The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

LIFE SCIENCE: BIOLOGY

Wednesday, August 20, 2025 — 12:30 to 3:30 p.m., only

Student Name _____

School Name _____

The possession or use of any communications device is strictly prohibited when taking this examination. If you have or use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

Print your name and the name of your school on the lines above.

Use your knowledge of **Life Science: Biology** to answer all questions in this examination.

You are to answer all questions in this examination. You may use scrap paper to work out the answers to the questions, but be sure to record your answers on your answer sheet and in your test booklet. A separate answer sheet for multiple-choice questions has been provided to you. Follow the instructions from the proctor for completing the student information on your answer sheet. Record your answers for the constructed response questions in your test booklet.

All answers in your test booklet should be written in pen, except for graphs and drawings, which should be done in pencil.

When you have completed the examination, you must sign the declaration printed on your separate answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet and test booklet cannot be accepted if you fail to sign this declaration.

NOTICE …

A four-function or scientific calculator must be available for you to use while taking this examination.

Note that diagrams are not drawn to scale unless otherwise noted.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

Base your answers to questions 1 through 4 on the information below and on your knowledge of biology.

Trees Have Organ Systems

Trees have two systems, compared to the multiple systems that are present in animals. Trees are multicellular organisms with organ systems that enable them to carry out specific functions necessary for maintaining homeostasis. However, that does not diminish the importance of these two systems, which have numerous critical functions.

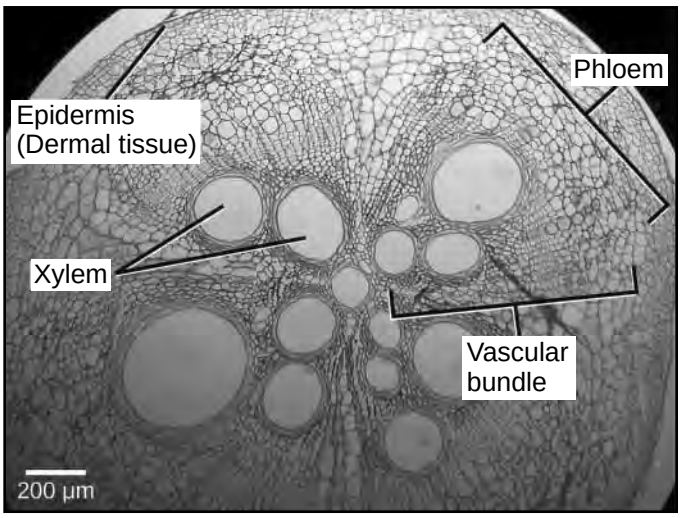
The table below contains information about the structures and functions of the systems found in trees.

Systems in Trees

	Root System	Shoot System
Structures	roots	stem/trunk, branches, leaves
Functions	– anchor the tree – absorb water and minerals from the soil – store and modify products of photosynthesis	– connect roots to branches – transport material – perform photosynthesis – contain reproductive structures

The model below is a cross section of a stem as viewed through a microscope that was observed during an investigation. The stem contains the xylem and phloem, which together make up the vascular bundle, a structure that transports materials within a tree.

Cross Section of a Stem



1 Describe an interaction between the vascular bundle with both the root and shoot systems in a plant. [1]

The compounds needed by plants to carry out life functions are delivered to plant cells in different ways. Maple trees are one type of tree that produce a liquid, known as sap, that circulates sugar, water, and other molecules throughout the plant. Root hairs are single-celled structures that exchange oxygen and carbon dioxide within air pockets in the soil. They also absorb water from the soil. These materials are then delivered to all plant cells.

2 Which statement best explains why the function of sap and root hairs is necessary for the functioning of plant cells to maintain homeostasis?

(1) Cellular respiration occurs only in root cells since the sap only travels to those cells.

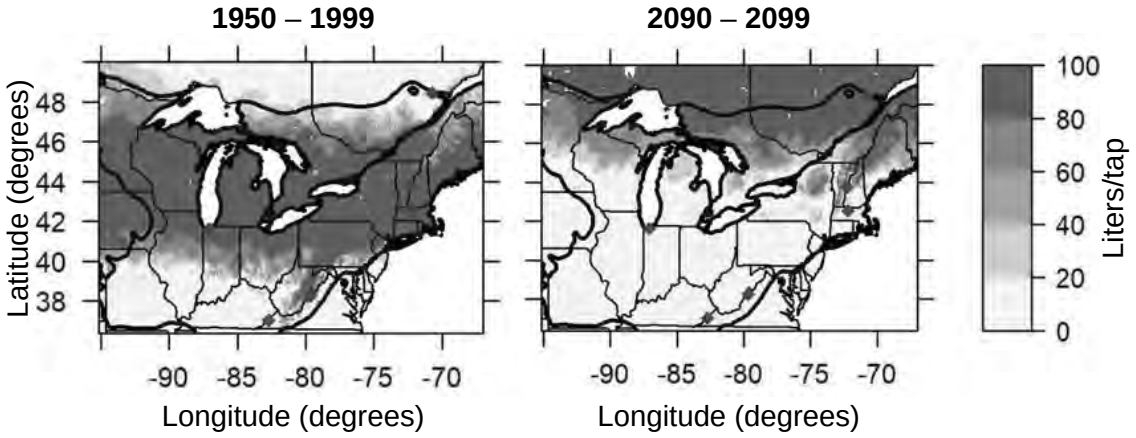
(2) The sugar in the sap combines with carbon dioxide to form new sugars for the root cells.

(3) Sap and root hairs contribute to the transport of materials necessary for the plant cells to carry out cellular respiration.

(4) Sap and root hairs contain the raw materials required for the root cells to carry out photosynthesis.

Changing climate is affecting the health of maple trees and their production of sap, used to produce maple syrup. The result is less sweet syrup, which is affecting the maple syrup industry. The model below shows the amount of maple syrup produced from 1950 to 1999, as well as future projections, given the continual rise in temperature.

Past Production of Maple Syrup and Future Projections



3 Which statement provides evidence to explain how the changing climate will affect maple trees and syrup production in the future?

(1) The optimal areas for maple syrup production will shift northward where temperatures are cooler.

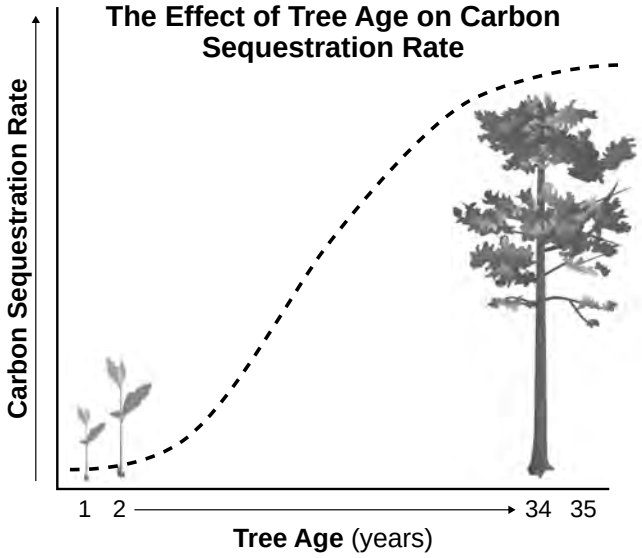
(2) The optimal areas where maple syrup was produced from 1950 to 1999 will stay the same in the future.

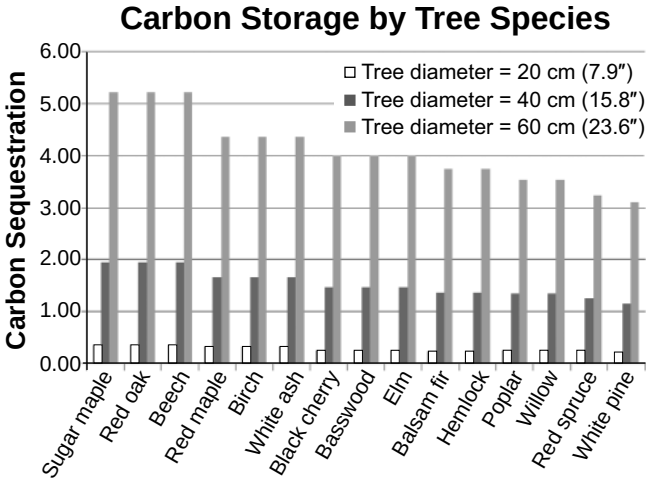
(3) Future maple syrup production will mainly occur in latitudes between 38 and 42 degrees, since maple trees will be more successful in that range.

(4) Maple trees will not survive in northern areas in the future, therefore maple syrup production will stop.

Scientists are concerned about the changing climate and the potential loss of maple trees. Trees are extremely important in the sequestering (storage) of carbon.

The models below illustrate carbon sequestration based on tree age and the diameter of various species of trees.





4 Describe the role of tree age *and* diameter, including those of maples, on carbon cycling and storage between the atmosphere and biosphere. [1]

Base your answers to questions 5 through 10 on the information below and on your knowledge of biology.

Strategies for Survival in Different Animal Species

When bluefin tuna reach breeding age, they migrate in schools until they reach an area in the ocean where conditions are right. Bluefin tuna then spawn, where they release millions of eggs and sperm into the water.

Spawning takes place in nutrient-poor water. Young tuna practice cannibalism to obtain nutrients. Once the young reach a certain size, they stop eating each other and travel in schools to other regions of the ocean. Only two out of every 30 million fertilized eggs will reach adulthood. Four to six years later they will spawn, and the cycle will begin all over again.

5 Which piece of evidence best supports how the tuna's spawning behavior provides a survival advantage?

(1) If a pathogen infects some of the fish in the school during spawning, then others will most likely become infected.

(2) Due to the large number of fish, the school must move from one area to another because food quickly runs out.

(3) It is more likely that many offspring will be hatched, increasing the likelihood that some will reproduce.

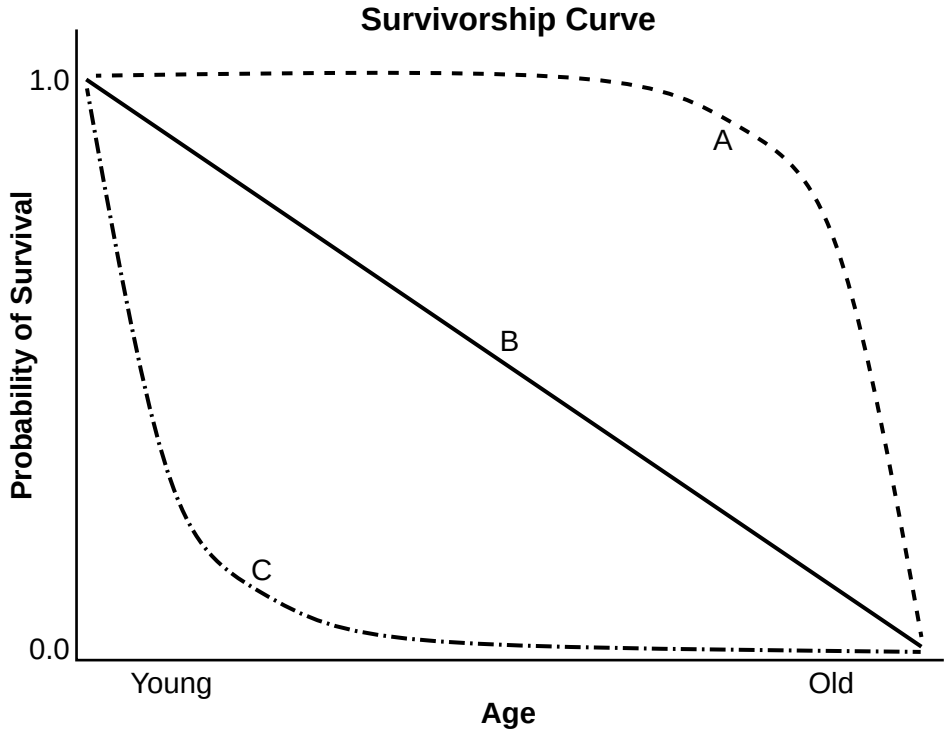
(4) If there are many fish in one area, wastes accumulate more quickly, and oxygen levels decrease.

Shrews are mammals that live primarily underground. The female gives birth to five to seven offspring per litter and has three or four litters per year. About 50% of the offspring survive. The young are dependent on the mother for milk for 22 to 25 days. During this time, if the mother has to move the nest to a new location, the young shrews form a caravan behind the mother. Each shrew holds onto the base of the tail of the shrew in front of it with its mouth, forming a chain of shrews, as shown below.

Eurasian Shrew Caravan

6 Construct an explanation that shrew behavior makes it possible for the species to survive even though they produce fewer offspring than the tuna per reproductive cycle. [1]

A survivorship curve is a model showing the number or proportion of individuals surviving to each age for a given species or group. The survivorship curves below are used to represent life expectancy patterns in three different species, *A*, *B*, and *C*.



