California Assessment of Student Performance and Progress

California Science Test
Practice Test
Scoring Guide

High School

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About the Practice Test Scoring Guide

Introduction to Practice Test Scoring Guide

This California Science Test (CAST) Practice Test Scoring Guide offers details about the 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 fully representative of all possible item types included in CAST. The practice test covers a selection of items from performance expectations (PEs) assessed in high school.

This scoring guide should be used alongside the online practice tests, which can be accessed on the Practice and Training Tests web page. Annotated responses are also available to help explain the rationale for each score point on selected constructed response items from the practice test on the Practice and Training Test Resources web page.

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.

Item: This is the question number that corresponds to the question as it appears in the practice test.

Key: This 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.

PE Code: This references the standards that describe what students should know and be able to do.

Science and Engineering Practices (SEPs): These are descriptions of behaviors that students engage in as they investigate the natural world and design solutions.

Disciplinary Core Ideas (DCIs): These are essential ideas in the science disciplines that all students should understand.

Crosscutting Concepts (CCCs): These are interdisciplinary skills students should exhibit that unify the study of science and engineering through common application across fields.

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

High School Practice Test Items

Items 1–6

Item	Key	PE	SEP	DCI	CCC	ILCS
1	**First drop-down list:** increase **Second drop-down list:** natural selection (1 point)	HS-LS4-4	6. Constructing Explanations and Designing Solutions	LS4.C Adaptation	2. Cause and Effect	Construct an explanation based on evidence for how natural selection leads to changes in traits in populations.
2	B (1 point)	HS-PS1-2	6. Constructing Explanations and Designing Solutions	PS1.A Structure and Properties of Matter	1. Patterns	Select the ionic compound that can be formed in a reaction with Br_2, based on the number of valence electrons.
3	Two-point item: **Part A:** decrease by about 50% (1 point) **Part B:** B (1 point)	HS-ESS3-3	5. Using Mathematical and Computational Thinking	ESS3.C Human Impacts on Earth Systems	7. Stability and Change	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
4	Picture with eight A_2B molecules (1 point)	HS-PS1-7	5. Using Mathematical and Computational Thinking	PS1.B Chemical Reactions	5. Energy and Matter	Predict the number of molecules of A_2B that will form from the complete reaction of A_2 and AB.
5	C (1 point)	HS-ESS2-5	3. Planning and Carrying Out Investigations	ESS2.C The Roles of Water in Earth's Surface Processes	6. Structure and Function	Identify the design that will provide the best evidence to determine the amount and type of sediment entering the stream.
6	Exemplars and rubric provided on the next page.	HS-LS1-6	6. Constructing Explanations and Designing Solutions	LS1.C Organization for Matter and Energy Flow in Organisms	5. Energy and Matter	Construct an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules combine to form other large molecules.

Item 6 Exemplars and Rubric

Score	Exemplar(s)	Rubric
2	Based on the table, it looks like the glucose molecules were stored in glycogen within 6 hours. And by the end of the 18-hour time period, the glucose was all used up by the cells for energy or stored in the glycogen. OR The glucose was stored in the glycogen at the beginning, to use for energy later, and by the end it was all used up or stored.	The response includes that glucose is incorporated into or stored in the glycogen. AND The response includes that within the first 6 hours, glucose was stored or broken down into glycogen and by the end of the 18-hour time period, the glucose was used up by the cells for energy or stored in the glycogen. NOTE: If time is not mentioned (particular hours) credit should be given based on the response if the understanding is that over time the glucose was used up.
1	The glucose was being used by the glycogen within the first 6 hours. OR By the time it was over after 18 hours, the glucose was turned into glycogen. OR Based on the data in the table, the glycogen was metabolizing the glucose between hour 6 and hour 12, then it was all gone. OR The glucose was used up by the cells for energy.	The response includes that glucose is incorporated into or stored in the glycogen. OR The response includes that within 6 hours, the glucose was stored in or broken down into glycogen, and by the end of the 18 hours, the glucose was used up or stored in the glycogen.

