

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Living Environment 22-23 Quarterly #2

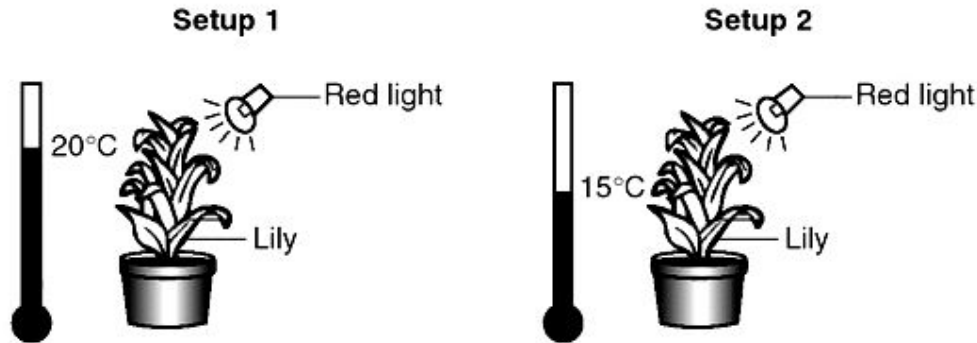
OA Essential 1	1	2	3	4
Analyze information/evidence strategically for essential learning.  Student can:	Identify the subject/topic of given information/evidence	Do 1 and:  Strategically identify and sort relevant information based on given purpose.	Do all of 2 and:  Identify relationships and/or trends present in provided material.	Do all of 3 and:  Predict or construct new information based on the given information and/or evidence provided
LT 1.2	1	2	3	4
I can construct and analyze a graph/ data set.  Student can:	Sometimes identify X and Y axis and understand which variable goes on each axis	Identify X and Y axis and understand which variable goes on each axis  Sometimes: Create a consistent scale without breaks  Plot and connect points on a line graph	Do all of 2 and:  Create a consistent scale without breaks  Plot and connect points on a line graph	Do all of 3 and:  Analyze trends and predict outcomes based on a line graph.  Draw a valid conclusion based on the data provided.
LT 3.2	1	2	3	4
Priority Standard: I can model the cycling of matter to show its conservation and understand human impacts.	Demonstrates basic understanding of vocabulary involved.	Developing ability to create a model to explain cycling of matter.	Consistently able to create models to explain cycling of matter.  Developing ability to analyze these models.	Consistently able to draw and explain valid conclusions based on the models of cycling of matter.
LT 3.3	1	2	3	4
I can explain how humans have impacted the environment and the cycles in nature.	Demonstrates basic understanding of vocabulary involved.	Developing ability to create a model to explain human impact on cycling of matter.	Consistently able to create models to explain human impact on cycling of matter.  Developing ability to analyze these models.	Consistently able to draw and explain valid conclusions based on the models of human impact on cycling of matter.

LT 4.1	1	2	3	4
I can compare the four major organic molecules based on their form and function.	Demonstrates basic understanding of vocabulary involved.	Developing ability to identify organic molecules based on their form and function.	Consistently able to identify organic molecules based on their form and function.  Developing ability to correctly use indicators.	Consistently able to correctly use indicators and analyze results of indicator testing.
LT 5.1	1	2	3	4
I can model transport and identify the organelles involved.	Identifies the components of the cell membrane.	Developing ability to describe the role of components of the cell membrane.	Consistently able to describe the role of components of the cell membrane.  Developing ability to differentiate between diffusion, osmosis, passive and active transport.	Consistently able to differentiate between diffusion, osmosis, passive and active transport.  Also able to justify why some molecules can diffuse and others cannot.
LT 5.2	1	2	3	4
I can model how diffusion works in different body systems to maintain homeostasis.	Identifies the organs involved in diffusion in various body systems.	Developing ability to describe the role of these organs in diffusion of materials needed to maintain homeostasis.	Consistently able to describe the role of these organs in diffusion of materials needed to maintain homeostasis.	Able to apply understanding of transport and homeostasis to various situations in plants, animals, and unicellular organisms.
Regents Readiness	1	2	3	4
Student is able to apply learning to correctly answer regents - style questions.	Scale Score 0-54  0 - 35%	Scale Score 55-64  36 - 47%	Scale Score 65-84  48 - 78%	Scale Score 85-100  79 - 100%
Students' raw percentage scores are converted to a scale score using the Living Environment regents conversion chart. Scale scores of 85 - 100 reflect mastery, 65 - 84 are passing scores.				

**OA Essential Skill #1:** Analyze information/evidence strategically for essential learning.

Use the information below to answer questions 1-4.

An investigation was carried out using the two setups shown below. Other than the difference shown in the diagram, all other conditions were identical.



1. Which is a possible hypothesis that could be tested with this setup
  - (1) If the Lily plant is warmer, then it will grow taller.
  - (2) If the Lily plant is in soil, then it will grow.
  - (3) If the Lily plant is exposed to red light, then it will grow taller.
  - (4) If the Lily plant is in the dark, then it won't grow.