7 A student claimed that *C* best represents the survivorship curve of a bluefin tuna. Which factor explains this claim?

(1) Millions of eggs and sperm are released at the same time in the same area of the ocean.

(2) An extremely small number of the young that hatch survive to adulthood.

(3) The young migrate to a different region of the ocean upon reaching a certain size.

(4) Because they practice cannibalism, approximately half of the young reach adulthood.

8 Use the information provided to explain which survivorship curve best represents the shrews. [1]

American bison are herding mammals found on the plains of North America. When predators, such as wolves or mountain lions, threaten the calves, the adults form a double ring around the calves. The adult female bison make an inner circle around the calves while the male adult bison form an outer circle around the females.

A Herd of American Bison

9 Explain how the process of evolution has led to the development of this behavior in bison populations. [1]

10 In the 1800s, unregulated hunting reduced bison herds from tens of millions of individuals to fewer than 1,000. How might the DNA of the modern bison populations compare with the DNA of ancestral populations prior to the 1800s?

(1) Modern bison have more genetic diversity than their ancestors as a result of an increase in available mates.

(2) Modern bison have less genetic diversity than the population before the 1800s did as a result of increased random mutations.

(3) The DNA of the modern bison is identical to that of bison living before the 1800s because they all evolved from the same common ancestor.

(4) The DNA of modern bison shows less genetic diversity compared to their ancestors due to the limited genetic variation remaining in their population.

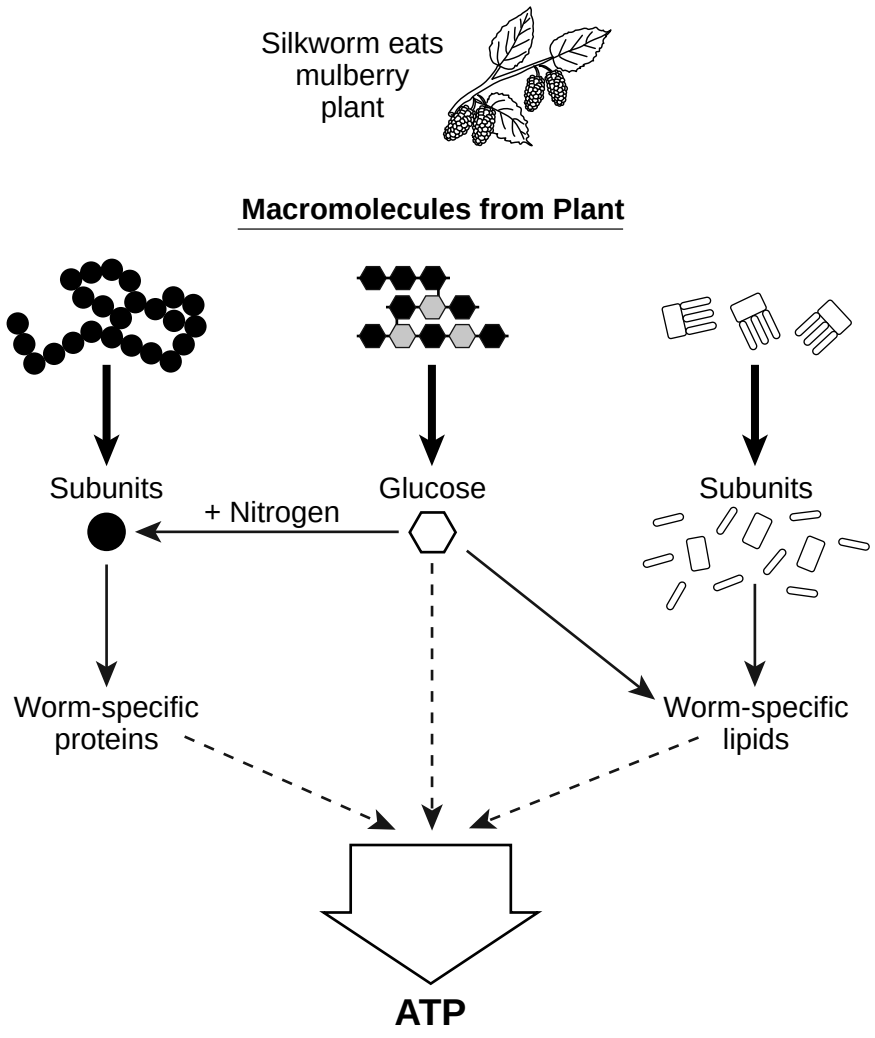
Base your answers to questions 11 through 14 on the information below and on your knowledge of biology.

A Unique Relationship: Mulberries and Silk

The ability of living organisms to rearrange elements into different forms and groups is fundamental to life. Mulberry plants use specific biological processes to combine molecules present in the environment in order to produce the substances they need to carry out life functions. Silkworms eat mulberry leaves exclusively, getting all of their water and other nutrients from these leaves.

Most nutrients from the mulberry leaves enter the silkworm in the form of macromolecules. The macromolecules must be metabolized by body systems of the silkworm into a form that the cells of the worm are able to use. The model below summarizes some of the processes the silkworm uses to convert the nutrient macromolecules from the mulberry tree into a usable form.

Possible Metabolic Pathways of Macromolecules in Silkworm



11 Based on information in the model, which statement describes the chemical process by which the energy in glucose from the mulberry plant is converted and made available to the silkworm?

(1) Cellular respiration within the cells of the silkworm breaks the bonds of glucose to release energy that can be used to produce ATP, a usable source of cellular energy.

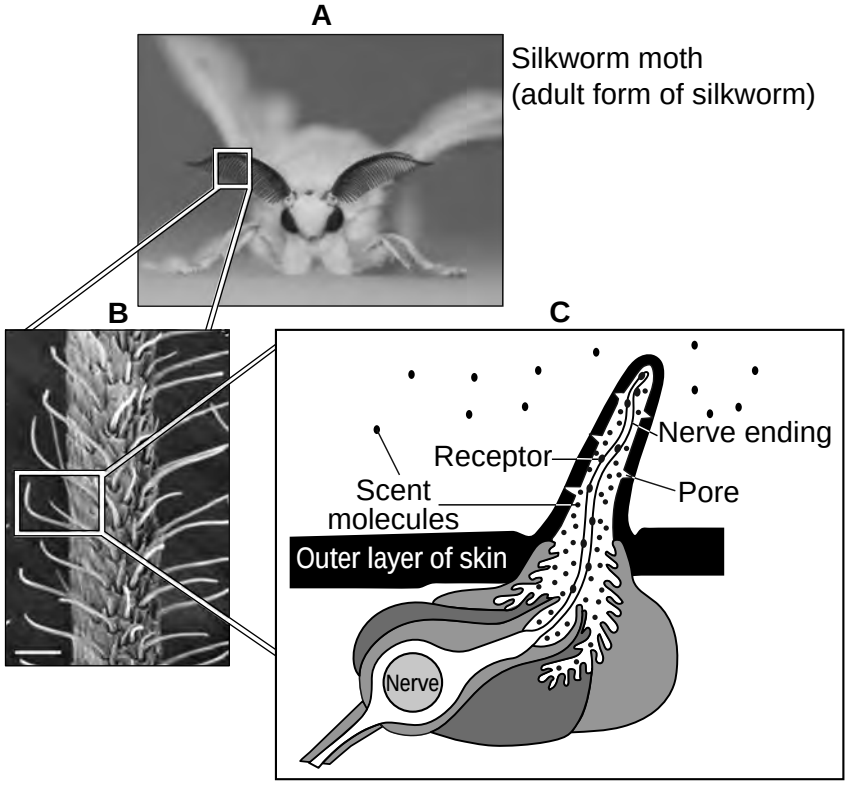
(2) Cellular respiration within the cells of the mulberry tree breaks the bonds of glucose to release amino acids, a usable source of cellular energy.

(3) Digestion within the cells of the silkworm breaks the bonds of glucose to release amino acids that can be used to build ATP for energy.

(4) Digestion within the cells of the mulberry tree breaks the bonds of glucose to release elements that can be used to build lipids for energy.

12 Use evidence from the model to explain how the elements in the glucose can be used by the silkworm to synthesize protein molecules needed to sustain life. [1]

Researchers have determined that silkworm moths have a mechanism that enables them to locate mulberry leaves. Mulberry leaves emit scented chemical molecules that are detected by highly sensitive receptors within the antennae of the silkworm, as shown in the models below.



13 Which statement best describes how the organization and interactions of *two* systems present within the silkworm moth enables it to find and use mulberry leaves as their source of nutrients?

(1) Special receptors in the nervous system of the silkworm pick up the scent of the mulberry leaves and send messages to the muscular system to spin a silk cocoon.

(2) Receptors in the nervous system within the antennae pick up scent molecules from mulberry leaves. The silkworm is able to find and eat the leaves, using the digestive system to break down the nutrient molecules into a usable form.

(3) The nervous system of the silkworm sends messages to the digestive system to begin to break down the fats that are taken in to produce new muscle tissue for movement.

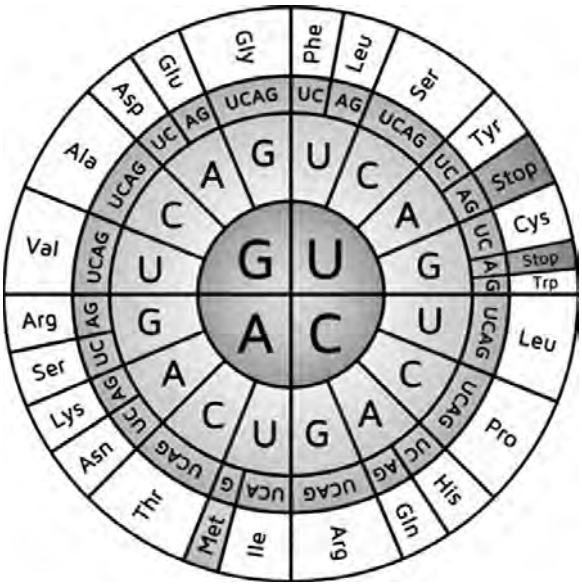
(4) The muscular system sends messages to the nervous system to receive scent messages from the mulberry leaves.

Silkworms use the mulberry leaves to produce fibroin, a protein molecule needed to spin silk. Part of the DNA sequence that codes for the protein fibroin is listed in the table below.

14 Use the partial DNA code to determine the mRNA sequence. Then use the Universal Codon Chart below to determine the amino acid sequence that would result if this DNA sequence was expressed to produce fibroin. [1]

Partial DNA	GAT	CAA	TTA	AAT
mRNA				
Amino acids				

Universal Codon Chart

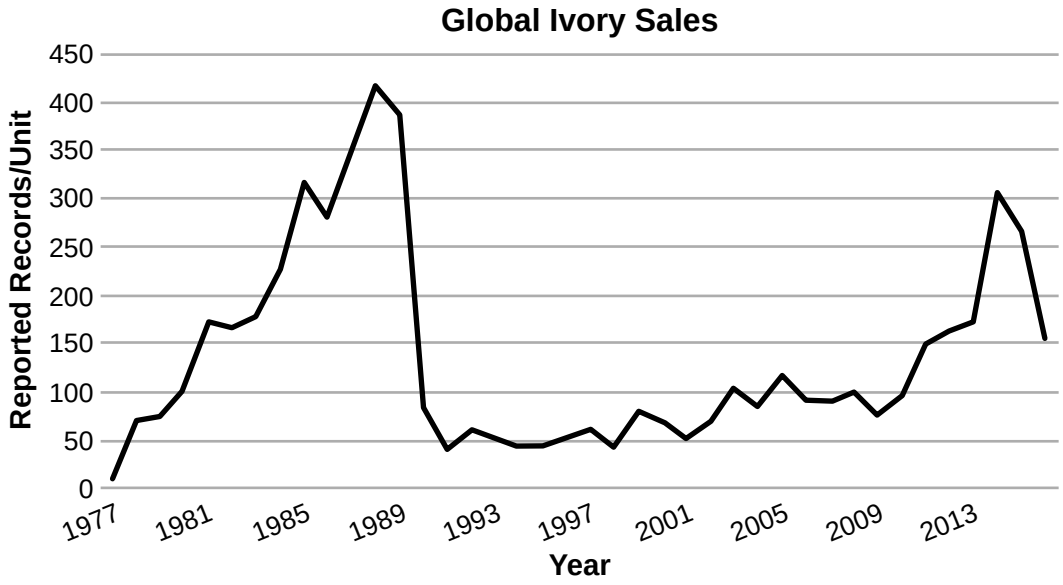


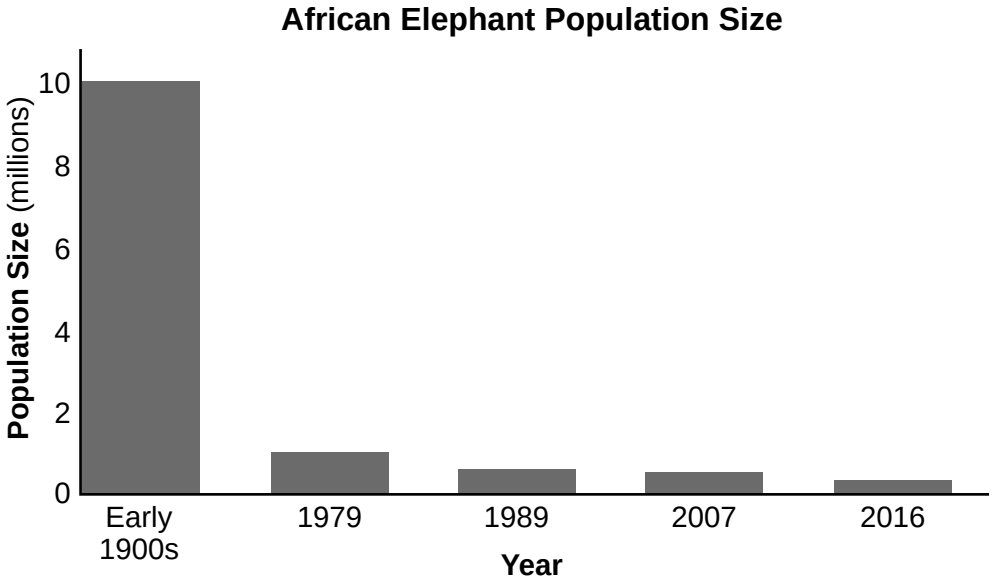
Base your answers to questions 15 through 19 on the information below and on your knowledge of biology.

