

Name:

Class:

Date:

Question #1

1. A researcher at the Broward County Health Department designed an investigation to determine insulin levels in patients with diabetes. First, she selected 10 male subjects who were all 25 years of age and in good health. At 8:00 am every day for 3 days, the test subjects ate a meal based on the chart below.

Day	Time	Meal
1	8:00 AM	high fat meal
2	8:00 AM	high protein meal
3	8:00 AM	high sugar meal

One hour after each meal the men had their blood insulin levels measured. Which of the following is the question the researcher is trying to answer?

- A How do males process insulin?
- B How does age affect blood insulin levels?
- C How does the time of day affect blood insulin levels?
- D How do different types of food effect blood insulin levels?

Question #2

2. A pesticide manufacturer claims that a new product will decrease the pest population by 25% more than a current pesticide. A population of 75 beetles of the same species is exposed to the new pesticide for a 10-week period. A separate population of the same species of beetle is exposed to the same amount of the current pesticide for a 10-week period. The data collected is sent to an independent research company to verify the results. Which statement **BEST** explains how an independent research company verifies data to ensure unbiased results?

- A The company compares the data given to other plant investigations.
- B The company publishes the results and asks for other scientists' feedback.
- C The company tests several brands of pesticides and draws its own conclusion.
- D The company ensures the same investigation is repeated and produces comparable results.

Question #3

3. Scientists use many different types of tools, materials, and equipment to support their research. Cell biologists depend on microscopes to observe organisms, cells, and tissues. Which microscope would provide the **BEST** view of the internal structures of a cell's mitochondria?

- A transmitting electron microscope
- B scanning electron microscope
- C compound light microscope
- D dissecting microscope

Question #4

4. Anton von Leeuwenhoek is attributed to inventing the microscope. The lenses he made enabled him to observe “little animals” which was quite a surprise. Later that century, Robert Hooke contributed to the design by adding light to illuminate the objects being viewed. Not long after these inventions the cell theory was developed. What does this information suggest about the evolution of the cell theory?

- A Geologists contributed findings that were used to develop the cell theory.
- B Progress on the cell theory was delayed by a lack of technological progress.
- C Improvements in technology are closely related to changes in the cell theory.
- D Scientists needed to focus less on cells and more on microscope development to expand the cell theory.

Question #5

5. Throughout history, claims have been made that are not scientifically sound. One such claim was that fleas are spontaneously created from a piece of cloth. By using the scientific process this claim was discredited. Which part of the cell theory also provides a basis for disproving this claim?

- A Cells come only from preexisting cells.
- B All cells contain hereditary information.
- C All living things are made of one or more cells.
- D A cell is the basic unit of structure and function for all living things.

Question #6

6. While conducting a field study at Lake Okeechobee, a botanist collected samples of a specific plant species. While observing the roots and leaves under a microscope, she noticed their cells have similar organelles; however, the root cells are shaped differently from the leaf cells. Which part of the cell theory do these observations support?

- A All cells come from preexisting cells.
- B Cells contain hereditary information.
- C All living things are made of one or more cells.
- D Cells are the basic unit of structure and function of living things.

Question #7

7. Plant and animal cells contain organelles which work together to maintain homeostasis. Even though there are organelles not found in both types of cells, there are many that are.



Image obtained from Creative Commons

Which organelles are found in both plant and animal cells?

- A cell membrane and cell wall
- B chloroplasts and mitochondria
- C nucleolus, cell membrane and mitochondria
- D Golgi apparatus, nucleolus, cell membrane and large vacuole

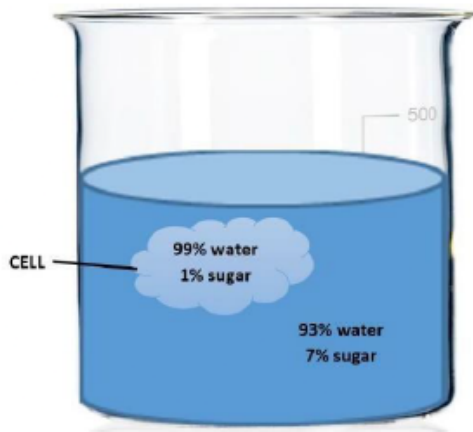
Question #8

8. Marine biologists diving off the coast of Florida collect specimens for an investigation on oceanic microscopic organisms. The plan is to first classify the organisms as eukaryotic or prokaryotic. Which of the following characterizes a cell as eukaryotic?

- A having a nucleus
- B motility with a flagella
- C containing ribosomes
- D being able to reproduce

Question #9

9. Use the illustration below to answer the question.

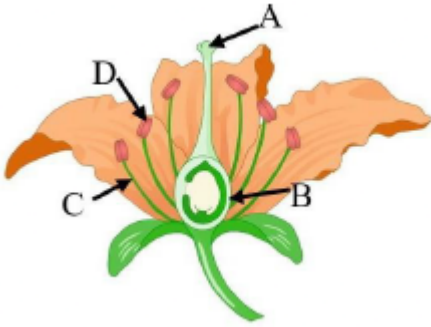


An animal cell is placed in a 7% sugar solution to demonstrate the process of osmosis. Which statement best describes how the cell will be affected?

- A Sugar will move out of the cell and the cell will expand.
- B Water will move out of the cell and the cell will shrink.
- C Water will move into the cell and the cell will expand.
- D Sugar will move into the cell and the cell will shrink.

Question #10

10. Insects, such as bees, are an important contributor to plant reproduction. Their role is to aid in fertilization and increase the chances of diversity among species.

