Biology Summer Packet- [QKXNMQKSNU]

Student Name: _____ Teacher Name: Erlan Cabrera

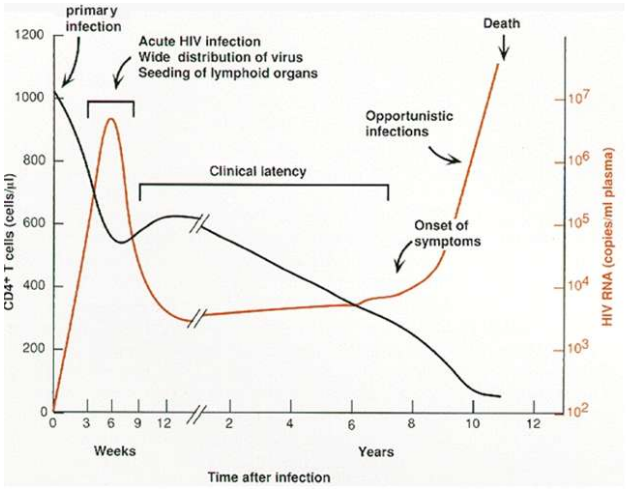
Score: _____ Date: _____

Question 1 : 3011

Bacterial DNA is used frequently in genetic engineering because

A	it is compact and linear.
B	it carries millions of genes.
C	it is found within a nucleus in a circular form.
D	it is found in the cytoplasm as a simple circle.

Question 2 : 38859

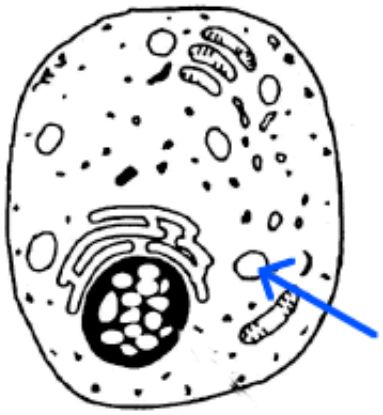


HIV acts by attaching to receptors on the surfaces of T-cells that aid other lymphocytes in fighting infection. Once HIV is inside a cell, its RNA is reverse-transcribed and its product DNA is integrated into the host cell. It then directs the production of new virus particles. As time goes on the number

of T-cells

A	increases.
B	decreases.
C	stays the same.
D	is unpredictable.

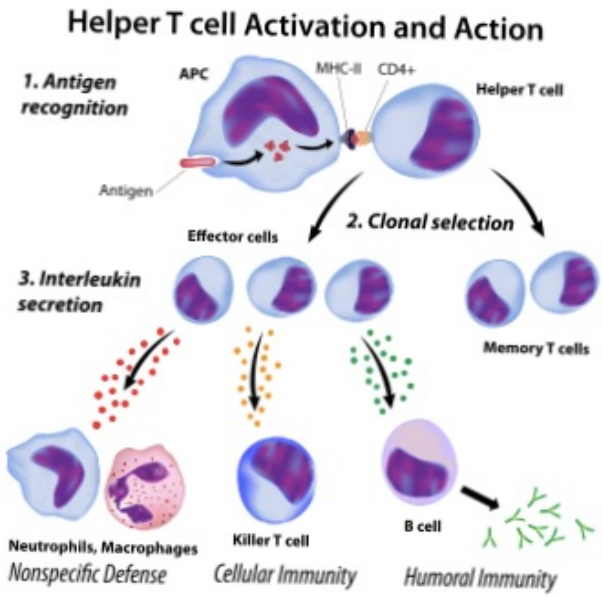
Question 3 : 361014



A student observes this cell under the microscope. He is discussing the structure indicated by the arrow with his lab partner. What would be the most likely classification of the cell pictured? What evidence supports your choice?

A	This cell is eukaryotic because it is enclosed in a cell membrane and does not have a cell wall.
B	This cell is prokaryotic because it contains ribosomes to carry out protein synthesis.
C	This cell is prokaryotic because it contains a nucleus with circular DNA.
D	This cell is eukaryotic because it contains membrane-bound organelles such as lysosomes and vacuoles.

