Biology

Short Constructed-Response Scoring Guide

Spring 2025

General Information

Beginning with the 2022–2023 school year, science assessments include short constructed-response questions at every assessed grade level. Students are asked to provide a short response to a question. Responses are scored using a prompt-specific, two-point rubric.

This State of Texas Assessments of Academic Readiness (STAAR®) constructed-response scoring guide provides student exemplars at all score points for short constructed-response questions from the STAAR Biology operational test. The questions are presented as they appeared on the test, and responses were scored based on the two-point rubrics that were developed with the input of Texas educators. A response earns a specific score point based on the completeness of the response provided as measured against the rubric.

The responses in this guide are actual student responses submitted online during the testing window. To protect the privacy of individual students, all names and other references of a personal nature have been altered or removed. Otherwise, the responses appear as the students wrote them and have not been modified.

Biology Short Constructed Response

Prompt

Two students list characteristics of an organism:

- has cytoplasm
- has DNA in a nucleus
- has ribosomes
- has a cell wall

Based on the list of characteristics, Student A claims that the organism is prokaryotic, while Student B claims that the organism is eukaryotic.

Identify which student is correct **AND** why that student is correct.

Think about the information carefully. Then enter your response in the box provided.

Item-Specific Rubric

Score: 2

The response provides complete and correct understanding.

- Identifies which student is correct.
  - Student B

  AND

- Explains why that student is correct.
  - Because eukaryotic organisms have DNA stored within a nucleus, while prokaryotic organisms do not.

Score: 1

The student answers half of the question correctly. The response provides partial understanding.

- Identifies Student B is correct.

  OR

- Explains eukaryotic organisms have a nucleus.

Score: 0

The response is incorrect or irrelevant. The response provides little to no understanding.

Sample Student Responses

Score Point 0

Response 1

Student B is correct, the organism is prokaryotic because it has a ribosomes.

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. The identification provided is contradictory, with the correct student and incorrect organism ("Student B is correct, the organism is prokaryotic"). The student provides an incorrect explanation ("because it has a ribosomes"). Ribosomes are found in both eukaryotic and prokaryotic cells, so their presence does not indicate the cell type.

Response 2

Student A is correct about the cell being eukaryotic, The organism has a cytoplasm which makes it a plant cell, and those are living organisms that provide food for themselves, making them eukaryotic. As well as prokarytoic cells lacking cell walls as well, which also defines it.

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. The identification provided is contradictory with the incorrect student and correct organism ("Student A is correct about the cell being eukaryotic"). The student provides an incorrect explanation ("The organism has a cytoplasm which makes it a plant cell, and those are living organisms that provide food for themselves, making them eukaryotic. As well as prokarytoic cells lacking cell walls as well, which also defines it"). Cytoplasm and cell walls are found in both eukaryotic and prokaryotic cells, so their presence does not indicate the cell type. While many eukaryotic organisms, such as plants and fungi, have cell walls, not all eukaryotic organisms do. Although all plants are eukaryotic, not all eukaryotes are plants, so stating that the organism is a plant can be true but is irrelevant and does not affect the score.

Response 3

The organism is prokaryotic because it does not contain a nucleus. Student A is correct.

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. The student identifies the incorrect student ("Student A is correct") and also makes an incorrect claim ("The organism is prokaryotic"). The student provides an incorrect explanation ("because it does not contain a nucleus"). While it is true that prokaryotic cells do not contain a nucleus, the organism in the prompt does.

Response 4

student a is correct because the organism has a nucleus in it and eukaryote organisms do not have a nucleus.

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. The student identifies the incorrect student ("student a is correct"). There is no attempt to identify the organism. The student provides an incorrect explanation ("because the organism has a nucleus in it and eukaryote organisms do not have a nucleus"). This demonstrates a fundamental misunderstanding of the defining characteristics of eukaryotic and prokaryotic organisms, as eukaryotic cells do have a nucleus, whereas prokaryotic cells do not.

