California Assessment of Student Performance and Progress

California Science Test
Practice Test
Scoring Guide

Grade Eight

CAST Practice Test Scoring Guide—Grade Eight

Table of Contents

Introduction to Practice Test Scoring Guide

This California Science Test (CAST) practice test scoring guide offers details about items, student response types, correct responses, and related scoring considerations for the practice test items. These items have been selected to show some of the new approaches to measuring the California Next Generation Science Standards (CA NGSS) that can be found in the assessment. The practice test items are not fully representative of all possible item types included in the CAST. The practice test covers a selection of items from performance expectations assessed in grade eight.

This scoring guide should be used alongside the online practice tests, which can be accessed at http://www.caaspp.org/practice-and-training/index.html. Annotated responses are also available to help explain the rationale for each score point on selected constructed response items from the practice test at https://www.caaspp.org/ta-resources/practice-training.html.

The following information is presented in a metadata table. Metadata contains specific information about each item including the alignment of the item with the CA NGSS standards.

Item: The question number that corresponds to the question as it appears in the practice test

Key: Represents the correct answer(s) to the item or question and includes the score point value for the item and its parts (Items are worth either one or two points. For some technology-enhanced items, a screen capture of the correct answers is included. Exemplars and rubrics are provided for constructed response items.)

Performance Expectations (PE) Code: References the standards that describe what students should know and be able to do

Science and Engineering Practices (SEP): Descriptions of behaviors that students engage in as they investigate the natural world and design solutions

Disciplinary Core Ideas (DCI): Essential ideas in the science disciplines that all students should understand

Crosscutting Concepts (CCC): Interdisciplinary skills students should exhibit that unify the study of science and engineering through common application across fields

Item-Level Claim Statement (ILCS): A brief statement that illustrates how an item aligns with the PE

Example of Metadata

Item	Key	PE	SEP	DCI	CCC	ILCS
1	A (1 point)	MS-PS1-5	2. Developing and Using Models	PS1.B Chemical Reactions	5. Energy and Matter	Select the appropriate components to develop a model to illustrate the conservation of atoms/mass.

Grade Eight Practice Test Items

Item	Key	PE	SEP	DCI	CCC	ILCS
1	C (1 point)	MS-PS1-5	2. Developing and Using Models	PS1.B Chemical Reactions	5. Energy and Matter	Select the appropriate components to develop a model to illustrate the conservation of atoms/mass.
2	**First drop-down menu:** dark-colored fish **Second drop-down menu:** cannot see them as well as fish of the other color (1 point)	MS-LS4-4	6. Constructing Explanations and Designing Solutions	LS4.B Natural Selection	2. Cause and Effect	Explain why one variation of the trait is more advantageous given the introduction of a predator to the environment.
3	C (1 point)	MS-ETS1-2	7. Engaging in Argument from Evidence	ETS1.B Developing Possible Solutions	N/A	Select the option that meets the two criteria and provides a supporting statement.

Item metadata table continuation showing items 4–6

Item	Key	PE	SEP	DCI	CCC	ILCS
4	Two-point item: **Part A:** D (1 point) **Part B:** **First drop-down menu:** increased **Second drop-down menu:** decreased (1 point)	MS-PS2-4	7. Engaging in Argument from Evidence	PS2.B Types of Interactions	4. Systems and System Models	Construct a sound argument using evidence from the data, that an increase in an objects mass, increases the magnitude of gravitational force acting on the object.
5	**First drop-down menu:** support **Second drop-down menu:** increase, which will cause the use of freshwater (1 point)	MS-ESS3-4	7. Engaging in Argument from Evidence	ESS3.C Human Impacts on Earth Systems	2. Cause and Effect	Evaluate (with reasoning) whether the provided evidence/data are sufficient to defend the claim based on almond production and the effect it has on water supplies in California.
6	Exemplars and rubric provided below.	MS-LS2-1	4. Analyzing and Interpreting Data	LS2.A Interdependent Relationships in Ecosystems	2. Cause and Effect	Explain how resource availability affects population growth and carrying capacities.

Exemplars and rubric for item 6:

2 point

Exemplar(s):

At point A, the paramecium population is growing rapidly because there's plenty of food. At point B, the growth rate slows down because now there are more paramecium and the food supply is limited.