2. Identify the independent variable in the above setup.

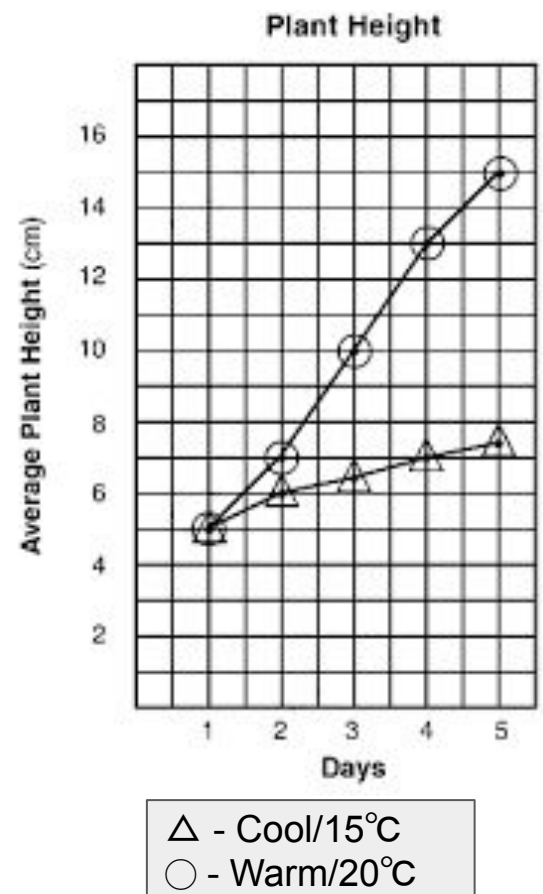
- (1) Light Color
- (2) Plant Type
- (3) Temperature
- (4) Pot Size

3. The graph to the right shows data for plant height over 5 days. Which statement below best describes the relationship between plant height and time?

- (1) As time increases, height increases.
- (2) As time decreases, height increases.
- (3) As height increases, time decreases.
- (4) As height increases, time stays the same.

4. Based on the graph, predict the height of the Warm plant for day 6.

- (1) 15cm
- (2) 8cm
- (3) 16cm
- (4) 17cm

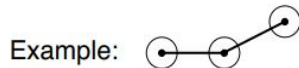


**1.2:** I can construct and analyze a graph/ data set.

Using the information in the data table, construct a line graph on the grid provided, following the directions below.

5. Mark an appropriate scale, without any breaks in the data, on each labeled axis.

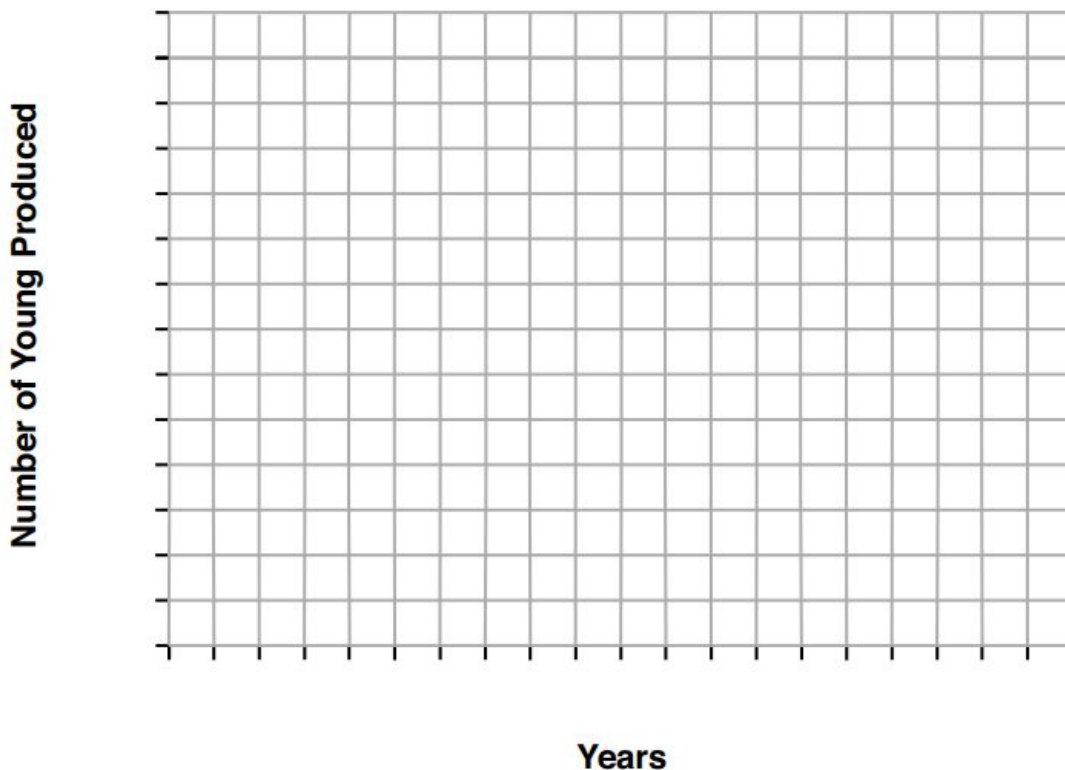
6. Plot the data on the grid. Connect the points and surround each point with a small circle.