Score Point 1

Response 1

Student B is correct because the organism has a nucleus that shows the organism is eukaryotic not prokaryotic. Other factors such as the ribosomes and cell wall also help to prove the organism is infact not prokaryotic as prokaryotic cells do not have these characteristics.

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly identifies which student is correct ("Student B is correct") consistent with the correct claim ("the organism is eukaryotic"). The student initially provides a correct explanation for why Student B is correct ("because the organism has a nucleus that shows the organism is eukaryotic"). However, the explanation becomes incorrect as the student adds inaccurate proof ("Other factors such as the ribosomes and cell wall also help to prove the organism is infact not prokaryotic as prokaryotic cells do not have these characteristics"). Ribosomes and cell walls are found in both eukaryotic and prokaryotic cells, so their presence does not indicate the cell type.

Response 2

The organism is a eukaryotic cell because no prokaryotic cell has a cell wall.

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly identifies which student is correct ("The organism is a eukaryotic cell"). While the student is not directly identified, the response identifies the organism as eukaryotic, which corresponds with Student B's claim. This is sufficient identification for credit.

The student provides an incorrect explanation ("because no prokaryotic cell has a cell wall"). Cell walls are found in both eukaryotic and prokaryotic cells, so their presence does not indicate the cell type.

Response 3

the student that said eukaryotic is correct because ribosome and cytoplsm are on found in the eukary and not in the prokary

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly identifies which student is correct ("the student that said eukaryotic is correct").

The student provides an incorrect explanation ("because ribosome and cytoplsm are on found in the eukary and not in the prokary"). Ribosomes and cytoplasm are found in both eukaryotic and prokaryotic cells, so their presence does not indicate the cell type.

Response 4

Student A is correct because only eukaryotic cells have a nucleus in them, prokaryotic never has a nucleus.

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly explains why a student is correct ("only eukaryotic cells have a nucleus in them, prokaryotic never has a nucleus"). Note that either statement about the presence or absence of a nucleus would be sufficient for credit for this element.

The student identifies the incorrect student ("Student A is correct"). There is no attempt to identify the organism. While the identification is incorrect, the student demonstrates partial understanding by providing the fundamental difference between eukaryotic and prokaryotic cells based on the list of characteristics given for the organism in question.

Score Point 2

Response 1

Student B is correct, because the only thing is that is has DNA in a nucleus and prokayotic doesn't. That's the only thing that they don't have in common, everything else they do. Prokayotic and Eukayotic have cytoplasm, has ribosomes, and it also has cell wall.

The response demonstrates complete and correct understanding. It includes both of the required elements. The student correctly identifies which student is correct ("Student B is correct") and correctly explains why the student is correct ("because the only thing is that is has DNA in a nucleus and prokayotic doesn't"). The student provides the relevant characteristic from the list given and explains the contrast that proves the correct claim that the organism is eukaryotic. Additional correct comparison information is provided ("That's the only thing that they don't have in common, everything else they do. Prokayotic and Eukayotic have cytoplasm, has ribosomes, and it also has cell wall"), but is not required for credit.

Response 2

Student B is correct, a eukaryotic organism contains membrane-bound organelles. For instance, this organism contains a nucleus, a prokaryotic organisms would not contain a nucleus. Instead, it would contain lose genetic material due to the lack of membrane-bound organelles.

The response demonstrates complete and correct understanding. It includes both of the required elements. The student correctly identifies which student is correct ("Student B is correct") and correctly explains why the student is correct ("a eukaryotic organism contains membrane-bound organelles. For instance, this organism contains a nucleus, a prokaryotic organisms would not contain a nucleus"). While it is true that only eukaryotic organisms have membrane-bound organelles, the student must specify the nucleus from the list that proves the correct claim.

Response 3

Student B is correct it is a eukaryoic cell because the celly has a nucleus and a cell wall, while prokaryotic cells don't have a nucleus.