Ivory and Elephants

In African elephant populations, both males and females usually have ivory tusks, which are actually a pair of massive teeth. Some females never grow them. Tusks are crucial to male elephants for defense and in their competition for mates.

In many parts of the world, elephant ivory is still viewed as a status symbol. It was used to produce small carvings, jewelry, piano keys, and chess sets. Traditional medicine used ivory powder to treat a variety of illnesses. Acquiring ivory results in the illegal killing of elephants, known as poaching. Ivory is still sold, even though it is against the law to do so.





15 Researchers claimed that elephants were being poached for their tusks, which are composed of ivory. Based on data provided in the graphs, which statement best explains this claim?

(1) Between 1977 and 2016, both graphs show a similar trend.

(2) Between 1977 and 1989, ivory sales increased, and African elephant population size decreased.

(3) Between 1980 and 2007, predators stopped preying on elephants, and the African elephant population size increased.

(4) Between 1979 and 1990, it was illegal to hunt elephants.

Tusklessness, not growing tusks, appears to be caused by a dominant allele, carried by females and lethal to males. The table below contains data on the change in the frequency of tusklessness in female African elephants.

Female African Elephant Tusklessness Data

Year	Sample Size	Tusked Females	Tuskless Females	Tusklessness %
1969	247	221	26	10.5
1972	205	180	25	12.2
1988	132	89	43	32.6
1989	165	102	63	38.2
1990	298	194	104	34.9
1991	171	114	57	33.3
1992	195	136	59	30.2
1993	279	199	80	27.7

16 Which statement best describes a trend in tusklessness represented in the data table?

(1) From 1988 to 1991 the frequency of tusklessness decreased.

(2) From 1969 to 1989 the frequency of tusklessness increased.

(3) From 1969 to 1993 the total number of tuskless females remained constant.

(4) From 1989 to 1991 the total number of tuskless females increased.

17 Which statement about how humans affected the elephant population is supported by the evidence provided?

(1) The decrease in global ivory sales resulted in a decrease in tuskless male elephants.

(2) The chance of producing tuskless males increased as a result of the tighter enforcement on poachers.

(3) Poaching has led to an increase in the tuskless trait among female elephants.

(4) The demand for ivory has led to a decrease in the number of tuskless female elephants producing offspring.

African savanna elephants can significantly impact the ecosystems that they live in. These elephants can push down and uproot trees, allowing the tree bark to be used for food. As trees are uprooted, the soil is disturbed, and the organisms that live under the soil are exposed.

The table below shows how the trait of tusklessness impacts the behavioral characteristics of African savanna elephants.

Behavior	Tusked Elephants	Tuskless Elephants
Defense	Use tusks as primary defense	Rely on strength and group cooperation
Hole-digging and use	Can dig deep holes in compacted soil to access water and minerals	Mainly use existing holes to access water and minerals
Dominance vocalization	Deep rumbles and trumpeting	Deep rumbles and trumpeting
Feeding	Eat more fibrous and woody vegetation	Eat more grasses and soft vegetation
Knocking down trees	Can use both tusks and trunk	Can use trunk only

18 Which statement identifies the claim, supported by evidence, that a shift to more tuskless elephants could disrupt the stability of the local ecosystem?

(1) The amount of grass available to other herbivores in the ecosystem would decrease.

(2) There would be more deep watering holes available within the ecosystem.

(3) The amount of living woody vegetation available to organisms in the ecosystem would decrease.

(4) Soil-dwelling organisms would be more vulnerable to predators, and their number would decline.

Conflict between humans and elephants exists across Africa. As human populations grow, people are moving into wild areas, increasing loss of natural habitats. Elephants compete with people for decreasing resources. Elephants searching for food frequently enter villages and sometimes damage property, uproot vegetable gardens, and can harm people. Multiple organizations have come up with solutions to reduce conflict between elephants and humans, as described below.

Solution One: Beehive Fences
Beehive fences are made by hanging beehives connected by wire around crops to deter elephants from entering areas by using their natural fear of African honeybees. When an elephant pushes the wire the hives shake, alerting guard bees which then defend their hives. Over time, elephants learn to avoid these bee-fenced areas.

Solution Two: Resource Management Hunting
Millions of acres of elephant habitat are set aside where limited elephant hunting is allowed. These areas are closely monitored and regulated. Without this managed hunting, the critically important elephant range will be lost to other land uses.

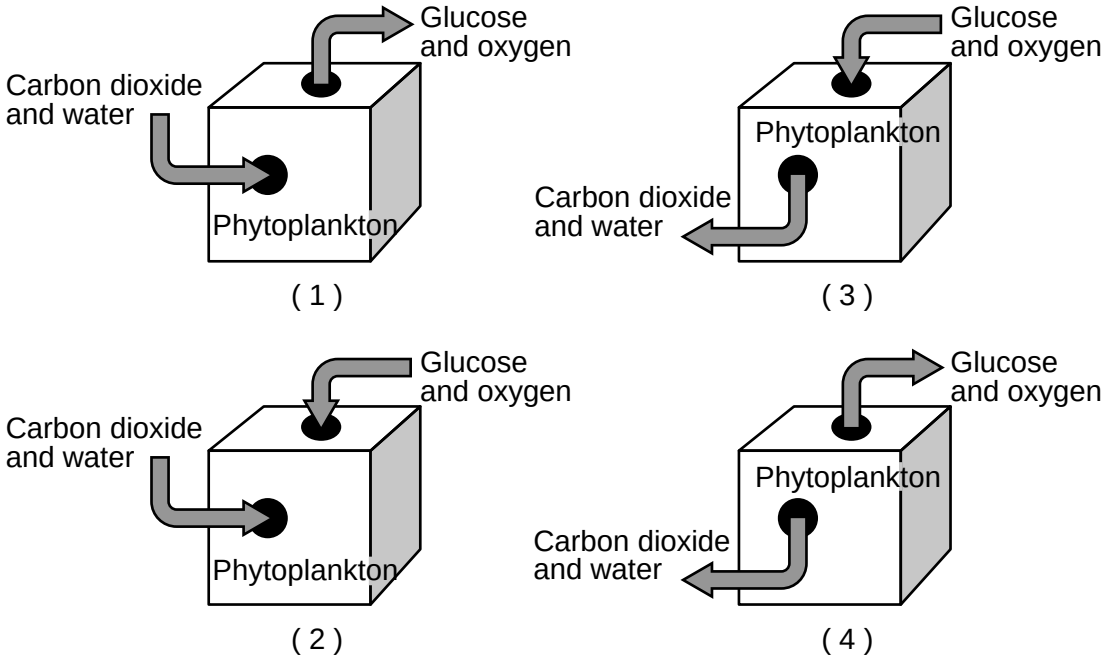
19 Evaluate the solutions listed above by explaining which solution would be most effective at reducing the conflict between humans and elephants while having the *least* impact on the ecosystem. [1]

Base your answers to questions 20 through 23 on the information below and on your knowledge of biology.

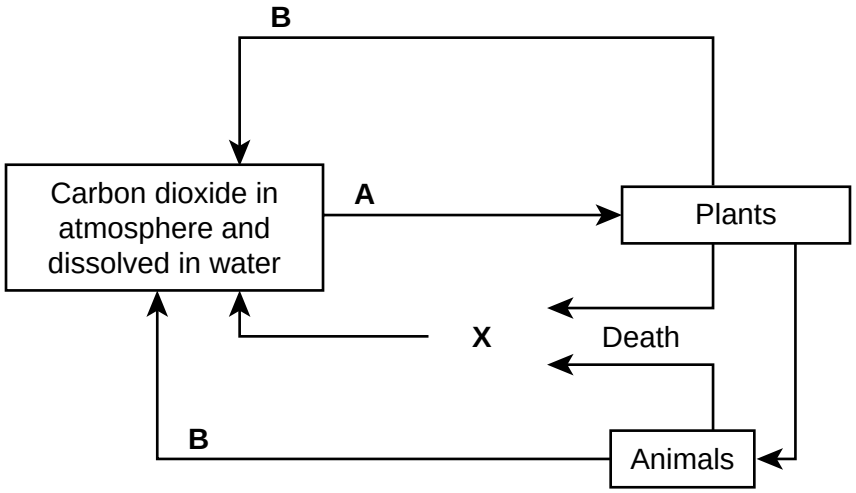
Carbon Cycle Supports Life on Earth

Life on Earth is only possible with carbon. Organisms on Earth rely on carbon for the production of molecules used in life functions. Various processes in the environment cycle carbon. In the ocean, the main producers in this cycle are plant-like microscopic organisms called phytoplankton.

20 Which model below best identifies how phytoplankton cycle carbon between two of Earth's spheres?



The model below represents how processes *A*, *B*, and *X* play a significant role in the exchange of carbon.

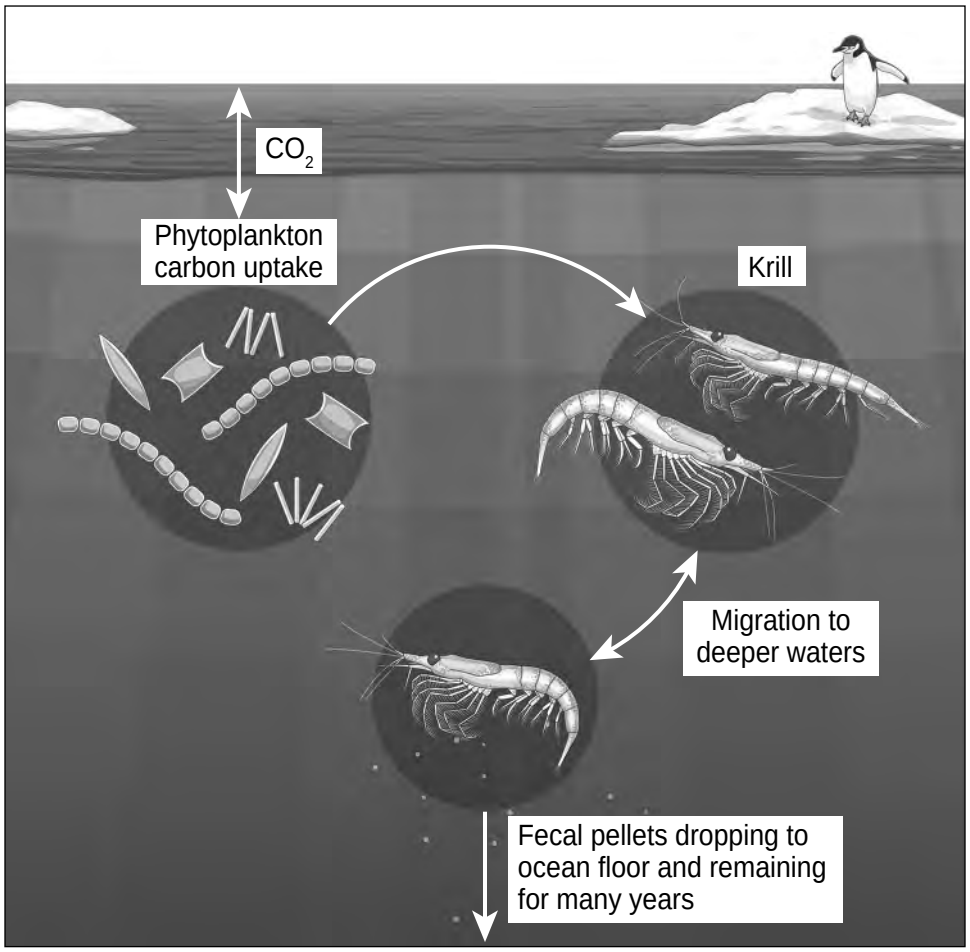


21 Based on the model, identify the process represented by *X and* describe how this process contributes to the cycling of carbon between *two* of Earth's spheres. [1]

Krill are small shrimp-like creatures that live in the southern oceans around Antarctica and consume phytoplankton. They play an important role in the carbon cycle. Krill contribute to the removal of up to 12 billion tons of carbon from the Earth's atmosphere each year.