**Number of Peregrine Falcon Offspring Produced in New York State From 1992 to 2012**

Year	Number of Offspring Produced
1992	30
1996	48
2000	75
2004	79
2008	129
2012	148

**Number of Peregrine Falcon Offspring Produced in New York State from 1992-2012**

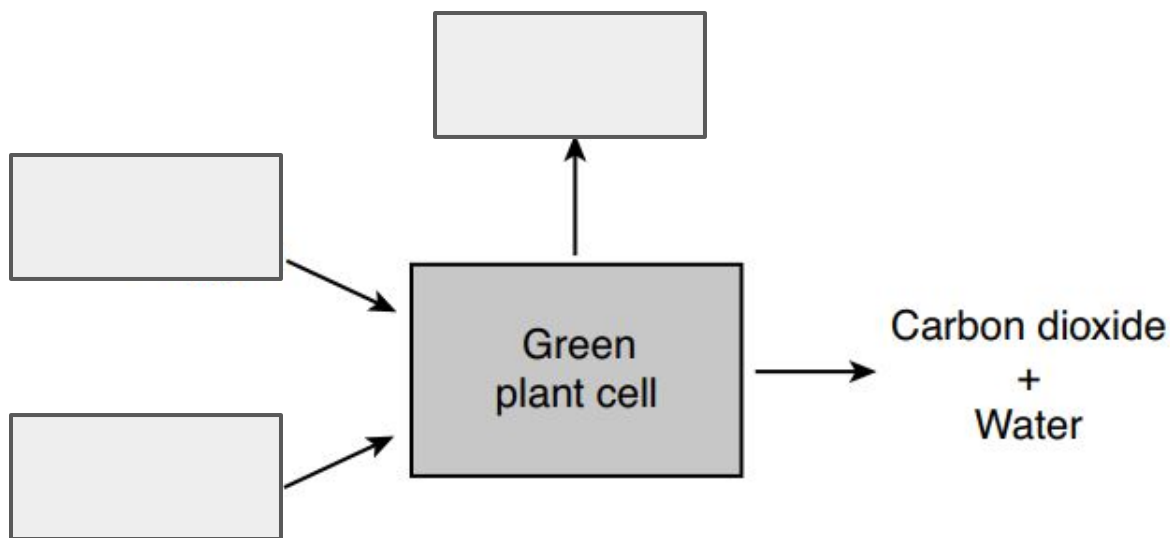


7. Which conclusion is best supported by the information presented in the graph?

- (1) The greatest decrease was during the time period of 1992 and 1996.
- (2) The greatest increase was during the time period of 2004 and 2008.
- (3) There has been a steady decline since the banning of DDT in 1972.
- (4) The population reached carrying capacity in 2004.

**3.2:** I can model the cycling of matter to show its conservation and understand human impacts.

Use the diagram below to answer questions 8-10.



8. Which biological process is represented in the diagram?

- (1) Photosynthesis
- (2) Respiration
- (3) Digestion
- (4) Replication

9. Identify the two raw materials (reactants) necessary for this process. **Label them in the appropriate boxes on the diagram.**

10. Identify the energy rich molecule produced. **Label it in the appropriate box on the diagram.**

11. Today, many diseases have been linked to mutations that cause mitochondria to fail. Patients who suffer from mitochondrial diseases may suffer from fatigue and weakness. Explain why patients with a mitochondrial disease would tend to experience these symptoms.

**3.3:** I can explain how humans have impacted the environment and the cycles in nature.

Use the passage below and your knowledge of biology to answer questions 12-15.

### Global Warming

Throughout its long history, Earth has warmed and cooled time and again. Climate has changed when the planet received more or less sunlight due to subtle shifts in its orbit, as the atmosphere or surface changed, or when the Sun's energy varied. But in the past century, another force has started to influence Earth's climate: humanity. ...

...What has scientists concerned now is that over the past 250 years, humans have been artificially raising the concentration of greenhouse gases in the atmosphere at an ever increasing rate, mostly by burning fossil fuels, but also from cutting down carbon-absorbing forests. Since the Industrial Revolution began in about 1750, carbon dioxide levels have increased nearly 38 percent as of 2009 and methane levels have increased 148 percent. ...

Source: <http://earthobservatory.nasa.gov> /January 20

12. Identify a greenhouse gas from the reading.

13. *Other than global warming*, state one specific effect on the environment if the human activities mentioned in the passage continue.

14. *Other than the issues mentioned in the passage*, state one action that humans could take to slow down the rate of global warming.

15. On November 4, 2016, the Paris Agreement brought many nations into a common cause to combat climate change and adapt to its effects on a global level. State one reason why climate change needs to be addressed globally as well as locally.

**4.1:** I can compare the four major organic molecules based on their form and function.

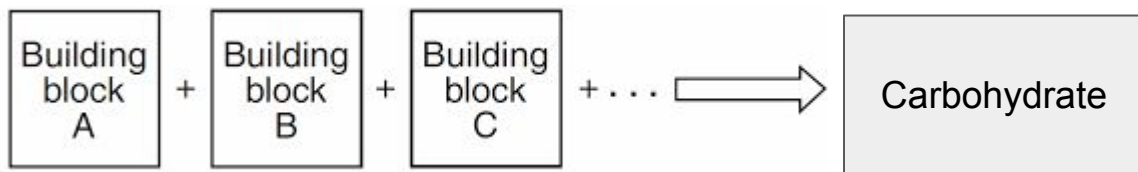
16. Which substance is NOT an organic molecule?