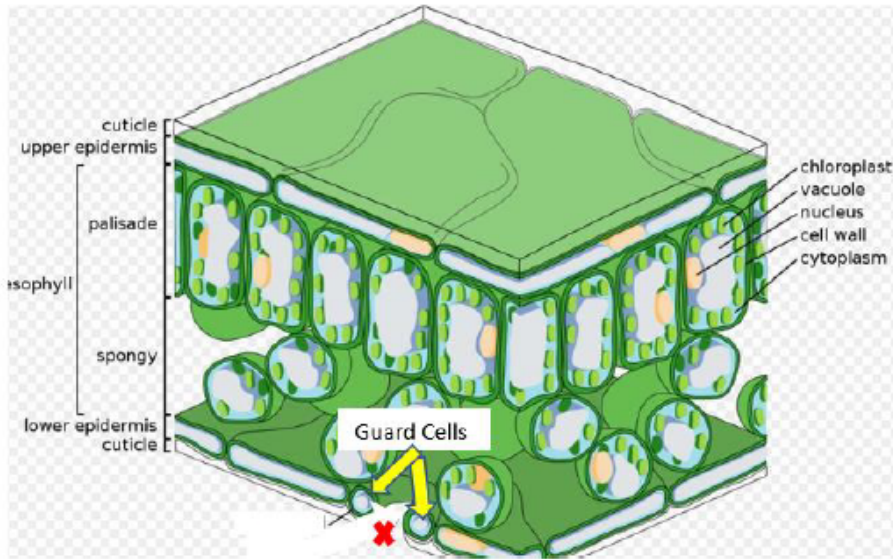


After a flower is fertilized in which of the following letter choices would the resulting embryo develop?

- A | A
- B | B
- C | C
- D | D

Question #11

11. The diagram below represents the cross section of a plant leaf.



How does the structure indicated with the red X contribute to the survival of a plant?

- A It allows the intake of gases necessary for photosynthesis
- B It allows the intake of minerals necessary for plant growth.
- C It allows the intake of sunlight necessary for ATP production.
- D It allows the intake of sugars necessary for plant reproduction.

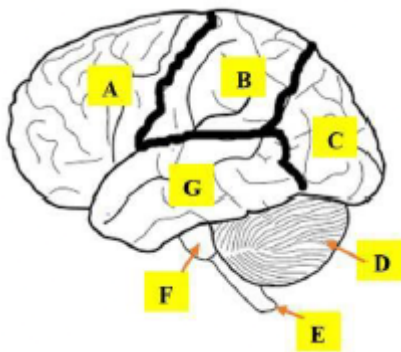
Question #12

12. Place a plant in a pot with some soil and provide it with the proper resources and it will grow. There are specific parts that contain cells that divide to promote growth. Which of the lists below contain the structures involved in growth?

- A | sepal, filament, ground tissue
- B | meristematic tissue, cambium
- C | xylem, dermal tissue, anther
- D | stomata, style, root cap

Question #13

13. Use the diagram of the human brain to answer the question.



Which of the following statements accurately names the part of the brain as indicated in the diagram?

- A | E is the pons
- B | C is the occipital lobe
- C | B is the temporal lobe
- D | A is the pituitary gland

Question #14

14. Use the cross-section image of the human brain to answer the question.

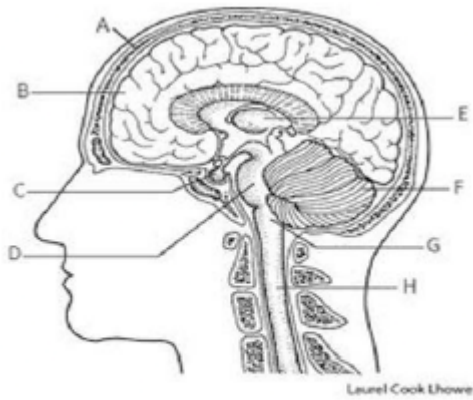


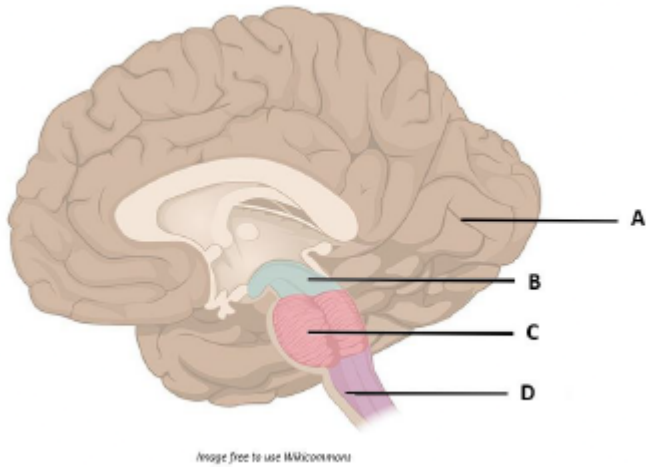
Figure 1 Cross-Section of the Human Brain

The portion of the brain that coordinates muscular activity is labeled as position F in the image. What is the name of this part of the brain?

- A** | brain stem
- B** | cerebellum
- C** | cerebrum
- D** | pons

Question #15

15. Every day you breath without thinking about it, even while sleeping. The pons is one part of the brain that controls this unconscious breathing.



Which letter indicates the pons on the image of the brain?

A A

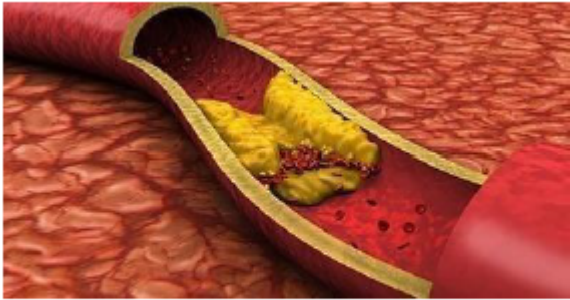
B B

C C

D D

Question #16

16. Atherosclerosis is the leading cause of death in the United States. People who have high cholesterol and are overweight are at risk for developing this disease. Plaque builds up inside the arteries of the circulatory system causing a partial or full blockage of the vessels. (See image below)



artery with atherosclerosis

How will this condition affect the way blood flows throughout the cardiovascular system?

