

Biology 1

Sample Items

Introduction

The South Carolina State Department of Education provides districts and schools with tools to assist in delivering focused instruction aligned with the *South Carolina College- and Career-Ready Science Standards 2021*. This document contains a set of twenty End-of-Course Examination Program (EOCEP) Biology 1 test items that have been written to align with the standards identified as *EOCEP Biology 1*. These items were reviewed for content, fairness, and sensitivity prior to being field tested and approved for release to the public.

Purpose

This document is intended to be a resource for educators; it is not designed to be a practice test for students. The sample items are examples of college- and career-ready assessment items. The EOCEP assesses content standards in a variety of ways. This document does not include all item types. To see the full functionality of Technology-Enhanced items see Online Tools Training. <https://portal.te.drctdirect.com/SC>

Item Information Format

EOCEP Biology Sample Item (#)	
Standard Alignment	PE Code (2D or 3D) Science and Engineering Practice (SEP) Disciplinary Core Idea (DCI) Crosscutting Concept (CCC)
Standard Description	text from the <i>South Carolina College- and Career-Ready Science Standards 2021</i>
Item Type	Selected Response, Multi-select, Drag and Drop, Drop-down, Evidence-based Selected Response, Match Interaction; Short Text Input
Answer Key	correct answer
Depth of Knowledge	cognitive demand
Estimated Difficulty	estimate based on student responses

Links

Assessment Quick Links for Teachers

<https://ed.sc.gov/tests/assessment-information/quick-links-for-teachers/>

South Carolina College- and Career-Ready Science Standards 2021

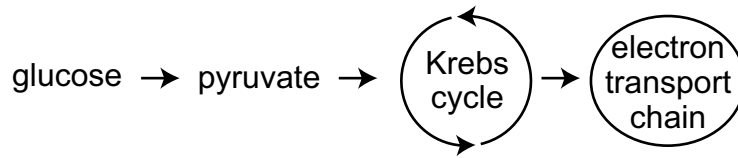
<https://ed.sc.gov/instruction/standards/science/standards/>

Norman Webb's Depth-of-Knowledge for the Four Content Areas

<https://www.webbalign.org/dok-summary-tables>

1. Examine the model.

Cellular Process Essential for Homeostasis



Based on this model, which statement **best** explains how this cellular process provides the energy an organism needs to maintain homeostasis?

- A. Glucose molecules are metabolized, resulting in the storage of energy.
- B. The bonds in glucose molecules are broken down, resulting in the loss of energy.
- C. Glucose molecules are broken down, resulting in the release of energy that is captured in ATP.
- D. The bonds of complex molecules are metabolized to form glucose, resulting in the formation of ATP.

EOCEP Biology Sample Item 1	
Standard Alignment	B-LS1-7 (3D) SEP: Developing and Using Models DCI: LS1.C CCC: Energy and Matter
Standard Description	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.
Item Type	Selected Response
Answer Key	C
Depth of Knowledge	2
Estimated Difficulty	Medium

2. Complete the table by dragging the **best** example of each cause for biodiversity loss into the table.

Causes for Loss of Biodiversity

Ranking	Cause	Example	Effect on Biodiversity
1	change in land use		30% decrease
2	overuse (overfishing, overhunting, overharvesting)		20% decrease
3	climate change		14% decrease
4	invasive species		11% decrease

Key:

Causes for Loss of Biodiversity

Ranking	Cause	Example	Effect on Biodiversity
1	change in land use	clear-cutting sections of the Amazon rainforest	30% decrease
2	overuse (overfishing, overhunting, overharvesting)	repeatedly planting the same crop on farmland	20% decrease
3	climate change	burning fossil fuels	14% decrease
4	invasive species	vines growing over trees, buildings, and power lines	11% decrease

Item information on following page 

EOCEP Biology Sample Item 2	
Standard Alignment	B-LS2-7 (2D) SEP: N/A DCI: LS4.D CCC: Stability and Change
Standard Description	Design, evaluate, and refine a solution for reducing the impacts of human activities on biodiversity and ecosystem health.
Item Type	Drag and Drop
Answer Key	Top to Bottom: clear-cutting sections of the Amazon rainforest; repeatedly planting the same crop of farmland; burning fossil fuels; vines growing over trees, buildings, and power lines
Depth of Knowledge	2
Estimated Difficulty	Medium

3. Use the chart below to answer the question.

Blood Types

Phenotype	Genotype
A	$I^A i$ or $I^A I^A$
B	$I^B i$ or $I^B I^B$
AB	$I^A I^B$
O	ii

What are the possible phenotypes of a child with a parent who is heterozygous for type A blood and a parent who is homozygous for type B blood?

- A. type A only
- B. type AB only
- C. type AB or type B
- D. type AB or type O

EOCEP Biology Sample Item 3	
Standard Alignment	B-LS3-3 (2D) SEP: Analyzing and Interpreting Data DCI: LS3.B CCC: N/A
Standard Description	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
Item Type	Selected Response
Answer Key	C
Depth of Knowledge	2
Estimated Difficulty	Medium

4. Select a box in each row to indicate whether the molecule is a reactant or product of the process that transforms solar energy into chemical energy.

Cellular Process

	Reactant	Product
water	<input type="checkbox"/>	<input type="checkbox"/>
oxygen	<input type="checkbox"/>	<input type="checkbox"/>
glucose	<input type="checkbox"/>	<input type="checkbox"/>
carbon dioxide	<input type="checkbox"/>	<input type="checkbox"/>

Key:

Cellular Process

	Reactant	Product
water	<input checked="" type="checkbox"/>	<input type="checkbox"/>
oxygen	<input type="checkbox"/>	<input checked="" type="checkbox"/>
glucose	<input type="checkbox"/>	<input checked="" type="checkbox"/>
carbon dioxide	<input checked="" type="checkbox"/>	<input type="checkbox"/>

EOCEP Biology Sample Item 4	
Standard Alignment	B-LS1-5 (3D) SEP: Developing and Using Models DCI: LS1.C CCC: Energy and Matter
Standard Description	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
Item Type	Match Interaction
Answer Key	See key
Depth of Knowledge	2
Estimated Difficulty	High

5. Select **two** statements that support the claim that increased genetic diversity within a species increases the chances of the survival of the species.
- A. The species would be better able to resist diseases.
 - B. The species would be better able to mate more frequently.
 - C. The species would be better able to adapt to changes in climate.
 - D. The species would be better able to produce large numbers of offspring.
 - E. The species would be better able to produce individuals with similar genotypes.
 - F. The species would be better able to produce individuals with similar phenotypes.