Score	Exemplar(s)	Rubric

0	Glucose combined with the glycogen.
	OR
	It looks like it stayed the same during the first 12 hours.
	OR
	The glucose dissolved in the petri dish.
	OR
	The glucose became radioactive.
	OR
	*&YTT%$#$D
	OR
	I don't know; I was never taught this.
		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.

Items 7–25

Item	Key	PE	SEP	DCI	CCC	ILCS
7	**Row 1:** High-mass stars **Row 2:** Low-mass stars **Row 3:** High-mass stars **Row 4:** High-mass stars (1 point)	HS-ESS1-3	8. Obtaining, Evaluating, and Communicating Information	ESS1.A The Universe and Its Stars	5. Energy and Matter	Describe how factors such as composition and temperature affect the rate of nuclear fusion and energy production.
8	C (1 point)	HS-PS4-1	5. Using Mathematical and Computational Thinking	PS4.A Wave Properties	2. Cause and Effect	Describe how wavelength is related to the change in the medium.
9	C (1 point)	HS-LS3-3	4. Analyzing and Interpreting Data	LS3.B Variation of Traits	3. Scale, Proportion, and Quantity	Calculate the predicted genotypic ratios of offspring.
10	**First drop-down list:** colliding with **Second drop-down list:** weathering and erosion (1 point)	HS-ESS2-1	2. Developing and Using Models	ESS2.A Earth Materials and Systems	7. Stability and Change	Describe how a model illustrates or explains the internal and surface processes that produced a geological feature.
11	C (1 point)	HS-PS2-1	4. Analyzing and Interpreting Data	PS2.A Forces and Motion	2. Cause and Effect	Identify the relationship between mass and acceleration.
12	C (1 point)	HS-PS3-5	2. Developing and Using Models	PS3.C Relationship Between Energy and Forces	2. Cause and Effect	Evaluate a model of a capacitor with an electric field to identify actions that will change the energy in the system.

Item	Key	PE	SEP	DCI	CCC	ILCS
13	First, third, and fourth options (1 point)	HS-LS4-6	5. Using Mathematical and Computational Thinking	LS4.D Biodiversity and Humans	2. Cause and Effect	Identify components in a simulation that depict the effects of human activity on bird biodiversity.
14	Two-point item: **Part A:** C (1 point) **Part B:** **First drop-down list:** less **Second drop-down list:** increases (1 point)	HS-ESS3-5	4. Analyzing and Interpreting Data	ESS3.D Global Climate Change	7. Stability and Change	Predict changes to the Arctic sea ice based on probability and describe the patterns shown in the data over time.
15	**First drop-down list:** the same as **Second drop-down list:** genes (1 point)	HS-LS1-1	6. Constructing Explanations and Designing Solutions	LS1.A Structure and Function	6. Structure and Function	Construct an explanation based on evidence for how gene expression determines the structure of proteins produced by pancreatic cells.
16	**Row 1:** Increase in the number of collisions **Row 2:** Increase in the number of collisions **Row 3:** Decrease in the number of collisions (1 point)	HS-PS1-5	6. Constructing Explanations and Designing Solutions	PS1.B Chemical Reactions	1. Patterns	Explain the relationship between temperature and reaction rate in terms of temperature's impact on frequency of collisions between reactants A and B.