- A prevents friction
- B blood flows faster
- C thickens the blood
- D increases blood pressure

Question #17

17. Polycythemia is a rare type of cancer that causes the bone marrow to produce too many red blood cells, white blood cells and platelets, then releasing them into the blood circulation. This increase in cell volume makes the blood thick and sticky. What is a consequence of having this disease?

- A Blood flow is decreased.
- B Plaque forms inside the veins.
- C Appetite and cravings increase.
- D The mouth and skin become dry.

Question #18

18. Marathon runners may train for years competing in one of the big races such as the Miami Marathon. If not prepared, runners can develop cramps, shortness of breath and blood circulation can also be affected. How does exercise normally impact blood circulation?

- A Heart rate increases delivering blood faster to the muscles.
- B Blood pressure decreases after stress is place on the lungs.
- C Increased blood volume decreases flow to the cells needing oxygen.
- D Resistance develops in the blood vessels causing decreased blood flow.

Question #19

19. Specific immunity and non-specific immunity work together to provide protection from and fight against infectious organisms. Which of the following is an example of the non-specific immune response to a pathogen?

- A Red blood cells target and kill pathogens.
- B Mucus, sweat, and tears prevent pathogens from entering the body.
- C White blood cells produce specific antibodies after exposure to pathogens.
- D T-cells generate a chemical response that eliminates particular pathogens.

Question #20

20. The parent of a kindergarten student contacted the school to inform them that her son, Malachi, has the virus chicken pox. The parent stated that Malachi is covered in red bumps and is very uncomfortable. The school nurse contacted the other parents to inform them of the concern in case other kids haven't been vaccinated or never previously had chicken pox. Why would it matter if a kid has already been exposed to the virus in the past?

- A Antigenes are present in those not exposed.
- B Immunity will be lacking if there was previous exposure.
- C Passive immunity will be activated if previously exposed.
- D Previous exposure means there is protection from antibodies.

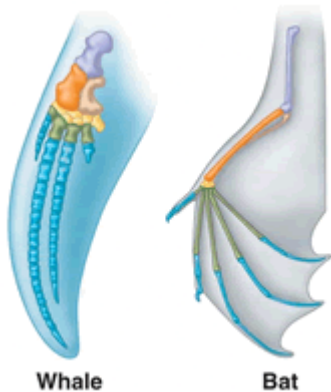
Question #21

21. Jose cut his arm while climbing a tree. Within 24 hours the wound was red, swollen, and warm to touch. The doctor diagnosed him with a bacterial infection and wrote a prescription directing Jose' to take 10 cc's of the antibiotic, Penicillin, 3 times a day for 10 days. Jose' took the medicine but stopped after 2 days because the swelling decreased, and the cut didn't hurt anymore. In 3 days, the infection came back so mom began giving him the antibiotic again. This time the antibiotic didn't work. What information should the doctor give to Jose's mom?

- A The dosage of antibiotic was not enough and will need to be increased to 20 cc.
- B The infection is most likely caused by a virus and needs a different mode of treatment.
- C The antibiotics must be taken as prescribed so surviving bacteria won't become resistant to treatment.
- D The initial antibiotic prescribed was not effective against this type of bacteria and needs to be changed.

Question #22

22. Scientists are comparing structures of a bat and a whale. The images below show the bones of a whale flipper and bat wing.



What can scientists infer from these structures?

- A The structures no longer have a purpose.
- B The organisms share a common ancestor.
- C The organisms have no evolutionary connections.
- D The structures are only present during the embryo stage.

Question #23

23. The theory of evolution was developed using evidence collected by numerous scientists. This evidence helped explain that organisms change over time. Which of the following examples does NOT support the theory of evolution?

- A Hollow bones make bird species lighter so that they can fly.
- B Camels in Asia have structures similar to alpaca in South America.
- C Green Anoles and chickens may have a common ancestor because they have DNA sequences in common.
- D On a tree with dark colored tree bark, bugs lighter in color are more frequently eaten by birds than darker bugs.

Question #24

24. Researchers have long debated when exactly hominid language developed. Most anthropologists agree that this occurred about 150,000 to 200,000 years ago. What fossil evidence from the same time period led scientists to this inference?

- A jaw thickness
- B neck length
- C skull volume
- D tail missing

Question #25

25. A scientist recently discovered a multicellular heterotrophic organism in a drop of canal water. When viewed with a microscope it was apparent that the organism contains chloroplasts, mitochondria, and membrane-bound organelles. In which kingdom is the organism classified?

- A Animalia
- B Fungi
- C Plantae
- D Protista

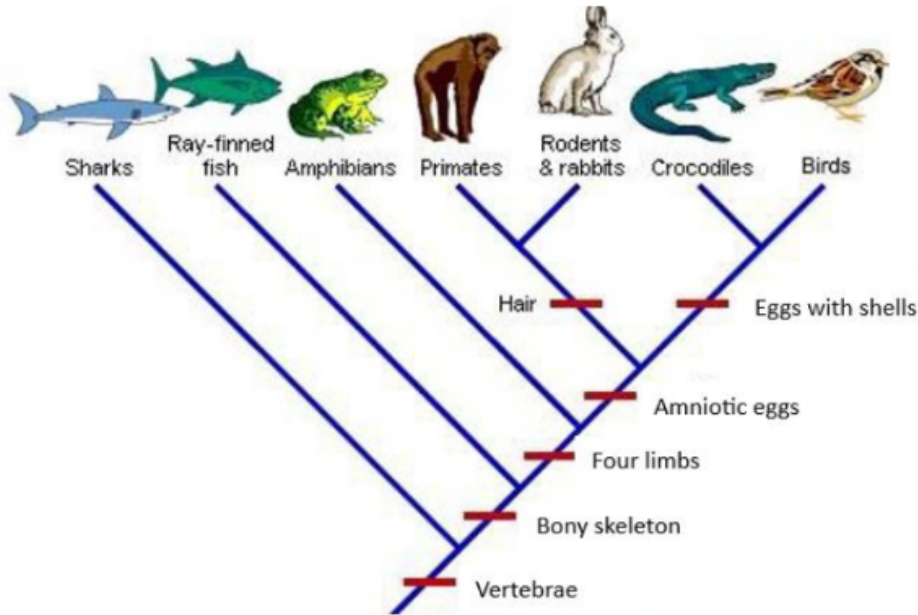
Question #26

26. In the 18th century naturalist, Carolus Linnaeus simply classified organisms in two kingdoms, Plantae and Animalia. Later that century, Protista was added. Which of the following led to the addition of Protista?

