

Computer-Based Released Items

Grade 8 MCAS Mathematics

Spring 2025

The spring 2025 grade 8 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.

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.
- 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.

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/.

A Note about Testing Mode

Most of the operational items on the grade 8 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 8 Mathematics
Spring 2025 Computer-Based Released Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer (SR)**
1	<i>Number System & Expressions/Equations</i>	8.EE.C.8	SR	Determine the coordinates of the solution of a system of equations.	B
2	<i>Functions</i>	8.F.A.1	SR	Given a set of points on a coordinate plane, determine which point should be removed in order to create a function.	<i>see page 5</i>
3	<i>Number System & Expressions/Equations</i>	8.EE.A.1	SR	Apply the properties of positive and negative integer exponents to identify equivalent expressions.	C
4	<i>Functions</i>	8.F.B.4	SR	Determine which equation can be used to find the value of an unknown quantity, given a verbal description of a ratio in a real-world context.	A
5	<i>Number System & Expressions/Equations</i>	8.NS.A.1	SR	Identify rational numbers from a list of radical expressions.	A,C
6	<i>Number System & Expressions/Equations</i>	8.EE.A.4	CR	Convert numbers expressed in standard notation into scientific notation, and multiply and divide numbers expressed in scientific notation using a real-world context.	
7	<i>Geometry</i>	8.G.A.2	SR	Determine which statement about a rectangle and its image after a reflection is true, and identify which transformation preserves congruence of a figure.	Part A: A Part B: <i>see page 5</i>
8	<i>Number System & Expressions/Equations</i>	8.EE.A.3	SR	Convert expressions written in scientific notation to expressions written in standard notation.	<i>see page 5</i>
9	<i>Number System & Expressions/Equations</i>	8.NS.A.2	SR	Determine the approximate locations of irrational numbers on a number line.	<i>see page 6</i>
10	<i>Statistics and Probability</i>	8.SP.A.3	SR	Interpret the y-intercept in a linear model based on data to determine which sentence interpreting the model is true.	D
11	<i>Number System & Expressions/Equations</i>	8.EE.B.5	SR	Determine which graph represents a proportional relationship described within a real-world context.	C
12	<i>Geometry</i>	8.G.C.9	SR	Determine the volume of a cylinder in a real-world context.	C
13	<i>Functions</i>	8.F.A.2	SR	Compare the y-intercepts of linear functions represented algebraically and in tables.	A,C,D
14	<i>Functions</i>	8.F.A.1	SR	Determine which set of coordinate pairs represents a function.	A
15	<i>Functions</i>	8.F.B.5	SR	Determine which statement best describes a given graph qualitatively.	C
16	<i>Geometry</i>	8.G.A.1	CR	Given a polygon and its image after a transformation, verify congruence by analyzing properties of both polygons and describe a series of transformations that would result in the same image of the polygon.	
17	<i>Geometry</i>	8.G.B.6	SR	Determine which set of numbers could represent the side lengths of a right triangle.	C

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer (SR)**
18	<i>Statistics and Probability</i>	8.SP.A.2	SR	Justify why a line drawn through data on a scatter plot is suitable as a line of best fit.	<i>see page 6</i>
19	<i>Number System & Expressions/Equations</i>	8.EE.B.6	SR	Use similar triangles to compare the slopes of two line segments on the same line.	A,D,E
20	<i>Geometry</i>	8.G.B.8	SA	Apply the Pythagorean Theorem to plot a point at a given distance from a second point.	<i>see page 6</i>

* 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 5–6 of this document provide correct answers for technology-enhanced (TE) items. Sample responses and scoring guidelines for constructed-response items will be posted at

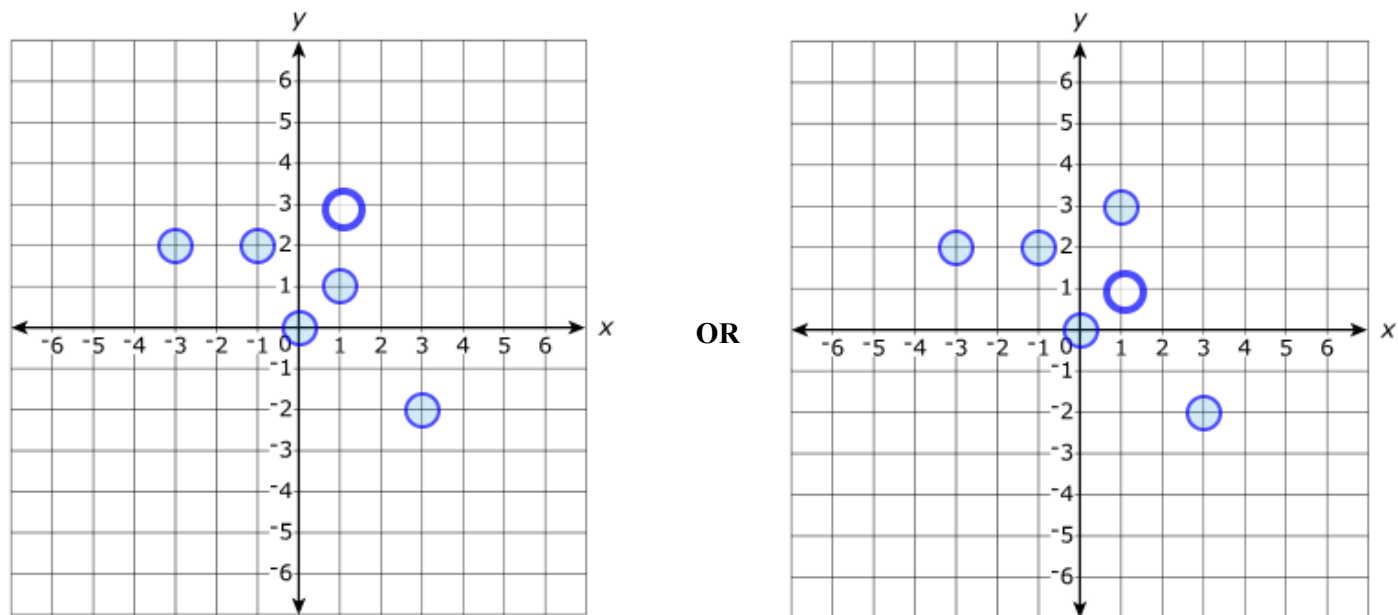
www.doe.mass.edu/mcas/student/default.html.