OR

At Point A the paramecium are growing quickly because there is plenty of food but at Point B the food supply has decreased so the growth rate has slowed down.

Rubric:

The response includes that at point A resources are plentiful (unlimited) and the population can grow rapidly.

AND

The response includes that at point B, carrying capacity resources are limited and so the growth rate slows down.

1 point

Exemplar(s):

At Point A there is a lot resources for the paramecium so the population can grow rapidly.

OR

At point B there is not enough resources to support any more growth.

Rubric continues on the next page.

Rubric continues from previous page.

OR

Because after the paramecium has reached its carrying capacity and there is not enough resources, growth has slowed down.

Rubric:

The response includes that at point A resources are plentiful (unlimited) and the population can grow rapidly.

OR

The response includes that at point B, carrying capacity, resources are limited and so the growth rate slows down.

0 point

Exemplar(s):

The population didn't change size, just that the resources were gone.

OR

The paramecium will find a new food source and continue to grow.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

Rubric continues on the next page.

Rubric continues from previous page.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

A score of 0 should also be given to responses that consist only of:

No relevant content provided

- no response is provided (e.g., blank)

- random keystrokes or nonsense verbiage

- punctuation mark(s) (e.g., ".")

Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Additional annotated samples for this prompt can be found at https://www.caaspp.org/ta-resources/practice-training.html.

Item metadata table continuation showing items 7–9

Item	Key	PE	SEP	DCI	CCC	ILCS
7	B (1 point)	MS-ESS3-2	4. Analyzing and Interpreting Data	ESS3.B Natural Hazards	1. Patterns	Evaluate the information provided on earthquakes and identify a pattern between the location and severity of a natural disaster.
8	**Row 1:** Does not show a field exists **Row 2:** Does show a field exists **Row 3:** Does not show a field exists **Row 4:** Does show a field exists (1 point)	MS-PS2-5	3. Planning and Carrying Out Investigations	PS2.B Types of Interactions	2. Cause and Effect	Evaluate data to determine if there is evidence that fields exert forces on nearby objects without direct contact.
9	**Row 1:** Plants, Animals **Row 2:** Plants **Row 3:** Plants **Row 4:** Plants, Animals (1 point)	MS-LS1-6	6. Constructing Explanations and Designing Solutions	LS1.C Organization for Matter and Energy Flow in Organisms	5. Energy and Matter	Explain the role of plants (or animals) in the cycling of matter.

Item metadata table continuation showing item 10–13

Item	Key	PE	SEP	DCI	CCC	ILCS
10	D (1 point)	MS-PS3-4	3. Planning and Carrying Out Investigations	PS3.B Conservation of Energy and Energy Transfer	3. Scale, Proportion, and Quantity	Select the suitable equipment necessary to investigate heat transfer.
11	C (1 point)	MS-LS3-1	2. Developing and Using Models	LS3.B Variation of Traits	6. Structure and Function	Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
12	C (1 point)	MS-ESS3-5	1. Asking Questions and Defining Problems	ESS3.D Global Climate Change	7.Stability and Change	Ask a testable question that could be used to evaluate global impacts from a volcano that has erupted.
13	Exemplars and rubric provided below.	MS-LS2-4	7. Engaging in Argument from Evidence	LS2.C Ecosystem Dynamics, Functioning, and Resilience	7. Stability and Change	Link the evidence/data to a claim about how the impact of La Niña caused a change in the rate of photosynthesis within a tropical forest ecosystem.

Exemplars and rubric for item 13:

2 point

Exemplar(s):

The rate of photosynthesis will decrease. The graph shows that as light intensity decreases then CO_2 intake decreases too.

Rubric:

The response includes that the rate of photosynthesis will decrease.

AND

The response includes that the graph shows as light intensity decreases, the CO_2 uptake decreases.

1 point

Exemplar(s):

The rate of photosynthesis will decrease.

OR

With less sunlight, the plants take up less carbon dioxide.

Rubric:

The response includes that the rate of photosynthesis will decrease.

OR

The response includes that the graph shows as light intensity decreases, the CO_2 uptake decreases.

Rubric continues on the next page.

Rubric continues from previous page.