- A** Observing organisms that don't have organelles contained by a membrane.
- B** Finding that the cell walls of mushrooms are made of chitin and not cellulose.
- C** Using a microscope to view single-celled photosynthetic organisms moving with flagella.
- D** Discovering single-celled organisms that don't have a nucleus living near thermal vents at the bottom of the ocean.

Question #27

27. Use the cladogram below to answer the following question.



Scientists use cladogram models to depict relationships between organisms. Which of the following statements accurately describes this cladogram?

- A Ray finned fish lay amniotic eggs.
- B Crocodiles and birds lay eggs with shells.
- C Sharks do not share any traits with birds and rabbits.
- D Amphibians may share a common ancestor with alligators.

Question #28

28. The first life on Earth appeared about 3.8 billion years ago. Conditions on the planet were extremely harsh and did not promote life as we know it now. How were early organisms able to survive in this hostile environment?

- A By being heterotrophic.
- B By sharing common ancestors.
- C By reproducing through binary fission.
- D By using chemicals as an energy source.

Question #29

29. Scientist from various fields of science often debate how life began on Earth. Evidence has been provided from experimentation, studies of rock samples, and structures along the surface. Which of the following are NOT used to explain how life on Earth began?

- A Microorganisms were delivered to Earth by meteorite and asteroid bombardments.
- B Hydrothermal vents concentrated molecules needed for life in the ocean depths.
- C Iron sulfide was melted by the sun then formed DNA when cooled.
- D Lightening aided in the formation of amino acids.

Question #30

30. Through research and investigation scientists are able to develop explanations for when and how life began on Earth. It is important that credible resources be used and cited in any publish notes. Which of the following is the *most valid* source for researching this topic?

- A cave drawings from central Europe
- B newspaper columns
- C scientific journals
- D wikipage

Question #31

31. The country of Guam is home to several species of birds of paradise. The males exhibit amazing color patterns and may even dance to attract the less ornate females. (See the image below.) The birds adapted to an environment where they have no natural predators.



The colorful male shows his bright colors to attract a female.

A species of tree snake was introduced to the island by the shipping industry and have made the birds a primary food source. As a result, the number of males on the island dropped dramatically while the number of females only demonstrated a slight decrease. Which of the following most likely describes what is happening in Guam?

- A Genetic drift is shown by the snakes' desire to eat the birds.
- B Natural selection was the result of adding an unfamiliar predator.
- C Gene flow is increased by introducing the snakes onto the island.
- D Divergent evolution is represented as the number of males declines.

Question #32

32. A family of black wolves migrated across a land bridge to a region supporting a large population of gray wolves. A few generations later, the population consists entirely of wolves with black and gray markings. Which of the following best describes the mechanism that caused this change in the population of the wolves in the region?

- A Genetic mutations naturally occurred in the black and gray wolf populations, resulting in both groups simultaneously developing black and gray coat markings.
- B The introduction of black wolf alleles added to the gray wolf population's gene pool, increasing the frequency of the alleles for black fur in the population.
- C The wolves with gray coats had to compete for resources with the successful black wolves, so they adapted their coats to mimic the black wolves.
- D The gray wolves selected other gray wolves over black wolves as mates, causing genetic drift by limiting the gray wolf gene pool.

Question #33

33. *Hyla chrysocelis*, or gray tree frog, went through a chromosomal mutation resulting in a new species, *Hyla versicolor*.



Image Credit: Sara Hollerich
US Fish and Wildlife

This new species looks very similar to the original frog; however, it has a different call. Males with the mutation have a musical call that is more attractive to females as compared to the unmutated original species. How has this mutation *most likely* affected the evolution of these frog species?

- A The population experienced a shift with an increase in the alleles that result in musical calls.
- B The unmutated species will learn how to make the same call as the ones with the mutation.
- C The traits that characterize the mutated species will disappear from the tree frog population.
- D The *Hyla chrysocelis* will become extinct since females prefer the calls of the frogs with the mutation.

Question #34

34. In summer squash, white fruit color (W) is dominant over yellow fruit color (w) and disk-shaped fruit (D) is dominant over sphere-shaped fruit (d). In the parental (P1) cross shown below, what percent of offspring are predicted to have white disk-shaped fruit?

$$P1 = WwDD \times WWDD$$

A 6%

B 19%

C 50%

D 100%

Question #35

35. Red blood cells are classified as type A or type B, based on their surface antigens. Type O blood does not contain either A or B antigens. The chart below shows the possible phenotypes of each blood type.

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

Which mechanism explains how both A and B antigens produce type AB blood?

A incomplete dominance

B polygenic inheritance

C complete dominance

D codominance

Question #36

36. Queen Victoria of England, who ruled from 1837 to 1901, was believed to be a carrier of the inherited disease hemophilia H. A hemophiliac's blood does not have the chemicals it needs to clot. The disease is so severe that the queen's affected son bled to death after a common childhood fall. If Queen Victoria's genotype was $X^H X$ and her husband Prince Albert was XY, what is the chance the couple will produce an heir who is also a carrier?

A $\frac{1}{4}$

B $\frac{2}{4}$

C $\frac{3}{4}$

D $\frac{4}{4}$

Question #37

37. *Drosophila melanogaster*, or fruit fly, has 3 chromosomes plus the sex chromosomes X and Y. Mutations occurred within four different cells of an individual female fruit fly as shown in the table below.