Question 4 : 285906



What is the role of T-cells in the humoral immune response?

A	Helper T-cells are converted to B-cells following clonal selection.
B	The B-cells are activated to produce antibodies following antigen recognition.
C	Effector B-cells undergo clonal expansion after receiving a signal from memory T-cells.
D	The B-cells are activated after receiving an interleukin signal from an effector T-cell.

Question 5 : 2280

_____ is a recessive genetic disorder that strikes young African-Americans and affects the hemoglobin in red blood cells.

A	AIDS
B	Hemophilia

C	Tuberculosis
D	Sickle-cell anemia

Question 6 : 23940

As plants grow, stems and branches thicken or increase in *girth*. This thickening is a result of cells in the vascular cambium. Vascular cambium can develop into either xylem or phloem tissue within a plant. Because of this unique ability, we would expect vascular cambium cells to have all but one of these characteristics.

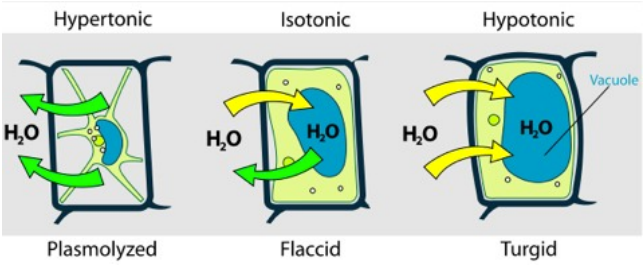
A	relatively undifferentiated
B	simple, typical plant cells
C	woody, re-inforced cell walls
D	able to undergo cellular division

Question 7 : 121296

Human behavior is frequently influenced by family and cultural experience resulting in habits and attitudes that began forming in infancy. Bill and his parents generally lead fairly sedentary lives often watching cartoons and playing video games. He would like to improve his health and physical condition. Which change does not represent a change toward more healthy habits?

A	Adding an afternoon walk and weekend family hikes in a nearby park.
B	Eating more fruits and vegetables and less meat, carbs, and dessert.
C	Order pizza and popcorn and watch more television as a family night.
D	Limiting screen time and reading more books and enjoy family game night.

Question 8 : 101135



Living organisms use osmoregulation to balance solute and water concentrations in their cells, tissues and organs. Many marine organisms have internal solute concentrations that are similar to their environment. However, this is not typically true of freshwater and terrestrial organisms. Select what is likely to happen to the cells of a freshwater plant if placed in a marine environment?

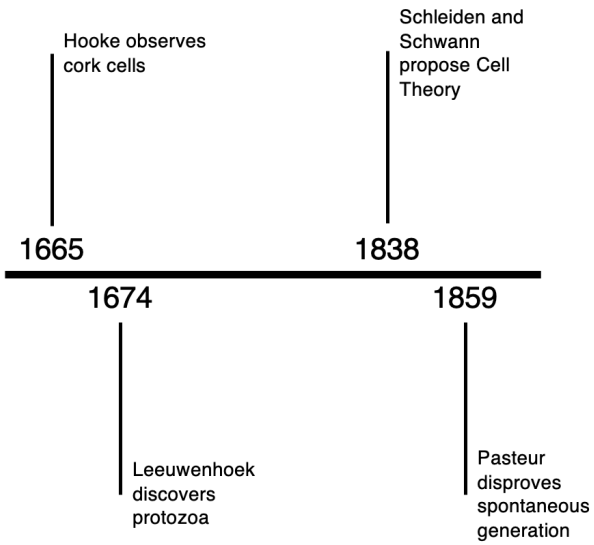
A	The cells will die immediately.
B	The cells will undergo plasmolysis.
C	The cells will swell and become turgid.
D	There will be no obvious change in the plant cells.