0 point

Exemplar(s):

The rate of photosynthesis will increase.

OR

The rate of photosynthesis will increase because of the warmer climate.

OR

Carbon dioxide uptake will increase.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

Rubric continues on the next page.

Rubric continues from previous page.

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Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

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Item metadata table continuation showing items 14–17

Item	Key	PE	SEP	DCI	CCC	ILCS
14	A (1 point)	MS-LS1-4	7. Engaging in Argument from Evidence	LS1.B Growth and Development of Organisms	2. Cause and Effect	Identify evidence that is irrelevant/invalid and would not support the argument that certain flower colors attract more pollinators.
15	A (1 point)	MS-PS4-1	5. Using Mathematics and Computational Thinking	PS4.A Wave Properties	1. Patterns	Use the model to identify how the energy of the wave changes based on a change in amplitude.
16	**First drop-down menu:** pink **Second drop-down menu:** basic (1 point)	MS-LS1-5	6. Constructing explanations and Designing Solutions	LS1.B Growth and Development of Organisms	2.Cause and Effect	Select the terms that complete the sentence, based on the student's investigation and collected data on plant color and soil pH.
17	First, second, and third options (1 point)	MS-ESS1-4	6. Constructing Explanations and Designing Solutions	ESS1.C The History of Planet Earth	3. Scale, Proportion, and Quantity	Use scientific concepts, principles, and theories to explain how the evidence supports a conclusion about Earth's history based on sedimentary rock layers.

Item metadata table continuation showing items 18–19

Item	Key	PE	SEP	DCI	CCC	ILCS
18	D (1 point)	MS-LS4-3	4. Analyzing and Interpreting Data	LS4.A Evidence of Common Ancestry and Diversity	1. Patterns	Analyze pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.
19	Exemplars and rubric provided below.	MS-PS1-3	8. Obtaining, Evaluating and Communicating Information	PS1.B Chemical Reactions	6. Structure and Function	Evaluate the information given on the energy used to make plastic bottles and the impact manufacturing has on natural resources.

Exemplars and rubric for item 19:

2 point

Exemplar(s):

Plastic B comes from corn, which is a renewable resource. Plastic A comes from oil, which is a nonrenewable resource. It takes less energy to make Plastic B than to make Plastic A, so making bottles out of Plastic B will conserve energy.

OR

Plastic A is a nonrenewable resource so it wouldn't make sense to use it when you can you use Plastic B, which is a renewable resource. It takes less energy to make something out of a renewable resource.

Rubric continues on the next page.

Rubric continues from previous page.

Rubric:

The response includes that the raw material for Plastic B comes from a renewable resource (corn), but the raw material for Plastic A comes from a nonrenewable resource (oil).

AND

The response includes that it takes less energy to make Plastic B than it does to make Plastic A.

1 point

Exemplar(s):

Plastic B comes from corn, which you plant more of every year and Plastic A comes from oil, which takes millions of years to make.

OR

It takes less energy to make plastic B than plastic A, so it will save more natural resources.

OR

It takes more energy to make plastic A, so I wouldn't use that one.

Rubric:

The response includes that the raw material for Plastic B comes from a renewable resource (corn), but the raw material for Plastic A comes from a nonrenewable resource.

OR

The response includes that it takes less energy to make Plastic B than it does to make Plastic A.

Rubric continues on the next page.

Rubric continues from previous page.

0 point

Exemplar(s):

It takes the same amount of energy when you are making stuff.

OR

Plastic is recyclable.

OR

Plastic A will be easier to use because it is made from oil.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

OR

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

Rubric continues on the next page.

Rubric continues from previous page.

