**Computer-Based Released Items**
**Grade 3 Mathematics**
**Spring 2023**

The spring 2023 grade 3 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. 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 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/.

**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.

# Grade 3 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 | 3.OA.A.3 | SR | Solve a word problem involving division of two whole numbers. | D |
| 2 | Operations and Algebraic Thinking | 3.OA.D.9 | SA | Identify the rule to find the next number in an addition pattern. | 43 |
| 3 | Measurement and Data | 3.MD.A.2 | SA | Solve a one-step multiplication word problem with liquid volume in metric units and record the answer using a slider. | *see page 5* |
| 4 | Operations and Algebraic Thinking | 3.OA.B.5 | SA | Determine the value of the variable in an equation using the Commutative Property of Multiplication. | 8 |
| 5 | Geometry | 3.G.A.1 | SR | Identify shapes with right angles. | B,C,E |
| 6 | Number and Operations-Fractions | 3.NF.A.3 | SR | Choose the statement that correctly compares two fractions with the same numerator or denominator. | D |
| 7 | Number and Operations in Base Ten | 3.NBT.A.1 | CR | Determine and justify which numbers round to the same 100 and provide different numbers that will also round the same way. |  |
| 8 | Geometry | 3.G.A.2 | SA | Given the number of equal parts in a figure, determine what fraction one part is of the area of the whole figure. | *see page 5* |
| 9 | Measurement and Data | 3.MD.B.3 | SA | Complete a scaled picture graph using the three categories of data in a given table. | *see page 5* |
| 10 | Number and Operations-Fractions | 3.NF.A.3 | SR | Plot a point on a number line to show the location of a given fraction that is equivalent to a whole number. | *see page 6* |
| 11 | Operations and Algebraic Thinking | 3.OA.A.2 | SR | Determine which equation can be used to solve a word problem involving division of whole numbers. | C |
| 12 | Number and Operations in Base Ten | 3.NBT.A.2 | SR | Solve a real-world problem by subtracting two three-digit whole numbers. | A |
| 13 | Measurement and Data | 3.MD.C.7 | SR | Identify the expression that can be used to find the total area of a given tiled rectangle using the distributive property. | D |
| 14 | Geometry | 3.G.A.1 | SR | Determine which shape has the same number of angles as a given shape. | D |
| 15 | Number and Operations-Fractions | 3.NF.A.3 | SA | Write a fraction that is equivalent to a given fraction. | *see page 6* |
| 16 | Operations and Algebraic Thinking | 3.OA.C.7 | SR | Determine which multiplication expression with three factors has a value less than a given value using the properties of operations. | D |
| 17 | Operations and Algebraic Thinking | 3.OA.C.7 | SR | Complete given division equations by choosing the correct quotients. | *see page 6* |
| 18 | Measurement and Data | 3.MD.A.1 | CR | Tell time on an analog clock, determine an interval of time given time on a digital clock, and solve a word problem by adding a time interval in minutes larger than one hour that changes from A.M. to P.M. |  |

| 19 | Number and Operations-Fractions | 3.NF.A.2 | SR | Identify the fraction greater than one that describes where a given point is plotted on a number line. | B |
| 20 | Number and Operations in Base Ten | 3.NBT.A.3 | SR | Multiply one-digit whole numbers by multiples of ten. | *see page 6* |

\* 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.