- (1) Starch
- (2) DNA
- (3) Water
- (4) Fat

17. Most of the protein stored in the muscle cells is composed of molecules that originally entered these cells as

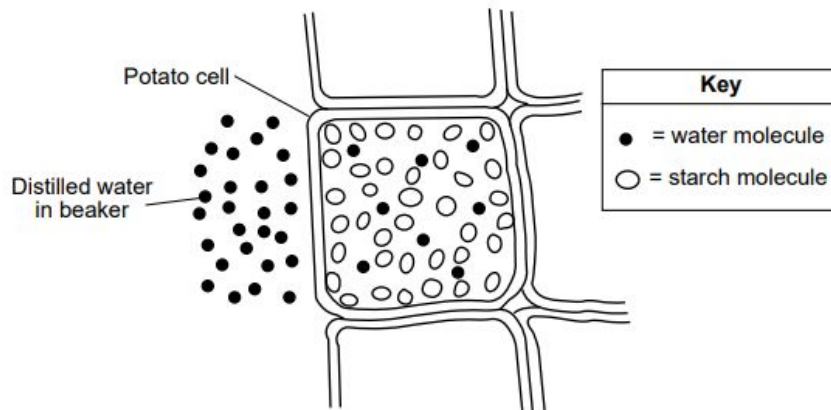
- (1) Enzymes
- (2) Simple sugars
- (3) Amino acids
- (4) Minerals

18. Identify the building blocks in the diagram below.



19. Identify the primary function of carbohydrates in the human body.

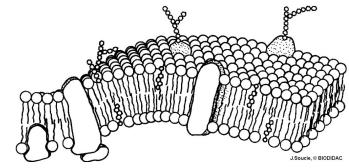
20. A student tested the potato cells shown for starch and glucose. Complete the chart below to show the results.



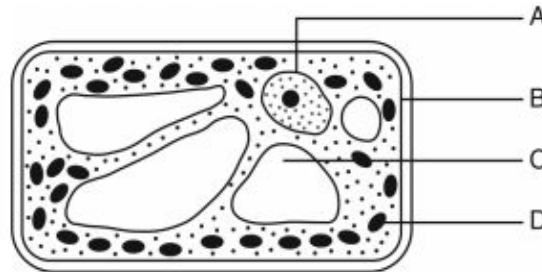
Indicator	Result Color	+/-
Glucose Indicator		
Iodine		

**5.1:** I can model transport and identify the organelles involved.

21. What is one of the two biomolecules that make up the cell membrane?



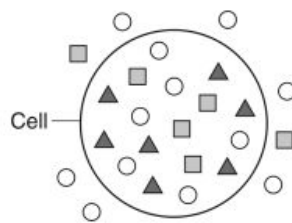
22. Which structure is responsible for the passage of materials into and out of the cell?



- (1) A      (2) B      (3) C      (4) D

23. The diagram below represents a cell and several molecules. The number of molecules shown represents the relative concentration of the molecules inside and outside of the cell. **Molecule B** could enter as a direct result of

- (1) Digestion  
 (2) Diffusion  
 (3) Active transport  
 (4) Enzyme productic



Key	
○	Molecule A
■	Molecule B
▲	Molecule C

Molecule	In	Out
B		
C		

24. Based on the diagram in question 20, would **Molecule C** diffuse into or out of the cell. *Support your answer.*

25. Circle the molecule that **can** diffuse from the digestive tract into the human bloodstream without first being digested.

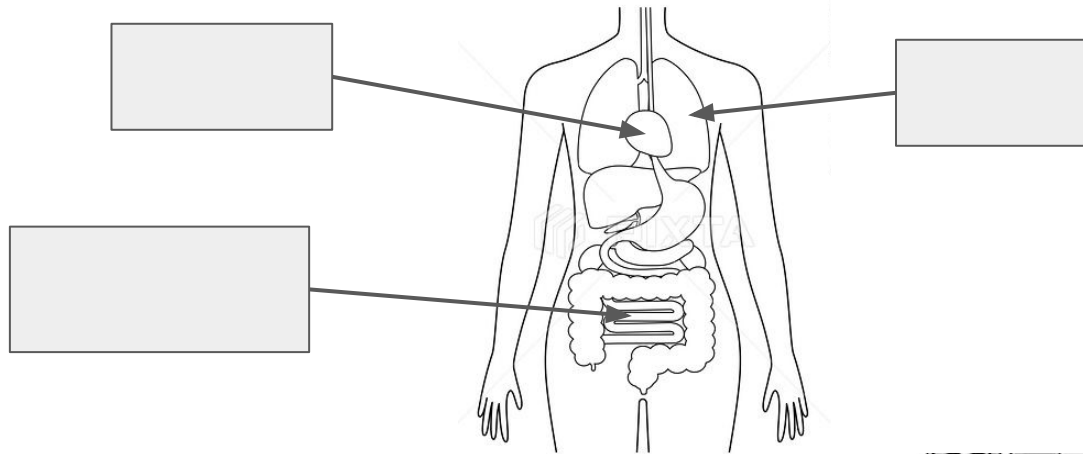
Protein      Starch      Fat      Glucose

Explain why this molecule is able to diffuse while the others are not.

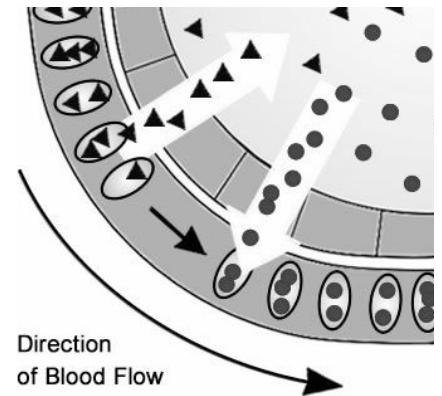


**5.2:** I can model how diffusion works in different body systems to maintain homeostasis.

26. Label the organs indicated in the diagram below.



27. If the diagram to the right represents muscle tissue surrounded by a capillary, then which shape represents oxygen? Support your answer.