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Opinions or comments about random topics

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Item metadata table continuation showing items 20–23

Item	Key	PE	SEP	DCI	CCC	ILCS
20	First and third options (1 point)	MS-LS4-4	6. Constructing Explanations and Designing Solutions	LS4.B Natural Selection	2. Cause and Effect	Explain how the increasing frequency for plant height at a certain elevation of one plant species is advantageous.
21	C (1 point)	MS-PS1-5	2. Developing and Using Models	PS1.B Chemical Reactions	5. Energy and Matter	Select the appropriate components to complete the model to illustrate the conservation of atoms/mass.
22	A (1 point)	MS-ESS2-4	2. Developing and Using Models	ESS2.C The Roles of Water in Earth's Surface Processes	5. Energy and Matter	Identify the processes operating within the water cycle and the role living organisms have on the water cycle.
23	**First drop-down menu:** cause a decrease in the number of native, beneficial plants **Second drop-down menu:** only introduce fish that cannot reproduce (1 point)	MS-LS2-5	7. Engaging in Argument from Evidence	LS2.C Ecosystem Dynamics, Functioning, and Resilience	7. Stability and Change	Identify possible unanticipated effects of a design solution that includes native and nonnative species within a lake ecosystem.

Item metadata table continuation showing items 24–25

Item	Key	PE	SEP	DCI	CCC	ILCS
24	Two-point item: **Part A:** **Row 1:** Does not require carrying an external source of energy **Row 2:** Does not require carrying an external source of energy **Row 3:** Requires carrying an external source of energy **Row 4:** Requires carrying an external source of energy (1 point) **Part B:** A (1 point)	MS-ETS1-3	4.Analyzing and Interpreting Data	ETS1.B Developing Possible Solutions	N/A	Identify relationships in the data sets, including relationships between design solutions and given criteria and constraints.
25	B (1 point)	MS-PS2-2	3. Planning and Carrying Out Investigations	PS2.A Forces and Motion	7. Stability and Change	Identify that if the results of external forces are exerted by objects in a specific direction and do not balance each other, then the system's velocity in that direction changes.

Item metadata table continuation showing items 26–27

Item	Key	PE	SEP	DCI	CCC	ILCS
26	**Row 1:** Reuses water **Row 2:** Reduces water use **Row 3:** Provides other source of water (1 point)	MS-ESS3-3	6. Constructing Explanations and Designing Solutions	ESS3.C Human Impacts on Earth Systems	2. Cause and Effect	Propose several different processes to monitor and/or minimize the impact of human activity on water supplies.
27	Two-point item: **Part A:** Third and fifth options. (1 point) **Part B:** **Row 1**: Improves the rate of heating **Row 2:** Reduces the rate of heating **Row 3:** Improves the rate of heating **Row 4:** Reduces the rate of heating (1 point)	MS-ETS1-1	1. Asking Questions and Defining Problems	ETS1.A Defining and Delimiting Engineering Problems	Influence of Science, Engineering, and Technology on Society and the Natural World	Identify how to address factors in designing a solar cooker that heats food faster than a conventional oven.

Item metadata table continuation showing items 28–32

Item	Key	PE	SEP	DCI	CCC	ILCS
28	C (1 point)	MS-ESS1-2	2. Developing and Using Models	ESS1.B Earth and the Solar System	4. Systems and System Models	Identify the locations of several celestial objects within the solar system, including the Earth, to complete the model.
29	**First drop-down menu:** decreases **Second drop-down menu:** increases (1 point)	MS-LS2-1	4. Analyzing and Interpreting Data	LS2.A Interdependent Relationships in Ecosystems	2. Cause and Effect	Identify patterns of change based on the field study of the Anderson's thistle and the Canada thistle.
30	Second and fifth options (1 point)	MS-LS2-1	4. Analyzing and Interpreting Data	LS2.A Interdependent Relationships in Ecosystems	2. Cause and Effect	Predict the likely outcome for the distribution of the plant populations over time.
31	C (1 point)	MS-LS2-2	6. Constructing Explanations and Designing Solutions	LS2.A Interdependent relationships in Ecosystems	1.Patterns	Predict what effect the removal of the Canada thistle population would have on the three insect populations.
32	Exemplars and rubric provided below.	MS-LS2-2	6. Constructing Explanations and Designing Solutions	LS2.A Interdependent Relationships in Ecosystems	1. Patterns	Predict what would occur to both plant populations with the addition of weevils into the ecosystem.

Exemplars and rubric for item 32:

2 point

Exemplar(s):

Because both weevils eat the Canada thistle, the Canada thistle population will decrease first, while the Anderson's thistle population may increase or stay the same at first.

OR

The Canada thistle population will decrease and the Anderson's thistle population will increase because both weevils eat the Canada thistle first.

