

Computer-Based Released Items Grade 8 MCAS Science & Technology/Engineering Spring 2026

The spring 2026 grade 8 Science & Technology/Engineering (STE) 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 and unreleased operational item from the computer-based test, including the following: reporting category, standard covered, science and engineering practice category covered (if any), item type, item description, and correct answer (for released selected-response items only). 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 STE 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 STE content and assessed the same standard as the technology-enhanced item.

**Grade 8 Science & Technology/Engineering
Spring 2026 Computer-Based Released Operational Items**

CBT Item No.	Reporting Category	Standard	Science and Engineering Practice Categories	Item Type*	Item Description	Correct Answer (SR)**
1	<i>Physical Science</i>	7.PS.3.2	C. Evidence, Reasoning, and Modeling	SR	Determine when the potential energy of an object will change the most.	D
2	<i>Technology/Engineering</i>	6.ETS.2.3	None	SR	Determine which piece of safety equipment would best protect a worker.	D
3	<i>Technology/Engineering</i>	8.ETS.2.5	None	SR	Describe an advantage of using one manufacturing method compared to another method.	A
4	<i>Technology/Engineering</i>	6.ETS.1.5	B. Mathematics and Data	SR	Determine the scale used to create an object.	C
5	<i>Technology/Engineering</i>	7.ETS.1.2	C. Evidence, Reasoning, and Modeling	CR	Analyze a decision matrix to describe an advantage of using a certain material, explain why a material from the decision matrix should be used to make a certain object, and explain why a property of the material makes it a good choice to use.	
6	<i>Earth and Space Science</i>	7.ESS.3.4	B. Mathematics and Data	CR	Analyze data to explain why a certain crop contributes the most to increasing global temperatures, explain why a certain crop allows for the greatest number of species in the ecosystem, and describe one way to reduce the environmental impact of a certain crop.	
7	<i>Earth and Space Science</i>	6.ESS.1.4	C. Evidence, Reasoning, and Modeling	SR	Analyze evidence from diagrams showing rock layers and fossils from two locations to put several events in order from earliest to most recent.	see page 6
8	<i>Life Science</i>	8.LS.3.2	B. Mathematics and Data	SR	Identify the percentage of a parent's genetic material received by an offspring in asexual reproduction.	D
9	<i>Earth and Space Science</i>	8.ESS.1.2	C. Evidence, Reasoning, and Modeling	CR	Complete a model to show the force that keeps a planet in orbit around a star, and identify that force.	

10	<i>Life Science</i>	7.LS.1.4	C. Evidence, Reasoning, and Modeling	SR	Explain how different parts of plants attract animals that pollinate the plant.	C;D
11	<i>Physical Science</i>	8.PS.1.4	None	SR	Explain what happens to water vapor when the temperature of the air changes.	D
12	<i>Life Science</i>	7.LS.2.1	B. Mathematics and Data	SR	Select a time period on a population graph when the population did not have enough resources available.	see page 6
13	<i>Physical Science</i>	7.PS.2.3	B. Mathematics and Data	SR	Compare the strengths of the electric forces between pairs of charges.	see page 7
14	<i>Earth and Space Science</i>	8.ESS.1.1	C. Evidence, Reasoning, and Modeling	SR	Use a model of the Earth-Sun system to identify each season at two locations on Earth.	see page 7
15	<i>Physical Science</i>	8.PS.2.1	C. Evidence, Reasoning, and Modeling	SR	Use Newton's third law to determine the amount of force applied to an object during a collision.	C
16	<i>Life Science</i>	6.LS.1.2	None	SR	Identify a plant cell part that is smaller than usual when a plant wilts due to a lack of water.	D
17	<i>Life Science</i>	7.LS.2.5	None	SR	Determine an action that would help organisms being negatively affected by a human activity.	B
18	<i>Physical Science</i>	6.PS.1.6	A. Investigations and Questioning	SR	Identify evidence of an exothermic reaction occurring in an investigation, and identify the equipment used to measure a change in average molecular kinetic energy.	D;C
19	<i>Physical Science</i>	7.PS.3.1	B. Mathematics and Data	SR	Interpret a kinetic energy equation to determine how the kinetic energy of a cart will change when the speed of the cart increases.	D
20	<i>Life Science</i>	8.LS.1.5	C. Evidence, Reasoning, and Modeling	SR	Determine that genetic differences in individuals of the same species result in different traits.	A

* STE item types are selected-response (SR) and constructed-response (CR).