Question 9 : 2837

_____ digest and recycle the cell's used components by breaking down proteins, nucleic acids, lipids, and carbohydrates.

A	Vesicles
B	Ribosomes
C	Lysosomes
D	Endoplasmic reticula

Question 10 : 539915



In biology, cell theory is a scientific theory first formulated in the mid-nineteenth century. It has three tenets:
1. Living organisms are made up of cells.
2. Cells are the basic structural/organizational unit of all organisms.
3. All cells come from pre-existing cells.

According to the cell theory, why are viruses not considered living?

A	Viruses are not cells.

B	Viruses contain protein.
C	Viruses contain DNA, but not RNA.
D	Viruses cannot reproduce on their own.

Question 11 : 1511545

In order for infection and disease to occur in an individual, a process involving six components must occur. Order these components from start to finish, or in this case, infection.

Source	Target
≡ Susceptible host	
≡ Portal of exit	
≡ Reservoirs	
≡ Pathogen or etiological agent	
≡ Portal of entry	
≡ Mode of transmission	

Question 12 : 2987

In a prokaryotic cell, most ribosomes are

A	in the nucleus.
B	attached to the ER.
C	attached to the nucleus.

D	floating freely in the cytoplasm.

Question 13 : 1512003
Place each item into the proper category.

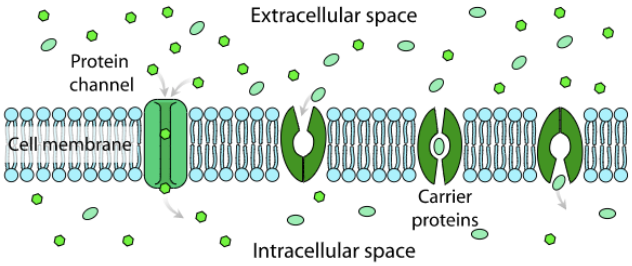
Positive Effects of Genetic Engineering	Negative Effects of Genetic Engineering

- Agriculture
- Pharmaceuticals
- Herbicides and Pesticides
- Mutations
- Transplants
- Disease Prevention

Question 14 : 31275
According to an American Cancer Society's annual report published in December 2009, the U.S. cancer death rate continues to decline, as it has since the 1990s. This may be attributed to all BUT ONE of these factors.

A	early screening
B	fewer people smoke
C	genetic engineering
D	healthier diet and less obesity

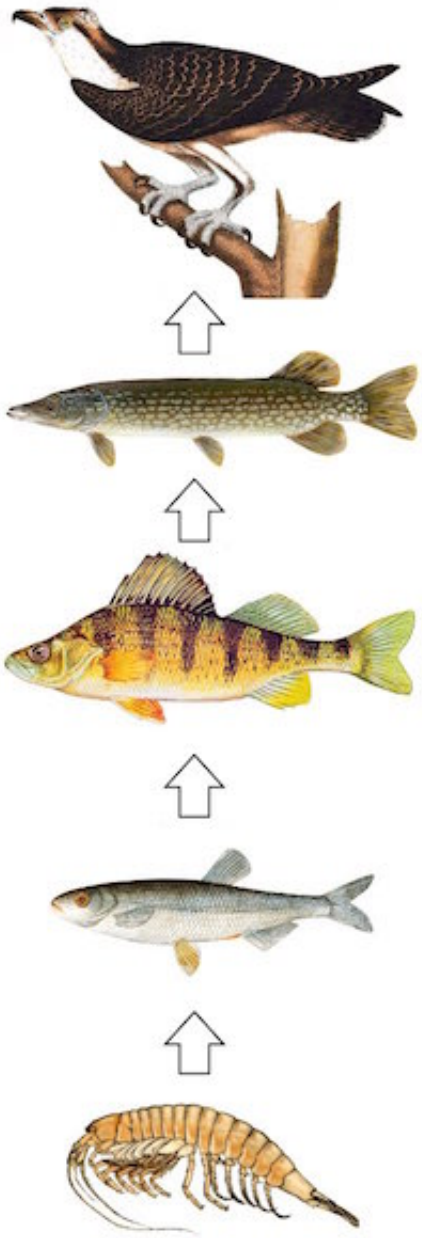
Question 15 : 421755



The model shows two types of proteins, channels and carriers, allowing the movement of molecules into the cell. As indicated by the model, what question is best asked about the role of the proteins in this type of transport?