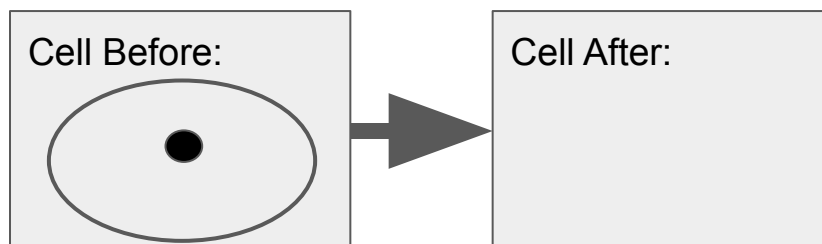


28. Identify the role of the small intestine in the human body.

- (1) Diffusion of nutrients into the bloodstream.
- (2) Diffusion of nutrients out of the bloodstream.
- (3) Synthesis of proteins from amino acids.
- (4) Osmosis of salt into the bloodstream.

29. Louis Zamperini, a one time Olympic runner, survived 47 days stranded on a raft in the Pacific during WWII after a plane crash. To survive, they needed to stay hydrated but were unable to drink the surrounding salty ocean water.

Complete the diagram below to show what would have happened to Louis' cells if he drank the salty ocean water. Draw what his cell would look like, identify the molecule diffusing, and include an arrow to show the direction of diffusion.

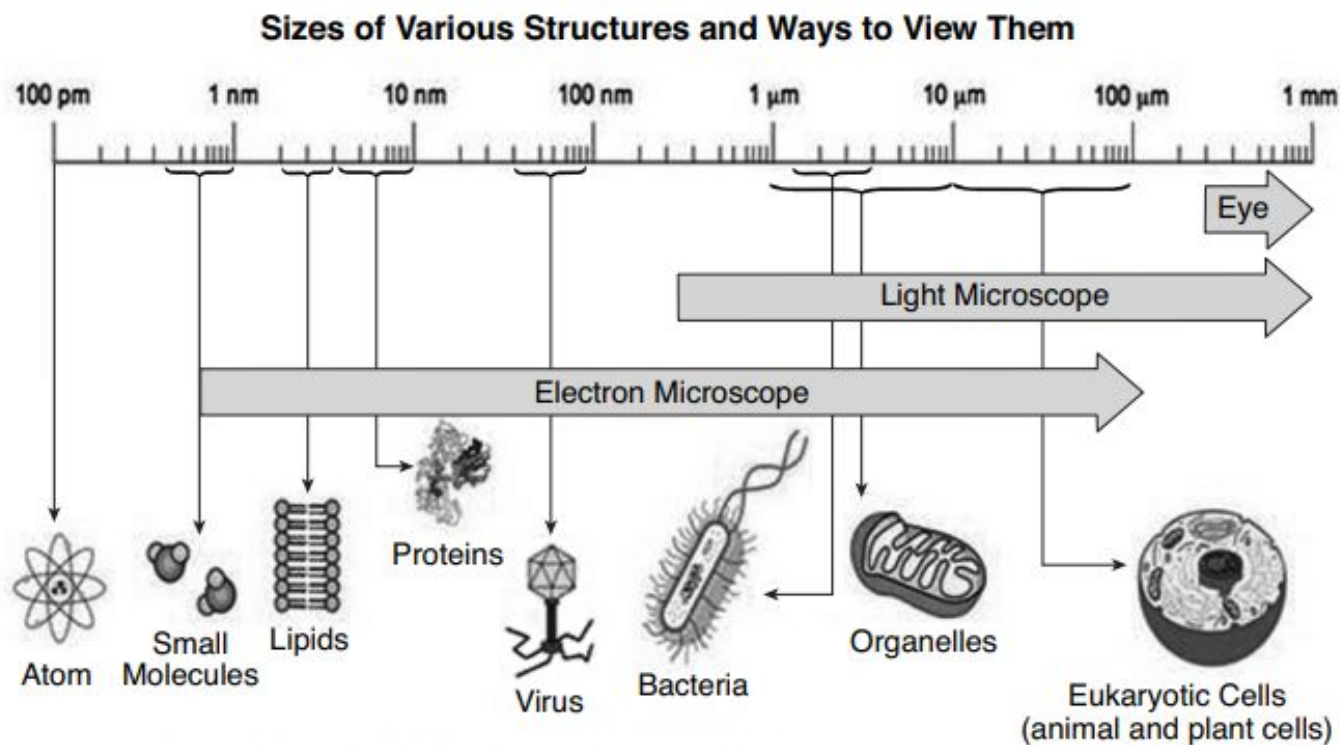


**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

1. Which molecules are normally found in single-celled organisms?
  - (1) organic molecules, only
  - (2) inorganic molecules, only
  - (3) both organic and inorganic molecules
  - (4) neither organic nor inorganic molecules
2. By measuring the colors of light reflected by different tree species in a forest, scientists can determine the amount of biodiversity present in different areas. Maintaining biodiversity is important because it
  - (1) reduces the carrying capacity of a forest ecosystem
  - (2) guarantees that all species within a forest ecosystem will survive
  - (3) increases the number of predators that control the population size of prey
  - (4) ensures the availability of a variety of genetic material
3. Large numbers of white-tailed deer on Long Island are infested with ticks that transmit Lyme disease to other mammals. One attempt to control reproduction in these ticks has been the release of large numbers of sterilized male ticks. When compared to using pesticides, this method to control ticks would
  - (1) cause more environmental pollution
  - (2) lead to a decrease in the deer population
  - (3) be less likely to harm the environment
  - (4) result in an increase in the tick population
4. Humans are able to positively or negatively affect their environment in many ways. Which statement accurately describes one of these possible effects?
  - (1) A positive environmental effect is that burning fossil fuels to generate electricity reduces carbon dioxide levels in the atmosphere.
  - (2) A positive environmental effect is the cutting of trees in rain forests to provide large quantities of lumber to build homes for the increasing world population.
  - (3) A negative environmental effect is that industrialization provides many jobs and helps the economy grow.
  - (4) A negative environmental effect is that unregulated fishing in the ocean can disrupt the interactions between organisms in existing food webs.