The response demonstrates complete and correct understanding. It includes each of the two required elements. The student identifies which student is correct ("Student B is correct") consistent with the correct claim ("it is a eukaryoic cell") and correctly explains why the student is correct ("because the celly has a nucleus and a cell wall, while prokaryotic cells don't have a nucleus"). While "has a nucleus and a cell wall" is true, it is the start of an incorrect explanation as both eukaryotic and prokaryotic cells can contain cell walls; however, the student goes on to sufficiently clarify that the contrasting characteristic between the two cell types is the nucleus.

Response 4

eukaryotic because prokaryotic dont have nucleus.

The response demonstrates complete and correct understanding. It includes each of the two required elements. The student correctly identifies which student is correct ("eukaryotic"). While the student is not directly identified, the response identifies the organism as eukaryotic, which corresponds with Student B's claim. This is sufficient identification for credit. The response also correctly explains why the student is correct ("because prokaryotic dont have nucleus"). Although the fact that eukaryotic organisms have a nucleus is not directly stated, the concise explanation indicates understanding that the presence of a nucleus in the cells confirms the organism as eukaryotic, which is sufficient for credit.

Biology Short Constructed Response

Prompt

Cytochrome c is a protein that helps release energy from food and is produced by nearly all organisms. The table shows a short sequence of the amino acids in cytochrome c for several species.

Organism	Amino Acid Sequence				
	9	**10**	**11**	**12**	**13**
Tuna	Glycine	Aspartic acid	Valine	Alanine	Lysine
Chicken	Glycine	Aspartic acid	Isoleucine	Glutamic acid	Lysine
Neurospora	Glycine	Aspartic acid	Serine	Lysine	Lysine
Gray whale	Glycine	Aspartic acid	Valine	Glutamic acid	Lysine
Silkworm moth	Glycine	Asparagine	Alanine	Glutamic acid	Asparagine

Identify the organism that is **MOST CLOSELY** related to tuna **AND** explain your reasoning using evidence from the table.

Think about the information carefully. Then enter your response in the box provided.

Item-Specific Rubric

Score: 2

The response provides complete and correct understanding.

- Identifies the organism that is **MOST CLOSELY** related to the Tuna.
    - Gray whale

AND

- Explains reasoning using evidence from the table.
    - Because the only difference in the amino acid sequence provided is at amino acid 12.

Score: 1

The student answers half of the question correctly. The response provides partial understanding.

- Identifies Gray whale is most closely related with no evidence provided.

Score: 0

The response is incorrect or irrelevant. The response provides little to no understanding.

Sample Student Responses

Score Point 0

Response 1

silkworm and gray whale

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. An incorrect identification of the organism most closely related to tuna is provided ("silkworm and gray whale"). Although the student correctly identifies "gray whale," more than one organism is listed, demonstrating no understanding of which is the correct organism. There is no attempt to provide reasoning using evidence from the table.

Response 2

Chicken is most closely related to the tuna because everything that the tuna has, the chicken also has in common.The only thing not in common is number twelve.

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. An incorrect identification of the organism most closely related to tuna is provided ("Chicken"). The student incorrectly explains reasoning using evidence from the table ("The only thing not in common is number twelve"). This reasoning is true for the tuna and gray whale, but not for the tuna and chicken.

Response 3

The organism that is most closely related to the tuna is Neurospora because they have the least differences in their animo acid sequence.

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. An incorrect identification of the organism most closely related to tuna is provided ("Neurospora"). The student incorrectly explains reasoning using evidence from the table ("because they have the least differences in their animo acid sequence"). This reasoning is true for the tuna and gray whale, but not for the tuna and Neurospora.

Response 4

lysine because it is 13 in the amino acid sequence

The response is incorrect or irrelevant and demonstrates little to no understanding. It includes neither of the required elements. An incorrect identification of the organism most closely related to tuna is provided ("lysine"). The student incorrectly explains reasoning using evidence from the table ("because it is 13 in the amino acid sequence"). Lysine is number 13 for four of the organisms, but this is not relevant to the identification of the correct organism.

Score Point 1

Response 1

The grey whale is the most related to the tuna because they have the most proteins in common.