EOCEP Biology Sample Item 5	
Standard Alignment	B-LS4-2 (3D) SEP: Constructing Explanations and Designing Solutions DCI: LS4.C CCC: Cause and Effect
Standard Description	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
Item Type	Multi-Select
Answer Key	A, C
Depth of Knowledge	2
Estimated Difficulty	High

6. In pea plants, round pods (R) are dominant to wrinkled pods (r) and yellow pods (Y) are dominant to green pods (y). The Punnett square below shows the possible gene combinations for a dihybrid cross between two parent plants that are heterozygous (RrYy).

Punnett Square for a Dihybrid Cross

	RY	Ry	rY	ry
RY	RRYY	RRYy	RrYY	RrYy
Ry	RRYy	RRyy	RrYy	Rryy
rY	RrYY	RrYy	rrYY	rrYy
ry	RrYy	Rryy	rrYy	rryy

In each space below, enter the probability of producing the phenotype listed.

round and yellow offspring: / 16

round and green offspring: / 16

wrinkled and yellow offspring: / 16

wrinkled and green offspring: / 16

Key:

round and yellow offspring: / 16

round and green offspring: / 16

wrinkled and yellow offspring: / 16

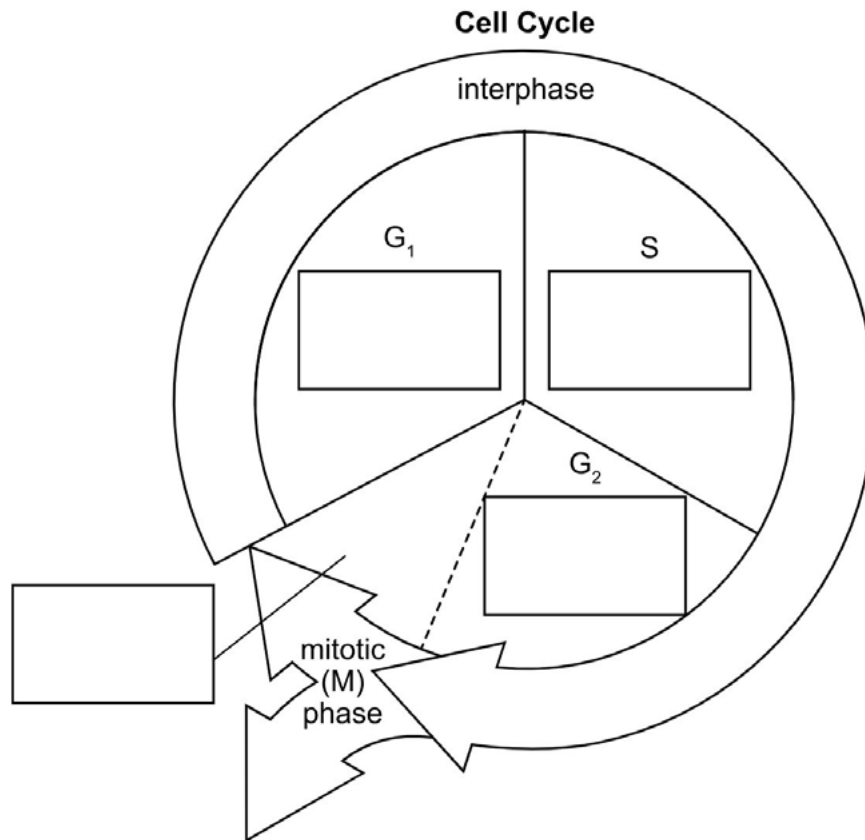
wrinkled and green offspring: / 16


Item information on following page 

EOCEP Biology Sample Item 6	
Standard Alignment	B-LS3-3 (3B) SEP: Analyzing and Interpreting Data DCI: LS3.B CCC: Scale, Proportion, and Quantity
Standard Description	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
Item Type	Short Text Input
Answer Key	Top to Bottom: 9; 3; 3; 1
Depth of Knowledge	2
Estimated Difficulty	High

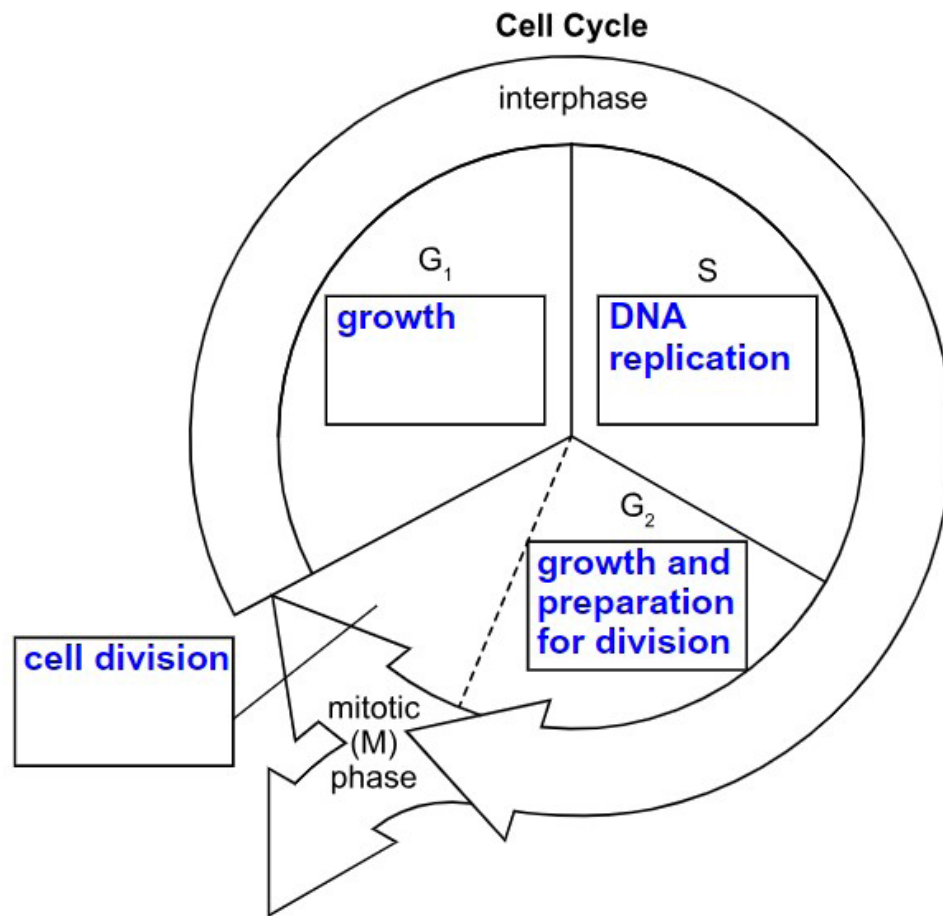
7. A student designed the model shown to explain the cell cycle.