Cell Type	Chromosome	Trait	Normal Phenotype	Mutated Phenotype
exoskeleton	2	head features	eyes present	eyes are absent
gamete	2	wing shape	straight wings	curly wings
muscle	X	body color	tan body	yellow body
nerve	3	antenna shape	normal antennae	leg-shaped antennae

Which of these mutations could be passed on to the offspring of this fruit fly?

A curly wings

B yellow body

C absent eyes

D leg-shaped antennae

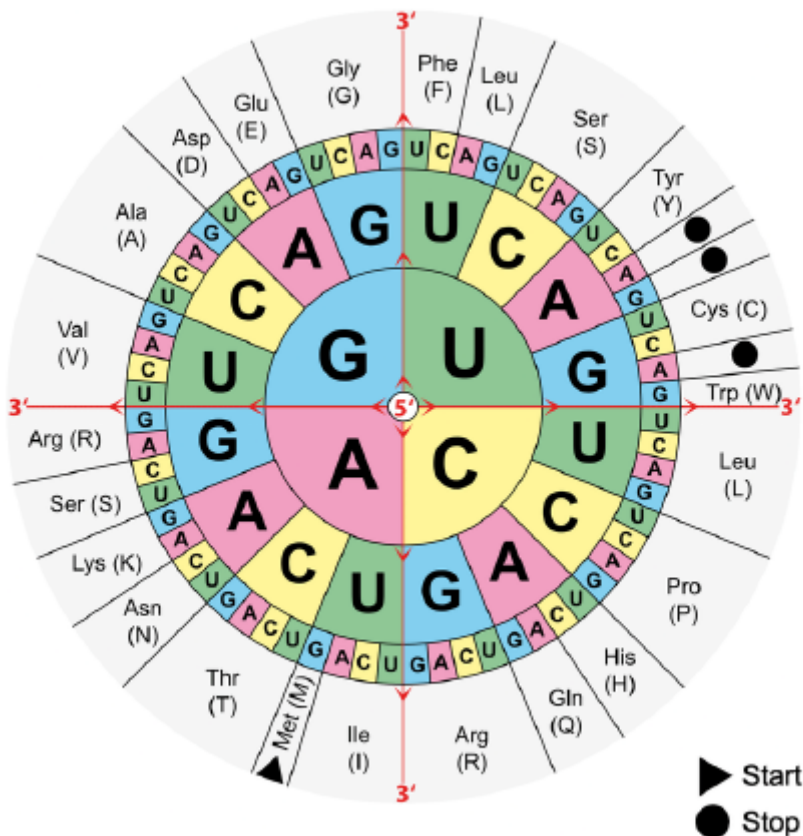
Question #38

38. Bacteria have nucleotide sequences that came from viruses that previously attacked the organisms. These segments of genetic information provide memories of the viruses, which enables bacteria to recognize the viruses and fight off future attacks. Which explains why viral nucleotides can incorporate into bacterial DNA?

- A** They both contain the uracil nucleotide.
- B** The virus attaches to the cell membrane.
- C** Genetic material of both is made of the same 4 nucleotides.
- D** Viral DNA is sequenced in the same order as Bacterial DNA.

Question #39

39. A codon chart has been provided for this question.



The following DNA strand produces the protein below.

Met – Pro – Ser – Gln – Asn

A genetic mutation occurred when the DNA was exposed to radiation. The original and mutated DNA strands are shown below. A codon chart has been provided.

Original DNA: T – A – C – G – G – G – A – G – T – G – T – T – T – A – A – C – T

Mutated DNA: T – A – C – G – G – G – A – G – T – C – T – T – T – A – A – C – T

How does this mutation affect the protein produced?

- A The protein has more amino acids than the original.
- B The protein has less amino acids than the original.

C The protein has a amino acid that occurs twice.

D No changes in the protein occurs.

Question #40

40. Gene therapy involves replacing a faulty gene with a normal one. Before the theory could be developed, which of the following needed to occur?

A The development of new medications.

B The effects of viral DNA had to be studied.

C The way in which DNA replicates had to be determined.

D The genes on each chromosome had to be mapped and described.

Question #41

41. Diabetes is a condition where a person does not produce enough insulin to control glucose levels in the body. Which of the methods would be of interest to a person who has diabetes and takes insulin every day?

A Designing procedures for testing potential parents for genetic disorders.

B Engineering fruits and vegetables that resist insects and other pests.

C Developing ways to identify criminals through DNA fingerprinting.

D Using recombinant DNA to produce hormones from bacteria.

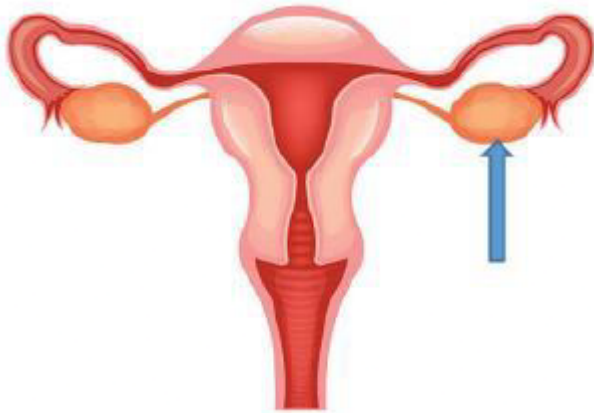
Question #42

42. New discoveries have created opportunities for scientists to develop innovative procedures involving genes. Rules and regulations have been developed to discourage research that may be deemed unethical to the public. Which of the following research projects would most likely cause the concerns?

- A Cloning a species of corn.
- B Increasing butterfly offspring resistance to insecticides.
- C Manipulating embryo genes so that they cause disease.
- D Conducting methods to repair conditions caused by mutations.

Question #43

43. Use the image of the female reproductive system to answer the question.



Which statement accurately represents the structure indicated by the arrow?

- A ovary- egg/ova production
- B uterus - site of fertilized egg implantation
- C fallopian tube- provides a route for sperm
- D vagina- entrance to the reproductive organs

Question #44

44. In 2019, 11% of infants in Broward County were born premature. The stage of lung development greatly increases the chance of survival for infants. During which trimester of pregnancy do the lungs fully develop?