The model below illustrates the role of krill in the carbon cycle.

Carbon Cycling in Antarctica



22 Based on the model, explain how rapid growth in the krill population would affect the cycling of carbon between the atmosphere and biosphere. [1]

23 A carbon sink is anything that absorbs more carbon from the environment than it releases. Which process carried out by krill results in the accumulation and storage of carbon for a period of time?

(1) Photosynthesis in the atmosphere releases carbon to the atmosphere.

(2) Respiration in the geosphere releases carbon wastes into the atmosphere.

(3) Elimination of wastes in the hydrosphere stores carbon on the ocean floor.

(4) Acidification in the biosphere stores carbon in the bodies of organisms.

Base your answers to questions 24 through 28 on the information below and on your knowledge of biology.

Keratin — A Very Versatile Protein

The skin, hair, nails, horns, and claws of many organisms are composed of a tough, structural protein called keratin. In humans, there are over 54 different types of keratin proteins in the body. The KRT1 gene, involved in making one type of keratin protein called keratin 1, is expressed in the outer layers of skin. Another keratin protein is coded for by the gene KRT12 and functions in the cornea of the eye.

Segments of the DNA code for synthesizing these proteins are shown in the table below.

Gene	DNA Sequence							
KRT1	TAC	AGA	GGA	GTG	TTT	AGC	TCC	TTC
KRT12	TAC	TTC	AAT	CCC	TAT	TGT	CTG	TTC

24 Which statement best provides evidence that supports the explanation that the sequence of DNA determines proteins?

(1) The structure of KRT1 and KRT12 mRNA determines the DNA code that is translated to produce a specific protein with a specific shape, which determines its function.

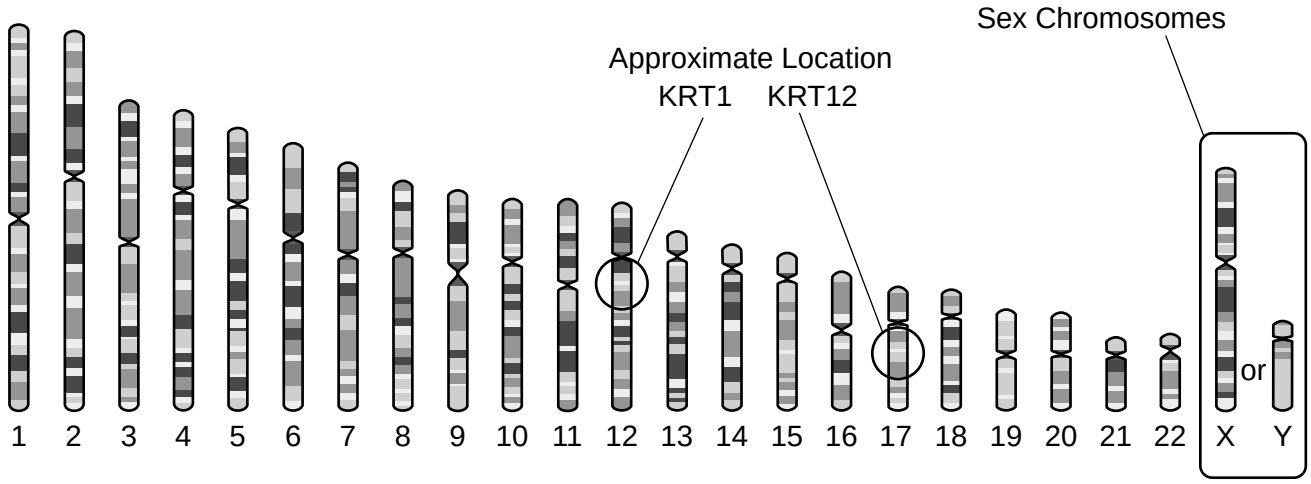
(2) The structure of the KRT1 and KRT12 genes determines the genetic information present in protein that determines the function of each DNA molecule.

(3) The DNA that codes for KRT1 and KRT12 is different, resulting in different protein structures with different functions.

(4) The structure of each protein determines the order of bases in DNA. The KRT1 and KRT12 proteins are different, resulting in different functions.

The model below represents the approximate location of the human KRT1 and KRT12 genes within the human genome.

Chromosomes Present in Human Cells



25 Use the model to describe how this genetic information is utilized to produce specialized cells. [1]

Some keratin-producing genes, like KRT10, are expressed in a group of body cells, known as keratinocytes. These are located in the outermost layers of the skin, making up about 90 percent of the cells there. In some individuals, keratinocytes do not produce appropriate amounts of keratin, resulting in various skin disorders.

The table below summarizes the results of an investigation used to study portions of a normal and mutated KRT10 gene present in skin cells.

26 Use information obtained from the table to provide evidence that explains why the gene mutation may affect the amino acid sequence, altering the ability of the skin cells to produce the keratin protein. [1]

	Normal KRT10 Gene	Mutated KRT10 Gene
DNA	GGC TTC CTA CTT GGA CAA	GGC TTC CTA CAA
Amino acid sequence	Pro Leu Asp Glu Pro Val	Pro Leu Asp Val

Treatments for some keratin-related disorders are being researched, including gene therapy. One possible technique would use lab-grown, genetically modified keratinocytes. These modified cells include a properly functioning version of the keratin-producing gene that is then transplanted into the patient.

27 Which claim best explains why only one generation of genetically modified keratinocytes must be genetically altered and transplanted into an individual in order for that individual to continue producing appropriate amounts of keratin?

(1) The lab-grown keratinocytes will undergo meiosis and pass the keratin DNA to future generations of skin cells.

(2) The modified cells will undergo mitosis and pass the functioning keratin gene on to future generations of skin cells.

(3) Only the modified skin cells will be able undergo mitosis, causing all body cells of the individual to produce appropriate levels of keratin.

(4) When the cells undergo meiosis, the DNA will be modified in future generations of skin cells to include only the genes for appropriate levels of keratin production.

Crocodile scales, cat claws, and fur are also composed of keratin. The keratin in each of these structures is not identical, nor does it perform identical functions.

28 Based on the evidence provided, which statement best explains the variation in keratin structure and function as represented by these organisms?

(1) These organisms needed different structures to survive in their environments. The DNA that codes for keratin changed to improve each of these organisms' chance of survival.

(2) The gene responsible for the production of keratin in each organism had survivable changes to the DNA sequence, which were passed on to offspring.

(3) All of these organisms had ancestors that lived in the same environment and produced keratin that then mutated to produce different structures which were passed on to their offspring.

(4) Keratin most likely appeared first in crocodiles. The ancestors of the other organisms inherited the keratin gene from the crocodiles and modified it to adapt to their environment.

Base your answers to questions 29 through 32 on the information below and on your knowledge of biology.

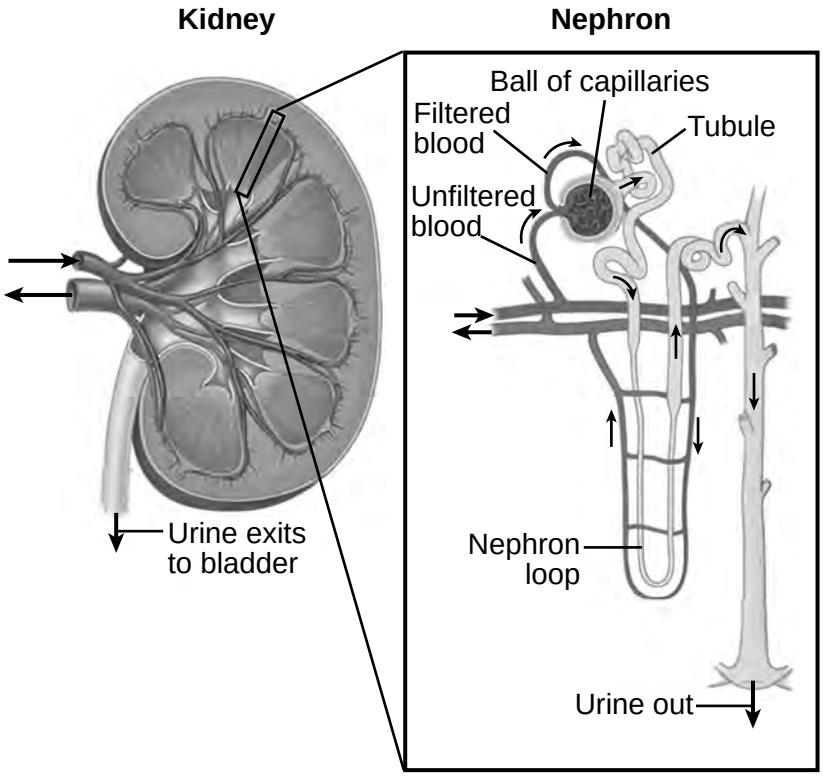
How Do Kangaroo Rats Survive in the Desert?

Kangaroo rat species live in the desert and conserve water so efficiently that they can survive without drinking. The body systems of these animals have various adaptations that allow the rats to extract water from the food they eat.

Kangaroo rats produce highly concentrated urine containing a minimal amount of water. Urine concentration depends on specialized structures in the kidney called nephrons.

The model below shows the organization of specific parts of the circulatory and excretory systems that are needed to filter water and waste from the blood.

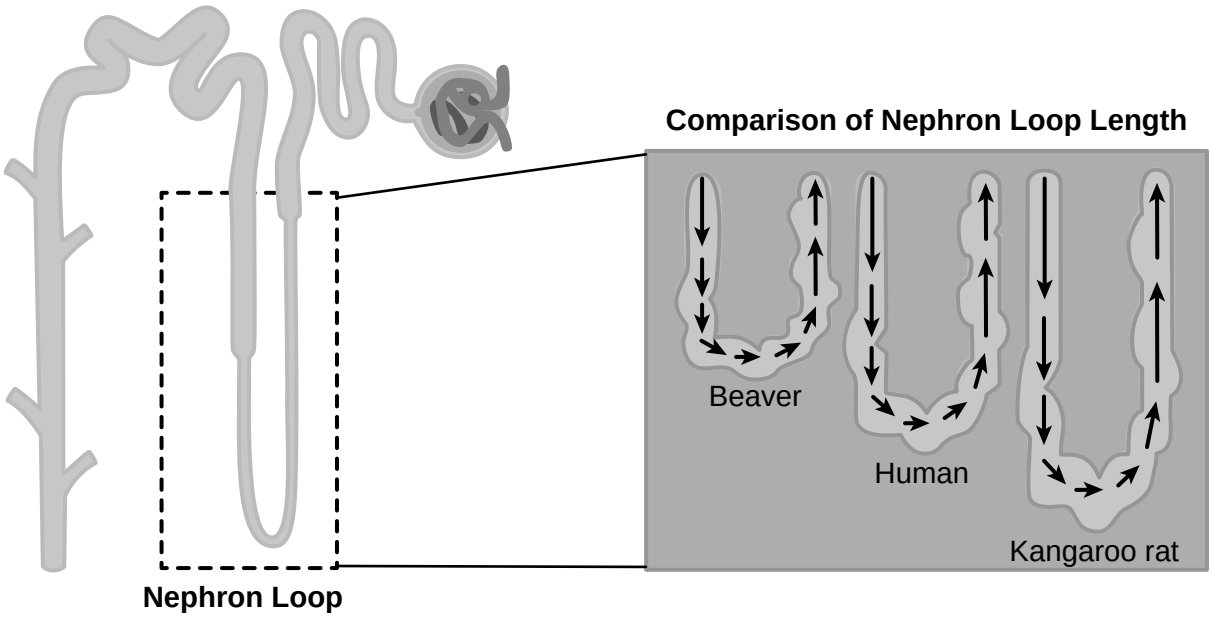
Flow of Blood Through Kidney



29 Describe how specific parts of the circulatory *and* excretory systems interact within the kangaroo rat to conserve water. [1]

The length of the nephron loop has been directly correlated with the efficiency of water conservation in organisms.