Drag and drop the events into the correct places in the model to describe what occurs during each part of the cell cycle.



Item information on following page 

Key:



EOCEP Biology Sample Item 7	
Standard Alignment	B-LS1-4 (3D) SEP: Developing and Using Models DCI: LS1.B CCC: Systems and System Models
Standard Description	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing, and maintaining, complex organisms.
Item Type	Drag and Drop
Answer Key	See key
Depth of Knowledge	2
Estimated Difficulty	High

Use the information below to answer the questions.

Environmental DNA

A newly discovered type of DNA was found at a location in Greenland. This DNA has provided evidence for an ancient ecosystem at the location. Scientists call this genetic material environmental DNA, or eDNA. Environmental DNA is collected directly from soil, sediments, and water at excavation sites. The eDNA in Greenland was found in fragments of frozen sediment deep beneath the permafrost. Scientists estimate that the ecosystem existed 2 million years ago.

Observations about eDNA in Greenland

- The eDNA is 1 million years older than any other analyzed DNA.
- DNA pulled from chloroplasts and mitochondria has helped identify over 100 types of plants.
- The eDNA has provided information on multiple organisms.
- The eDNA is not directly linked to a single source of biological material.
- DNA from fossilized mastodon feces has provided evidence of the animal's presence and its diet.
- There is evidence of plentiful food sources that could have supported a mastodon population.
- The ecosystem temperature was 11°C to 19°C warmer than today's temperature.

Technological advances in the study of DNA allowed scientists to sequence small degraded pieces of genetic material. Besides finding evidence of the large number of different plants, scientists also discovered genetic material of animals as diverse as coral, ants, fleas, reindeer, and hares. The fact that evidence of a more temperate ecosystem was found frozen in permafrost suggests a rapid shift in climate conditions.

8. Poplar and birch trees flourished in the newly discovered ancient environment and played important roles in that ecosystem. A student wants to create a model showing how the trees affected carbon cycling in the ancient ecosystem.

Use the drop-down menus to complete three statements that will support the model.

1. Trees the amount of carbon dioxide in the atmosphere through .
2. Trees carbon levels in the geosphere through decomposition.
3. Trees carbon dioxide levels in the atmosphere and hydrosphere through respiration.

Key:

1. Trees the amount of carbon dioxide in the atmosphere through .
2. Trees carbon levels in the geosphere through decomposition.
3. Trees carbon dioxide levels in the atmosphere and hydrosphere through respiration.

Item information on following page 

EOCEP Biology Sample Item 8	
Standard Alignment	B-LS2-5 (3D) SEP: Developing and Using Models DCI: LS2.B CCC: Systems and System Models
Standard Description	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.
Item Type	Drop-Down
Answer Key	1. decreased, photosynthesis; 2. increased; 3. increased
Depth of Knowledge	2
Estimated Difficulty	High

9. A sample of eDNA from the ancient ecosystem contained genetic material originating from an ancient poplar tree. Scientists identified the corresponding chromosome of modern poplar trees and compared the ancient and modern DNA molecules. The DNA was not identical.

Which statement **most likely** explains why the DNA from modern poplar trees is different from the DNA of ancient poplar trees?

- A. Ancient poplar trees reproduced asexually by producing seeds, but modern poplar trees reproduce sexually.
- B. Favorable environmental conditions reduced the rate of cellular division, resulting in the production of fewer daughter cells.
- C. Mutations made during DNA replication were not corrected before protein synthesis began, causing mutations to accumulate in the poplar genome over time.
- D. Independent assortment of chromosomes during meiosis enabled ancient poplar trees to produce identical offspring, but modern poplar trees produce genetically unique offspring.

EOCEP Biology Sample Item 9	
Standard Alignment	B-LS3-2 (2D) SEP: Engaging in Argument from Evidence DCI: LS3.B CCC: N/A
Standard Description	Make and defend a claim based on evidence that inheritable genetic variations may result from (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.
Item Type	Selected Response
Answer Key	C
Depth of Knowledge	2
Estimated Difficulty	High

10. Scientists sequenced a strand of environmental DNA. They used a codon chart to determine whether the sample included a complete gene. Study the codon chart below.

