BIOLOGY END OF COURSE TEST STUDY GUIDE

Content Domain 1: Cells

The _____ is the basic unit of structure and function in all living organisms.

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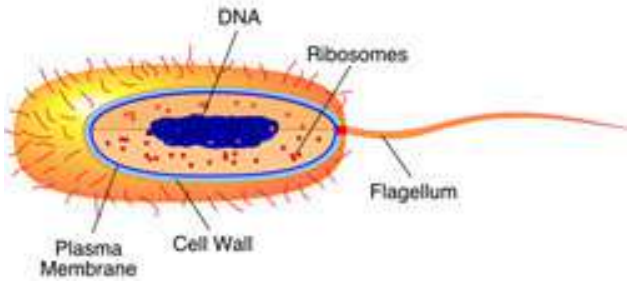
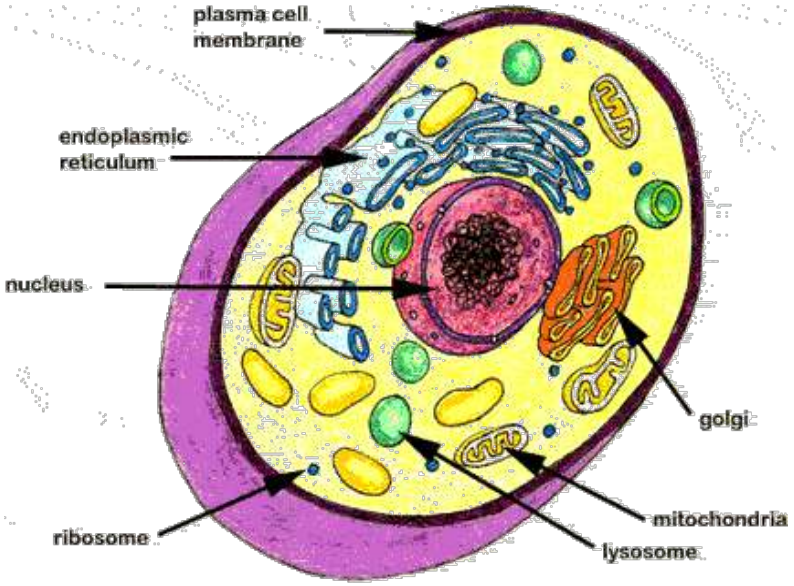
The _***cell***_____ is the basic unit of structure and function in all living organisms.

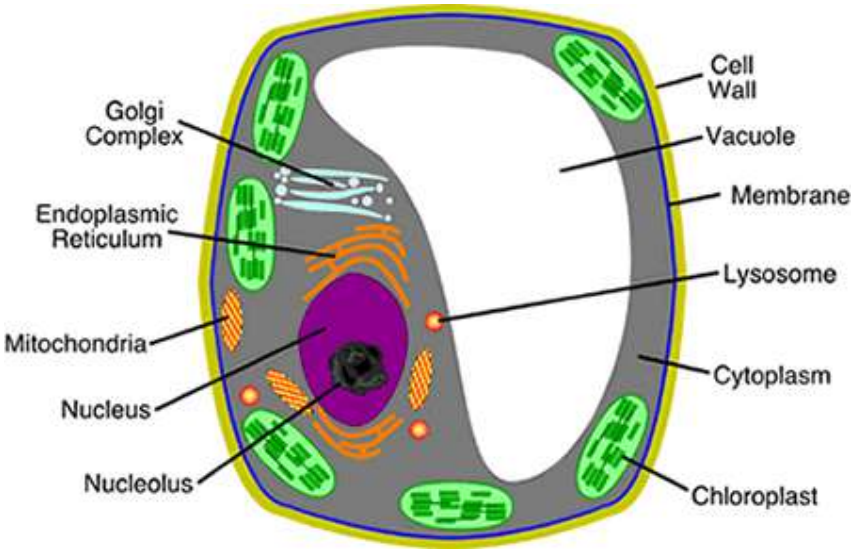
Prokaryotic cell-
Bacteria



Eukaryotic cell - Animal Cell



Eukaryotic cell- Plant cell



Also Eukaryotic:

Protists and Fungi

If a cell has a nucleus and membrane bound organelles, it is said to be _____.