Location and Various Lengths of Nephron Loops



Urine Concentration in Mammals Living in Different Environments

Mammal Species	Environment	Maximal Urine Concentration (Milliosmoles/L)	Urine:Blood Plasma Ratio
Beaver	Fresh water	520	1.7:1
Human	Land with moderate moisture	1400	4.5:1
Kangaroo rat	Desert with low moisture	5500	16.0:1

30 Which explanation, based on the evidence provided, supports the claim that natural selection leads to the adaptations that control water regulation in specific environments?

(1) The shorter nephron loop in humans produces urine with the lowest urine:blood plasma ratio.

(2) The kangaroo rat has a long nephron loop and produces urine with the highest urine:blood plasma ratio.

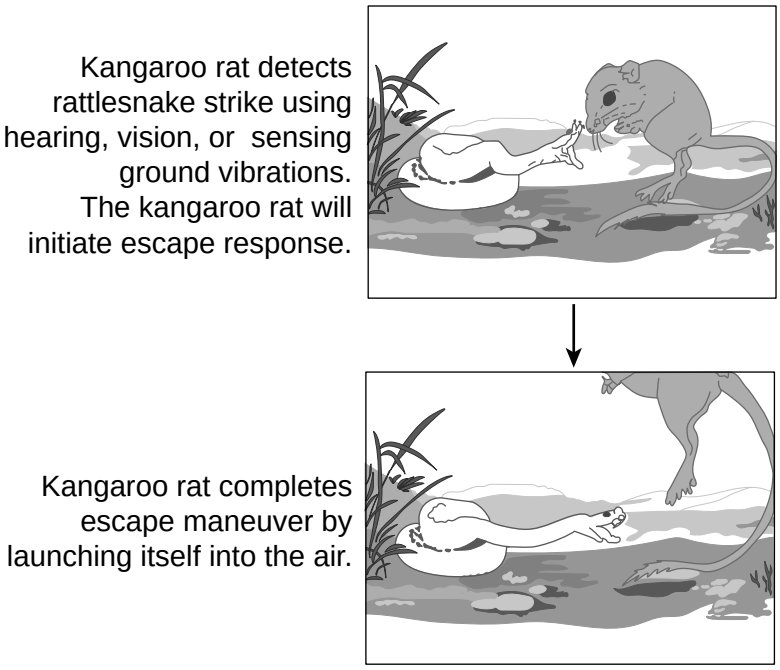
(3) There is no relationship between the nephron length and maximal urine concentration.

(4) Mammalian kidneys have nephron loops that are the same length regardless of their environment.

Survival in the desert also requires that kangaroo rats have the ability to escape predators. Various body systems must work together to enable the kangaroo rat to perform lightning-quick escape maneuvers.

Scientists studied the evolution of the kangaroo rat leap. They determined that although 81% of snake strikes were accurate, 78% of the time the kangaroo rats were fast enough to evade a bite that would kill.

Kangaroo Rat Escape Maneuver



31 Which statement best describes an interaction that occurs between body systems during the kangaroo rat's lightning-quick maneuver?

(1) The respiratory and nervous systems interact when sending a signal to the spinal cord to leap.

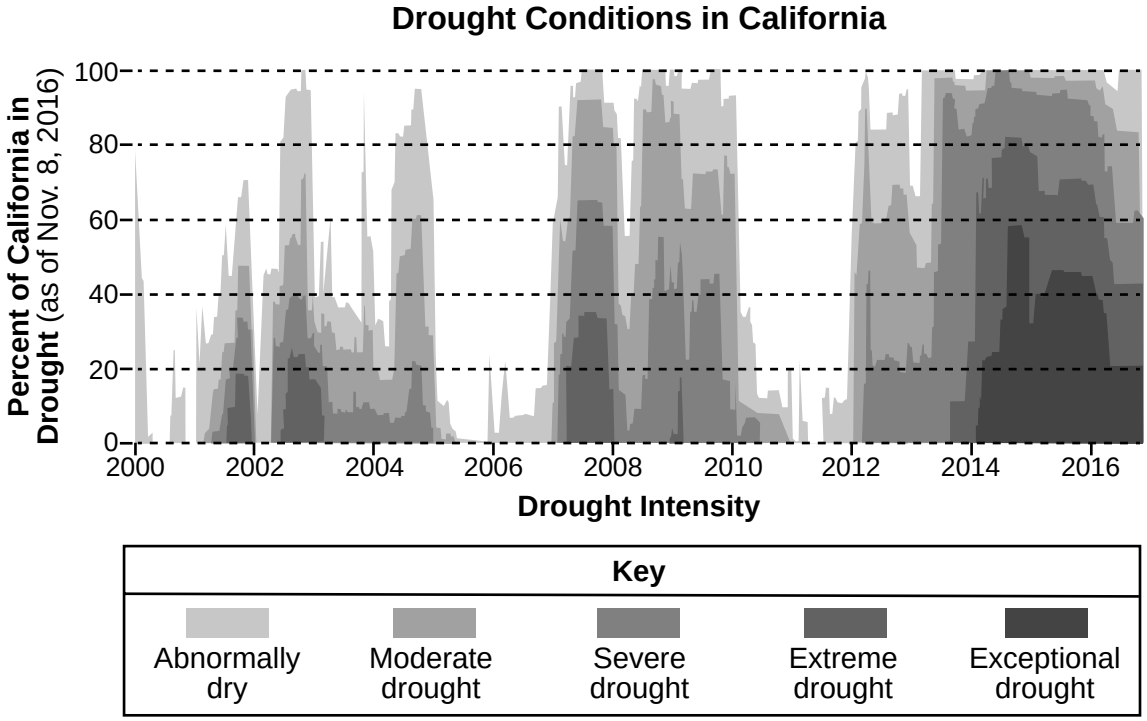
(2) The circulatory and nervous systems interact when sending a signal to the leg muscles.

(3) The respiratory and muscular systems interact to slow cellular respiration prior to the muscle contraction.

(4) The nervous and muscular systems interact to trigger the leg muscle to contract.

California is home to several species of kangaroo rats. Kangaroo rats are highly affected by changes in their habitat. Because they don't drink water, they are dependent on the food available in the habitat for both nutrition and water.

The graph below shows the change in drought conditions in California over a 16-year period.

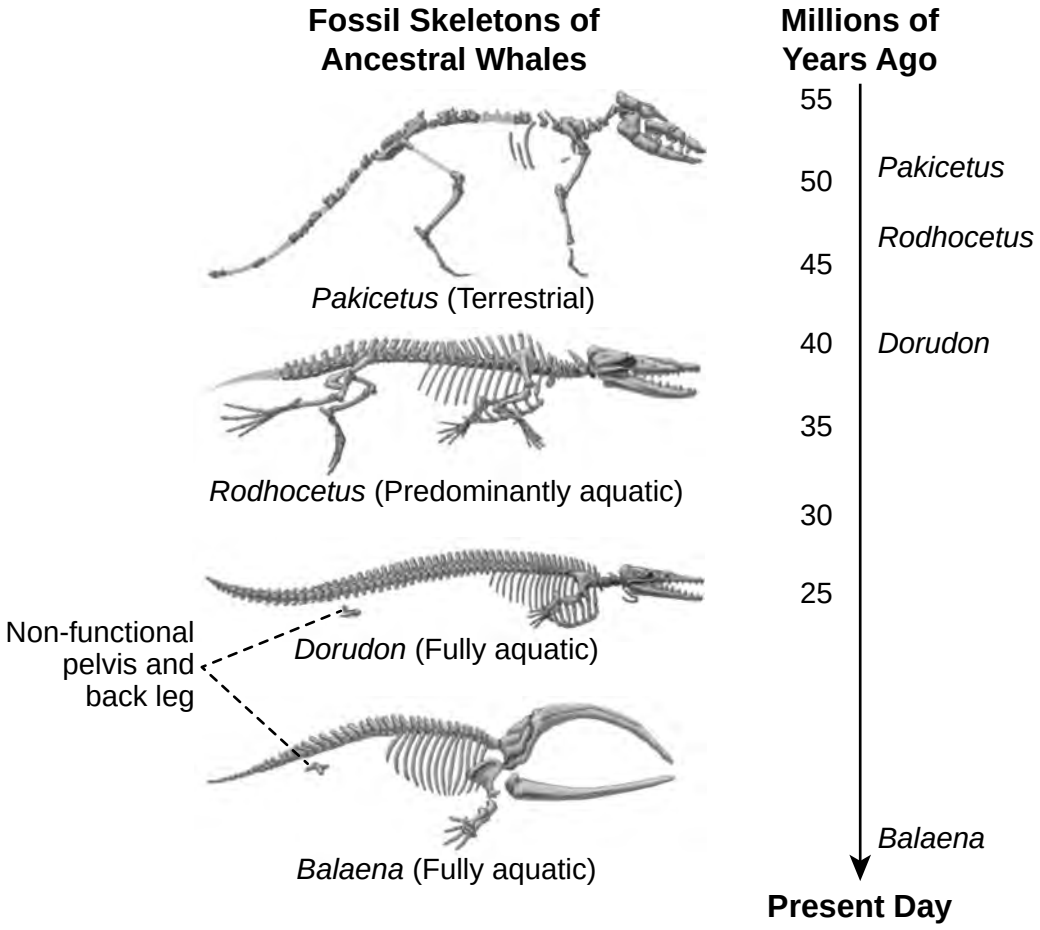


32 Using evidence from the information provided, describe how the kangaroo rat carrying capacity may be impacted if this trend continues in California. [1]

Base your answers to questions 33 through 36 on the information below and on your knowledge of biology.

Evolutionary Relationships

Evidence suggests that whales have descended from mammals that walked on land. The diagrams below show some information about extinct ancestors of modern whales.



33 Which statement includes scientific information that best explains how modern whales may have descended from land-living mammals?

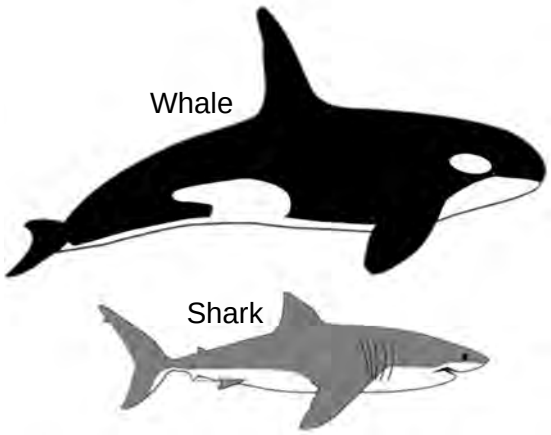
(1) Early ancestors of whales became more adapted to live on land, due to their paddle-like feet.

(2) The total number of whale species with a non-functional pelvis increased on land and in water.

(3) Ancestors of modern whales had leg and pelvic bones, which are present in more modern whales.

(4) Some ancestral whales learned aquatic behaviors that could be passed on to offspring.

Whales and other marine mammals are often mistaken for fish, such as sharks, because of the similarity of their body shapes, as shown below. Even though they look similar, whales and sharks are genetically different.



34 Based on evidence, which statement explains how whales and sharks have evolved to have similar body shapes?

(1) All aquatic organisms are closely related so they are likely to look the same.

(2) Marine mammals evolved directly from fish and therefore share many structural similarities.

(3) Whales and sharks possess identical genetic mutations in their genome which determine their similar body shape.

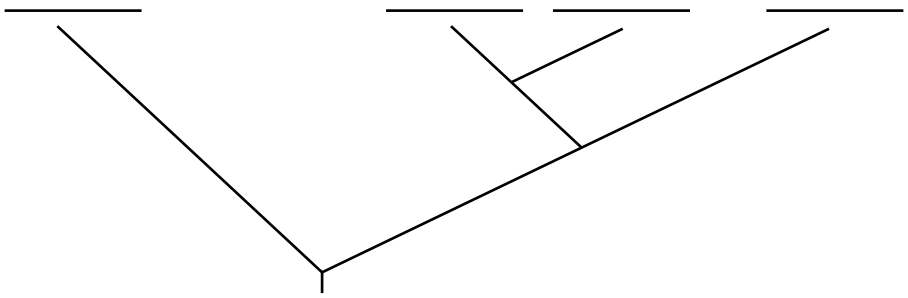
(4) The body shape of whales and sharks allows them to swim efficiently, which improves their chances of survival.

Researchers also studied the location of transposons, a type of DNA that is randomly inserted into a genome and passed down to future generations. Transposons are studied to determine evolutionary relationships. The table below shows some information about transposons in mammals.