A	How can proteins be used in active transport?
B	How do proteins allow for endocytosis of large molecules?
C	How can molecules move against the gradient through proteins?
D	How do proteins allow for facilitated diffusion of molecules into the cell?

Question 16 : 305241



This diagram shows a food chain in a Swedish lake. The mountain shrimp at the bottom are eaten by the bleak above them, the bleak are eaten by the perch above them, the perch are eaten by the northern pike above them, and the northern pike are eaten by the osprey.

Which of these would cause the GREATEST reduction in the number of fish in the lake available for human consumption?

A	elimination of the bleak

B	elimination of the osprey
C	elimination of the northern pike
D	elimination of the mountain shrimp

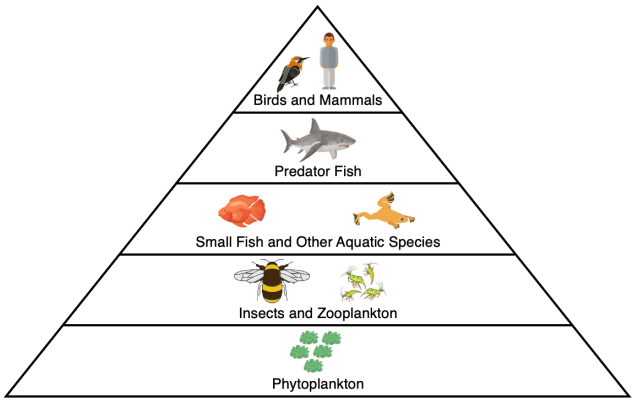
Question 17 : 42403
According to the law of conservation of mass, in any food chain we know that

A	the quantity of matter in producers and consumers is always equal.
B	matter is created at the start of a food web and destroyed in the end.
C	matter is changed into various forms but the total quantity remains unchanged.
D	the amount of matter increases as the food web progresses from the producers to the consumers.

Question 18 : 2560
According to the fossil record, five _____
took place, which lowered the variety of species found on Earth today.

A	mass clonings
B	microevolutions
C	mass extinctions
D	mass revolutions

Question 19 : 30465



An ecological pyramid is sometimes used to show both the flow of matter and energy in an ecosystem. The pyramid narrows as matter and energy flow from the bottom to the top. Draw a conclusion about what this pyramid tells you about the energy in this ecosystem.

A	Energy stays the same. Only the number of living things change.
B	Energy decreases from the top to the bottom as organisms are larger in size.
C	Energy increases from bottom to top because the organisms get larger in size.
D	Energy decreases from bottom to top because some is used at each level for life processes.

Question 20 : 8195

Which factor would INCREASE the carrying capacity for white-tailed deer in an Eastern temperate forest ecosystem?

A	The re-introduction of the Eastern cougar into North Carolina.
B	A large migration of the closely related mule deer, into the East.
C	The construction of new roads and increased traffic through woodland areas.
D	The re-introduction of the American chestnut tree, which produces many seeds, and used to live in North Carolina.

Question 21 : 8274

Which practice can be categorized as a sustainable practice?

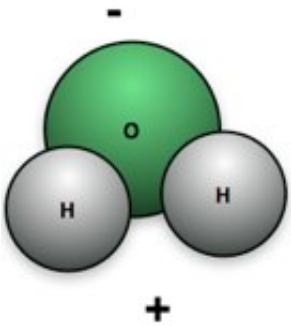
A	strip-mining for coal
B	slash-and-burn farming
C	selective cut forestry
D	urban sprawl city planning

Question 22 : 67788

What is a renewable resource that is constant and will never run out?