- If a cell does not have a nucleus or membrane bound organelles, it is said to be _____. Both types of cells have DNA and ribosomes.

- There are only 2 kingdoms whose members contain prokaryotic cells. They are _____ and _____.

Organisms with prokaryotic cells are all _____ celled organisms where as eukaryotes can be either _____ celled or _____celled organisms.

If a cell has a nucleus and membrane bound organelles, it is said to be ____*eukaryotic*_____.

- If a cell does not have a nucleus or organelles, it is said to be _____*prokaryotic*_____.

- There are only 2 kingdoms whose members contain prokaryotic cells. They are __*Eubacteria*_____ and __*Archaebacteria*_____.

Organisms with prokaryotic cells are all _*one*_____ celled organisms where as eukaryotes can be either _*one*_____ celled or __*many*_____celled organisms.

Which of the following are characteristics of living things? (Circle correct characteristics)

Reproduction ***Gas exchange***

Growth ***Take in energy***

Assimilation of materials ***Respond to stimuli***

Definite shape ***Movement***

The _____ is the outer boundary of the cell and it controls what enters and leaves the cell.

Which of the following are characteristics of living things? (Circle correct characteristics)

Reproduction ***Gas exchange***

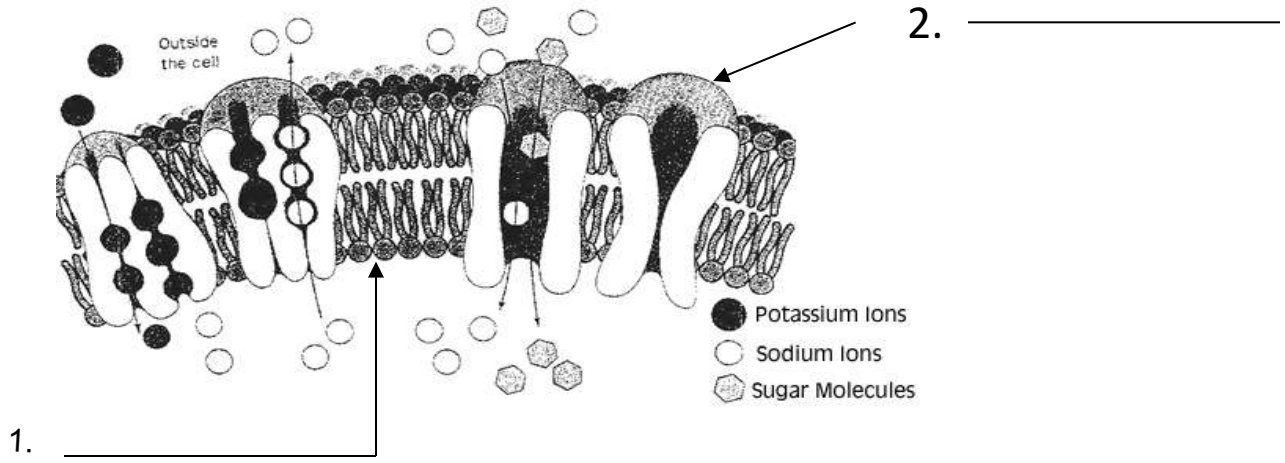
growth *Take in energy*

assimilation of materials *respond to stimuli*

Definite shape *movement*

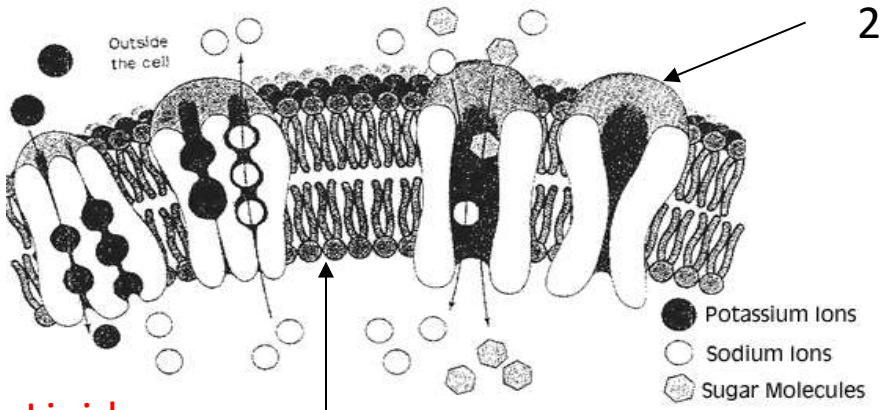
The __***cell membrane***_____ is the outer boundary of the cell and it controls what enters and leaves the cell.