Table 1: Presence of Transposons in Specific Locations

Animal	Location of Transposons				
	1	2	3	4	5
Whale	✓	✓	✓		✓
Camel					
Cow	✓	✓		✓	
Hippopotamus	✓	✓	✓		

35 Using the molecular evidence provided, complete the evolutionary tree below to describe the relationships between the whale, camel, cow, and hippopotamus. [1]



36 Which types of evidence would best demonstrate patterns that could be used to determine the evolutionary relationships between goats and the other organisms?

(1) embryonic development, habitat, DNA sequences

(2) DNA sequences, location of transposons, skeletal structures

(3) habitat, embryonic similarities, fossil record

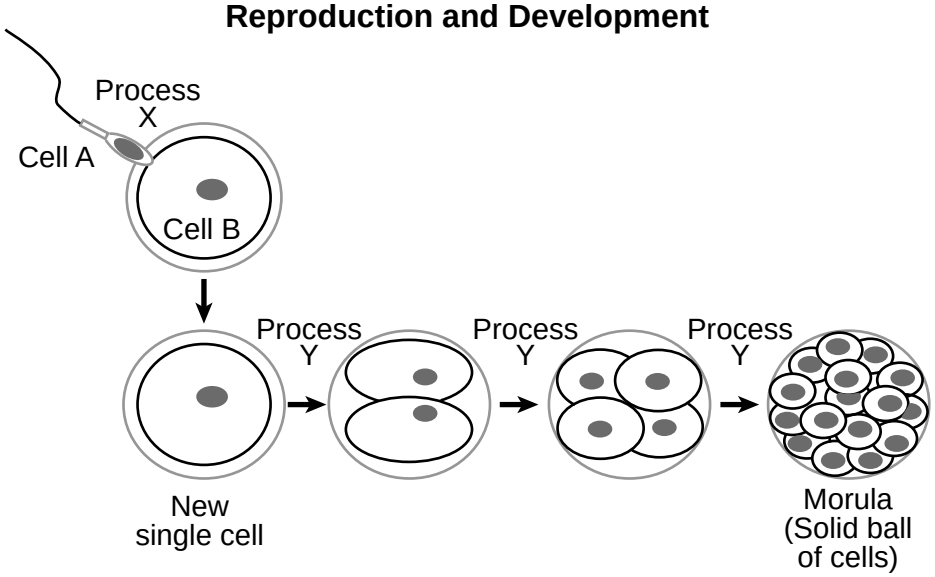
(4) leg bones, coloration, number of transposons

Base your answers to questions 37 through 41 the information below and on your knowledge of biology.

The Human Journey from One Cell to 30 Trillion

Events that occur during human reproduction and development result in the transformation of a single cell into an individual made of trillions of cells. These events are numerous and diverse, but all play a part in ensuring the continuity of life. The journey begins with the formation of the first cell (Process *X*). That cell will respond to specific factors both inside and outside the cell to produce many similar cells (Process *Y*).

Processes that Occur During Early Human Reproduction and Development



37 Which statement explains why Process *X* is necessary to maintain the continuity of life?

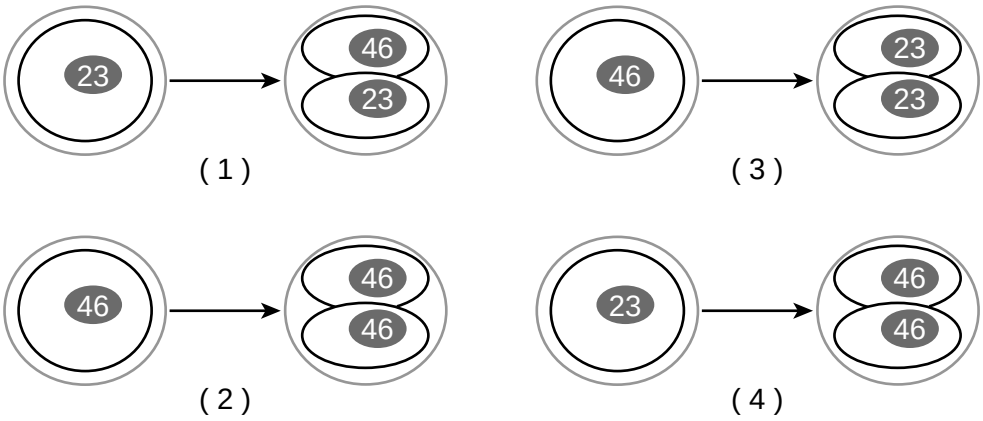
(1) It results in a cell that contains all of the genetic material needed to form an embryo.

(2) It guarantees the survival of the offspring in any kind of environment.

(3) It produces offspring with only traits that are favorable for survival.

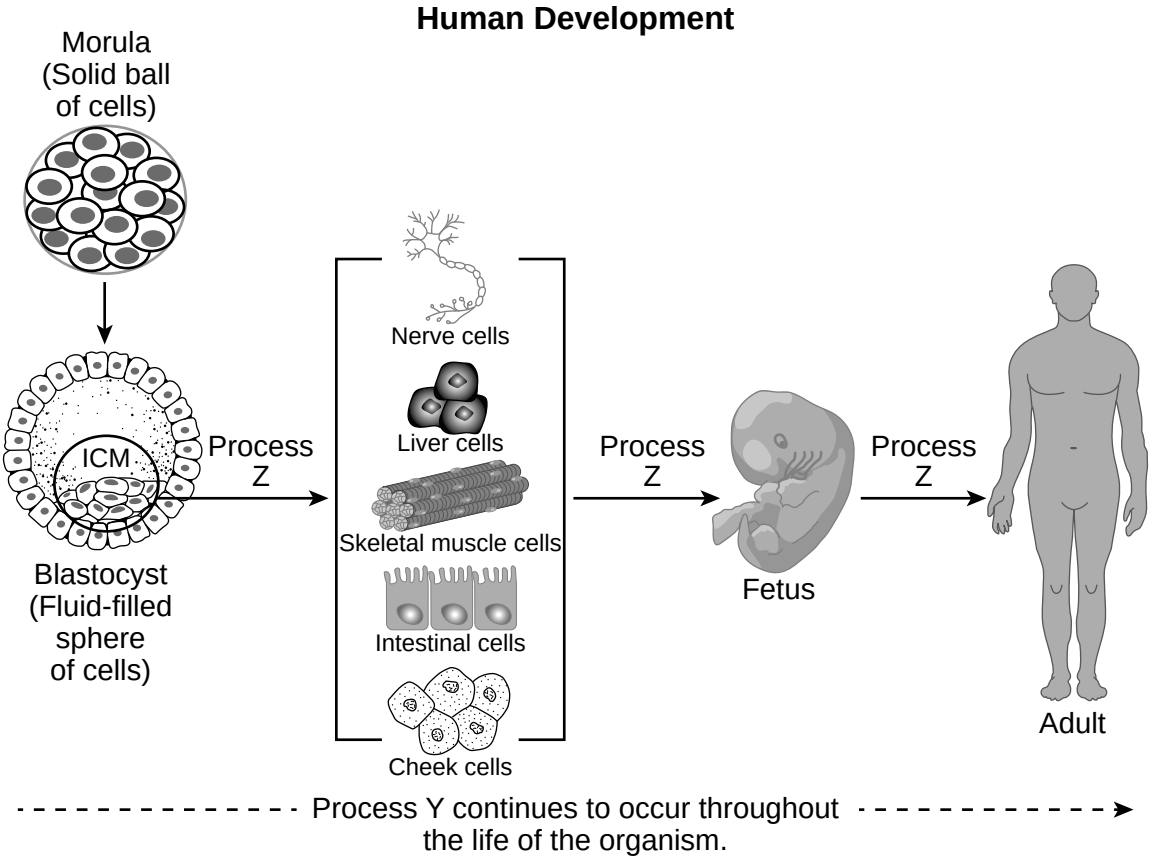
(4) It assures that each parent passes on identical genetic material to the offspring.

38 Which diagram best summarizes how Process *Y* results in the typical number of chromosomes present in the nucleus of each human cell?



39 If an error is present in the DNA of Cell *A*, describe how the error would be present in every cell within the morula. [1]

As human development continues, the solid ball of cells will hollow out to form a fluid-filled sphere of cells. At one end, it contains a mass of less than 100 cells called the inner cell mass (ICM). The ICM will form the fetus.



40 Which statement best summarizes the result of Process *Y* at all stages of human development, from the new single cell stage to the adult stage?

(1) Damaged genes are eliminated and favorable genes are passed on to the next generation of human cells.

(2) Cells are produced that can be used to produce offspring, which will increase the chance of the species surviving.

(3) The genetic variation between the cells of the developing organism is increased and new cell types are formed.

(4) The number of cells that make up the organism increases and the organism is capable of growth and repair.

As the embryo develops, the cells of the ICM rearrange and change location. These changes are the result of Process Z and will give rise to all of the cell types needed to form structures such as nerves, organs, and muscles, such as the cardiac muscles of the heart. When a person suffers a heart attack, some of their cardiac muscle cells die. This causes permanent damage to the heart because adults cannot produce new cardiac cells under normal conditions. Doctors used animal models (pigs) to test several therapies aimed at repairing damaged heart tissue.

41 Describe a trade-off researchers must consider when using pigs as model organisms to cure heart disease in humans. [1]

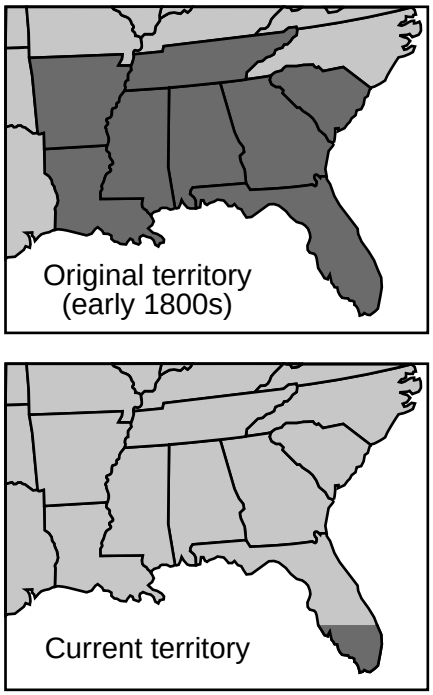
Base your answers to questions 42 through 45 on the information below and on your knowledge of biology.

Driving the Florida Panther to Extinction

The decline in the Florida panther population is an example of how humans have had an impact on the biodiversity of an area. The panther is a large cat that preys primarily upon wild hogs, raccoons, and deer. They can be found in forested areas, pinelands, and freshwater swamp forests.

During the 1800s and early 1900s, habitat loss and hunting led to the panther's near-extinction. By the mid-1980s, only 20 to 30 panthers could be found in the wild. Conservation efforts to increase the panther population started with the release of eight females from Texas in 1995 into available panther habitat in south Florida, much of which was protected from human activity. The Florida panther population historically bordered the Texas population, with interbreeding occurring naturally. Such conservation efforts have succeeded in bringing the wild panther population up to about 200 individuals.

Florida Panther Territory



42 Which explanation regarding the Florida panther would best be supported by the evidence in the information provided?

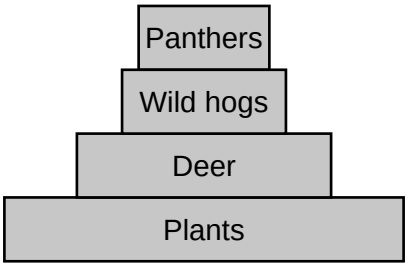
(1) The average panther reproductive rate will increase in order to maintain the panther population.

(2) If their territory decreases because of housing developments, it will become easier for the males to find genetically diverse mates.

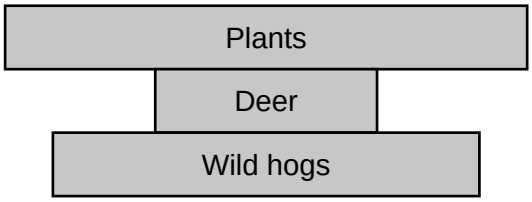
(3) Due to the size of the population, genetic variation is most likely low, decreasing the ability of the panther population to adapt to environmental changes.

(4) The panther population has rebounded and will most likely continue to rise, regardless of changes to their habitat.

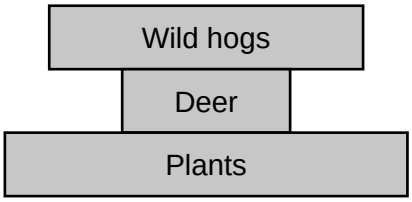
The model below represents a balanced Florida ecosystem.



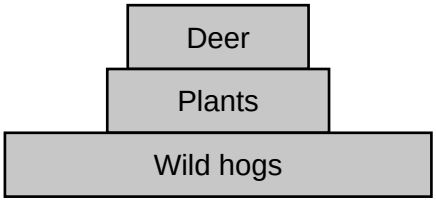
43 Which pyramid of biomass would best represent the Florida ecosystem if the panthers went extinct, causing a sudden imbalance in the ecosystem?