A	coal
B	nuclear
C	oil
D	solar

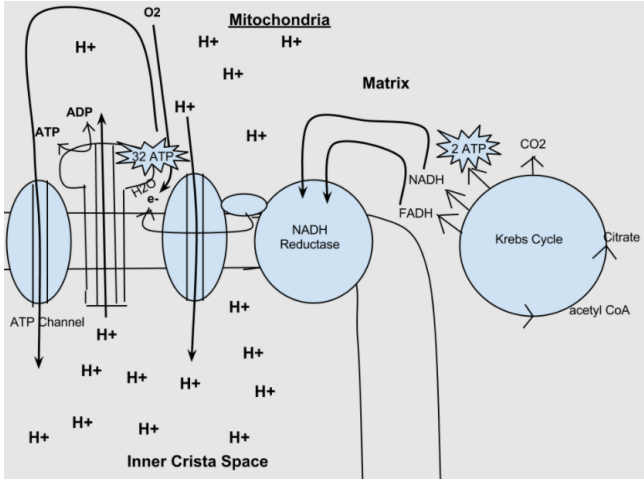
Question 23 : 25211



Because water is a polar molecule, it makes an excellent solvent for atoms and compounds found within cells and tissues. Water, acting as a solvent in organisms, aids in all of the following EXCEPT

A	eliminating wastes.
B	maintaining turgor pressure.
C	constructing cell membranes.
D	supplying oxygen and nutrients to cells.

Question 24 : 523349



A model of a portion of cellular respiration is shown here. Which of these statements is supported by the model shown here? Select ALL that apply.

A	Carbon dioxide is released as food and other organic molecules are broken down.
B	The processes occur in the presence of oxygen to produce many ATP molecules for the cell.
C	ATP is directly made as larger carbohydrates are digested during the electron transport chain.
D	Electron carriers generated in the Krebs cycle are used in the electron transport chain to generate ATP.

E	Carbon dioxide that is generated in the Krebs cycle is used to phosphorylate the ATP in the electron transport chain.

Question 25 : 2533

The Honeydough Bread factory produces 2,000 loaves of bread per day.
During bread making, _____ by yeast produces _____ which makes the bread rise.

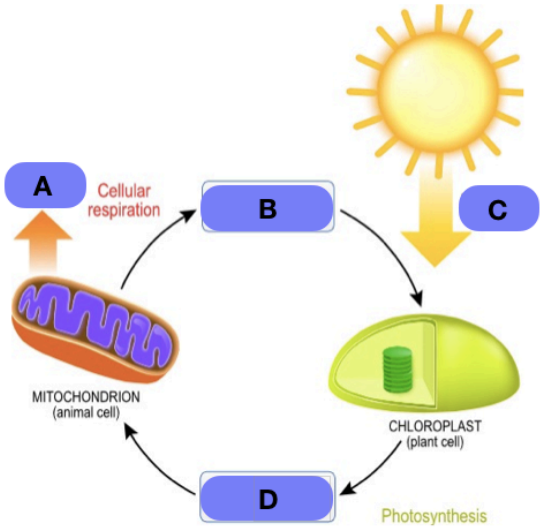
A	water respiration, oxygen
B	lactic acid fermentation, sugar
C	reconstitution, carbon monoxide
D	alcoholic fermentation, carbon dioxide

Question 26 : 37948

Cancer occurs when signals for _____ are blocked or misinterpreted.

A	apoptosis
B	endocytosis
C	exocytosis
D	mitosis

Question 27 : 537391



A moose eats a lily pad. The food the moose eats is used to make ATP energy that can be used in cellular processes. However, the moose provides part of what the lily pad needs for photosynthesis as well. This is B in the diagram above. What is that? Choose ALL that apply.

A	water
B	oxygen
C	glucose
D	sunlight
E	carbon dioxide

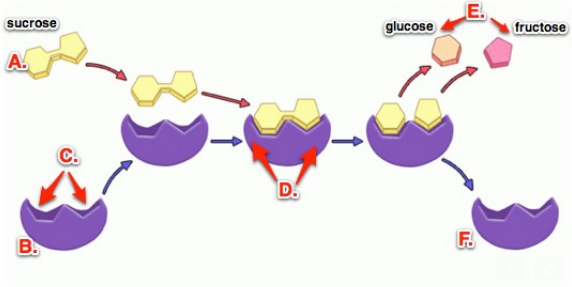
Question 28 : 37917

Which factor would not increase the production of glucose by photosynthesis in plants?