Item	Key	PE	SEP	DCI	CCC	ILCS
17	**First drop-down list:** increases **Second drop-down list:** speeds up (1 point)	HS-ESS1-4	5. Using Mathematical and Computational Thinking	ESS1.B Earth and the Solar System	3. Scale, Proportion, and Quantity	Evaluate how a comet's acceleration and/or force of attraction between the Sun and comet change with respect to the change in the comet's distance and/or mass.
18	D (1 point)	HS-PS2-3	6. Constructing Explanations and Designing Solutions	PS2.A Forces and Motion	2. Cause and Effect	Select the design solution that best meets the provided criteria about momentum and force during a collision.
19	**First drop-down list:** wind turbines **Second drop-down list:** released during manufacturing **Third drop-down list:** solar panels (1 point)	HS-ETS1-3	6. Constructing Explanations and Designing Solutions	ETS1.B Developing Possible Solutions	N/A	Select the best alternative solution from among multiple solutions of renewable resources, based on their strengths and weaknesses, in providing electricity.
20	Third and fourth options (1 point)	HS-LS1-3	3. Planning and Carrying Out Investigations	LS1.A Structure and Function	7. Stability and Change	Identify what is to be recorded as useful data for an investigation on the effect of exercise on heart rate.

Item	Key	PE	SEP	DCI	CCC	ILCS
21	**First drop-down list:** ecological succession **Second drop-down list:** carrying capacity (1 point)	HS-LS2-2	5. Using Mathematical and Computational Thinking	LS2.A Interdependent Relationships in Ecosystems	3. Scale, Proportion, and Quantity	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
22	B (1 point)	HS-PS2-2	5. Using Mathematical and Computational Thinking	PS2.A Forces and Motion	4. Systems and System Models	Mathematically determine the properties of the system using the conservation of momentum of objects in the system.
23	B (1 point)	HS-ESS1-5	7. Engaging in Argument from Evidence	ESS1.C The History of Planet Earth	1. Patterns	Identify the correct explanation for the ages and locations of rocks on a map of the North American plate.

Item	Key	PE	SEP	DCI	CCC	ILCS
24	Two-point item: **Part A:** **Row 1:** Photosynthesis Input **Row 2:** Photosynthesis Input **Row 3:** Photosynthesis Output **Row 4:** Photosynthesis Output (1 point) **Part B:** **Row 1:** Cellular Respiration Output **Row 2:** Cellular Respiration Output **Row 3:** Cellular Respiration Input **Row 4:** Cellular Respiration Input (1 point)	HS-LS2-5	2. Developing and Using Models	LS2.B Cycles of Matter and Energy Transfer in Ecosystems	4. Systems and System Models	Select the inputs and outputs of photosynthesis and cellular respiration.
25	Exemplars and rubric provided on the next page.	HS-PS3-1	5. Using Mathematical and Computational Thinking	PS3.A Definitions of Energy	4. Systems and System Models	Create a correct mathematical representation to determine the components of gravitational potential energy in the Earth-ball system and kinetic energy.

Item 25 Exemplars and Rubric

Score	Exemplar(s)	Rubric
2	The kinetic energy of the ball at the bottom of the building is the same as the potential energy at the top of the building. The potential energy needs to be divided by the mass of the tennis ball and the acceleration due to gravity(g) to find the height of the building. OR In the system, kinetic energy at the bottom of the fall is equal to the gravitational potential energy so ½mv2 = mgh where m is mass, v is velocity, g is acceleration due to gravity, and h is the height of the building, so just solve for h and you can find the height of the building.	The response includes that the kinetic energy of the tennis ball at the bottom of the building is equal to the gravitational potential energy of the tennis ball at the top of the building. AND The response includes that gravitational potential energy at the top of the building can be divided by the mass and acceleration due to gravity to find the height of the building.
1	The kinetic energy of the ball at the bottom of the building is the same as the potential energy at the top of the building. OR The PE at the top is the same as the KE at the bottom when the ball hits. OR I can divide the potential energy by the mass of the ball and gravity if I want to find how tall the building is.	The response includes that the kinetic energy of the tennis ball at the bottom of the building is equal to the gravitational potential energy of the tennis ball at the top of the building. OR The response includes that gravitational potential energy at the top of the building can be divided by the mass and acceleration due to gravity to find the height of the building.

Score	Exemplar(s)	Rubric

0	The potential energy is 0 at the top of the building and it will be 0 when the ball hits the ground.
	OR
	I would just measure the building with a meter stick.
	OR
	I would time how long it takes for the ball to hit the ground.
	OR
	As the ball goes down the building, the potential energy increases.
	OR
	*&YTT%$#$D
	OR
	I don't know; I was never taught this.
		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.