RNA Codon Chart

Second Position

		U	C	A	G	
First Position	U	UUU } Phe	UCU } Ser	UAU } Tyr	UGU } Cys	Third Position
		UUC } Phe	UCC } Ser	UAC } Tyr	UGC } Cys	
		UUA } Leu	UCA } Ser	UAA stop	UGA stop	
		UUG } Leu	UCG } Ser	UAG stop	UGG Trp	
First Position	C	CUU } Leu	CCU } Pro	CAU } His	CGU } Arg	Third Position
		CUC } Leu	CCC } Pro	CAC } His	CGC } Arg	
		CUA } Leu	CCA } Pro	CAA } Gln	CGA } Arg	
		CUG } Leu	CCG } Pro	CAG } Gln	CGG } Arg	
First Position	A	AUU } Ile	ACU } Thr	AAU } Asn	AGU } Ser	Third Position
		AUC } Ile	ACC } Thr	AAC } Asn	AGC } Ser	
		AUA } Ile	ACA } Thr	AAA } Lys	AGA } Arg	
		AUG Met start	ACG } Thr	AAG } Lys	AGG } Arg	
First Position	G	GUU } Val	GCU } Ala	GAU } Asp	GGU } Gly	Third Position
		GUC } Val	GCC } Ala	GAC } Asp	GGC } Gly	
		GUA } Val	GCA } Ala	GAA } Glu	GGA } Gly	
		GUG } Val	GCG } Ala	GAG } Glu	GGG } Gly	

Which statement would **best** identify that the scientists were working with a complete gene?

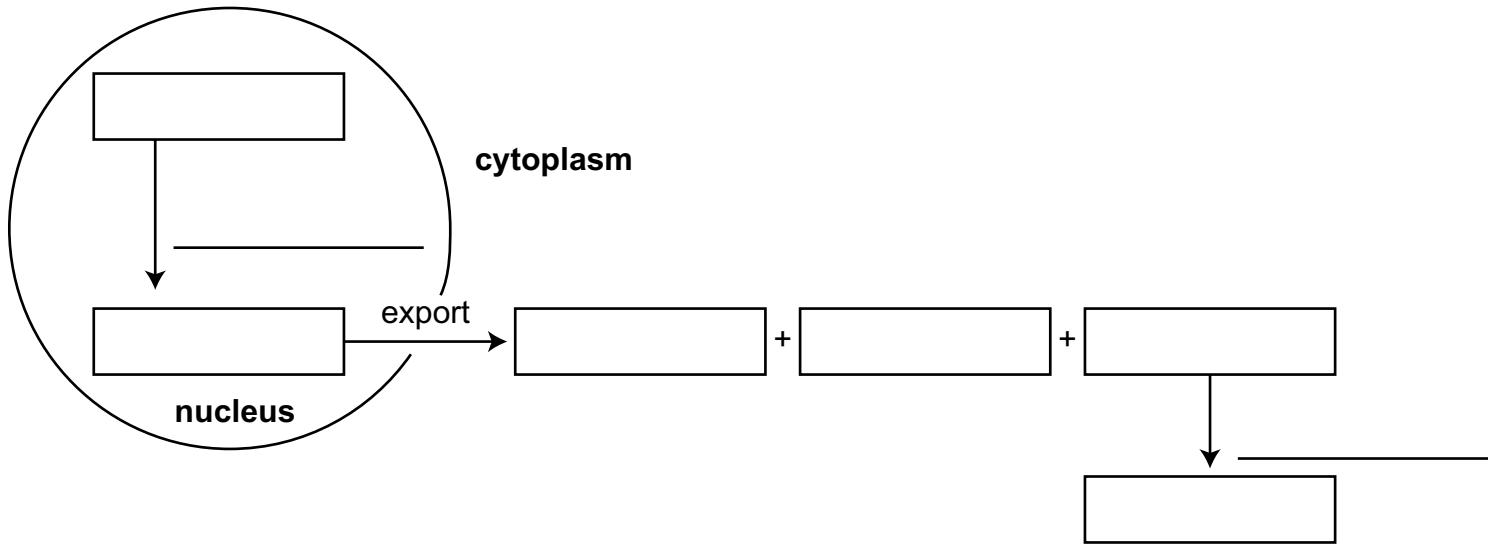
- A. The first codon was UGG; the final codon was AUG.
- B. The first codon was AUG; the final codon was UAA, UAG, or UGA.
- C. The first codon was UGG; the final codon was UAA, UAG, or UGA.
- D. The first codon was AUG; the final codon was AUG.

Item information on following page 

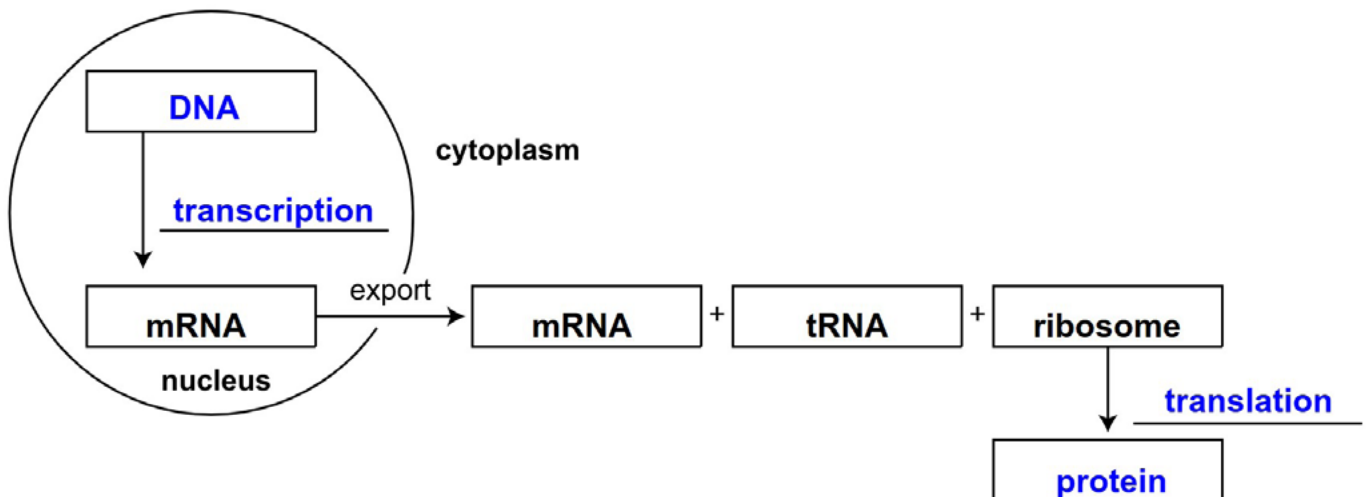
EOCEP Biology Sample Item 10	
Standard Alignment	B-LS1-1 (3D) SEP: Constructing Explanations and Designing Solutions DCI: LS3.A CCC: Structure and Function
Standard Description	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
Item Type	Selected Response
Answer Key	B
Depth of Knowledge	1
Estimated Difficulty	Medium

11. A student is building a model for protein synthesis. The model shows that some events happen within the nucleus and others happen within the cytoplasm. Each arrow represents a process and each box represents a structure.