# Grade 3 Mathematics
## Spring 2023 Computer-Based Unreleased Operational Items

| CBT Item No. | Reporting Category | Standard | Item Type* | Item Description |
|---|---|---|---|---|
| 21 | Measurement and Data | 3.MD.C.7 | SR | Complete an equation that can be used to find the area of a given rectangle that is tiled. |
| 22 | Measurement and Data | 3.MD.B.4 | SR | Select an appropriate ruler and measure an item to the nearest fourth of an inch. |
| 23 | Operations and Algebraic Thinking | 3.OA.B.6 | SR | Create multiplication equations that can be used to help solve given division equations that have a variable for the unknown. |
| 24 | Measurement and Data | 3.MD.A.1 | SR | Determine the time on a given analog clock. |
| 25 | Operations and Algebraic Thinking | 3.OA.D.8 | CR | Use different strategies and reasoning to solve two-step word problems with addition and multiplication of whole numbers. |
| 26 | Operations and Algebraic Thinking | 3.OA.A.3 | SR | Solve a word problem given the relationship between two given whole number amounts. |
| 27 | Number and Operations in Base Ten | 3.NBT.A.2 | SR | Compare three-digit whole numbers given in a table by subtracting. |
| 28 | Operations and Algebraic Thinking | 3.OA.B.5 | SA | Use the distributive property to complete a multiplication equation. |
| 29 | Measurement and Data | 3.MD.C.5 | SR | Identify the correct statement about estimating the area of a given figure, made of two squares, based on reasoning about the size of the squares. |
| 30 | Number and Operations in Base Ten | 3.NBT.A.3 | SR | Solve a real-world problem by finding the product of a one-digit number and a multiple of 10. |
| 31 | Operations and Algebraic Thinking | 3.OA.A.1 | SR | Determine the multiplication expressions that can be used to model given rectangular arrays. |
| 32 | Operations and Algebraic Thinking | 3.OA.D.9 | SR | Given the first number and the rule of a pattern, determine a common characteristic of all the numbers in the pattern. |
| 33 | Measurement and Data | 3.MD.D.8 | SA | Given a real-world problem, determine the length of one side of a square given the square's perimeter. |
| 34 | 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. |
| 35 | 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. |
| 36 | Number and Operations-Fractions | 3.NF.A.2 | SR | Plot a unit fraction on a number line. |
| 37 | Number and Operations-Fractions | 3.NF.A.1 | SA | Write a fraction that is represented by a given fraction model. |
| 38 | Number and Operations in Base Ten | 3.NBT.A.1 | SR | Round whole numbers to the nearest 10. |
| 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 | Measurement and Data | 3.MD.C.6 | SR | Determine the area of given figures by counting the unit squares. |

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

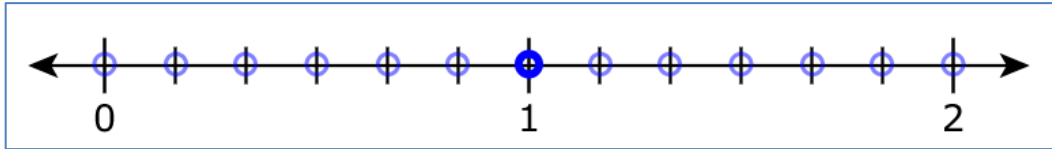**Correct Answer for CBT Item #3: Technology-Enhanced Item**
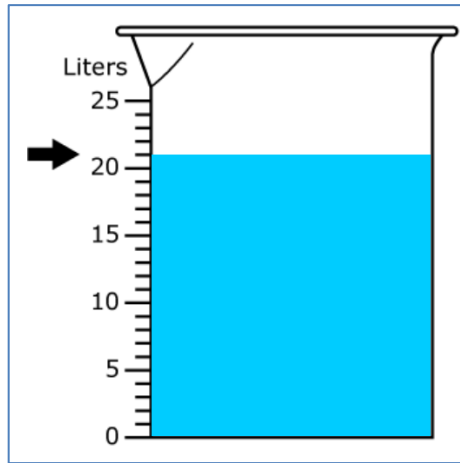


**Correct Answer for CBT Item #8: Technology-Enhanced Item**

- $\frac{1}{2}$ **or any equivalent fraction**

- **No decimals allowed**

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

**Correct Answer for CBT Item #10: Technology-Enhanced Item**



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

- $\frac{1}{2}$ or any equivalent fraction
- $\frac{2}{4}$ is not allowed
- No decimals allowed

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

| Equation | 7 | 8 | 9 |
|---|---|---|---|
| $40 \div 5 =$ | ○ | ● | ○ |
| $42 \div 6 =$ | ● | ○ | ○ |
| $72 \div 8 =$ | ○ | ○ | ● |
| $81 \div 9 =$ | ○ | ○ | ● |

**Correct Answer for CBT Item #20: Technology-Enhanced Item**

$5 \times 80 =$ 400

$3 \times 20 =$ 60

$90 \times 6 =$ 540