of the Number and Operations - Fractions concepts involved in comparing two decimals to hundredths by reasoning about their size. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
<b>1</b>	The student response demonstrates a minimal understanding of the Number and Operations - Fractions concepts involved in comparing two decimals to hundredths by reasoning about their size.
<b>0</b>	The student response contains insufficient evidence of an understanding of the Number and Operations - Fractions concepts involved in comparing two decimals to hundredths by reasoning about their size to merit any points.

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



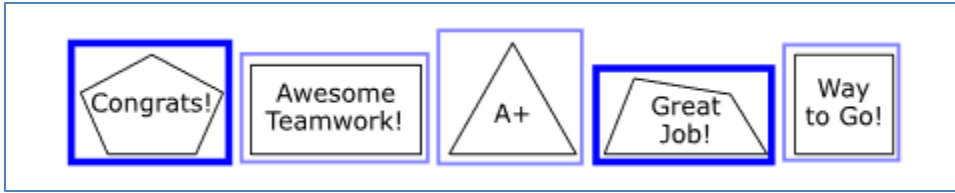
**Rubric for CBT Item #6: Constructed Response**

<b>Scoring Guide</b>	
<b>Score</b>	<b>Description</b>
<b>4</b>	The student response demonstrates an exemplary understanding of the Operations and Algebraic Thinking concepts involved in multiplying or dividing to solve word problems involving multiplicative comparisons. The student correctly uses multiplication to write equations and solve word problems involving multiplicative comparisons.
<b>3</b>	The student response demonstrates a good understanding of the Operations and Algebraic Thinking concepts involved in multiplying or dividing to solve word problems involving multiplicative comparisons. 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.
<b>2</b>	The student response demonstrates a fair understanding of the Operations and Algebraic Thinking concepts involved in multiplying or dividing to solve word problems involving multiplicative comparisons. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
<b>1</b>	The student response demonstrates a minimal understanding of the Operations and Algebraic Thinking concepts involved in multiplying or dividing to solve word problems involving multiplicative comparisons.
<b>0</b>	The student response contains insufficient evidence of an understanding of the Operations and Algebraic Thinking concepts involved in multiplying or dividing to solve word problems involving multiplicative comparisons to merit any points.



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

**Part A:**



**Part B:**

The  sticker appears to be a right triangle because it has .

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

The dashed line  a line of symmetry for the figure.  
The figure has a total of  of symmetry.

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

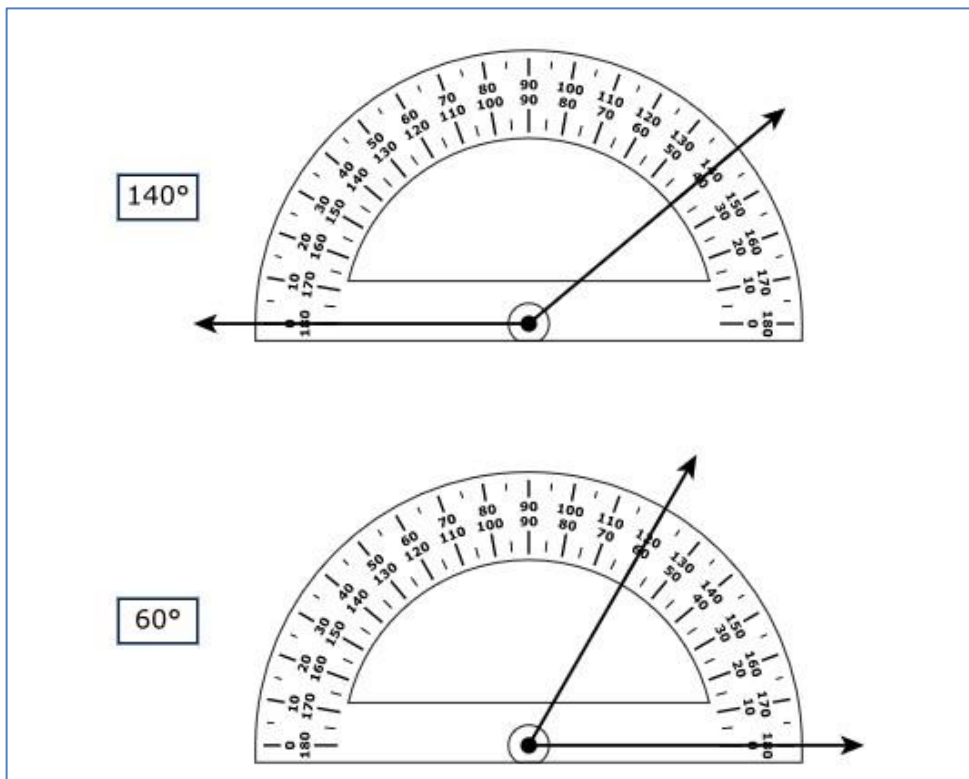
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**Correct Answer for CBT Item #16: Technology-Enhanced Item**

Statement	True	False
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32,974 rounded to the nearest hundred is 33,000	<input checked="" type="radio"/>	<input type="radio"/>
32,974 rounded to the nearest thousand is 33,000	<input checked="" type="radio"/>	<input type="radio"/>

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



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

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