

Computer-Based Released Items

Grade 3 Mathematics

Spring 2021

The spring 2021 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 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 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.

2021 Session Sampling

In 2021, due to the COVID-19 pandemic, the Department reduced testing time for students in grades 3–8 through a session sampling approach, in which each student took only a portion of each MCAS assessment. Instead of taking two sessions in each subject, individual students took one session each.

Grade 3 Mathematics
Spring 2021 Computer-Based Released Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer**
1	Operations and Algebraic Thinking	3.OA.A.4	SR	Determine the missing factor in a multiplication equation.	A
2	Number and Operations-Fractions	3.NF.A.1	SA	Partition a rectangle into equal parts and shade the parts to represent a given fraction in the form a/b .	<i>see page 6</i>
3	Operations and Algebraic Thinking	3.OA.C.7	SR	Choose the pair of multiplication and/or division equations that are both true.	D
4	Operations and Algebraic Thinking	3.OA.A.2	SA	Write an expression that can be used to solve a word problem involving division of whole numbers.	<i>see page 6</i>
5	Geometry	3.G.A.1	SR	Determine which shapes are a specific type of quadrilateral.	B,E
6	Geometry	3.G.A.2	SR	Determine the unit fraction that describes the area of one part of a circle that is partitioned into equal parts.	C
7	Measurement and Data	3.MD.A.1	CR	Solve word problems by finding time intervals using subtraction and addition.	<i>see page 6</i>
8	Measurement and Data	3.MD.B.4	SA	Select an appropriate ruler and measure a figure to the nearest fourth of an inch.	<i>see page 7</i>
9	Measurement and Data	3.MD.B.3	SA	Use a scaled bar graph to solve a two-step "how many more" question.	5
10	Number and Operations in Base Ten	3.NBT.A.1	CR	Solve a word problem with estimation by rounding whole numbers to the nearest 10 and 100.	<i>see page 7</i>
11	Operations and Algebraic Thinking	3.OA.A.3	SR	Solve a word problem involving division of two whole numbers.	C
12	Number and Operations-Fractions	3.NF.A.3	SR	Identify an equivalent fraction using a given fraction model larger than one.	A
13	Operations and Algebraic Thinking	3.OA.D.8	SA	Solve a two-step word problem involving subtraction and multiplication and represent the solution on a number line.	<i>see page 7</i>

14	Measurement and Data	3.MD.C.6	SA	Determine the area of an irregular shape by counting the square tiles that cover it.	19
15	Number and Operations-Fractions	3.NF.A.2	SR	Graph a fraction greater than one on a number line.	<i>see page 8</i>
16	Measurement and Data	3.MD.C.7	SR	Determine the equation that can be used to find the area of a figure with a given length and width.	B
17	Number and Operations-Fractions	3.NF.A.3	SR	Choose the statement that correctly compares two fractions with the same numerator.	D
18	Operations and Algebraic Thinking	3.OA.B.6	SR	Determine the multiplication equation that could be used to solve a given division equation.	C
19	Operations and Algebraic Thinking	3.OA.D.9	SR	Determine the rule and find the next number in a pattern.	<i>see page 8</i>
20	Number and Operations in Base Ten	3.NBT.A.3	SR	Choose expressions that have the same value as a given expression in which a one-digit whole number is multiplied by a multiple of ten.	C,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. Pages 6 through 8 and this document provide correct answers for technology-enhanced (TE) items and scoring rubrics for constructed-response items. Sample responses and scoring guidelines for constructed-response items will be posted to the Department's website later this year.

Grade 3 Mathematics
Spring 2021 Computer-Based Unreleased Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	Measurement and Data	3.MD.C.5	SR	Determine the area of a figure given the number of square tiles that cover the figure and the side length of each tile.
22	Number and Operations-Fractions	3.NF.A.2	SR	Determine which fraction is represented by the location of a given point on a number line.
23	Number and Operations in Base Ten	3.NBT.A.2	SR	Compare three-digit whole numbers given in a table by subtracting.
24	Number and Operations-Fractions	3.NF.A.3	SA	Write a fraction that is equivalent to a given fraction.
25	Operations and Algebraic Thinking	3.OA.B.5	SR	Choose the pair of multiplication and/or division equations that are both true.
26	Number and Operations in Base Ten	3.NBT.A.3	SR	Multiply one-digit whole numbers by multiples of ten.
27	Geometry	3.G.A.1	SR	Identify which mathematical name applies for a shape given the number of sides.
28	Number and Operations in Base Ten	3.NBT.A.2	SA	Add two three-digit whole numbers with regrouping.
29	Number and Operations in Base Ten	3.NBT.A.1	SR	Round whole numbers to the nearest 10.
30	Measurement and Data	3.MD.A.1	SR	Determine the time interval given starting and ending times shown on two different analog clocks.
31	Measurement and Data	3.MD.D.8	SR	Given a shape and its dimensions, determine which shape with different given dimensions has the same area but a different perimeter.
32	Operations and Algebraic Thinking	3.OA.A.1	CR	Solve a multiplication word problem, and write another word problem that can be solved with a given multiplication equation.
33	Operations and Algebraic Thinking	3.OA.C.7	SA	Solve multiplication equations with two or three whole number factors.
34	Operations and Algebraic Thinking	3.OA.D.8	SA	Write an equation involving multiplication and addition that can be used to solve a two-step problem.