Rubric:

The response includes that the Anderson's thistle population will increase or remain constant and the Canada thistle will decrease.

AND

The response includes that this is because the stem mining weevil and the flowerhead weevil eat Canada thistle first.

1 point

Exemplar(s):

The Canada thistle will decrease and the Anderson's thistle will increase.

OR

Rubric continues on the next page.

Rubric continues from previous page.

Because both weevils eat the Canada thistle, the population of Canada thistle will decrease first.

OR

The Canada thistle will decrease because both weevils eat that first.

Rubric:

The response includes that the Anderson's thistle population will increase or remain constant and the Canada thistle will decrease or that this is because the stem mining weevil and the flowerhead weevil eat Canada thistle first.

OR

The response includes that the Anderson's thistle population will increase or remain constant and the Canada thistle will decrease or that this is because the stem mining weevil and the flowerhead weevil eat Canada thistle first.

0 point

Exemplar(s):

Eventually the cold weather will come and kill off all the weevils so the thistles can grow again.

OR

The thistle populations will decrease.

OR

*&YTT%$#$D

Rubric continues on the next page.

Rubric continues from previous page.

OR

I don't know; I was never taught this.

Rubric:

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A score of 0 should also be given to responses that consist only of:

No relevant content provided

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- punctuation mark(s) (e.g., ".")

Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Item metadata table continuation showing items 33–36

Item	Key	PE	SEP	DCI	CCC	ILCS
33	**Row 1:** Criteria **Row 2:** Criteria **Row 3:** Constraints **Row 4:** Constraints (1 point)	MS-LS2-5	7. Engaging in Argument from Evidence	ETS1.B Developing Possible Solutions	7. Stability and Change	Identify the criteria and/or constraints that resulted with the addition of the weevils into the ecosystem.
34	B (1 point)	MS-LS2-5	7. Engaging in Argument from Evidence	ETS1.B Developing Possible Solutions	7. Stability and Change	Select the best design to increase the Anderson's thistle and provide justification for the selection based on evidence.
35	B (1 point)	MS-ESS3-5	1. Asking Questions and Defining Problems	ESS3.D Global Climate Change	7. Stability and Change	Identify questions about patterns in data that connect natural processes and human activities to changes in global temperatures and carbon dioxide and other greenhouse gases over the past century.
36	**First drop-down menu:** model **Second drop-down menu:** sunlight (1 point)	MS-ESS3-4	7. Engaging in Argument from Evidence	ESS3.C Human Impacts on Earth Systems	2. Cause and Effect	Identify a potential source of evidence/data that could be used to support their claim about greenhouses.

Item metadata table continuation showing item 37

Item	Key	PE	SEP	DCI	CCC	ILCS
37	Exemplars and rubric provided below.	MS-ESS3-4	7. Engaging in Argument from Evidence	ESS3.C Human Impacts on Earth Systems	2. Cause and Effect	Use graphical evidence to support a student claim about changes in CO_2 causing a concomitant change in temperature.

Exemplars and rubric for item 37:

2 point

Exemplar(s):

Student 2's claim is supported by the graph when you compare beakers 2 and 3.

OR

If you look at beakers 2 and 3 in the graph you see that they support student 2.

Rubric:

The response includes identifying that student claim 2 (or student 2 or claim 2) would be supported by the graph.

AND

The response includes identifying that beakers 2 and 3 should be compared to support the claim.

Rubric continues on the next page.

Rubric continues from previous page.

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1 point

Exemplar(s):

The beakers in the graph support student 2 the best.

OR

Student 1 is supported when you look at beakers 2 and 3 in the graph.

OR

Beakers 2 and 3 provide the best data to support a claim.

Rubric:

The response includes identifying that student claim 2 (or student 2 or claim 2) would be supported by the graph.

OR

The response includes identifying that beakers 2 and 3 should be compared to support the claim.

0 point

Exemplar(s):

Student 1 has a claim supported when you look at beakers 1 and 3.

OR

Rubric continues on the next page.

Beaker data in the graph support a student claim.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

Rubric:

0-point should be awarded if a student attempts to answer the prompt but the response is incorrect or too vague (insufficient information provided) to receive credit

A score of 0 should also be given to responses that consist only of:

No relevant content provided

- no response is provided (e.g., blank)

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Student's opinion of the test

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

Rubric continues on the next page.