- A 1st Trimester
- B 2nd Trimester
- C 3rd Trimester
- D 4th Trimester

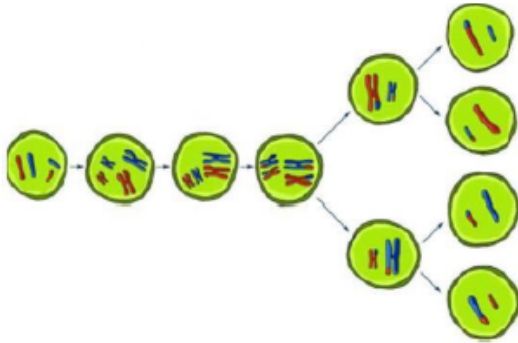
Question #45

45. A fertilized single cell implants in the uterus. There, this zygote begins to divide rapidly to form an embryo. Which of the following is the first stage of embryonic development?

- A blastula
- B gastrula
- C morula
- D uterula

Question #46

46. The distribution of chromosomes in one type of cell division is shown in the diagram below.



Which process and type of resulting cells are represented in the diagram?

- A meiosis, producing diploid skin cells
- B meiosis, producing haploid gametes
- C mitosis, producing diploid gametes
- D mitosis, producing haploid body cells

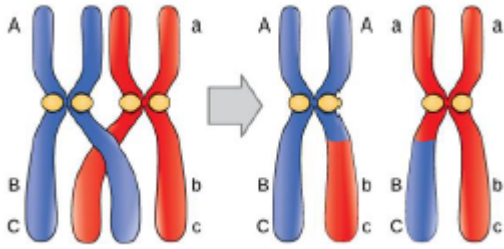
Question #47

47. During the cell cycle, cells are checked for mutations by p53 proteins. When all is working normally, cells that cannot be repaired are removed from the cycle. If p53 proteins are damaged or missing, the mutated cells will continue to divide. What is the most likely consequence of p53 proteins missing from the cell cycle?

- A Cancer develops.
- B Replication occurs.
- C Normal cells stop dividing.
- D Cycle phases are skipped.

Question #48

48. The following process occurs during cell division.



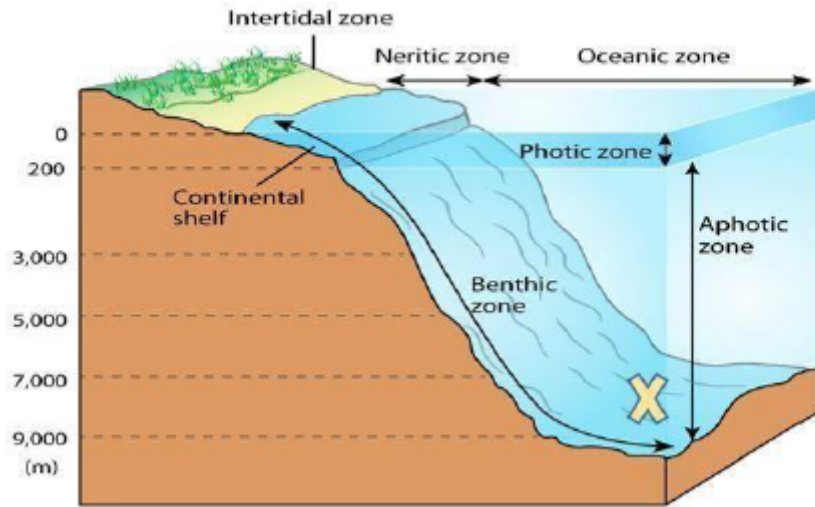
During which phase does it occur?

- A Meiosis – Prophase I
- B Mitosis – Metaphase
- C Meiosis – Telophase II
- D Mitosis – Interphase

Question #49

49. Use the Ocean Zones illustration to answer the following question.

Ocean Zones

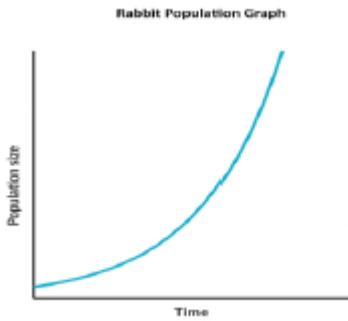


Which of the answers accurately describes the organisms that live in the deepest parts of the Benthic Zone as indicated by the X?

- A Have keen eyesight.
- B Survive using photosynthesis.
- C Adapted to warm temperatures.
- D Obtain energy from dead surface organisms.

Question #50

50. The following graph was created using data collected from observing a population of rabbits for 3 years.



Which of the following would *possibly explain* what has happened to this rabbit population?

- A Introduction of a virus into the population.
- B Natural predators of the rabbits were hunted to extinction.
- C Food sources died due to increased average temperatures.
- D A new housing development removed a section of area used for shelter.

Question #51

51. Large numbers of invasive Lionfish have been detected along the coral reefs off Florida's coast. The hungry predators consume many of the local species in this fragile habitat. Biologists have traced the source of the fish to people releasing them from home aquariums into the ocean.

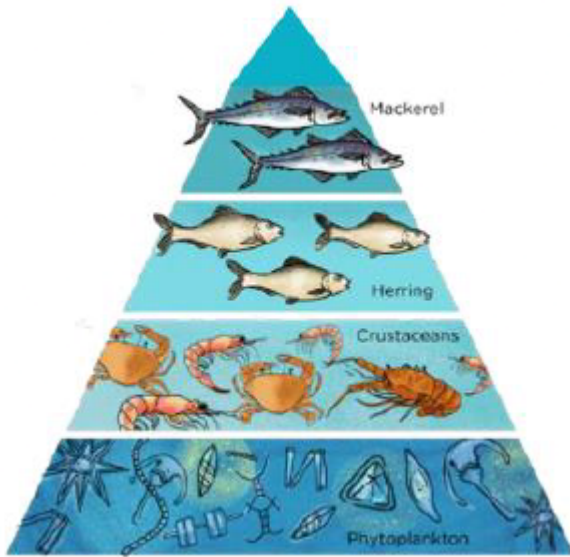


What affect would this species *most likely* have on the reef ecosystem?