Label the following structures in the cell (plasma) membrane below:



The parts inside of a cell which perform a specific function for the cell are known as _____.

Label the following structures in the cell (plasma) membrane below:



1. Lipids

2. Protein

The parts inside of a cell which perform a specific function for the cell are known as Organelles.

Fill out the table below on the Cell Parts.

Cell Part	Function
	Energy center or "powerhouse" of the cell. Turns food energy into useable chemical energy (ATP). This is the site for Cellular Respiration.
	Site for making proteins
	Processes, packages and secretes proteins (cell's post office)
	Contains digestive enzymes, breaks things down
	Transport, "intracellular highway"
	Stores water or other substances (Plants- 1 large one; Animals-several small ones.
	Uses sunlight to create food, site of photosynthesis (only found in algae and plant cells)
	Provides additional support (plant, fungi, and bacteria cells)
	Jelly-like fluid interior of the cell
	the "control center" of the cell, contains the cell's DNA (chromosomes)

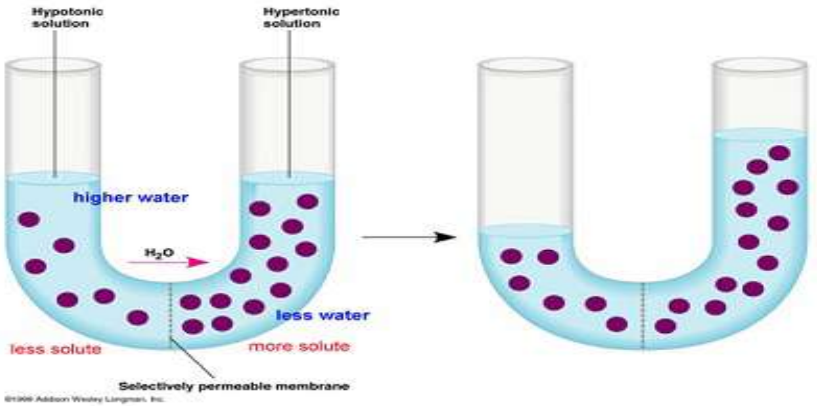
Fill out the table below on the Cell Parts.

Cell Part	Function
mitochondria	Energy center or "powerhouse" of the cell. Turns food into useable energy (ATP). This is the site for Cellular Respiration.
ribosomes	Make protein
Golgi apparatus	Processes, packages and secretes proteins (cell's post office)
lysosomes	Contains digestive enzymes, breaks things down
Endoplasmic reticulum	Transport, "intracellular highway"
vacuole	Stores water or other substances (Plants- 1 large one Animals-several small ones.
chloroplasts	Uses sunlight to create food, site of photosynthesis (only found in plant cells)
Cell wall	Provides additional support (plant, fungi, and bacteria cells)
cytoplasm	Jelly-like fluid interior of the cell
nucleus	the "control center" of the cell, contains the cell's DNA (chromosomes)

Living things maintain a balance between materials entering and exiting the cell. Their ability to maintain this balance is called _____. (You can also apply this term to the whole organism when discussing maintenance and regulation of body temperature, hormone levels, sweating vs. shivering, etc…).

The movement of substances across the cell membrane from an area of high concentration to an area of low concentration is known as _____.

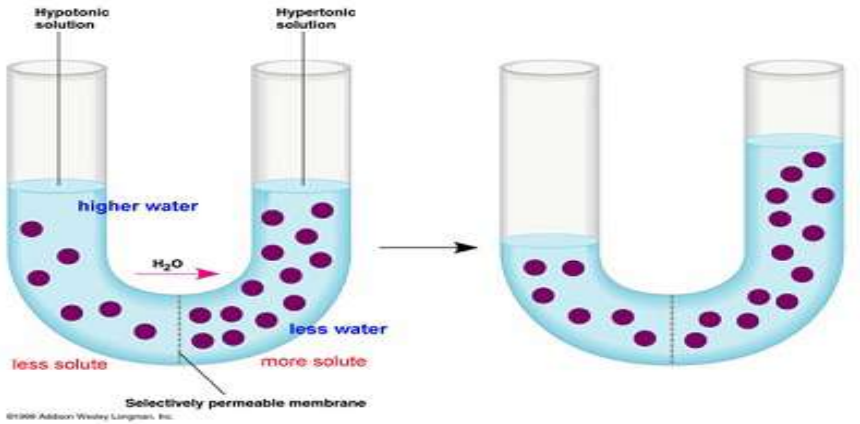
The diagram below is illustrating the process of _____.