1. Drag and drop labels into the boxes to correctly represent structures of protein synthesis.
2. Drag and drop labels onto the lines to correctly represent processes of protein synthesis.



Key:



Item information on following page 

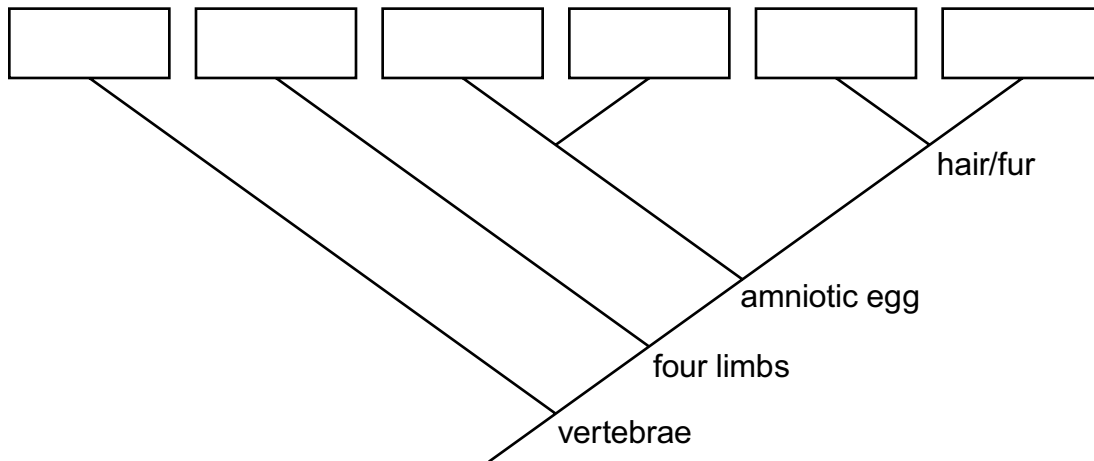
EOCEP Biology Sample Item 11	
Standard Alignment	B-LS1-1 (2D) DCI: LS3.A CCC: Structure and Function
Standard Description	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
Item Type	Drag and Drop
Answer Key	Top to Bottom: DNA, transcription, translation, protein
Depth of Knowledge	2
Estimated Difficulty	Medium


12. The table shows the presence of certain body features in different organisms.

Body Features of Six Organisms

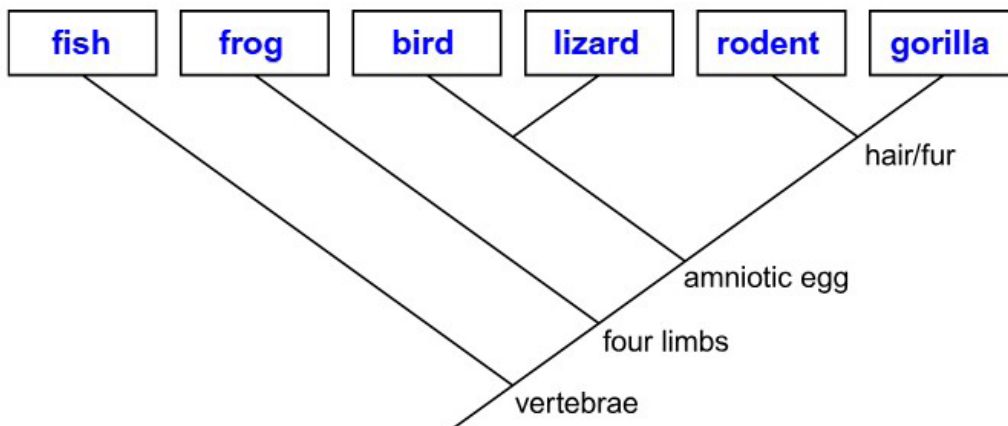
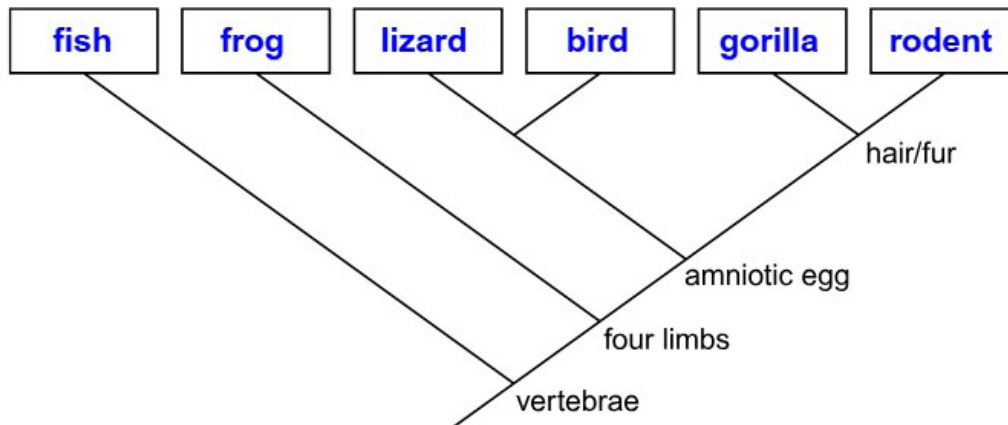
Organism	Vertebrae	Four Limbs	Amniotic Egg	Hair/Fur
bird	yes	yes	yes	no
fish	yes	no	no	no
frog	yes	yes	no	no
gorilla	yes	yes	yes	yes
lizard	yes	yes	yes	no
rodent	yes	yes	yes	yes

Drag the organism names into the cladogram below to **best** show the common ancestry represented by these data.