**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

Base your answers to questions 5 and 6 on the diagram below and on your knowledge of biology.



Source: Adapted from <https://microbiologyinfo.com/different-size-shape-and-arrangement-of-bacteria-cells/>

5. Only an electron microscope can be used to view  
(1) bacteria      (2) animal cells      (3) mitochondria      (4) viruses

6. A scientist is developing a system to remove harmful bacteria from a contaminated water supply. In order to trap the bacteria and prevent them from going through the filter, she must make sure the pores in the filter are no larger than

- (1) 1 nm      (2) 10 μm      (3) 1 μm      (4) 100 μm

**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

Base your answer to question 7 on the information and photographs below and on your knowledge of biology.

An arctic fox has a gland in its brain that secretes a hormone that regulates the production of melanin, a pigment that accounts for brown fur. In the winter, the foxes secrete more of this hormone and their cells stop making melanin, so they appear white. The pictures below illustrate two variations of fur color.



Source: <http://www.nationalgeographic.com/animals/mammals/a/arctic-fox/>

A	winter	increased melanin	white fur
B	summer	increased melanin	brown fur
C	winter	decreased melanin	white fur
D	summer	decreased melanin	brown fur

7. Which two rows best support the information provided?

- (1) A and B      (2) C and D      (3) B and C      (4) D and A

8. A farmer stopped maintaining a field that was once used to grow crops. Over time, the field eventually became a forest. These changes best illustrate the process of

- (1) ecological succession      (2) nutrient recycling  
(3) decomposition      (4) competition

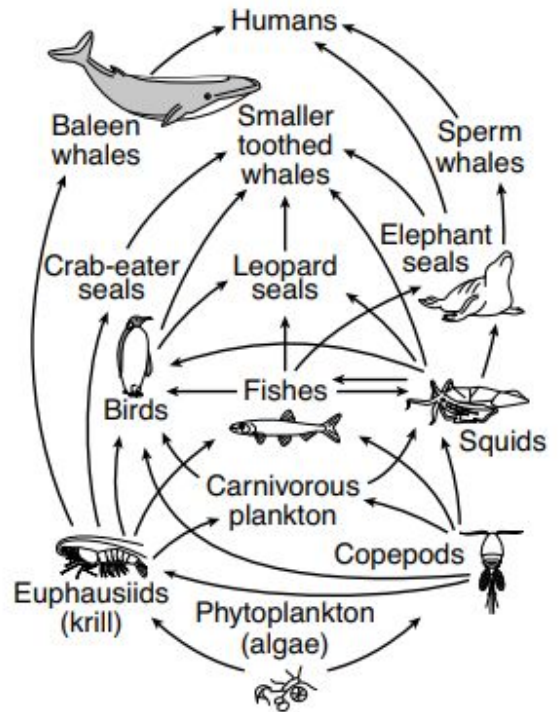
**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

9. Based on the food web to the right, the population that contains the greatest amount of available energy would be

- (1) seals
- (2) phytoplankton
- (3) fishes
- (4) humans

10. Which statement best describes what would happen in this ecosystem if the phytoplankton were removed from the food web on the right?

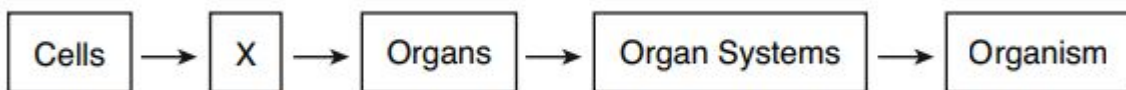
- (1) Copepods and krill would fill the vacant niche.
- (2) The number of heterotrophs would increase.
- (3) The food web would be disrupted, and organisms would die.
- (4) The food web would remain stable.



11. When the carrying capacity for a species in a habitat is reached, the population of the species levels off. This slowing of the rate of growth is most likely due to

- (1) limited resources
- (2) renewable energy
- (3) an increase in decomposers
- (4) a lack of competition

12. Levels of organization in humans are represented below.

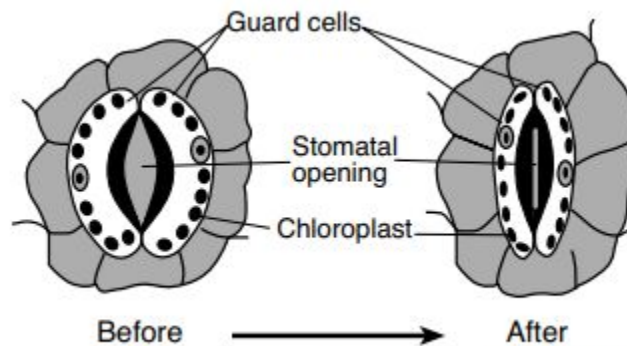


Level X most likely represents

- (1) molecules
- (2) tissues
- (3) organelles
- (4) ribosomes

**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

13. The diagram below represents a pair of guard cells changing shape, reducing the size of the stomatal opening in a leaf.