35	Operations and Algebraic Thinking	3.OA.A.4	SR	Determine which multiplication and division equations are true when the unknown quantity is replaced with a given value.
36	Number and Operations-Fractions	3.NF.A.1	CR	Determine the fraction represented by a fraction model, justify your answer, and then create a fraction model of a fraction greater than one.
37	Measurement and Data	3.MD.A.2	SR	Multiply to solve a word problem involving liters.
38	Measurement and Data	3.MD.D.8	SR	Given the perimeter and some of the side lengths for several polygons, determine which polygons have a missing side length that is a specific amount.
39	Geometry	3.G.A.2	SR	Determine the unit fraction that describes the area of one part of a given shape that is partitioned into equal parts.
40	Operations and Algebraic Thinking	3.OA.A.3	SR	Determine which equation represents a word problem with division of whole numbers.

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

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



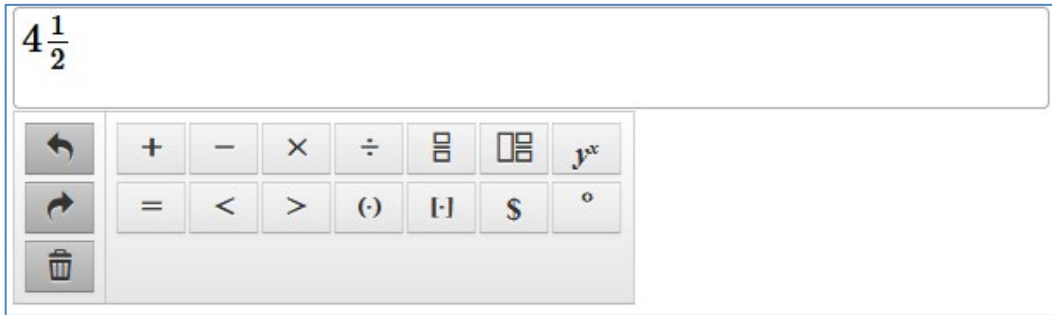
Correct Answer for CBT Item #4: Technology-Enhanced Item



Rubric for CBT Item #7: Constructed Response

Scoring Guide	
Score	Description
3	The student response demonstrates an exemplary understanding of the Measurement and Data concepts involved in solving word problems that require addition and subtraction of time intervals in minutes. The student correctly uses addition and subtraction of time intervals to solve word problems.
2	The student response demonstrates a good understanding of the Measurement and Data concepts involved in solving word problems that require addition and subtraction of time intervals in minutes. 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 word problems that require addition and subtraction of time intervals in minutes. 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 word problems that require addition and subtraction of time intervals in minutes. As a result, the response does not merit any points.

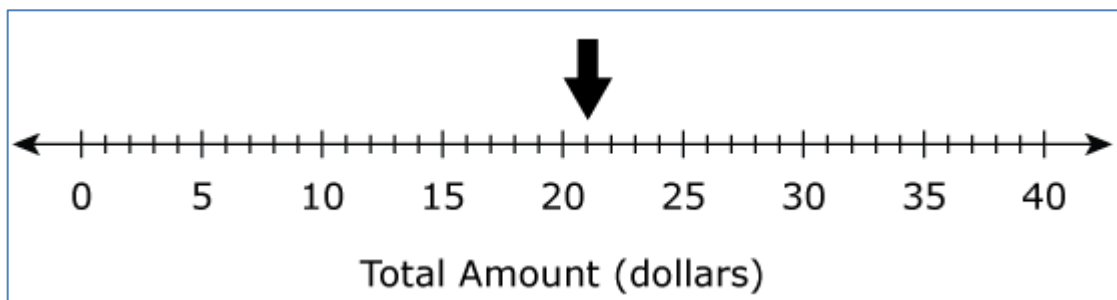
Correct Answer for CBT Item #8: Technology-Enhanced Item



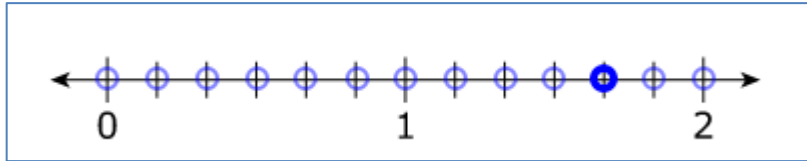
Rubric for CBT Item #10: Constructed Response

Scoring Guide	
Score	Description
3	The student response demonstrates an exemplary understanding of the Number & Operations in Base Ten concepts involved in using place value understanding to round whole numbers to the nearest 10 or 100. The student correctly rounds whole numbers to the nearest 10 and 100 to solve word problems by estimating and determines what numbers will round to a given amount.
2	The student response demonstrates a good understanding of the Number & Operations in Base Ten concepts involved in using place value understanding to round whole numbers to the nearest 10 or 100. 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 Number & Operations in Base Ten concepts involved in using place value understanding to round whole numbers to the nearest 10 or 100. The mixed evidence provided by the student merits 1 point.
0	The student response contains insufficient evidence of an understanding of the Number & Operations in Base Ten concepts involved in using place value understanding to round whole numbers to the nearest 10 or 100. As a result, the response does not merit any points.

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



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



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

The rule for the pattern is .

The next number in the pattern is .