Living things maintain a balance between materials entering and exiting the cell. Their ability to maintain this balance is called _homeostasis. (You can also apply this term to the whole organism when discussing maintenance and regulation of body temperature, hormone levels, sweating vs. shivering, etc…).

The movement of substances across the cell membrane from an area of high concentration to an area of low concentration is known as _passive transport (diffusion).

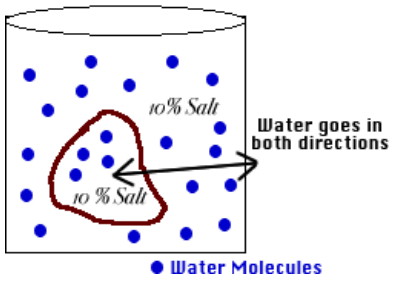
The diagram below is illustrating the process of osmosis (if water is moving).



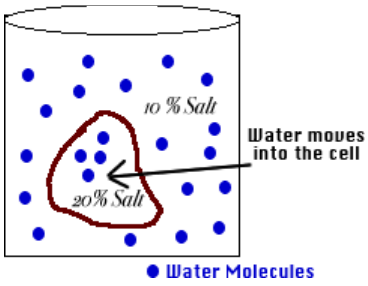
The following diagrams represent different solutions that can affect the rate of osmosis.

Label the solutions as being either hypotonic, hypertonic , or isotonic to the cells in the solutions.

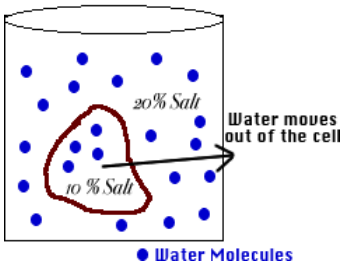
This solution is _____ to the cell.



This solution is _____ to the cell.



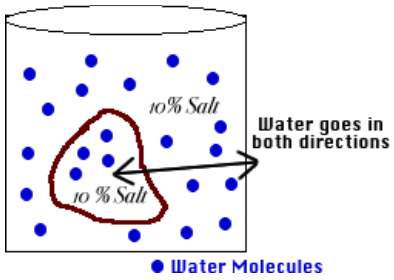
This solution is _____ to the cell.



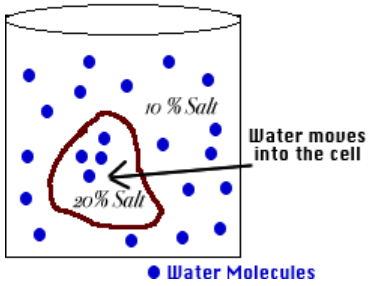
The following diagrams represent different solutions that can affect the rate of osmosis.

Label the solutions as being either hypotonic, hypertonic , or isotonic to the cells in the solutions.

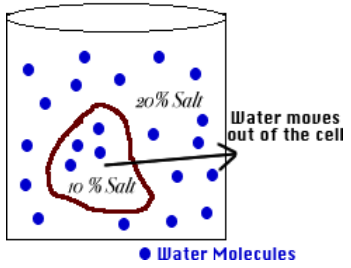
This solution is __Isotonic___ to the cell.



This solution is _hypotonic to the cell.

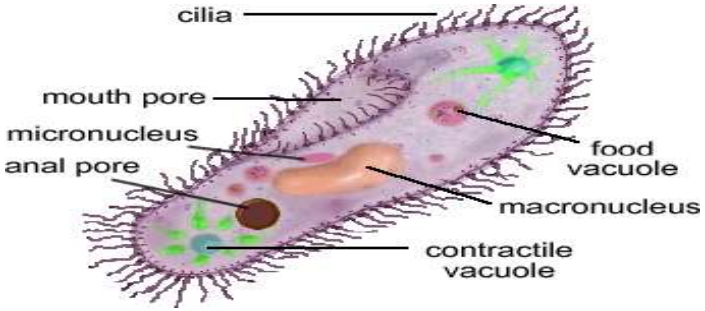


This solution is _hypertonic____ to the cell.