Item information on following page 

Key:



EOCEP Biology Sample Item 12	
Standard Alignment	B-LS4-1 (3D) SEP: Obtaining, Evaluating, and Communicating Information DCI: LS4.A CCC: Patterns
Standard Description	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
Item Type	Drag and Drop
Answer Key	Left to right: fish, frog, lizard/bird (either), gorilla/rodent (either)
Depth of Knowledge	2
Estimated Difficulty	Medium

13. A fish species that lives only in caves produces more of a protein called SSH compared to closely related fish species that do not live in caves. The extra protein causes the eye cells to die and be absorbed back into the body.

Which statement **best** explains how natural selection caused this phenomenon?

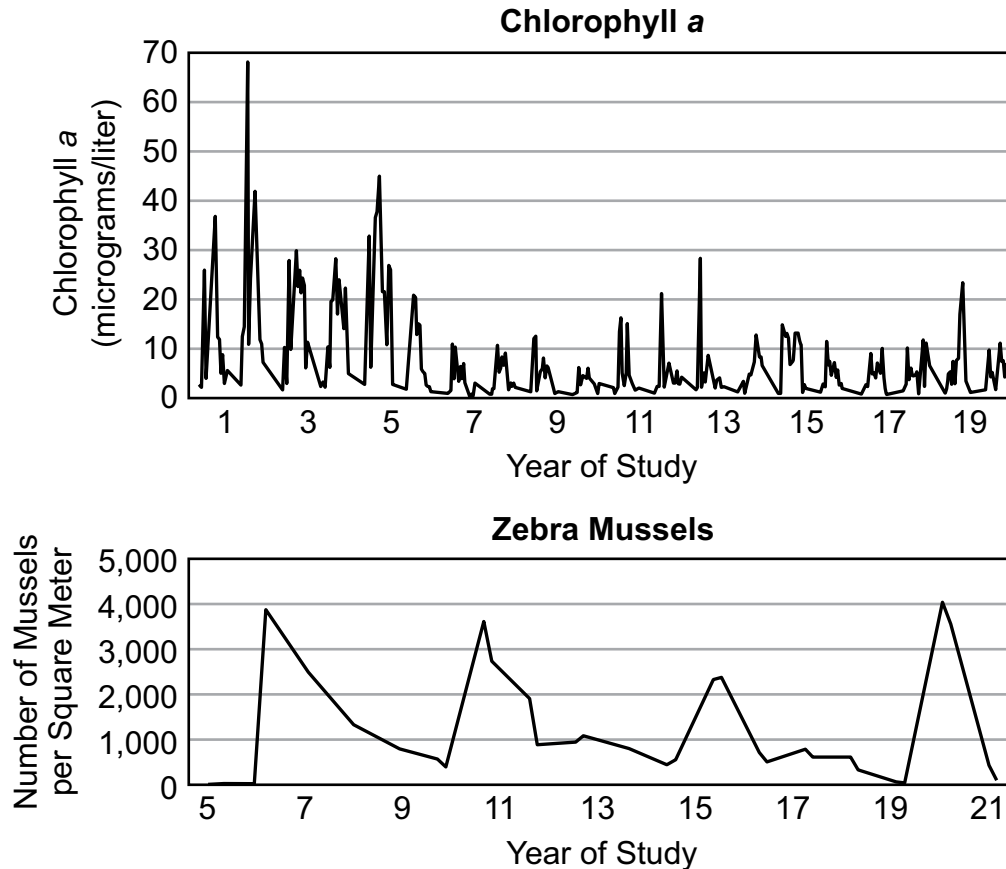
- A. The cave-dwelling fish ancestors had this mutation, which left them eyeless, so they found caves to live in for protection.
- B. With less light in caves, the eyes of cave-dwelling fish were more likely to mutate since they were not being used.
- C. Animal cells make less SSH when there is no light, so cave-dwelling fish species can adapt to low-light environments more quickly.
- D. An increase in SSH happened after cave-dwelling fish started to live in caves and was beneficial because it eliminated eyes, which were no longer useful.

EOCEP Biology Sample Item 13	
Standard Alignment	B-LS4-4 (3D) SEP: Constructing Explanations and Designing Solutions DCI: LS4.A CCC: Cause and Effect
Standard Description	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
Item Type	Selected Response
Answer Key	D
Depth of Knowledge	2
Estimated Difficulty	Medium

EOCEP Biology Sample Item 14	
Standard Alignment	B-LS1-6 (3D) SEP: Constructing Explanations and Designing Solutions DCI: LS1.C CCC: Energy and Matter
Standard Description	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and other large carbon-based molecules necessary for essential life processes.
Item Type	Drop-down
Answer Key	chemical reactions; many of the same atoms
Depth of Knowledge	2
Estimated Difficulty	Medium

15. This question has two parts.

Zebra mussels are invasive organisms that feed on phytoplankton. Scientists estimate the amount of phytoplankton in water by measuring chlorophyll *a*. The graphs show over twenty years of data on chlorophyll *a* and zebra mussels in a river. During year 5 of the study, zebra mussels were observed in this river.



Part A: Select the claim that **best** describes the effect of zebra mussels on the river.

- A. The introduction of zebra mussels had little to no effect on the river's carrying capacity for phytoplankton.
- B. The introduction of zebra mussels caused a long-term negative effect on the river's carrying capacity for phytoplankton.
- C. The introduction of zebra mussels caused a short-term positive effect on the river's carrying capacity for phytoplankton.

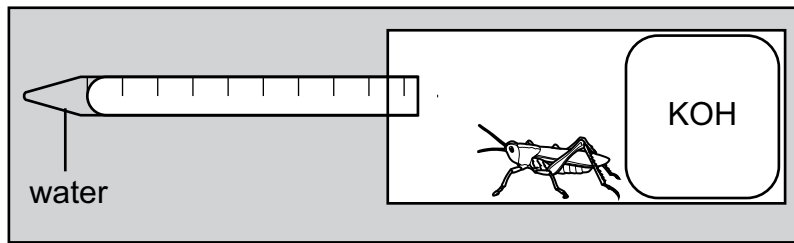
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Part B: Select the evidence that supports the claim made in part A.