- A Smaller fish quit reproducing.
- B Larger fish have more food to eat.
- C Native species have less food available.
- D Coral reefs flourish from increased waste products.

Question #52

52. The energy pyramid below represents an ocean ecosystem.

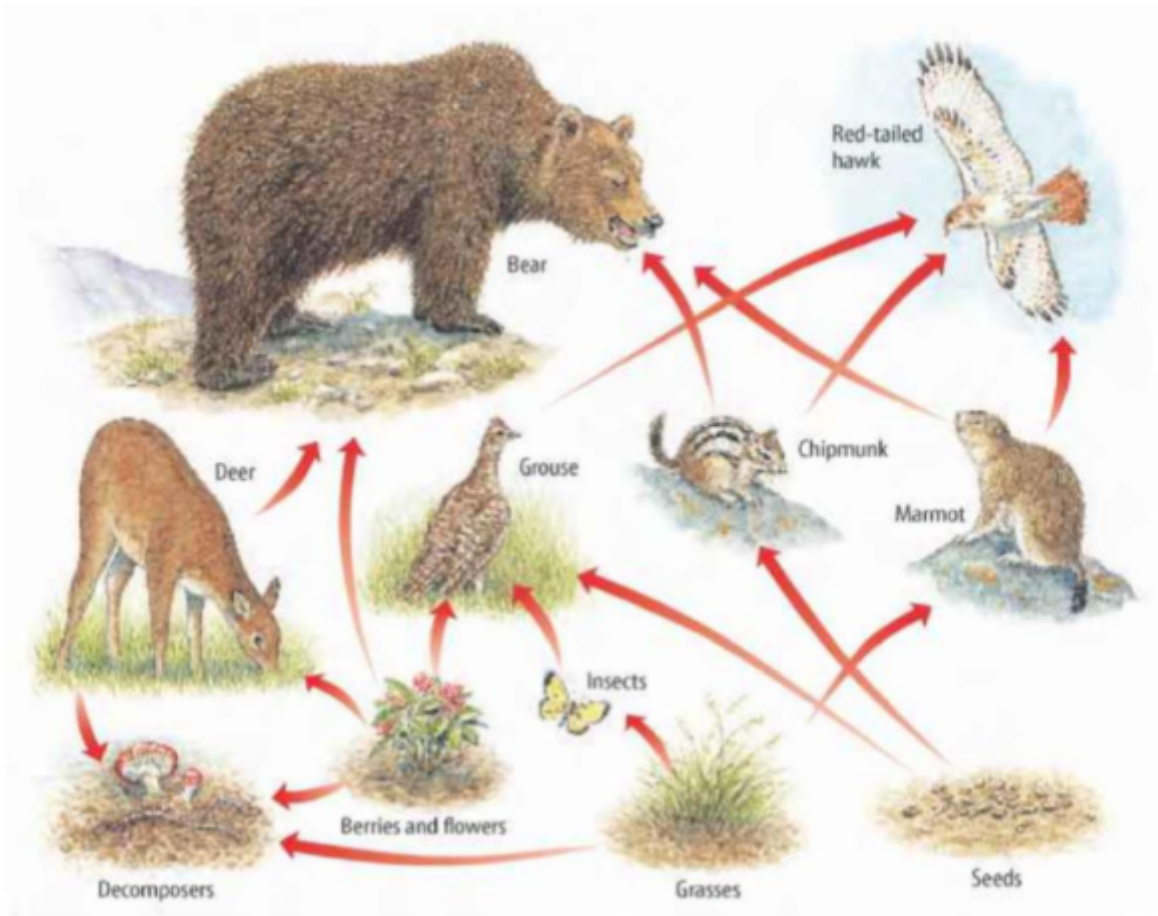


If 25000 joules of energy are provided by the producers, how much energy will be available for the tertiary consumers?

- A 2.5 joules
- B 25 joules
- C 250 joules
- D 2500 joules

Question #53

53. Use the food web illustration below for this question.



Ecology Center: https://www.ecologycenter.us/rain-forests-2/images/3504_46_132-animal-food-chain-rain-forest.jpg

What would be a short-term effect on the food web if insecticides killed most of the insects?

- A Bear numbers will decrease.
- B Grouse would eat more berries and flowers.
- C Chipmunks would search for another food source.
- D Red-tailed hawks would need to consume more marmots.

Question #54

54. The carbon cycle models the movement of carbon throughout Earth's spheres. Which of the following does NOT correctly explain the flow of carbon through the carbon cycle.

- A Oceans absorb carbon from the atmosphere.
- B Decomposers release carbon dioxide into the atmosphere.
- C Animals remove carbon dioxide from the atmosphere for respiration.
- D Carbon moves through the food web as organisms consume other organisms.

Question #55

55. A new type of cheap fuel gives off excessive amounts of smoke. Before this type of fuel is distributed for use, what would an ecologist need to know?

- A The cost of the fuel to consumers.
- B How long it will take to produce the fuel.
- C The effect the smoke will have on the environment.
- D If the fuel is more efficient than the gasoline currently used.

Question #56

56. Plans are to build a new automobile manufacturing plant in a small Florida town. Research reports state that the plant would have some negative environmental impacts such as noise, water, and air pollutions. The town is considering final approval despite the risks. Why might town leaders still consider approving construction?

- A Pollution can be contained.
- B More housing will need to be built.
- C New job opportunities are created.
- D Ecological improvements will follow.