The contractile vacuole inside of some protists like the paramecium below maintains osmotic balance (amount of water inside the cell) by pumping out excess _____.

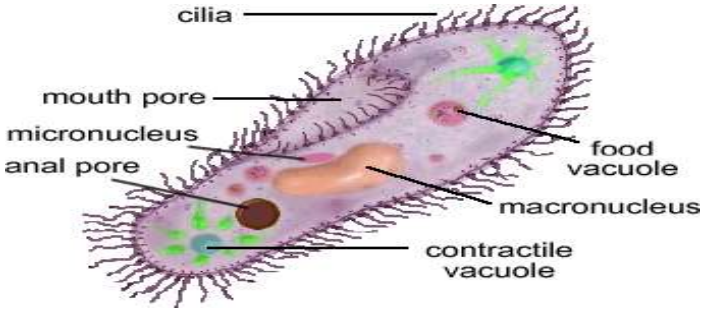
_____ is the type of membrane transport which requires energy. Bulk transport into the cell is known as _____, and bulk transport out of the cell is known as _____.



The contractile vacuole inside of some protists like the paramecium below maintains osmotic balance (amount of water inside the cell) by pumping out excess _water_.

Active transport is the type of membrane transport which requires energy.

Bulk transport into the cell is known as _endocytosis, and bulk transport out of the cell is known as exocytosis.

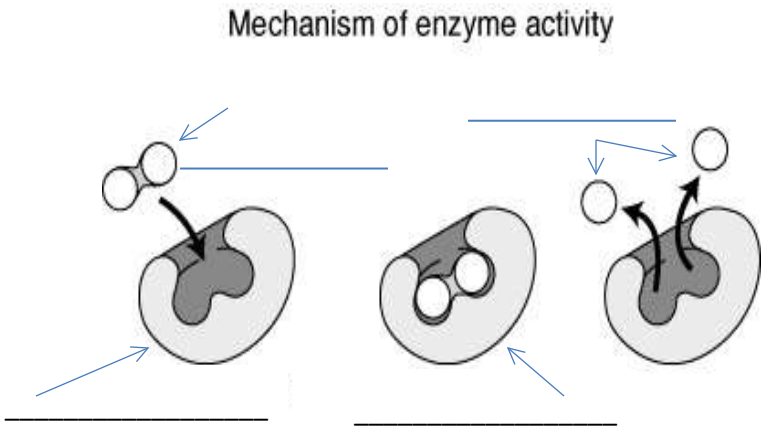


_____ are special proteins that speed up the rate of chemical reactions, by lowering activation energy (energy required to start a reaction).

The _____ is the substance an enzyme acts upon.

The enzyme and substrate fit together like a _____. This interlocking "fit" makes enzymes act only on specific substrates.

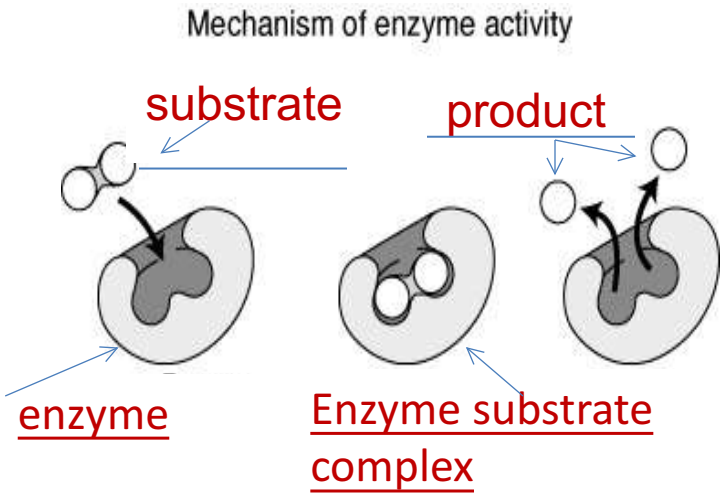
Label the diagram below with the following terms: Enzyme/substrate complex, substrate, enzyme, product



Enzymes are special proteins that speed up the rate of chemical reactions, by lowering activation energy (energy required to start a reaction).