** Answers are provided here for selected-response 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.

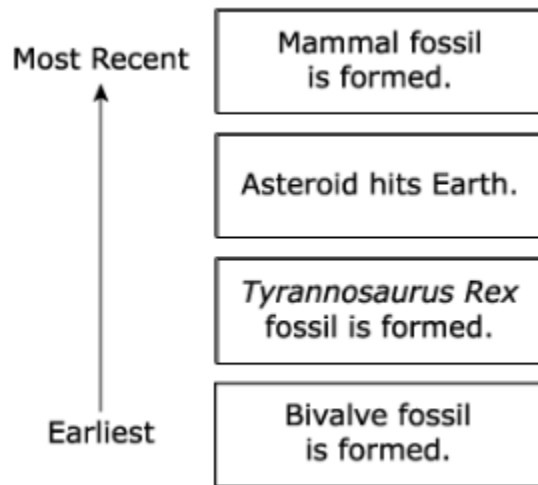
**Grade 8 Science and Technology/Engineering
Spring 2026 Unreleased Operational Items**

CBT Item No.	Reporting Category	Standard	Science and Engineering Practice Category	Item Type*	Item Description
21	<i>Earth and Space Science</i>	6.ESS.2.3	C. Evidence, Reasoning, and Modeling	SR	Interpret evidence from a map showing the distribution of fossils from different species to support a claim about tectonic plate movement.
22	<i>Technology/Engineering</i>	7.ETS.3.4	C. Evidence, Reasoning, and Modeling	SR	Interpret a diagram to describe a type of force acting on a bridge.
23	<i>Earth and Space Science</i>	6.ESS.1.1	C. Evidence, Reasoning, and Modeling	SR	Analyze data to complete a model showing the Moon's position relative to Earth and the Sun on a particular day.
24	<i>Life Science</i>	8.LS.3.4	C. Evidence, Reasoning, and Modeling	SR	Complete a model to show the pairs of alleles that code for a trait in an offspring and its parents.
25	<i>Physical Science</i>	8.PS.1.2	B. Mathematics and Data	SR	Interpret data to determine whether a physical or chemical change occurred when different substances were combined.
26	<i>Physical Science</i>	8.PS.1.1	C. Evidence, Reasoning, and Modeling	SR	Determine which model shows the structure of a molecule with a given chemical formula.
27	<i>Physical Science</i>	6.PS.1.7	B. Mathematics and Data	SR	Compare the relative densities of two solutions with the same volume.
28	<i>Physical Science</i>	8.PS.1.1	C. Evidence, Reasoning, and Modeling	CR	Identify a pure substance and explain why it is a pure substance, identify a mixture and explain why it is a mixture, and explain why substances made up of the same atoms can have different properties.
29	<i>Earth and Space Science</i>	8.ESS.1.1	B. Mathematics and Data	SR	Analyze a map and a graph to explain how the angle of incoming sunlight affects temperatures throughout the year.
30	<i>Technology/Engineering</i>	7.ETS.3.3	None	SR	Identify whether different types of car problems affect the car's propulsion system or control system.
31	<i>Technology/Engineering</i>	8.ETS.2.5	C. Evidence, Reasoning, and Modeling	SR	Describe assembling, quality control, and safety processes used in the manufacturing of an object.
32	<i>Technology/Engineering</i>	7.ETS.3.4	C. Evidence, Reasoning, and Modeling	SR	Use a diagram of a structure to describe a change that would prevent the structure from collapsing.
33	<i>Life Science</i>	6.LS.1.3	None	SR	Determine the body system that directly controls when muscles contract.