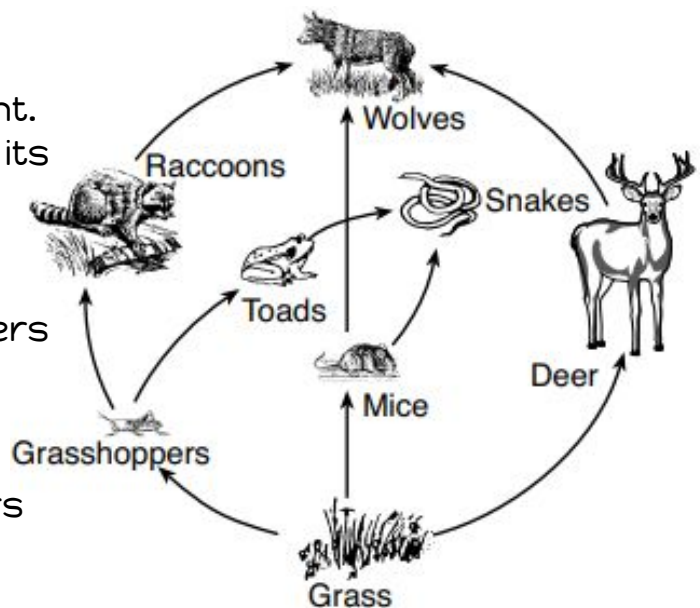


Source: Adapted from: <http://o.quizlet.com>

This is an adaptation that benefits plants by

- (1) increasing the flow of liquid water into leaves, which increases the rate of food and oxygen production
- (2) regulating the flow of water vapor out of leaves, preventing excess water loss by the plant
- (3) increasing the flow of oxygen molecules into the leaves, which increases the rate of photosynthesis
- (4) preventing the flow of carbon dioxide into the leaves, which would reduce the rate of respiration

14. A food web is represented to the right. Which organism is correctly paired with its role in the ecosystem?



- (1) The grass is both a consumer and a decomposer.
- (2) The toads function as consumers and autotrophs.
- (3) The grasshoppers function as consumers and heterotrophs.
- (4) The snakes are both consumers and herbivores.

15. One reason energy must be constantly added to a stable ecosystem is because some energy is

- (1) lost at each feeding level
- (2) incorporated into fossil fuels
- (3) destroyed by decomposers
- (4) digested by herbivores

**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

16. Which statement best illustrates direct competition within a species?

- (1) A chipmunk is caught and eaten by a hungry fox.
- (2) A deer attempts to escape a mountain lion that is chasing it.
- (3) Two muskrats mate and produce a litter of offspring.
- (4) Several squirrels eat acorns from the oak tree where they live.

17. When an altered ecosystem is left undisturbed, the most likely result would be

- (1) the gradual evolution of all of the original species
- (2) a rapid return to the original ecosystem
- (3) the elimination of all of the predator species
- (4) a gradual shift toward a stable ecosystem

18. Fire ants have a powerful venom that is deadly to the small animals they eat. The deadly venom has reduced the populations of birds who build nests on the ground.



Source: <http://www.sbs.utexas.edu/fireant/>

The relationship between fire ants and ground nesting birds is an example of

- (1) producer/consumer
- (2) predator/prey
- (3) scavenger/decomposer
- (4) parasite/host

19. Dead zones are areas found in the oceans and some large lakes where there is not enough oxygen to support life. Algae blooms occur when excess nutrients are introduced as pollutants from fertilizers, sewage-treatment plants, and the burning of fossil fuels. When the algae die and undergo decay, bacteria rapidly use up the oxygen in the area. Which human activity would most likely result in a decrease in the size and number of dead zones?

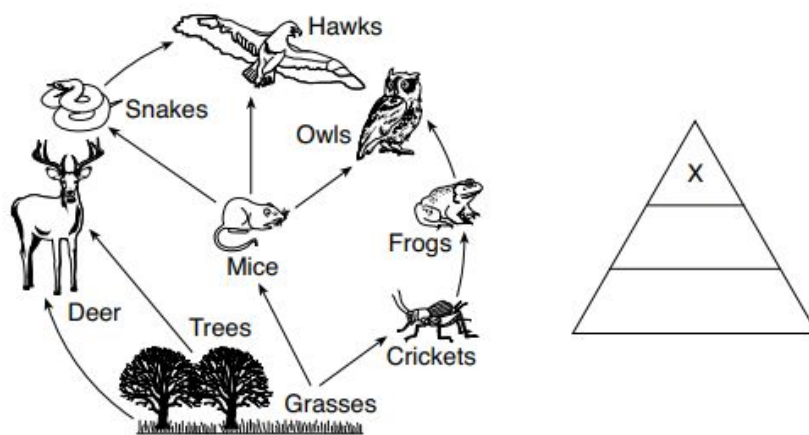
- (1) irrigating fields and lawns to increase runoff into the ocean and rivers
- (2) building more coal-fired electrical generating plants
- (3) reducing the use of chemicals on farm fields and golf courses
- (4) constructing more sewage-treatment plants on the shores of lakes and rivers

**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

20. A recent study found high levels of the toxic industrial pollutant mercury in the feathers of some songbirds. Those birds sang shorter, simpler versions of the songs they use to attract mates. Which statement regarding this finding is supported by the study?

- (1) Mercury pollution will result in the extinction of all songbirds.
- (2) Mercury prevents songbirds from obtaining required nutrients.
- (3) Human activities usually affect the smallest animals in ecosystems.
- (4) Human activities can have negative effects on a species.