A	increased exposure to sunlight
B	extra rainfall

C	freezing temperatures
D	increased carbon dioxide levels

Question 29 : 100652



You set up 5 samples that contained a range of sucrase concentrations but the same amount of substrate (sucrose).
- The pH was kept constant in all tubes by using the same amount of buffer.
- The temperature was kept constant in all tubes (room temp)
- A negative control was used (without the substrate sucrose) to prove that this reaction is due to enzyme activity. It is important to establish this, because sucrose can break down on its own to yield glucose and fructose but this reaction would take much longer without enzyme.
- There was no quantitative data, but a color key was used to distinguish between maximum, medium and low enzyme activity.
- By graphing the qualitative data, you observed that the reaction increases as the enzyme concentration is increased. This means, the more enzyme, the more sucrose can be broken down, the more products can be formed.
- However this effect can be observed up to a limit.

As stated, the results as evidenced in the experiment can only be observed up to a limit. Why?

A	A buildup of sugars alters the pH of the environment.
B	The products, glucose and fructose, denature the sucrase.
C	You eventually run out of sucrose to act as the substrate.

D	The reaction causes a change in temperature, that denatures the sucrase.

Question 30 : 28138
Which base is found in RNA but NOT in DNA?

A	adenine
B	cytosine
C	thymine
D	uracil

Question 31 : 516961
You are studying cellular respiration in biology. Your lab partner finds this model of aerobic respiration, but is confused as to what is happening. She asks you for your help. Examine the model.

What statements would help clarify the process of aerobic cellular respiration? Choose the TWO that apply.

A	Aerobic respiration requires either glucose or oxygen.
B	Aerobic respiration produces ATP from glucose and water.

C	Aerobic respiration produces oxygen and water as a byproduct.
D	Aerobic respiration is the process that provides usable energy in the form of ATP.
E	Aerobic respiration occurs in the mitochondria of the cells of eukaryotes, including plants and animals.

ⓘ This question requires at least 2 answers.

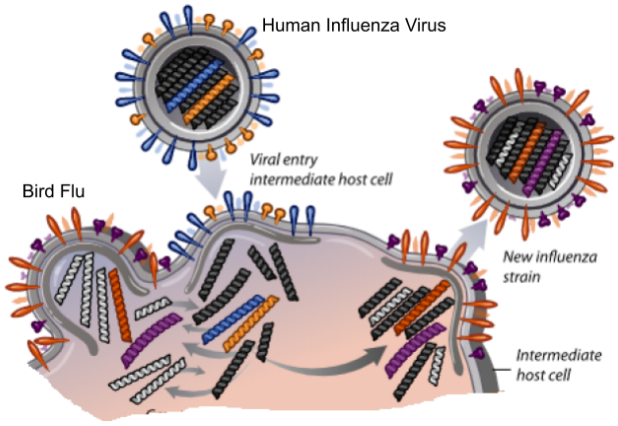
Question 32 : 20406

During Devonian time life transitioned to land. Two major divisions of animals moved ashore, first the arthropods and then the tetrapod vertebrates.

What fossil evidence BEST supports the classification of animals into these two basic branches, still recognized today?

A	fossilized amniotic eggs
B	impressions of scales versus fur
C	evidence of exoskeletons and endoskeletons
D	fossilized bones with and without air cavities

Question 33 : 421505



The model shows the bird flu and human influenza infecting an intermediate host to produce a new influenza strain. What process is involved in producing an influenza strain with a new phenotype?