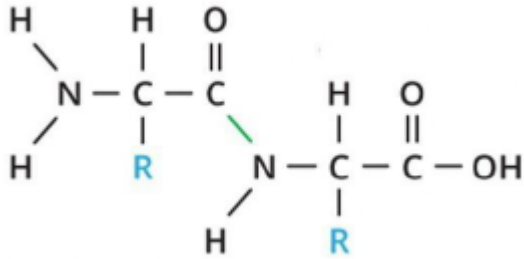
Question #57

57. Environmental sustainability is a practice used to maintain renewable and non-renewable natural resources. Government policies can be passed to set standards for the practice. Which of the following would be an effective policy for sustainability?

- A Limiting the number of fish caught by commercial fishermen.
- B Giving farmers subsidies, extra money, when crops fail.
- C Scheduling trash pickup once a week instead of twice.
- D Living in an apartment instead of a house.

Question #58

58. The diagram below shows the general structure of an amino acid.



Which type of molecule is formed from amino acids?

- A carbohydrates
- B lipids
- C nucleic acids
- D proteins

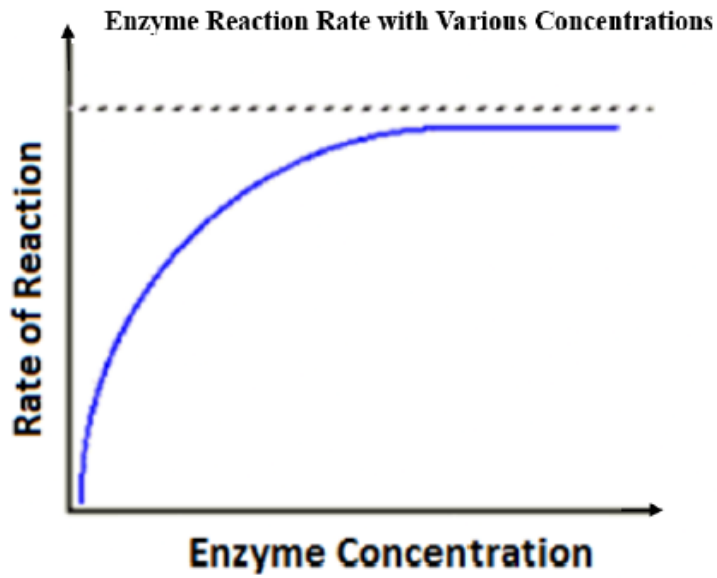
Question #59

59. Arctic animals are usually covered with blubber or fat. This adaptation allows them to live in the sub-zero temperatures. How do lipids contribute to this survival?

- A Source of energy needed to run away from a predator.
- B Supports the immune system by producing antibodies.
- C Provide warmth and stores energy for long swims under ice.
- D Control the effect of mutations caused by extended exposure to the sun in the summer.

Question #60

60. The following graph reflects how enzymes react at different substrate concentrations.



What conclusion can be made from the graph?

- A The rate of the reaction increases then maintains a constant rate.
- B The reaction rate increases as the enzyme concentration decreases.
- C The concentration of enzyme decreases as the reaction rate increases.
- D The concentration of the enzyme does not have an effect on the reaction rate.

Question #61

61. When a substance is dissolved the molecules are pulled into the solution. Water is a very effective at doing this. Which property of water makes it an effective solvent?

- A pH
- B polarity
- C cohesion
- D surface tension

Question #62

62. Rain is one part of the water cycle. When water evaporates into the atmosphere, it cools and condenses to form raindrops. Which of water's properties allows for water droplets to form?

- A adhesion
- B cohesion
- C high specific heat
- D pH

Question #63

63. One of the properties of water is that it has a high specific heat. Which of the following is a result of this characteristic?

- A A lake stays cool on a hot summer day.
- B Rain falls after condensing in the cooler atmosphere.
- C Water can move from the roots to the branches of a tree.
- D The ocean gets warmer as the day's temperature increases.

Question #64

64. A swimmer may compete in 6 different events during an Olympics. To prepare for this intense competition, they usually swim 7 to 8 miles a day to properly monitor their breathing. If they are not physically ready for a competition, they may run out of breath during a race. The lack of oxygen may cause intense muscle cramping. How would a decrease in oxygen intake effect cellular respiration?

- A ATP will decrease.
- B Oxygen will increase.
- C Glucose will increase.
- D Carbon dioxide will increase.

Question #65

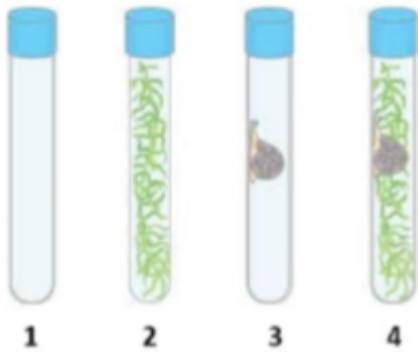
65. Photosynthesis and cellular respiration are interrelated processes. Which of the following demonstrates how these processes are related?

- A Photosynthesis produces water while cellular respiration needs water.
- B Photosynthesis stores energy while cellular respiration releases energy.
- C Photosynthesis uses oxygen while cellular respiration produces oxygen.
- D Photosynthesis releases carbon dioxide while cellular respiration uses carbon dioxide.

Question #66

66. Bromothymol blue (BTB) is a chemical indicator used to detect carbon dioxide (CO₂). A green color means there is a low CO₂ concentration present while yellow indicates a high concentration of CO₂.

A scientist set up four test tubes as shown below. The data table provided displays the contents of each test tube.



Test Tube with BTB	Variable	Beginning Color	Predicted Color
1	Water only	green	?
2	1 Elodea plant	green	?
3	1 Snail	green	?
4	1 Elodea plant 1 Snail	green	?

Based on what is known about photosynthesis and cellular respiration, what colors can the scientist expect in the test tubes after 24 hours?

A

- 1 = Green
- 2 = Green
- 3 = Green
- 4 = Yellow

B

- 1 = Green
- 2 = Yellow
- 3 = Green
- 4 = Yellow

C

1 = Yellow

2 = Yellow

3 = Green

4 = Yellow

D

1 = Green

2 = Green

3 = Yellow

4 = Yellow