21. A food web and an energy pyramid are represented below.

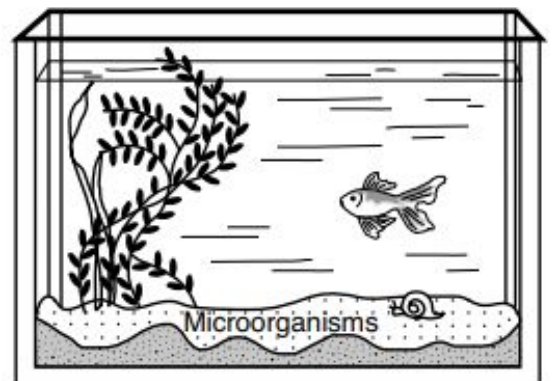


A group of organisms from the food web that would be found at level X of the energy pyramid is the

- (1) owls
- (2) trees
- (3) deer
- (4) crickets

22. Which statement best explains the purpose of the microorganisms in this aquarium?

- (1) Microorganisms recycle nutrients that support the ecosystem.
- (2) Microorganisms recycle the energy in this ecosystem.
- (3) Microorganisms are a source of food for the plant.
- (4) Microorganisms are an abiotic factor important for decomposition.



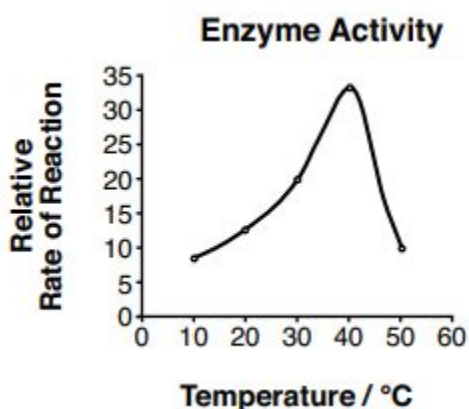


**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

23. A new species of floating photosynthetic algae was accidentally introduced into a pond ecosystem. It gradually replaced all the original algal species. A possible reason for the replacement could be that the new species

- (1) outcompeted the original algae populations for prey present in the ecosystem
- (2) required more resources than the original algae populations in the pond
- (3) outcompeted the original algae populations for abiotic factors
- (4) is less adapted to the pond ecosystem than the original algae populations

24. The graph below represents the rate of a chemical reaction involving a particular human enzyme that breaks down starch.



Source: Adapted from  
<http://nygmascience.files.wordpress.com/2011/11/enzyme-rate-of-reaction1.jpg>

The most likely reason the action of the enzyme decreases after 40°C is that

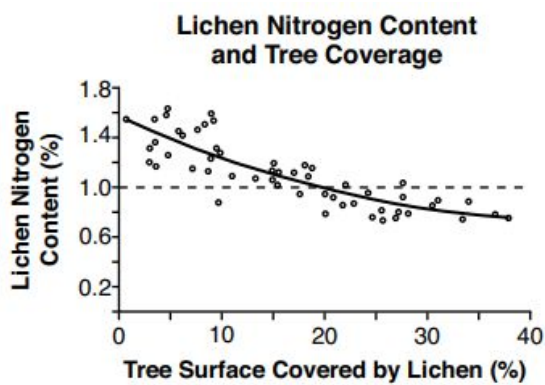
- (1) the DNA in the enzyme mutates and can no longer break down the starch
- (2) enzymes die after working for a long period of constant activity in the body
- (3) the shape of the enzyme changes due to environmental conditions
- (4) as the temperature of the enzyme rises, the pH of the environment changes, deactivating the enzyme

25. Scientific claims should be questioned if

- (1) peer review was used to examine the claims made by scientists
- (2) the experimental results cannot be repeated by other scientists
- (3) conclusions follow logically from the evidence
- (4) the data are based on samples that are very large

**Regents Readiness:** Student is able to apply learning to correctly answer regents - style questions.

26. Researchers studied the relationship between lichen nitrogen content and the growth of lichens on trees. They recorded the amount of growth after determining the percentage of the tree that was covered in lichens. Their data are shown in the graph below.

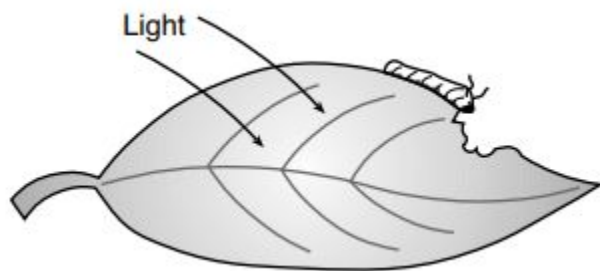


Source: McDermott, Amy, "Sentinels of Forest Health,"  
*Science News*, Nov. 26, 2016, pp.20-23

Which statement best describes the relationship between the nitrogen content and the growth of the lichen?

- (1) As nitrogen content in the lichen increases, the growth of the lichen increases.
- (2) As nitrogen content in the lichen decreases, the growth of the lichen decreases.
- (3) As nitrogen content in the lichen decreases, the growth of the lichen increases.
- (4) There is not a clear relationship between the amount of nitrogen in the lichen and growth

27. Organisms living in a forest ecosystem rely on the Sun as a source of energy for metabolic processes. The following events occur as energy is captured by a plant and used in the metabolic processes of an herbivore.



- [A] Energy is released from chemical bonds.
- [B] Energy is stored in large organic molecules.
- [C] Energy is transferred to molecules of ATP.
- [D] Energy is absorbed by plant cells.

The most likely order in which these events occur is

- (1) [A] - [D] - [B] - [C]
- (2) [D] - [A] - [B] - [C]
- (3) [B] - [A] - [C] - [D]
- (4) [D] - [B] - [A] - [C]