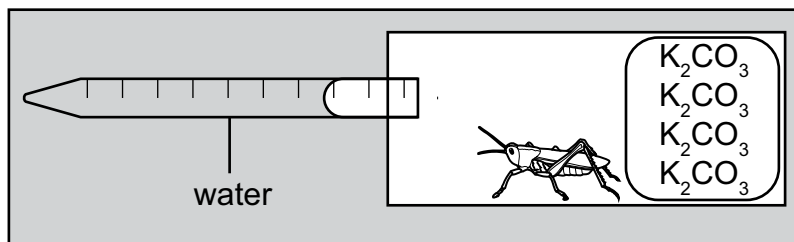
- A. The amount of chlorophyll *a* generally decreased after year 5 and remained low.
- B. The amount of chlorophyll *a* remained relatively unchanged during the twenty-year period.
- C. The amount of chlorophyll *a* decreased after year 5 and then steadily increased every two years.

EOCEP Biology Sample Item 15	
Standard Alignment	B-LS2-1 (3D) SEP: Using Mathematics and Computational Thinking DCI: LS2.A CCC: Scale, Proportion, and Quantity
Standard Description	Use mathematical and/or computational representations to support explanations of biotic and abiotic factors that affect carrying capacity of ecosystems at different scales.
Item Type	Evidence-Based Selected Response (EBSR)
Answer Key	B / A
Depth of Knowledge	2
Estimated Difficulty	High

16. As part of an investigation about cellular respiration, a student places an insect inside a respirometer submerged in water. A respirometer is an instrument for measuring oxygen consumption or carbon dioxide production.



As the insect respires, CO_2 (carbon dioxide) is produced and absorbed by KOH (potassium hydroxide) to make a solid precipitate (K_2CO_3). As the gas volume inside the pipette decreases, the pressure of water outside the respirometer forces water into the pipette.



In this investigation, the amount of water inside the pipette is directly proportional to what?

- A. The amount of sugar present in the insect
- B. The amount of oxygen consumed by the insect
- C. The amount of mitochondria involved in producing ATP
- D. The amount of ATP produced through cellular respiration

EOCEP Biology Sample Item 16	
Standard Alignment	B-LS1-7 (2D) SEP: Developing and Using Models DCI: LS1.C CCC: Energy and Matter
Standard Description	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.
Item Type	Selected Response
Answer Key	B
Depth of Knowledge	3
Estimated Difficulty	Low

17. Researchers are investigating ways to increase the efficiency of an important protein called Rubisco, which aids in carbon fixation in plants.

How would the increase in the efficiency of this protein **most likely** affect the carbon cycle?

- A. Increased Rubisco efficiency would increase the amount of carbon released by the biosphere and increase atmospheric carbon.
- B. Increased Rubisco efficiency would limit the amount of carbon needed to build larger organic molecules during the process of photosynthesis.
- C. Increased Rubisco efficiency would decrease the amount of carbon in the atmosphere and increase the amount of carbon in the biosphere.
- D. Increased Rubisco efficiency would limit the amount of carbon dioxide released during photosynthesis and prevent the formation of glucose during cellular respiration.

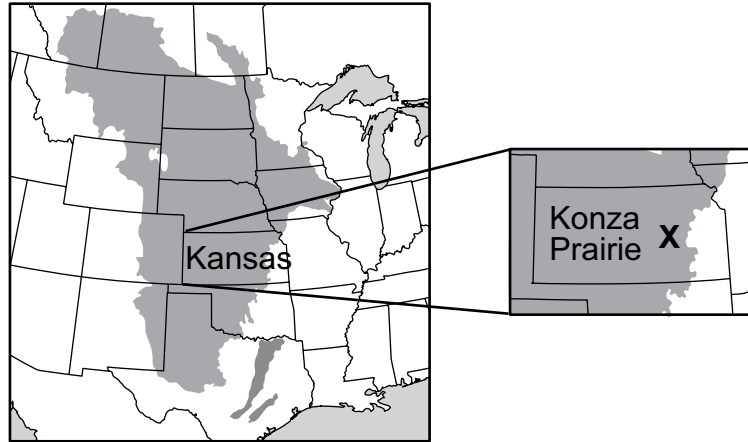
EOCEP Biology Sample Item 17	
Standard Alignment	B-LS2-5 (3D) SEP: Developing and Using Models DCI: LS2.B CCC: Systems and System Models
Standard Description	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.
Item Type	Selected Response
Answer Key	C
Depth of Knowledge	3
Estimated Difficulty	High

Use the information below to answer the questions.

Bison Reintroduction

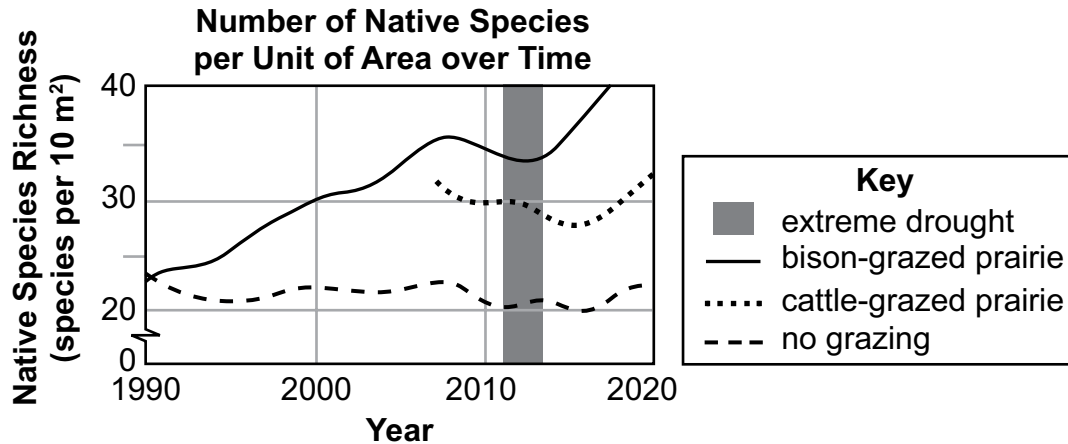
Bison were once the main grazers in the tallgrass prairies and shortgrass prairies across the Great Plains. Some researchers estimate that between 30 and 60 million bison lived across the Great Plains before 1800. Between 1830 and 1880, bison were hunted to near extinction. During that time, over 95% of the tallgrass prairie was settled and plowed as farmland. The map below shows the extent of the Great Plains and the location of the Konza Prairie in Kansas.

