

## Computer-Based Released Items

### Grade 6 MCAS Mathematics

### Spring 2025

The spring 2025 grade 6 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. More information can be found on the MCAS Test Administration Resources page at [www.doe.mass.edu/mcas/admin.html](http://www.doe.mass.edu/mcas/admin.html).

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.onlinehelp.cognia.org/released-items](http://mcas.onlinehelp.cognia.org/released-items).
- Released items from the **paper-based test** are available in PDF format on the Department’s website at [www.doe.mass.edu/mcas/release.html](http://www.doe.mass.edu/mcas/release.html).

This document provides information about each released item from the *computer-based test*, including the following: reporting category, standard covered, item type, item description, and correct answer (for selected-response and short-answer items only). This information is also provided for unreleased operational items. Sample responses and scoring guidelines for 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 6 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 or multiple-select items that tested the same Mathematics content and assessed the same standard as the technology-enhanced item.

**Grade 6 Mathematics**  
**Spring 2025 Computer-Based Released Operational Items**

| CBT Item No. | Reporting Category                           | Standard | Item Type* | Item Description                                                                                       | Correct Answer (SR)** |
|--------------|----------------------------------------------|----------|------------|--------------------------------------------------------------------------------------------------------|-----------------------|
| 1            | <i>The Number System</i>                     | 6.NS.B.4 | SR         | Determine the greatest common factor of two given numbers.                                             | C                     |
| 2            | <i>Expressions and Equations</i>             | 6.EE.A.1 | SR         | Represent the value of a given number as an expression with a whole-number exponent.                   | C                     |
| 3            | <i>Ratios and Proportional Relationships</i> | 6.RP.A.1 | SR         | Given relationships described in words, identify the ratio that represents each relationship.          | see page 6            |
| 4            | <i>The Number System</i>                     | 6.NS.C.6 | SR         | Determine the value of a given point on a number line.                                                 | B                     |
| 5            | <i>The Number System</i>                     | 6.NS.B.2 | SR         | Determine whether given division equations are true or false.                                          | see page 6            |
| 6            | <i>Expressions and Equations</i>             | 6.EE.B.6 | CR         | Create and evaluate expressions based on a real-world situation.                                       |                       |
| 7            | <i>Ratios and Proportional Relationships</i> | 6.RP.A.3 | SR         | Determine the volume of a solid by using rate and ratio reasoning within a real-world context.         | D                     |
| 8            | <i>Statistics and Probability</i>            | 6.SP.A.1 | SR         | Distinguish statistical questions from non-statistical questions.                                      | see page 6            |
| 9            | <i>Expressions and Equations</i>             | 6.EE.A.2 | SR         | Create a word expression that represents a mathematical expression.                                    | see page 6            |
| 10           | <i>Geometry</i>                              | 6.G.A.4  | SR         | Use the net of a triangular prism to find its surface area.                                            | C                     |
| 11           | <i>The Number System</i>                     | 6.NS.C.8 | SR         | Determine the location of a point on a coordinate plane based on its distance from a given point.      | C                     |
| 12           | <i>Statistics and Probability</i>            | 6.SP.B.5 | SA         | Identify the number of observations on a histogram.                                                    | 37                    |
| 13           | <i>Ratios and Proportional Relationships</i> | 6.RP.A.3 | CR         | Use reasoning about percentages and unit rates to solve a multi-step, real-world problem.              |                       |
| 14           | <i>The Number System</i>                     | 6.NS.A.1 | SR         | Solve a problem involving the division of two fractions.                                               | C                     |
| 15           | <i>Geometry</i>                              | 6.G.A.3  | SA         | Find the length of the side of a polygon by finding the distance between points on a coordinate plane. | 4                     |
| 16           | <i>The Number System</i>                     | 6.NS.C.7 | SA         | Identify a rational number that is within a range of other rational numbers.                           | $-4 < n < 0$          |
| 17           | <i>Expressions and Equations</i>             | 6.EE.C.9 | SR         | Interpret the relationship between two variables and use the relationship to create an equation.       | see page 7            |
| 18           | <i>Statistics and Probability</i>            | 6.SP.A.2 | SA         | Given a set of data, identify the median and the range.                                                | see page 7            |

| <b>CBT<br/>Item No.</b> | <b>Reporting<br/>Category</b>         | <b>Standard</b> | <b>Item<br/>Type*</b> | <b>Item Description</b>                                                                                             | <b>Correct<br/>Answer<br/>(SR)**</b> |
|-------------------------|---------------------------------------|-----------------|-----------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 19                      | <i>Geometry</i>                       | 6.G.A.2         | SR                    | Determine the dimensions and the volume of a right rectangular prism by using a cube with a fractional edge length. | <i>see page 7</i>                    |
| 20                      | <i>Statistics and<br/>Probability</i> | 6.SP.A.1        | SR                    | Identify multiple statistical questions.                                                                            | B,D,E                                |