Items 26–38

Item	Key	PE	SEP	DCI	CCC	ILCS
26	D (1 point)	HS-LS4-5	7. Engaging in Argument from Evidence	LS4.C Adaptation	2. Cause and Effect	Describe the conditions under which a claim about temperature effect on sugar maple tree distribution can be supported.
27	Third and fourth options (1 point)	HS-ESS1-6	6. Constructing Explanations and Designing Solutions	ESS1.C The History of Planet Earth	7. Stability and Change	Identify the roles of various earth processes (e.g., plate tectonics and erosion) in the preservation and destruction of evidence about Earth history.
28	B (1 point)	HS-PS1-3	3. Planning and Carrying Out Investigations	PS1.A Structure and Properties of Matter	1. Patterns	Identify and explain which procedure best compares the strengths of the forces of attraction between particles in a variety of solid substances.
29	D (1 point)	HS-LS2-8	7. Engaging in Argument from Evidence	LS2.D Social Interactions and Group Behavior	2. Cause and Effect	Construct an argument to explain an advantage of wolves living in packs.
30	**First drop-down list:** analog **Second drop-down list:** digital (1 point)	HS-PS4-2	1. Asking Questions and Defining Problems	PS4.A Wave Properties	7. Stability and Change	Analyze information comparing analog and digital technology to identify questions that will help musicians choose between analog and digital signals for the storage and transmission of the music they make.

Item	Key	PE	SEP	DCI	CCC	ILCS
31	**Row 1:** Faucet (source) **Row 2:** Faucet (source) **Row 3:** Drain (sink) **Row 4:** Faucet (source) **Row 5:** Drain (sink) (1 point)	HS-ESS2-6	2. Developing and Using Models	ESS2.D Weather and Climate	5. Energy and Matter	Use a model to identify carbon sources and sinks.
32	**First drop-down list:** increases **Second drop-down list:** increases **Third drop-down list:** density-dependent OR **First drop-down list:** decreases **Second drop-down list:** decreases **Third drop-down list:** density-dependent (1 point)	HS-LS2-1	5. Using Mathematical and Computational Thinking	LS2.A Interdependent Relationships in Ecosystems	3. Scale, Proportion, and Quantity	Analyze the carrying capacity graph to determine the relationship between the hare and the lynx.
33	Crossing over during meiosis (1 point)	HS-LS3-2	7. Engaging in Argument from Evidence	LS3.B Variation of Traits	2. Cause and Effect	Describe that crossing over is responsible for all of the variation in this rabbit species.

Item	Key	PE	SEP	DCI	CCC	ILCS
34	C (1 point)	HS-LS3-1	1. Asking Questions and Defining Problems	LS3.A Inheritance of Traits	2. Cause and Effect	Select the question that challenges the argument about phenotype and genotype connections in this rabbit species.
35	First, second, and fifth options (1 point)	HS-LS3-1	1. Asking Questions and Defining Problems	LS3.A Inheritance of Traits	2. Cause and Effect	Select questions that address the relationship between a chromosome and gene expression in this rabbit species.
36	**First drop-down list:** color gene **Second drop-down list:** gray-pointed (1 point)	HS-LS3-2	7. Engaging in Argument from Evidence	LS3.B Variation of Traits	2. Cause and Effect	Describe how the environmental conditions will impact the expression of the trait in this rabbit species.
37	C (1 point)	HS-LS3-1	1. Asking Questions and Defining Problems	LS3.A Inheritance of Traits	2. Cause and Effect	Select a scientifically correct question that challenges the conclusions about the offspring phenotypes in this rabbit species.
38	Exemplars and rubric provided on the next page.	HS-LS3-2	7. Engaging in Argument from Evidence	LS3.B Variation of Traits	2. Cause and Effect	Explain that genetic variation depends on both environmental and genetic factors in this rabbit species.