Rubric continues from previous page.

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.

Item metadata table continuation showing items 38–40

Item	Key	PE	SEP	DCI	CCC	ILCS
38	First and third options (1 point)	MS-ESS3-4	7. Engaging in Argument from Evidence	ESS3.C Human Impacts on Earth Systems	2. Cause and Effect	Evaluate (with reasoning) whether the provided evidence/data is sufficient to defend the claim for Prediction 2.
39	**First drop-down menu:** graph **Second drop-down menu:** town's (1 point)	MS-ESS3-4	7. Engaging in Argument from Evidence	ESS3.C Human Impacts on Earth Systems	2. Cause and Effect	Identify a potential source of evidence/data that could be used to support the claim for the increased use of fossil fuels.
40	First and second options (1 point)	MS-PS3-2	2. Developing and Using Models	PS3.A Definitions of Energy	4. Systems and System Models	Select components, and describe relationships and behaviors between the components to explain potential energy based on data from a roller coaster model.

Item metadata table continuation showing items 41–43

Item	Key	PE	SEP	DCI	CCC	ILCS
41	**First drop-down menu:** potential **Second drop-down menu:** kinetic **Third drop-down menu:** potential **Fourth drop-down menu:** kinetic (1 point)	MS-PS3-2	2. Developing and Using Models	PS3.A Definitions of Energy	4. Systems and System Models	Select components and describe relationships and behaviors between the components to explain potential energy based on data from a roller coaster model.
42	C (1 point)	MS-PS3-2	2. Developing and Using Models	PS3.A Definitions of Energy	4. Systems and System Models	Select components and describe relationships and behaviors between the components to explain potential energy based on data from a roller coaster model.
43	**Row 1:** Supports Claim 1 **Row 2:** Supports Claim 2 **Row 3:** Supports Claim 2 (1 point)	MS-PS3-5	7. Engaging in Argument from Evidence	PS3.B Conservation of Energy and Energy Transfer	5. Energy and Matter	Analyze statements that connect the evidence to the claim about energy loss during movement.

Item metadata table continuation showing items 44–45

Item	Key	PE	SEP	DCI	CCC	ILCS
44	**First drop-down menu:** increase **Second drop-down menu:** remain the same (1 point)	MS-PS3-1	4. Analyzing and Interpreting Data	PS3.A Definitions of Energy	3. Scale, Proportion, and Quantity	State that increasing the object's mass results in a directly proportional increase of the object's kinetic energy.
45	Exemplars and rubric provided below.	MS-PS3-1	4. Analyzing and Interpreting Data	PS3.A Definitions of Energy	3. Scale, Proportion, and Quantity	Explain that when two trains have the same speed at the bottom of a rollercoaster hill, the train with less mass will have less kinetic energy.

Exemplars and rubric for item 45:

2 point

Exemplar(s):

The new train has less kinetic energy because it has less mass when it's empty.

OR

The original empty train has more KE than the new train because the original train is heavier than the new train.

Rubric:

The response includes a statement that the kinetic energy of the new train will be less than that of the original train.

Rubric continues on the next page.

Rubric continues from previous page.

AND

The response includes a statement that the new train's mass is less than that of the original train.

1 point

Exemplar(s):

The original train has more KE than the new one.

OR

The new empty train has less mass.

OR

The current train has a mass of 3,300 kg and the new train has a mass of 1,650 kg, but both trains have the same velocity at the bottom of the first hill.

Rubric:

The response includes a statement that the kinetic energy of the new train will be less than that of the original train.

OR

The response includes a statement that the new train's mass is less than that of the original train.

0 point

Exemplar(s):

Rubric continues on the next page.

Rubric continues from previous page.

The old train has less KE than the new train.

OR

*&YTT%$#$D

OR

I don't know; I was never taught this.

Rubric:

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Opinions or comments about random topics

Rubric continues on the next page.

Rubric continues from previous page.

Direct copy of the stimulus without any attempt to answer

Opinions or comments about random topics

I don't know, IDK (without further elaboration)

Responses that go on to provide an answer to the prompt should be scored based on the relevant part of the response.