\* 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 6–7 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 6 Mathematics**  
**Spring 2025 Computer-Based Unreleased Operational Items**

| <b>CBT Item No.</b> | <b>Reporting Category</b>                    | <b>Standard</b> | <b>Item Type*</b> | <b>Item Description</b>                                                                                                                                             |
|---------------------|----------------------------------------------|-----------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21                  | <i>Statistics and Probability</i>            | 6.SP.A.2        | SR                | Analyze a dot plot using median, mode, and range.                                                                                                                   |
| 22                  | <i>The Number System</i>                     | 6.NS.C.8        | SR                | Use absolute value to determine the distance between two points on a coordinate plane given a mathematical context.                                                 |
| 23                  | <i>Geometry</i>                              | 6.G.A.3         | CR                | Solve problems on a coordinate plane by plotting points, finding the distance between points, and calculating the areas of figures graphed on the coordinate plane. |
| 24                  | <i>Expressions and Equations</i>             | 6.EE.B.8        | SR                | Identify an inequality that represents a condition in a real-world problem.                                                                                         |
| 25                  | <i>Ratios and Proportional Relationships</i> | 6.RP.A.3        | SR                | Use rate reasoning to solve a real-world problem involving fractions.                                                                                               |
| 26                  | <i>Expressions and Equations</i>             | 6.EE.A.3        | SA                | Use the distributive property to generate an equivalent expression within a real-world context.                                                                     |
| 27                  | <i>Expressions and Equations</i>             | 6.EE.B.7        | SA                | Determine the value of the dependent variable, given the value of the independent variable in a real-world context.                                                 |
| 28                  | <i>Statistics and Probability</i>            | 6.SP.B.4        | SR                | Identify the box plot that matches a set of data and create a line plot to represent given data.                                                                    |
| 29                  | <i>Expressions and Equations</i>             | 6.EE.A.4        | SR                | Determine which expression is equivalent to a given expression.                                                                                                     |
| 30                  | <i>Ratios and Proportional Relationships</i> | 6.RP.A.2        | SR                | Identify three unit rates in a real-world context.                                                                                                                  |
| 31                  | <i>Ratios and Proportional Relationships</i> | 6.RP.A.3        | SR                | Use a given rate to determine an equivalent rate in a real-world context.                                                                                           |
| 32                  | <i>Expressions and Equations</i>             | 6.EE.C.9        | SR                | Analyze the relationship between the variables in an equation that represents a given real-world context.                                                           |
| 33                  | <i>Geometry</i>                              | 6.G.A.1         | SR                | Find the area of a figure by decomposing it into rectangles and triangles.                                                                                          |
| 34                  | <i>The Number System</i>                     | 6.NS.B.3        | CR                | Solve a real-world problem by adding, subtracting, multiplying, and dividing decimals.                                                                              |
| 35                  | <i>Ratios and Proportional Relationships</i> | 6.RP.A.1        | SR                | Determine which statement describes a given ratio relationship in a real-world context.                                                                             |
| 36                  | <i>Expressions and Equations</i>             | 6.EE.A.3        | SR                | Use properties of operations to simplify and find an equivalent expression.                                                                                         |
| 37                  | <i>Ratios and Proportional Relationships</i> | 6.RP.A.2        | SR                | Determine which ratios are equivalent to a given unit rate.                                                                                                         |
| 38                  | <i>Expressions and Equations</i>             | 6.EE.A.2        | SR                | Write a mathematical expression to model a given real-world situation.                                                                                              |

| <b>CBT<br/>Item No.</b> | <b>Reporting Category</b>            | <b>Standard</b> | <b>Item<br/>Type*</b> | <b>Item Description</b>                                                       |
|-------------------------|--------------------------------------|-----------------|-----------------------|-------------------------------------------------------------------------------|
| 39                      | <i>Expressions and<br/>Equations</i> | 6.EE.A.4        | SR                    | Determine which expressions are equivalent to a given expression.             |
| 40                      | <i>Statistics and Probability</i>    | 6.SP.B.5        | SR                    | Determine which statements correctly describe data represented in a dot plot. |

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

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

| Relationship                    | 5:8                              | 3:5                              | 8:3                              |
|---------------------------------|----------------------------------|----------------------------------|----------------------------------|
| green marbles to yellow marbles | <input type="radio"/>            | <input checked="" type="radio"/> | <input type="radio"/>            |
| yellow marbles to all marbles   | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            |
| all marbles to green marbles    | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> |

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

| Division Equation  | True                             | False                            |
|--------------------|----------------------------------|----------------------------------|
| $87 \div 3 = 27$   | <input type="radio"/>            | <input checked="" type="radio"/> |
| $924 \div 6 = 154$ | <input checked="" type="radio"/> | <input type="radio"/>            |
| $870 \div 15 = 58$ | <input checked="" type="radio"/> | <input type="radio"/>            |

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

| Statistical Questions                       | Non-statistical Questions         |
|---------------------------------------------|-----------------------------------|
| Who was your favorite actor in the play?    | How many actors were in the play? |
| In which row did you sit to watch the play? | At what time did the play begin?  |

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

nine  the  of fifteen and  $n$

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

**Part A**

Based on the equation, the cyclist could ride  mile(s) in 1 hour and  miles in 2.5 hours.

**Part B**

$y = 14.5x$

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

The  of the data is equal to 7.

The  of the data is equal to 8.

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

| Statement                                                           | True                             | False                            |
|---------------------------------------------------------------------|----------------------------------|----------------------------------|
| The length of the rectangular prism is $\frac{1}{3}$ inch.          | <input type="radio"/>            | <input checked="" type="radio"/> |
| The width of the rectangular prism is $\frac{4}{3}$ inches.         | <input checked="" type="radio"/> | <input type="radio"/>            |
| The height of the rectangular prism is 1 inch.                      | <input checked="" type="radio"/> | <input type="radio"/>            |
| The volume of the rectangular prism is $\frac{20}{3}$ cubic inches. | <input type="radio"/>            | <input checked="" type="radio"/> |