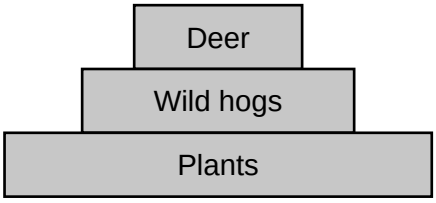
(1)



(3)



(2)

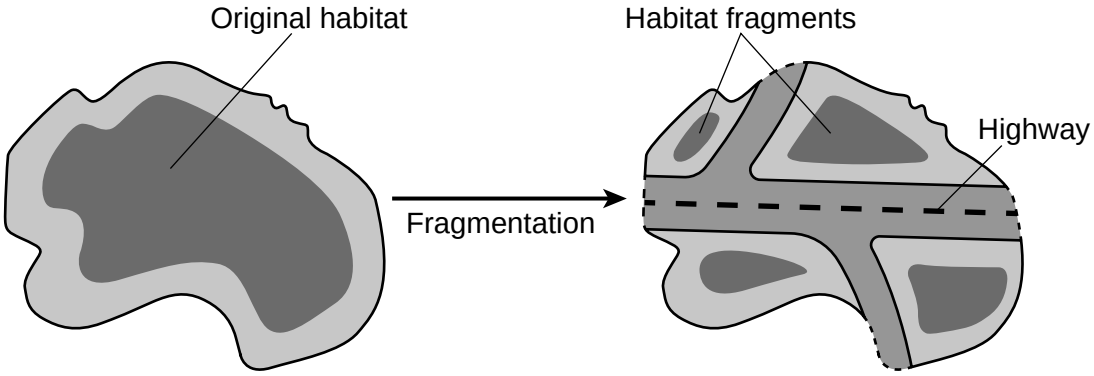


(4)

Human-caused habitat fragmentation from the late 1800s through today has broken up the once-large panther territory. Urbanization has contributed to the fragmentation of the panther habitat in Florida.

The model shows some information about habitat fragmentation.

The Effects of Habitat Fragmentation



44 Which statement supports the claim that habitat fragmentation will increase the likelihood of the Florida panther becoming extinct?

(1) Habitat fragmentation can interfere with panther migration patterns and access to resources.

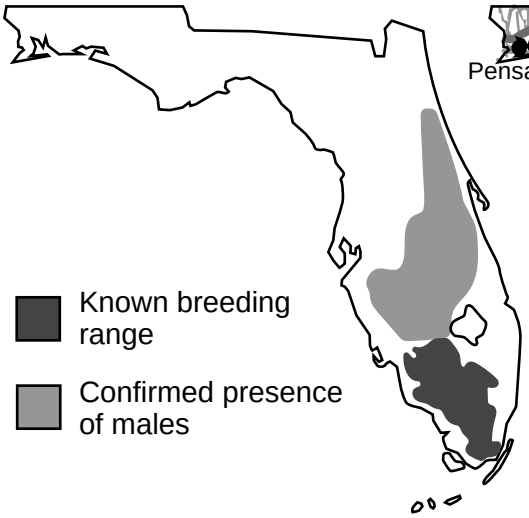
(2) Fragmentation will increase biodiversity that could lead to decreased resource availability.

(3) Competition between panthers living in different habitat fragments will increase.

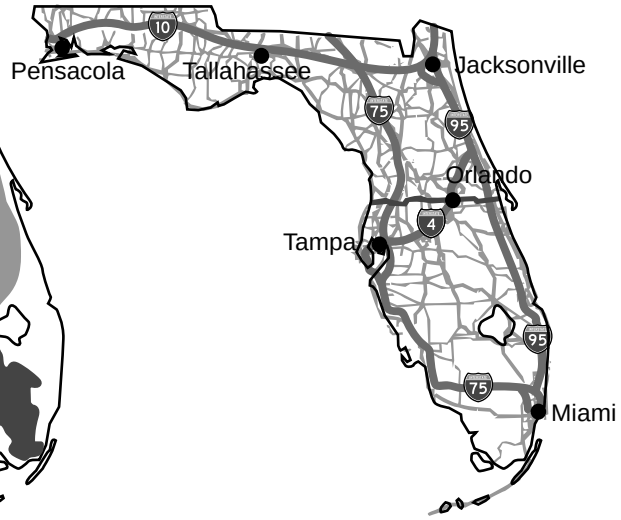
(4) Panthers will be more likely to migrate to new habitats that lack feral hogs and raccoons.

Some conservationists are now concerned that their original efforts to restore the Florida panther population may have been undone. They claim that new proposals to increase the number of housing developments and highways within the Florida panther breeding range will reduce the panther population to levels that occurred in the 1980s.

Florida Panther Range



Map of Major Florida Highways



A proposed solution to reduce panther deaths caused by cars is to build wildlife bridges. When designing wildlife bridges, engineers in Florida prioritized the criterion of panther survival while also considering constraints such as cost, driver safety, environmental impacts, and aesthetics.

A Wildlife Bridge

45 Evaluate wildlife bridges as a solution to reduce the impact on panther populations, based on prioritized criteria *and* constraints. [1]

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LIFE SCIENCE: BIOLOGY

The State Education Department / The University of the State of New York

Regents Examination in Life Science: Biology – August 2025

Scoring Key: Multiple-Choice Questions

Examination	Date	Question Number	Scoring Key	Question Type	Credit	Weight
Life Science: Biology	August '25	**2**	3	MC	1	1
Life Science: Biology	August '25	**3**	1	MC	1	1
Life Science: Biology	August '25	**5**	3	MC	1	1
Life Science: Biology	August '25	**7**	2	MC	1	1
Life Science: Biology	August '25	**10**	4	MC	1	1
Life Science: Biology	August '25	**11**	1	MC	1	1
Life Science: Biology	August '25	**13**	2	MC	1	1
Life Science: Biology	August '25	**15**	2	MC	1	1
Life Science: Biology	August '25	**16**	2	MC	1	1
Life Science: Biology	August '25	**17**	3	MC	1	1
Life Science: Biology	August '25	**18**	1	MC	1	1
Life Science: Biology	August '25	**20**	1	MC	1	1
Life Science: Biology	August '25	**23**	3	MC	1	1
Life Science: Biology	August '25	**24**	3	MC	1	1
Life Science: Biology	August '25	**27**	2	MC	1	1
Life Science: Biology	August '25	**28**	2	MC	1	1
Life Science: Biology	August '25	**30**	2	MC	1	1
Life Science: Biology	August '25	**31**	4	MC	1	1
Life Science: Biology	August '25	**33**	3	MC	1	1
Life Science: Biology	August '25	**34**	4	MC	1	1
Life Science: Biology	August '25	**36**	2	MC	1	1
Life Science: Biology	August '25	**37**	1	MC	1	1
Life Science: Biology	August '25	**38**	2	MC	1	1
Life Science: Biology	August '25	**40**	4	MC	1	1
Life Science: Biology	August '25	**42**	3	MC	1	1
Life Science: Biology	August '25	**43**	3	MC	1	1
Life Science: Biology	August '25	**44**	1	MC	1	1

Regents Examination in Life Science: Biology – August 2025

Scoring Key: Constructed Response Questions

Examination	Date	Question Number	Scoring Key	Question Type	Credit	Weight
Life Science: Biology	August '25	**1**	–	CR	1	1
Life Science: Biology	August '25	**4**	–	CR	1	1
Life Science: Biology	August '25	**6**	–	CR	1	1
Life Science: Biology	August '25	**8**	–	CR	1	1
Life Science: Biology	August '25	**9**	–	CR	1	1
Life Science: Biology	August '25	**12**	–	CR	1	1
Life Science: Biology	August '25	**14**	–	CR	1	1
Life Science: Biology	August '25	**19**	–	CR	1	1
Life Science: Biology	August '25	**21**	–	CR	1	1
Life Science: Biology	August '25	**22**	–	CR	1	1
Life Science: Biology	August '25	**25**	–	CR	1	1
Life Science: Biology	August '25	**26**	–	CR	1	1
Life Science: Biology	August '25	**29**	–	CR	1	1
Life Science: Biology	August '25	**32**	–	CR	1	1
Life Science: Biology	August '25	**35**	–	CR	1	1
Life Science: Biology	August '25	**39**	–	CR	1	1
Life Science: Biology	August '25	**41**	–	CR	1	1
Life Science: Biology	August '25	**45**	–	CR	1	1

Key
MC = Multiple-choice question
CR = Constructed-response question

The chart for determining students' final examination scores for the **August 2025 Regents Examination in Life Science: Biology** will be posted on the Department's web site at **https://www.nysedregents.org/life_science_biology/** no later than August 20, 2025. Conversion charts provided for the previous administrations of the Living Environment examination must NOT be used to determine students' final scores for this administration.

FOR TEACHERS ONLY

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

LIFE SCIENCE: BIOLOGY

Wednesday, August 20, 2025 — 12:30 to 3:30 p.m., only

RATING GUIDE

Directions to the Teacher:

Refer to the directions on page 2 before rating student papers.

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site at: https://www.nysed.gov/state-assessment/high-school-regents-examinations and select the link "Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

Directions to the Teacher

Follow the procedures below for scoring student answer papers for the Regents Examination in Life Science: Biology. Additional information about scoring is provided in the publication *Information Booklet for Scoring the Regents Examinations in Earth and Space Sciences and Life Science: Biology*.

Allow 1 credit for each correct response.

At least two science teachers must participate in the scoring of the open-ended questions on a student's paper. Each of these teachers should be responsible for scoring a selected number of the open-ended questions on each answer paper. No one teacher is to score more than approximately one-half of the open-ended questions on a student's answer paper. Teachers may not score their own students' answer papers.

Students' responses must be scored strictly according to the Rating Guide. For open-ended questions, credit may be allowed for responses other than those given in the rating guide if the response is a scientifically accurate answer to the question and demonstrates adequate knowledge as indicated by the examples in the rating guide. Do not attempt to correct the student's work by making insertions or changes of any kind. On the student's separate answer sheet, for each question, record the number of credits earned and the teacher's assigned rater/scorer letter.

Fractional credit is *not* allowed. Only whole-number credit may be given for a response. If the student gives more than one answer to a question, only the first answer should be rated. Units need not be given when the wording of the questions allows such omissions.

For hand scoring, raters should enter the scores earned in the appropriate boxes printed on the separate answer sheet. Next, the rater should add these scores and enter the total in the space provided. The student's score for the Life Science: Biology test should be recorded in the space provided. Then the student's raw score on the test should be converted to a scale score by using the conversion chart that will be posted on the Department's web site at: https://www.nysed.gov/state-assessment/high-school-regents-examinations no later than August 20, 2025. The student's scale score should be entered in the box labeled "Scale Score" on the student's answer sheet. The scale score is the student's final examination score.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score.

The test item map on page 11 identifies the Performance Expectation with which each test question is aligned. All NYSP-12SLS Performance Expectations are three-dimensional (https://www.nysed.gov/sites/default/files/programs/standards-instruction/p-12-science-learning-standards.pdf). The integration of these three dimensions provides students with a context for the content of science (DCI), the methods by which science knowledge is acquired and understood (SEP), and the ways in which the sciences are connected through concepts that have universal meaning across the disciplines (CCC).

1 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The vascular bundle delivers absorbed water from the root system to parts of the shoot system, such as the leaves, so they can perform photosynthesis.

— Leaves use materials such as water, which is transported by the vascular bundle from the root system to the shoot system.

— Roots absorb water/minerals, that are carried by the vascular bundle through the shoots to the rest of the plant.

— The vascular bundle carries food from the shoots/leaves to the roots to be stored.

2 [1] Allow 1 credit for 3.

3 [1] Allow 1 credit for 1.

4 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— As trees age and their diameter increases from 40 to 60 cm, they store 2.5 times more carbon. The carbon is absorbed from the atmosphere and stored in the biosphere.

— As trees age and grow larger in diameter, more carbon is stored in their structures. Plants absorb carbon dioxide from the air and combine it with water.

— Older and larger trees are able to store more carbon, since they use the carbon from the atmosphere and store the carbon in plant structures in the biosphere.

5 [1] Allow 1 credit for 3.

6 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Young shrews nurse and are cared for by their mother for 22 to 25 days. Bluefin tuna receive no parental care.

— Shrews feed on mothers' milk instead of feeding on each other, which provides parental care and increases the percentage of surviving offspring.

— The caravan makes it possible for the shrews to be better protected as they move from place to place, increasing their chances for survival.

7 [1] Allow 1 credit for 2.

8 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Line *A* represents populations in which most members live to an older age. Line *C* represents populations whose members die young. About 50% of the shrews live to adulthood, so Line *B* best represents the shrews.