A	Related viruses can recombine in a common host to express proteins with greater virulence.
B	Influenza viruses incorporate host cell DNA into their capsid to express host cell proteins.
C	Viruses that infect intermediate hosts have higher rates of mutations, which produces new phenotypes.
D	The new viral strain incorporated RNA molecules from the bird flu and proteins from the human influenza virus to create new DNA molecules.

Question 34 : 2558

One of the major elements of natural selection is that all species have genetic

A	digression.
B	melanism.
C	stability.
D	variation.

Question 35 : 2567

Evidence for evolution includes the presence of _____, which are similar structures shared by different species.

A	gradual structures
B	vestigial structures
C	integrated structures
D	homologous structures

Question 36 : 540212

A student is talking with another student about getting the influenza vaccine as the summer is turning into fall and the weather is beginning to change. The other student asks why they are getting the influenza vaccine or flu shot if they already got it last fall. Evaluate which response(s) would illustrate the concept of how influenza is impacted by natural selection, requiring multiple influenza vaccines, or flu shots. Select ALL that apply.

A	Influenza viruses mutate quickly, resulting in new viral phenotypes year after year.
B	Influenza viruses that are not eradicated by a flu shot can pass on their genome to future replicated viral particles.
C	Flu shots wear off after one year, so booster shots are needed to increase their effectiveness in protecting against the virus.
D	Influenza viruses incorporate portions of their host genomes into their viral DNA, making the original flu shot less effective.
E	Influenza viruses that survive after one flu season cause significant genetic changes to the infected host, requiring an additional flu shot.

Question 37 : 2091

Human Taxonomy

	Human

Taxonomic Rank	
Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Primates
Family	Homindae
Genus	Homo
Species	Sapiens

Which MOST SPECIFIC classification puts humans in the same category as whales?

A	Hominidae
B	chordata
C	mammalia
D	primates

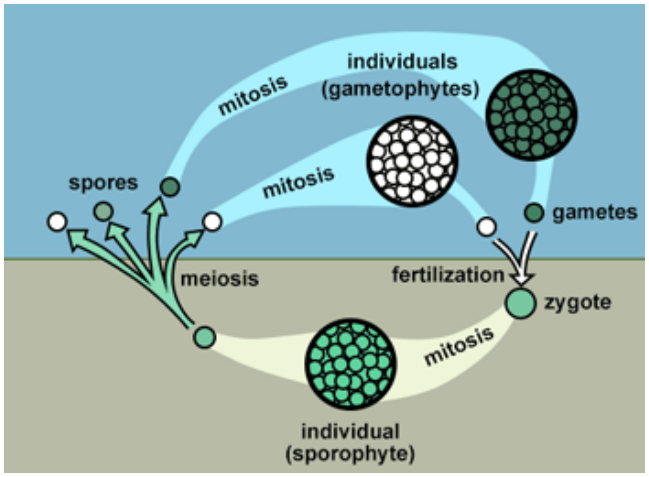
Question 38 : 86506

	B	b
B	BB	Bb
b	Bb	bb

Brown rabbits have the genotype BB or Bb. White rabbits have the genotype bb. If two brown rabbits, with the genotypes seen in the Punnett square above, have baby rabbits, what is the *probability* that the baby rabbits will also be brown?

A	25%
B	50%
C	75%
D	100%

Question 39 : 30793



During the moss life cycle, there is an alternation of generations, between saprophyte and gametophyte. The sporophyte has the diploid or 2N chromosome number while the gametophyte is haploid or N.

What process produces the 2N sporophyte in the moss life cycle?

A	meiosis
B	mitosis
C	fertilization
D	differentiation

Question 40 : 42858

Gregor Mendel raised and observed pea plants. In his observations he noticed that some pea plants were tall and some were short. Some plants produced round peas and some produces wrinkled peas. Mendel noticed that different combinations of these traits occurred in each generation.

What is the BEST explanation for this variation in pea plants?

A	Pea plants reproduce sexually creating variations.
B	Pea plants reproduce asexually creating variations.
C	Pea plants reproduce asexually making genetic copies of the parent plant.
D	Pea plants reproduce sexually making genetic copies of the parent plants.