Item 38 Exemplars and Rubric

Score	Exemplar(s)	Rubric
2	Genetic factors can affect point color variation because the color shown depends on the alleles that are inherited. Environmental factors can affect point color variation because it depends on the temperature that the rabbit is exposed to because temperature influences the expression of its inherited alleles, changing the point color.	The response includes that genetic factors affect point color variation because the specific phenotype expressed (black or gray) depends partly on the alleles that are inherited. AND The response includes that environmental factors can affect point color variation because the temperature that the rabbit is exposed to will influence the expression of its inherited alleles, thus altering its phenotype.
1	Genes can affect the color that is expressed because it depends partly on what alleles are inherited. OR The environment affects the color of the rabbit because the temperature that the rabbit lives in can make the color change. OR The temperature change caused the rabbits points to change color. OR It's in the traits because of the alleles that are inherited from the parents.	The response includes that genetic factors affect point color variation because the specific phenotype expressed (black or gray) depends partly on the alleles that are inherited. OR The response includes that environmental factors can affect point color variation because the temperature that the rabbit is exposed to will influence the expression of its inherited alleles, altering its phenotype.

Score	Exemplar(s)	Rubric

0	The rabbit's genes affect point color variation more than the environment.
	OR
	The rabbit's genes and the environment both effect the point color in the rabbits.
	OR
	It has to be the genes because how can temperature make a rabbit change its color.
	OR
	*&YTT%$#$D
	OR
	I don't know; I was never taught this.
		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 on the Practice and Training Test Resources web page.

Items 39–44

Item	Key	PE	SEP	DCI	CCC	ILCS
39	First and second options (1 point)	HS-PS1-6	6. Constructing Explanations and Designing Solutions	PS1.B Chemical Reactions	7. Stability and Change	Identify the scientific principles that support the effectiveness of the changes to meet the criteria required by the engineer in manufacturing fertilizer.
40	**First drop-down list:** 84 **Second drop-down list:** 18 (1 point)	HS-PS1-7	5. Using Mathematical and Computational Thinking	PS1.B Chemical Reactions	5. Energy and Matter	Select the mathematical representation that predicts the mass of the other component based on a chemical reaction.
41	B (1 point)	HS-PS1-7	5. Using Mathematical and Computational Thinking	PS1.B Chemical Reactions	5. Energy and Matter	Select the mathematical relationships that best demonstrate that atoms are conserved in the chemical reaction.
42	**First drop-down list:** decrease **Second drop-down list:** right **Third drop-down list:** exothermic (1 point)	HS-PS1-6	6. Constructing Explanations and Designing Solutions	PS1.B Chemical Reactions	7. Stability and Change	Select the change that best meets the criteria and justifies the change in temperature necessary for increasing the amount of fertilizer manufactured.

Item	Key	PE	SEP	DCI	CCC	ILCS
43	**Row 1:** Disadvantage **Row 2:** Disadvantage **Row 3:** Advantage **Row 4:** Advantage (1 point)	HS-PS1-6	6. Constructing Explanations and Designing Solutions	PS1.B Chemical Reactions	7. Stability and Change	Identify the advantages and disadvantages for each change in fertilizer production.
44	Exemplars and rubric provided on the next page.	HS-PS1-6	6. Constructing Explanations and Designing Solutions	PS1.B Chemical Reactions	7. Stability and Change	Identify or describe the scientific principles that support the effectiveness of the change to meet the criteria to maintain equilibrium.