Grade 8 Mathematics
Spring 2025 Computer-Based Unreleased Operational Items

CBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	<i>Geometry</i>	8.G.A.3	SR	Given a transformation, determine the coordinates of the image of a given point.
22	<i>Number System & Expressions/Equations</i>	8.NS.A.2	SR	Identify the approximate value of an irrational number.
23	<i>Number System & Expressions/Equations</i>	8.NS.A.1	SR	Identify an irrational number from a list of numbers.
24	<i>Statistics and Probability</i>	8.SP.A.1	CR	Interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities.
25	<i>Number System & Expressions/Equations</i>	8.EE.C.7	SR	Solve a linear equation by collecting like terms.
26	<i>Number System & Expressions/Equations</i>	8.EE.A.1	SR	Use the properties of exponents to identify equivalent expressions.
27	<i>Number System & Expressions/Equations</i>	8.EE.B.5	SR	Interpret a proportional relationship on a graph by identifying and interpreting the slope of the graph.
28	<i>Number System & Expressions/Equations</i>	8.EE.B.6	SR	Determine which equation represents a line graphed on a coordinate plane.
29	<i>Number System & Expressions/Equations</i>	8.EE.A.4	SA	Solve a real-world problem by performing operations with numbers expressed in both scientific and standard notation.
30	<i>Number System & Expressions/Equations</i>	8.EE.A.2	SA	Determine the cube root of a given number in the context of volume of a cube.
31	<i>Geometry</i>	8.G.B.7	SR	Create an equation to find an unknown leg length of a right triangle.
32	<i>Functions</i>	8.F.B.4	CR	Given a graph, determine the slope and y-intercept and use the equation of the line to predict the value of y given its corresponding x value.
33	<i>Geometry</i>	8.G.A.3	SR	Determine the coordinates of a point in a figure on a coordinate plane after a reflection.
34	<i>Geometry</i>	8.G.A.5	SA	Given parallel lines cut by a transversal, identify all angles that must be congruent to a given angle measure.
35	<i>Geometry</i>	8.G.C.9	SA	Determine the volume of a cone, given its radius and height in a real-world context.
36	<i>Functions</i>	8.F.A.2	SR	Compare properties of two functions represented algebraically and in a table, and interpret each function's rate of change and initial value.
37	<i>Functions</i>	8.F.A.1	SR	Determine which graph does not represent a function.
38	<i>Number System & Expressions/Equations</i>	8.EE.C.8	SR	Find the value of one variable in a system of linear equations representing a real-world context.
39	<i>Geometry</i>	8.G.A.4	SR	Given several transformations of a figure, determine whether the image created by each transformation is congruent or similar but not congruent to the original figure.
40	<i>Geometry</i>	8.G.C.9	SA	Find the volume of a sphere given its radius.

* 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 #7: Technology-Enhanced Item

Part B

Transformation	Congruent	Not Congruent
a translation 1 unit right	☒	☐
a 180° clockwise rotation about the origin	☒	☐
a dilation by a scale factor of 2 centered at the origin	☐	☒

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

$2 \times 10^{-2} =$

$2 \times 10^1 =$

$2 \times 10^3 =$

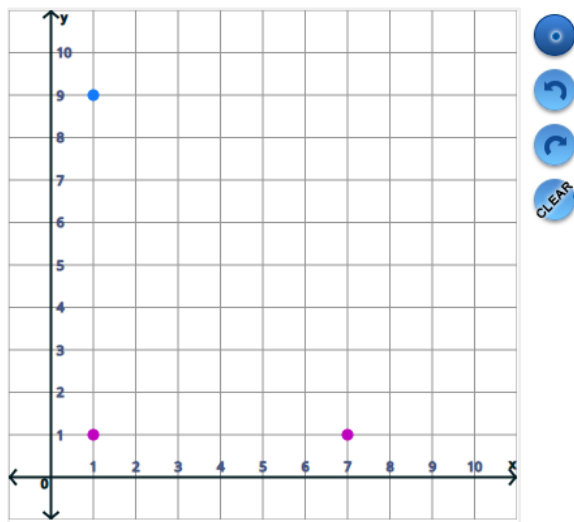
Correct Answer for CBT Item #9: Technology-Enhanced Item

$-\sqrt{10}$ Point Y	$-\sqrt{2}$ Point Z	$-2\sqrt{3}$ Point X
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Correct Answer for CBT Item #18: Technology-Enhanced Item

The line falls most of the data points, and the data show a association.

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



OR