The substrate is the substance an enzyme acts upon. The enzyme and substrate fit together like a lock and key. This interlocking "fit" makes enzymes act only on specific substrates.

Label the diagram below with the following terms:
Enzyme/substrate complex, substrate, enzyme, product



If it ends in –ase, is probably an _____, and if a word ends in –ose it is a _____.

The area in which a substrate molecule fits into an enzyme is known as the _____site.

Fill in the table on the 4 major biomolecules:

Biomolecule	Monomer	Function
1. Carbohydrate		
2.	Glycerol and fatty acids	
3.		Some are important structural components of living things- some serve as enzymes .
4. Nucleic acids		

If it ends in –ase, is probably an enzyme, and if a word ends in –ose it is a sugar.

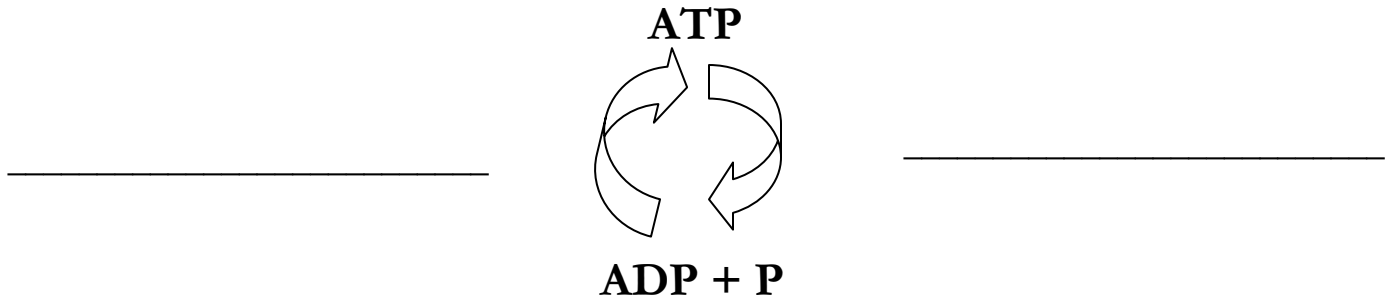
The area in which a substrate molecule fits into an enzyme is known as the active site.

Fill in the table on the 4 major biomolecules:

Biomolecule	Monomer	Function
1. Carbohydrate	Monosaccharides (simple sugars)	Provide building materials and energy
2. Lipid	Glycerol and fatty acids	Store energy
3. Protein	Amino acids	Some are important structural components of living things- some serve as enzymes .
4. Nucleic acids	Nucleotides	Contains and translates the genetic code

Content Domain 2: Organisms

ATP-*Adenosine Triphosphate* is a special molecule that stores and releases the energy in its bonds when the cell needs it. Below is a diagram showing the ATP-ADP cycle. On the lines beside the diagram write either **energy released for chemical reactions** or **energy supplied through cellular respiration.**



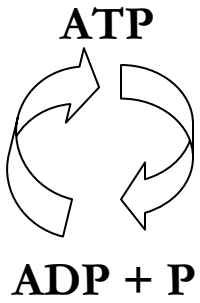
The process in which plants utilize sunlight energy into chemical energy in the form of glucose is called _____.

The process above takes place in the _____ of the plant cell.

Content Domain 2: Organisms

ATP-*Adenosine Triphosphate* is a special molecule that stores and releases the energy in its bonds when the cell needs it. Below is a diagram showing the ATP-ADP cycle. On the lines beside the diagram write either **energy released for chemical reactions** or **energy supplied through cellular respiration.**

energy supplied through cellular resspiration

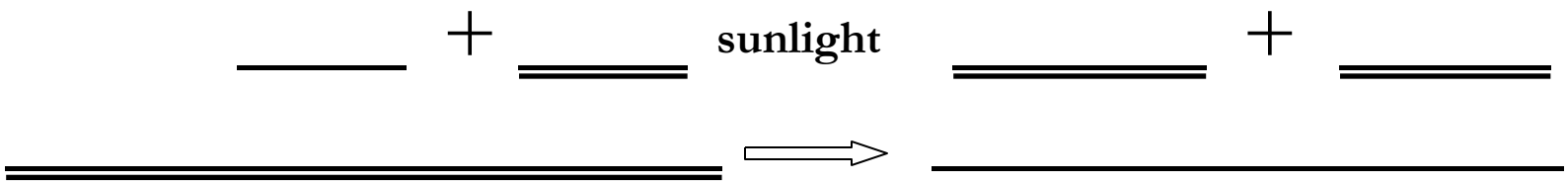


Energy released for chemical reactions

The process in which plants utilize sunlight energy into chemical energy in the form of glucose is called photosynthesis.