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly identifies the organism most closely related to tuna ("The grey whale"). The student incorrectly explains reasoning in an attempt to use evidence from the table ("because they have the most proteins in common"). The table shows the sequence of amino acids in the protein cytochrome c, so it is the amino acids, not proteins, that are in common. Amino acids are the building blocks of proteins, not the other way around.

Response 2

The gray whale is most closely related to tuna because on nine, they all have the same amino acid, and same for ten, but eleven they are mostly different, except tuna and gray whale have the same amino acid still, which means they are most closely related.

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly identifies the organism most closely related to tuna ("The gray whale"). The student incompletely explains reasoning using evidence from the table ("because on nine, they all have the same amino acid, and same for ten, but eleven they are mostly different, except tuna and gray whale have the same amino acid still, which means they are most closely related"). The student only notes how the first three amino acids are the same, but there is no discussion of all five. As two other organisms also share at least three common amino acids, this is insufficient.

Response 3

The organism that is most closely to related to tuna is Gray whale because they have similarities.

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly identifies the organism most closely related to tuna ("Gray whale"). The student insufficiently explains with an incomplete reason that does not clearly use evidence from the table ("because they have similarities"). These organisms have other similarities in addition to the amino acid sequences. The response does not adequately explain the reasoning or demonstrate the student's ability to read and interpret the table.

Response 4

The organism that is closely related to tuna is the gray whale because it matches exactly everything in the amino acid sequence from the tuna.

The response addresses half of the question correctly and demonstrates partial understanding. It includes one of the two required elements. The student correctly identifies the organism most closely related to tuna ("the gray whale"). The student incorrectly explains reasoning using evidence from the table ("because it matches exactly everything in the amino acid sequence from the tuna"). Four of the five amino acids match, not all of them.

Score Point 2

Response 1

The organism that is most closely related to tuna is the Gray whale. This is because the amino acid sequence has 4 matches, the most out of any other organism (Chicken has 3, Neurospora has 3, Silkworm moth has 2).

The response demonstrates complete and correct understanding. It includes each of the two required elements. The student correctly identifies the organism most closely related to tuna ("the Gray whale") and explains reasoning using evidence from the table ("This is because the amino acid sequence has 4 matches, the most out of any other organism"). Students only need to demonstrate they've correctly interpreted the table for their reason, so while the number of matches for all the organisms is correctly listed ("Chicken has 3, Neurospora has 3, Silkworm moth has 2"), it is not required.

Response 2

The organism most closely related to tuna would be a gray whale. The reason that the gray whale is the closets related to the tuna is because of its amino acid sequence. The both have Glycine, Aspartic acid and Valine. However when it comes to the the next amino acid Tuna has a different amino acid of Alanine while gray whale has Glutamic acid. Yet no other organism shares nearly the same amount of amino acids as the gray whale does with the tuna.

The response demonstrates complete and correct understanding. It includes each of the two required elements. The student correctly identifies the organism most closely related to tuna ("a gray whale") and explains reasoning using evidence from the table ("Yet no other organism shares nearly the same amount of amino acids as the gray whale does with the tuna"). Note this conclusive statement is needed for credit as the student correctly describes the table but does not address the fifth amino acid (lysine), and two other organisms also have three amino acid matches with tuna ("because of its amino acid sequence . . . both have Glycine, Aspartic acid and Valine. However when it comes to the next amino acid Tuna has a different amino acid of Alanine while gray whale has Glutamic acid").

Response 3

the most closely thing related to tuna is a grey whale because on the table they have the same amino acid sequence except 12

The response demonstrates complete and correct understanding. It includes each of the two required elements. The student correctly identifies the organism most closely related to tuna ("a grey whale") and explains reasoning using evidence from the table ("because on the table they have the same amino acid sequence except 12").

Response 4

The gray whale is most closely related to tuna because they have the most similar amino acids.

The response demonstrates complete and correct understanding. It includes each of the two required elements. The student correctly identifies the organism most closely related to tuna ("The gray whale") and explains reasoning using evidence from the table ("because they have the most similar amino acids"). A general conclusion based on accurately interpreting the table is sufficient for credit.