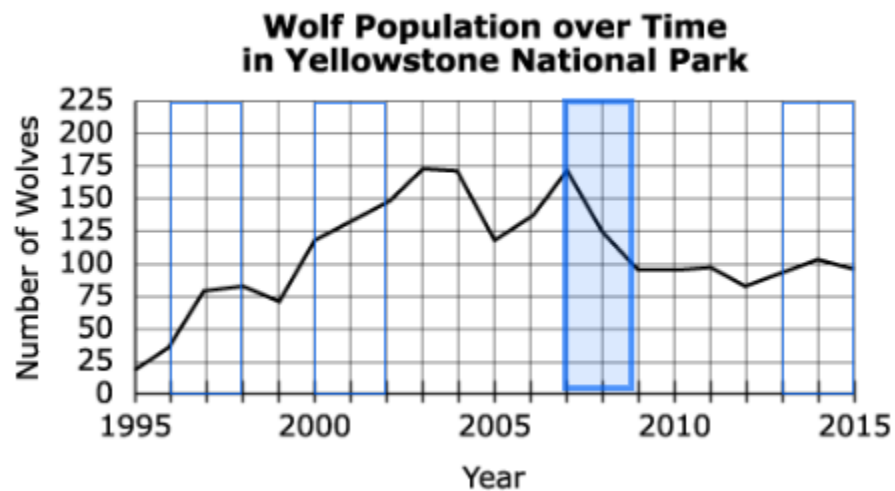
34	<i>Life Science</i>	7.LS.2.2	C. Evidence, Reasoning, and Modeling	SR	Interpret a food web to determine the relationships between two organisms and to describe their roles in keeping the ecosystem stable.
35	<i>Physical Science</i>	8.PS.2.2	B. Mathematics and Data	SR	Use a model to determine the net force on an object.
36	<i>Technology/Engineering</i>	7.ETS.3.1	C. Evidence, Reasoning, and Modeling	CR	Interpret a diagram of a communication system to identify and describe a transmitter and a receiver in the system.
37	<i>Earth and Space Science</i>	6.ESS.1.5	C. Evidence, Reasoning, and Modeling	SR	Determine which diagram best models the arrangement of the universe, the Milky Way, the solar system, and Earth.
38	<i>Life Science</i>	8.LS.3.4	C. Evidence, Reasoning, and Modeling	CR	Use a Punnett square to determine the flower color and alleles for each parent plant, identify and explain the percentage of offspring that are expected to have the recessive flower color, and explain how the Punnett square shows that the offspring are the result of sexual reproduction.
39	<i>Earth and Space Science</i>	7.ESS.2.4	C. Evidence, Reasoning, and Modeling	SR	Describe two ways a model could be revised to show how gravity affects the water cycle.
40	<i>Earth and Space Science</i>	8.ESS.1.2	None	SR	Explain why Earth orbits the Sun.
41	<i>Earth and Space Science</i>	8.ESS.3.5	A. Investigations and Questioning	SR	Determine which question students are trying to answer in an investigation about how carbon dioxide affects temperature.

* STE item types are: selected-response (SR) and constructed-response (CR).

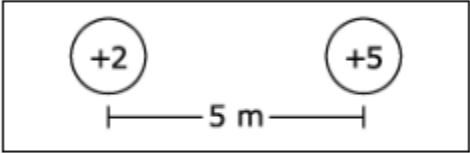
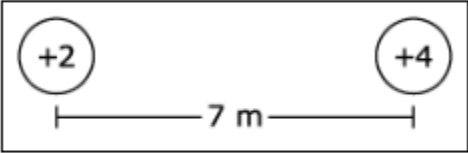
Correct Answer for CBT Item #7: Technology-Enhanced Item



Correct Answer for CBT Item #12: Technology-Enhanced Item



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

Force Is Greater	Force Is Less
	

Correct Answer for CBT Item #14: Technology-Enhanced Item

Location	Season
P	summer
Q	winter