The process above takes place in the chloroplasts of the plant cell.

Fill in the summary reaction for photosynthesis below with the correct reactants and products. Use the following terms: water, carbon dioxide, glucose, oxygen, CO_2, H_2O, $C_6H_{12}O_6$, O_2
(Place symbols on the top lines and words on the bottom.)



The process by which organisms break down glucose in order to release the energy in it is known as _____.

This process takes place in the _____ of the cell.

Fill in the summary reaction for photosynthesis below with the correct reactants and products. Use the following terms: water, carbon dioxide, glucose, oxygen, CO_2, H_2O, $C_6H_{12}O_6$, O_2 (Place symbols on the top lines and words on the bottom.)

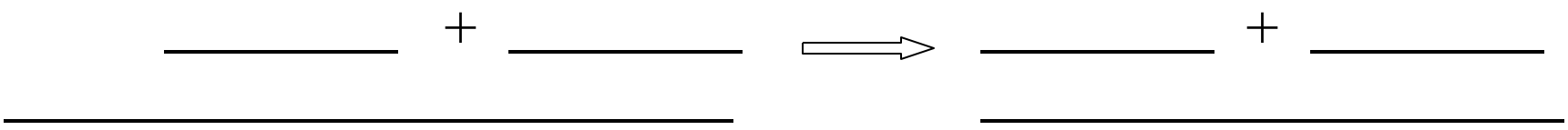
$$\underline{CO_2} + \underline{H_2O} \xrightarrow{\text{sunlight}} \underline{C_6H_{12}O_6} + \underline{O_2}$$

$$\underline{\text{carbon dioxide+ water}} \longrightarrow \underline{\text{Glucose + oxygen}}$$

The process by which organisms break down glucose in order to release the energy in it is known as cellular respiration.

This process takes place in the mitochondria of the cell.

Fill in the summary reaction for cellular respiration below with the correct reactants and products. Use the following terms: water, carbon dioxide, glucose, oxygen, CO_2, H_2O, $C_6H_{12}O_6$, O_2 (Place symbols on the top lines and words on the bottom.)



Fill in the summary reaction for cellular respiration below with the correct reactants and products. Use the following terms: water, carbon dioxide, glucose, oxygen, CO_2, H_2O, $C_6H_{12}O_6$, O_2 (Place symbols on the top lines and words on the bottom.)

$C_6H_{12}O_6$ + O_2 ⇨ CO_2 + H_2O

glucose + oxygen ⇨ carbon dioxide and water

_____ is the branch of biology which deals with the grouping and naming of organisms.

Carolus Linneaus developed the two word system to name organisms known as _____.

The first word of a scientific name is the _____ name and the second word is the _____ name.

There are _____ taxa (classification categories) in Linneaus' system. List them in order from largest to smallest.

1.
2.
3.
4.
5.
6.
7.

Taxonomy is the branch of biology which deals with the grouping and naming of organisms.

Carolus Linneaus developed the two word system to name organisms known as binomial nomenclature.

The first word of a scientific name is the genus name and the second word is the species name.

There are seven taxa (classification categories) in Linneaus' system. List them in order from largest to smallest.

1. Kingdom
2. Phylum
3. Class
4. Order
5. Family
6. Genus
7. Species

In the modern day classification system there are _____ kingdoms and _____ domains.

Correctly identify the kingdoms given the descriptions in the table below. Provide an example organism in each kingdom.

In the modern day classification system there are six kingdoms and three domains.

Correctly identify the kingdoms given the descriptions in the table below. Provide an example organism in each kingdom.