— This is represented by Line *B* on the graph because about 50% of young shrews survive to adulthood because they form caravans.

— Line *B* best represents shrew survival because about 50% of the young will survive to be adults.

9 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— As a result of this protective behavior, more bison calves survive and pass this adaptation on to their offspring.

— When threatened, the male and female bison form a protective circle around the calves, increasing the chances that the calves will survive and pass on this behavior.

— This is an adaptation that increases their chances of surviving, reproducing, and passing this adaptation on to future generations.

10 [1] Allow 1 credit for 4.

11 [1] Allow 1 credit for 1.

12 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— After eating the leaves, silkworms will rearrange the elements/subunits present in glucose and combine them with other elements to form amino acids that are combined to make proteins.

— Silkworms use the glucose from the mulberry plant to make proteins by rearranging the carbon, hydrogen, and oxygen with the addition of nitrogen to form the subunits necessary to make proteins.

13 [1] Allow 1 credit for 2.

14 [1] Allow 1 credit for:

Partial DNA	GAT	CAA	TTA	AAT
mRNA	CUA	GUU	AAU	UUA
Amino acids	LEU	VAL	ASN	LEU

15 [1] Allow 1 credit for 2.

16 [1] Allow 1 credit for 2.

17 [1] Allow 1 credit for 3.

18 [1] Allow 1 credit for 1.

19 [1] Allow 1 credit for an acceptable evidence. Acceptable responses include, but are not limited to:

Beehive Fences:

— There would be less destruction of property and crops from elephants, and since bees are a natural part of the environment adding the hives would not negatively impact the environment.

— People, villages, and agriculture will be protected from damage, and "least" impactful because resource management hunting will remove elephants from the ecosystem and decrease biodiversity.

Resource Management Hunting:

— maintains elephant populations and controls problem elephants while ensuring that the areas of elephant habitat will be preserved

— regulates elephant hunting and may reduce poaching, whereas bee fencing could impact nearby villages.

20 [1] Allow 1 credit for 1.

21 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The process is decomposition. During decomposition, carbon dioxide is released from the biosphere to the atmosphere/hydrosphere.

— Decomposition returns/recycles carbon from dead organisms to the atmosphere/geosphere, enabling the carbon cycle to continue.

22 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— More krill will eat more phytoplankton, which will reduce photosynthesis levels, resulting in more atmospheric carbon.

— Increased numbers of krill in the biosphere will reduce phytoplankton, which absorb CO_2, so CO_2 in the atmosphere will increase.

23 [1] Allow 1 credit for 3.

24 [1] Allow 1 credit for 3.

25 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— All somatic cells within one human have the same genetic content/chromosomes, but they only express specific genes, such as KRT1 or KRT12 on different chromosomes, that enable them to perform different functions through the production of specific proteins, resulting in specialized cells.

— Different cells use different genes that are found on different chromosomes. For example, cells of the cornea use the KRT12 gene and skin cells use the KRT1 gene.

— All body cells have the same DNA. In order to carry out their specific function, cornea cells express specific genes on chromosome 17 and skin cells express genes of chromosome 12 resulting in specialized cells and produce specific proteins when they express different genes.

26 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The mutation in the normal KRT10 gene is a deletion of two codons, which results in a deletion of two amino acids. Since the amino acid chain is shorter a different protein will be formed.

— The normal KRT10 gene contains Glu and Pro in the fourth and fifth position, but they are omitted from the mutated gene. This causes a different protein to form.

— In the mutated KRT10 gene there are fewer nucleotides resulting in fewer amino acids. This causes a different protein to form.

27 [1] Allow 1 credit for 2.

28 [1] Allow 1 credit for 2.

29 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The circulatory system is made up of blood vessels. The excretory system includes the kidney, which is made of nephrons. The blood vessels bring blood to the nephron, where it is filtered to form concentrated urine.

— Blood vessels of the circulatory system bring blood to the kidney, where the nephrons filter the blood, conserving water.

— As blood flows through blood vessels of the circulatory system to the kidneys of the excretory system, it enters capillaries within a nephron. The nephron filters out waste, and most water is returned to the body.

— Water and wastes diffuse out of the capillaries into the nephrons of the kidney. The blood is filtered in the nephron to produce urine that contains little water.

30 [1] Allow 1 credit for 2.

31 [1] Allow 1 credit for 4.

32 [1] Allow 1 credit. Acceptable responses include but are not limited to:

— With reduced water availability, there will not be as much vegetation and the kangaroo rat's food and water supply will drop drastically, which will decrease the carrying capacity of kangaroo rats.

— If the trend in the drought conditions continues, there will be very little water for plants and the moisture in the food (plants) eaten by the kangaroo rat will decrease, which will lower their carrying capacity.

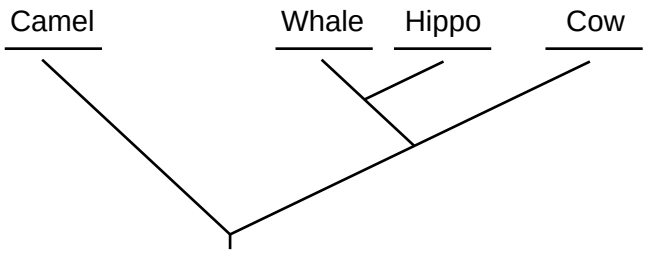
— Without enough water, there will be less food and water for the kangaroo rat. The rat population will suffer a serious decline.

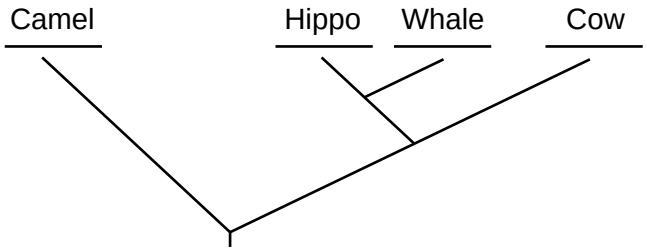
33 [1] Allow 1 credit for 3.

34 [1] Allow 1 credit for 4.

35 [1] Allow 1 credit. Acceptable responses are:

Examples of 1-credit responses:





36 [1] Allow 1 credit for 2.

37 [1] Allow 1 credit for 1.

38 [1] Allow 1 credit for 2.

39 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Cell *A* contributes half the genetic information in the new single cell. Since the new single cell divides by mitosis to produce the morula, the error would be passed on to all cells.

— Cell *A* gives the new cell half of its genetic information. Process *Y* is mitosis, so all of the cells are identical and will have the error.

— The DNA from Cell *A* is passed on to the new cell by mitosis, so each cell will have identical DNA.

40 [1] Allow 1 credit for 4.

41 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Using animal models before testing new procedures and medications on humans reduces the chances of humans being harmed, but pigs may not respond to medications in same way as humans.

— Most animals are inexpensive to maintain and plentiful, so using animal models would be more cost-effective, but animals are biologically different from humans. The medications may produce unexpected results that are different in each organism.

— Pigs have similar organs that function in similar ways to humans, but animals should not be used to test human medications because it is morally wrong and other, more humane alternatives for testing may exist.

Note: Answer must include *both* one benefit and one drawback to satisfy the trade-off component.

42 [1] Allow 1 credit for 3.

43 [1] Allow 1 credit for 3.

44 [1] Allow 1 credit for 1.

45 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The panthers and other wildlife may not initially use the bridges, but over time may learn to use them more often. This would reduce the number of panthers hit by cars and help maintain their biodiversity and connections to breeding grounds, while increasing the aesthetics for both wildlife and humans.

— The bridges look like a part of the ecosystem and would provide a passage for humans and other animals to use to safely cross the highway. However, there would be an additional cost required to build and maintain these bridges.

— The bridges join fragmented habitat by allowing the panthers to safely cross the highway without car collisions, increasing their chance of surviving and reproducing, which would maintain biodiversity. This would maintain ecosystem stability.

Note: Student responses must include *at least two* constraints.

The *Chart for Determining the Final Examination Score for the August 2025 Regents Examination in Life Science: Biology* will be posted on the Department's web site at: https://www.nysed.gov/state-assessment/high-school-regents-examinations no later than August 20, 2025. Conversion charts provided for previous administrations of the Regents Examination in Life Science: Biology must NOT be used to determine students' final scores for this administration.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to https://www.nysed.gov/state-assessment/teacher-feedback-state-assessments.
2. Click Regents Examinations.
3. Complete the required demographic fields.
4. Select the test title from the Regents Examination dropdown list.
5. Complete each evaluation question and provide comments in the space provided.
6. Click the SUBMIT button at the bottom of the page to submit the completed form.

THE STATE EDUCATION DEPARTMENT

THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY 12234

August 2025 Life Science: Biology Test Item Map to the Standards

Question	Type	Points	Performance Expectation
1	Constructed Response	1	HS-LS1-2
2	Multiple Choice	1	HS-LS1-3
3	Multiple Choice	1	HS-LS2-2
4	Constructed Response	1	HS-ESS2-6
5	Multiple Choice	1	HS-LS2-8
6	Constructed Response	1	HS-LS4-2
7	Multiple Choice	1	HS-LS2-2
8	Constructed Response	1	HS-LS4-3
9	Constructed Response	1	HS-LS4-2
10	Multiple Choice	1	HS-LS4-4
11	Multiple Choice	1	HS-LS1-7
12	Constructed Response	1	HS-LS1-6
13	Multiple Choice	1	HS-LS1-2
14	Constructed Response	1	HS-LS1-1
15	Multiple Choice	1	HS-LS2-2
16	Multiple Choice	1	HS-LS3-3
17	Multiple Choice	1	HS-LS4-4
18	Multiple Choice	1	HS-LS2-6
19	Constructed Response	1	HS-ETS1-3
20	Multiple Choice	1	HS-LS2-5
21	Constructed Response	1	HS-LS2-5
22	Constructed Response	1	HS-ESS2-6
23	Multiple Choice	1	HS-ESS2-6
24	Multiple Choice	1	HS-LS1-1
25	Constructed Response	1	HS-LS1-4
26	Constructed Response	1	HS-LS1-1
27	Multiple Choice	1	HS-LS3-2
28	Multiple Choice	1	HS-LS4-2
29	Constructed Response	1	HS-LS1-2
30	Multiple Choice	1	HS-LS4-4
31	Multiple Choice	1	HS-LS1-2
32	Constructed Response	1	HS-LS2-1
33	Multiple Choice	1	HS-LS4-1
34	Multiple Choice	1	HS-LS4-2
35	Constructed Response	1	HS-LS4-1
36	Multiple Choice	1	HS-LS4-1
37	Multiple Choice	1	HS-LS1-8
38	Multiple Choice	1	HS-LS1-4
39	Constructed Response	1	HS-LS1-8
40	Multiple Choice	1	HS-LS1-4
41	Constructed Response	1	HS-ETS1-3
42	Multiple Choice	1	HS-LS4-4
43	Multiple Choice	1	HS-LS2-4
44	Multiple Choice	1	HS-LS4-5
45	Constructed Response	1	HS-ETS1-3

The State Education Department / The University of the State of New York

Regents Examination in Life Science: Biology – August 2025

Chart for Converting Total Test Raw Scores to Final Exam Scores (Scale Scores)

(Use for the August 2025 exam only.)

Raw Score	Scale Score	Performance Level
45	**100**	5
44	**99**	5
43	**97**	5
42	**96**	5
41	**94**	5
40	**93**	5
39	**91**	5
38	**90**	5
37	**88**	5
36	**87**	5
35	**86**	5
34	**85**	5
33	**83**	4
32	**82**	4
31	**80**	4

Raw Score	Scale Score	Performance Level
30	**79**	4
29	**78**	4
28	**76**	4
27	**75**	3
26	**73**	3
25	**72**	3
24	**70**	3
23	**68**	3
22	**66**	3
21	**65**	3
20	**61**	2
19	**59**	2
18	**56**	2
17	**55**	2
16	**50**	1

Raw Score	Scale Score	Performance Level
15	**47**	1
14	**44**	1
13	**41**	1
12	**38**	1
11	**35**	1
10	**31**	1
9	**28**	1
8	**25**	1
7	**22**	1
6	**18**	1
5	**15**	1
4	**12**	1
3	**9**	1
2	**6**	1
1	**3**	1
0	**0**	1

To determine the student's final examination score (scale score), find the student's total test raw score in the column labeled "Raw Score" and then locate the scale score that corresponds to that raw score. The scale score is the student's final examination score. Enter this score in the space labeled "Scale Score" on the student's answer sheet.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

Because scale scores corresponding to raw scores in the conversion chart change from one administration to another, it is crucial that for each administration the conversion chart provided for that administration be used to determine the student's final score. The chart above is usable only for this administration of the Regents Examination in Life Science: Biology.