Item 44 Exemplars and Rubric

Score	Exemplar(s)	Rubric
2	An increase in pressure would increase how often molecules collide. The reaction will reduce the effect of this by shifting the equilibrium to the right to make more NH_3 because there are fewer molecules on the right side of the equation.	The response includes that an increase in pressure would increase the frequency of collisions between the reactant molecules. AND The response indicates that a system at equilibrium will adjust to reduce the effects of any changes, so the equilibrium will shift right to produce more ammonia or NH_3 to reduce the overall pressure of the system.
1	An increase in pressure would increase the number of collisions between molecules. OR The reaction will adjust to reduce the effects of the increase in pressure by shifting the equilibrium to the right and to produce more NH_3. The equilibrium will shift to the right producing more ammonia.	The response indicates that an increase in pressure would increase the frequency of collisions between the reactant molecules. OR The response indicates that a system at equilibrium will adjust to reduce the effects of any changes, so the equilibrium will shift right to produce more ammonia or NH_3 to reduce the overall pressure of the system.

0	The percent yield of ammonia at equilibrium would not be affected by an increase in pressure.
	OR
	There will be more ammonia.
	OR
	An increase in pressure would decrease the number of collisions between molecules.
	OR
	The equilibrium will shift to the left, producing less ammonia/NH_3
	OR
	*&YTT%$#$D
	OR
	I don't know; I was never taught this.
		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.

Items 45–48

Item	Key	PE	SEP	DCI	CCC	ILCS
45	D (1 point)	HS-ESS1-1	2. Developing and Using Models	ESS1.A The Universe and Its Stars	3. Scale, Proportion, and Quantity	Identify the type of star of the Sun on the main sequence of an HR diagram, relating its position to luminosity.
46	**First drop-down list:** 527 **Second drop-down list:** 6,000 (1 point)	HS-ESS1-1	2. Developing and Using Models	PS3.D Energy in Chemical Processes and Everyday Life	3. Scale, Proportion, and Quantity	Identify the location of the Sun on the main sequence of an HR diagram, relating its position to luminosity.
47	**First drop-down list:** increases **Second drop-down list:** decreases OR **First drop-down list:** decreases **Second drop-down list:** increases (1 point)	HS-ESS1-4	5. Using Mathematical and Computational Thinking	ESS1.B Earth and the Solar System	3. Scale, Proportion, and Quantity	Explain how the velocity changes with respect to the change in distance.
48	Exemplars and rubric provided on the next page.	HS-ESS1-4	5. Using Mathematical and Computational Thinking	ESS1.B Earth and the Solar System	3. Scale, Proportion, and Quantity	Explain from data the eccentricity of orbital paths of planets as they revolve around the Sun.

Item 48 Exemplars and Rubric

Score	Exemplar(s)	Rubric
2	The shape of the orbital path is an ellipse because the distance between the planet and the Sun increases and decreases as the planet goes around the Sun. OR I learned that the shape of a planets orbital path is an oval shape because the planet gets closer and then farther away as it makes its way around the Sun. OR As the planet moves farther away from the sun the shape changes and when it gets closer to the sun it changes again, so it's not circular.	The response includes that the orbital path is an ellipse or oval shape. AND The response includes that the distance between the Sun and the planet increases and decreases throughout the planet's orbital path.
1	The shape of the planets orbital path is an oval. OR The planets orbital path is an ellipse. OR Because the distance between the planet and the Sun increases and decreases as the planet goes around the Sun. OR The orbital path of the planet changes in shape as it gets closer or farther away from the Sun.	The response includes only that the shape of the orbital path is an ellipse or oval. OR The response includes only that the distance between the planet and Sun increases or decreases throughout the planet's orbital path.

Score	Exemplar(s)	Rubric

0	The orbital path is a circle because it goes around the sun.
	OR
	The distance between the planet and the sun stays constant.
	OR
	*&YTT%$#$D
	OR
	I don't know; I was never taught this.
		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 on the Practice and Training Test Resources web page.

Item 49

Item	Key	PE	SEP	DCI	CCC	ILCS
49	Two-point item: **Part A:** A (1 point) **Part B:** **First drop-down list:** moving away from the student's location **Second drop-down list:** expanding (1 point)	HS-ESS1-2	6. Constructing Explanations and Designing Solutions	ESS1.A The Universe and Its Stars	5. Energy and Matter	Explain the redshift pattern as indicating that more distant stars are moving away.