Great Plains and Konza Prairie

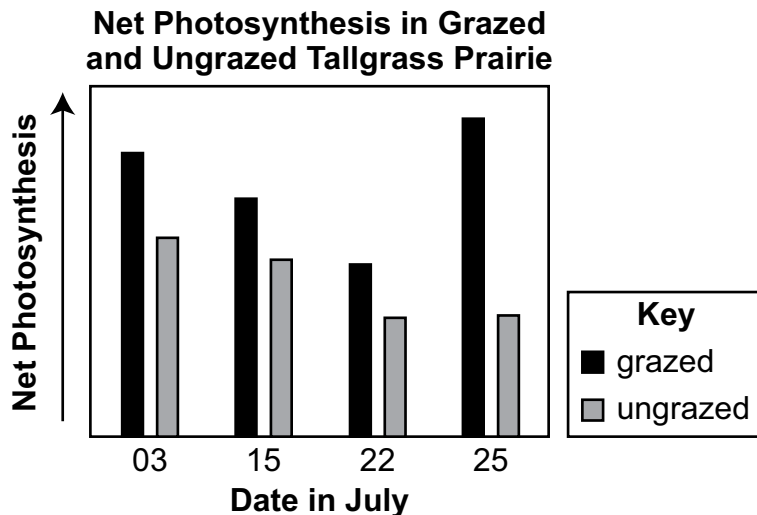


The Konza Prairie is an area that was never plowed. Today this tallgrass prairie is protected and is used for research. Research in the Konza Prairie has involved the reintroduction of the former main grazer species: bison. For over 30 years, researchers have been collecting and analyzing data about the productivity, biodiversity, and survival of tallgrass prairie under three different land uses: 1) areas grazed by bison, 2) areas with intense growing-season grazing by cattle, and 3) areas with no grazing.

The graph below shows results from the studies.



Researchers also observed that the native plant communities in bison-grazed areas could survive extreme drought, which occurred one year during the research period. Another researcher studied the amount of net photosynthesis in grazed and ungrazed tallgrass prairie. The graph below shows the results of the research one July.



The research in the Konza Prairie has provided valuable data to guide future land use and management practices across the Great Plains.

18. Researchers claim that grazing benefits the tallgrass prairie ecosystem.

Complete a statement that provides the **best** evidence to support this claim. Use the drop-down menus to complete the statement.

Grazing benefits a tallgrass prairie ecosystem because grazed areas have

biodiversity and net photosynthesis than ungrazed areas.

Grazing by results in the greatest benefit to a tallgrass prairie ecosystem.

Key:

Grazing benefits a tallgrass prairie ecosystem because grazed areas have

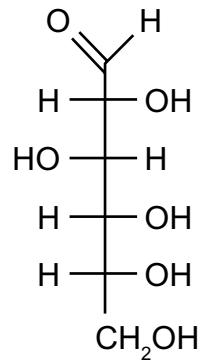
biodiversity and net photosynthesis than ungrazed areas.

Grazing by results in the greatest benefit to a tallgrass prairie ecosystem.

EOCEP Biology Sample Item 18	
Standard Alignment	B-LS4-5 (3D) SEP: Engaging in Argument from Evidence DCI: LS4.A CCC: Cause and Effect
Standard Description	Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
Item Type	Drop-down
Answer Key	higher, higher, bison
Depth of Knowledge	2
Estimated Difficulty	Medium

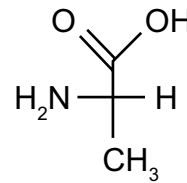
19. Study the model.

Molecular Structures



glucose

product of photosynthesis
in tallgrass prairie plants



amino acid

needed for life processes
in plants and animals

Which statement **best** explains the relationship between glucose and amino acids?

- A. Amino acids provide the energy for glucose formation in plant cells.
- B. Amino acids provide the instructions that cells use to build glucose molecules.
- C. Glucose provides the energy for the formation of hydrogen, oxygen, and carbon atoms.
- D. Glucose provides the hydrogen, oxygen, and carbon atoms needed to build amino acids.

EOCEP Biology Sample Item 19	
Standard Alignment	B-LS1-6 (2D) SEP: Constructing Explanations and Designing Solutions DCI: LS4.A CCC: Energy and Matter
Standard Description	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and other large carbon-based molecules necessary for essential life processes.
Item Type	Selected Response
Answer Key	D
Depth of Knowledge	2
Estimated Difficulty	Medium

20. Examine the information below.

Average Hours of Daylight at Konza Prairie

July	14.6
October	11.1

Use the drop-down menus to complete an explanation of the difference between the net photosynthesis in a tallgrass prairie measured in July and the predicted net photosynthesis expected in October.

Net photosynthesis would be in grazed areas than in ungrazed areas, and it

would be in July than in October because in July the prairie receives

hours of sunlight per day than it does in October.

Key:

Net photosynthesis would be in grazed areas than in ungrazed areas, and it

would be in July than in October because in July the prairie receives

hours of sunlight per day than it does in October.

Item information on following page 

EOCEP Biology Sample Item 20	
Standard Alignment	B-LS1-5 (3D) SEP: Developing and Using Models DCI: LS1.C CCC: Energy and Matter
Standard Description	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
Item Type	Drop-down
Answer Key	higher, higher, more
Depth of Knowledge	3
Estimated Difficulty	Low