Kingdom	Description	Example Organism
	Consumers that stay put. They have eukaryotic cells. They may be unicellular or multicellular. They decompose dead organisms and waste from the environment.	What is the only single celled organism in this group?
	Multicellular eukaryotes that photosynthesize. Have cellulose cell walls.	
	Mainly found in extreme environments. Some of these prokaryotic cells like extremely hot temperatures and areas of high salt content.	
	Multicellular consumers. They do not contain cell walls. Most have the ability to move.	
	Most diverse kingdom of organisms. They may be unicellular or multicellular. They live in moist environments. Some are plant-like, some animal-like, some fungus-like.	
	This group of prokaryotes can be both beneficial and harmful. Some cause diseases while others are used in the food industry and are decomposers.	

Kingdom	Description	Example Organism
Fungi	Consumers that stay put. They have eukaryotic cells. They may be unicellular or multicellular. They decompose dead organisms and waste from the environment.	What is the only single celled organism in this group? *Yeast*
Plantae	Multicellular eukaryotes that photosynthesize. Have cellulose cell walls.	*Apple tree*
Archaebacteria	Mainly found in extreme environments. Some of these prokaryotic cells like extremely hot temperatures and areas of high salt content.	*Methanogens*
Animalia	Multicellular consumers. They do not contain cell walls. Most have the ability to move.	*YOU!!*
Protista	Most diverse kingdom of organisms. They may be unicellular or multicellular. They live in moist environments. Some are plant-like, some animal-like, some fungus-like.	*Protozoa, Algae Slime Mold*
Eubacteria	This group of prokaryotes can be both beneficial and harmful. Some cause diseases while others are used in the food industry and are decomposers.	*E. coli*

Match the animal phylum characteristics with the correct phylum name:

_____Contain no specialized tissue. Have many pores.

_____ Bodies with radial symmetry. Stinging cells

_____ Flat worms. Only one body opening for digestive tract

_____ Round worms. First group with 2 body openings

_____ Segmented worms. First group with complete Digestive system.

_____ snails, squid, clams, oysters, slugs. Soft-body

_____ Jointed appendages and exoskeletons.

_____ spiny skin

_____ notochord, gill slits, tail

A. Platyhelminthes
B. Chordata
C. Nematoda
D. Arthropoda
E. Porifera
F. Cnidaria
G. Annelida
H. Echinodermata
I. Mollusa

Match the animal phylum characteristics with the correct phylum name:

_E_ Contain no specialized tissue. Have many pores.

_F_ Bodies with radial symmetry. Stinging cells

_A_ Flat worms. Only one body opening for digestive tract

_C_ Round worms. First group with 2 body openings

_G_ Segmented worms. First group with complete Digestive system.

_I_ snails, squid, clams, oysters, slugs. Soft-body

_D_ Jointed appendages and exoskeletons.

_H_ spiny skin

_B_ notochord, gill slits, tail

A. Platyhelminthes
B. Chordata
C. Nematoda
D. Arthropoda
E. Porifera
F. Cnidaria
G. Annelida
H. Echinodermata
I. Mollusa

In the table below, write in the correct Vertebrate class.

Class	Description
	Must return to water to reproduce. Obtain oxygen with gills when young and with lungs and through skin as an adult.
	Have hollow bones and feathers.
	Are jawless fish with skeletons made of cartilage.
	Have skeletons of cartilage. Sharks, skates and rays are examples.
	The first group to produce an amniotic egg. Have tough scaly skin.
	Feed their young milk. Have hair as a body covering
	Bony fish.

37. In the table below, write in the correct Vertebrate class.

Class	Description
Amphibian	Must return to water to reproduce. Obtain oxygen with gills when young and with lungs and through skin as an adult.
Aves	Have hollow bones and feathers.
Agnatha	Are jawless fish with skeletons made of cartilage.
Chondrichthyes	Have skeletons of cartilage. Sharks, skates and rays are examples.
Reptile	The first group to produce an amniotic egg. Have tough scaly skin.
Mammal	Feed their young milk. Have hair as a body covering
Osteichthyes	Bony fish.

Organism that can maintain a constant body temperature regardless of external temperature are known as _____. Also known as warm-blooded.

Organisms whose body temperature is similar to the temperature of the environment are known as _____. Also known as cold-blooded.

_____ plants have no vascular tissue, no roots, stems, or leaves. Ex. Mosses, hornworts, and liverworts.

_____ plants have vascular tissue to transport food and water.

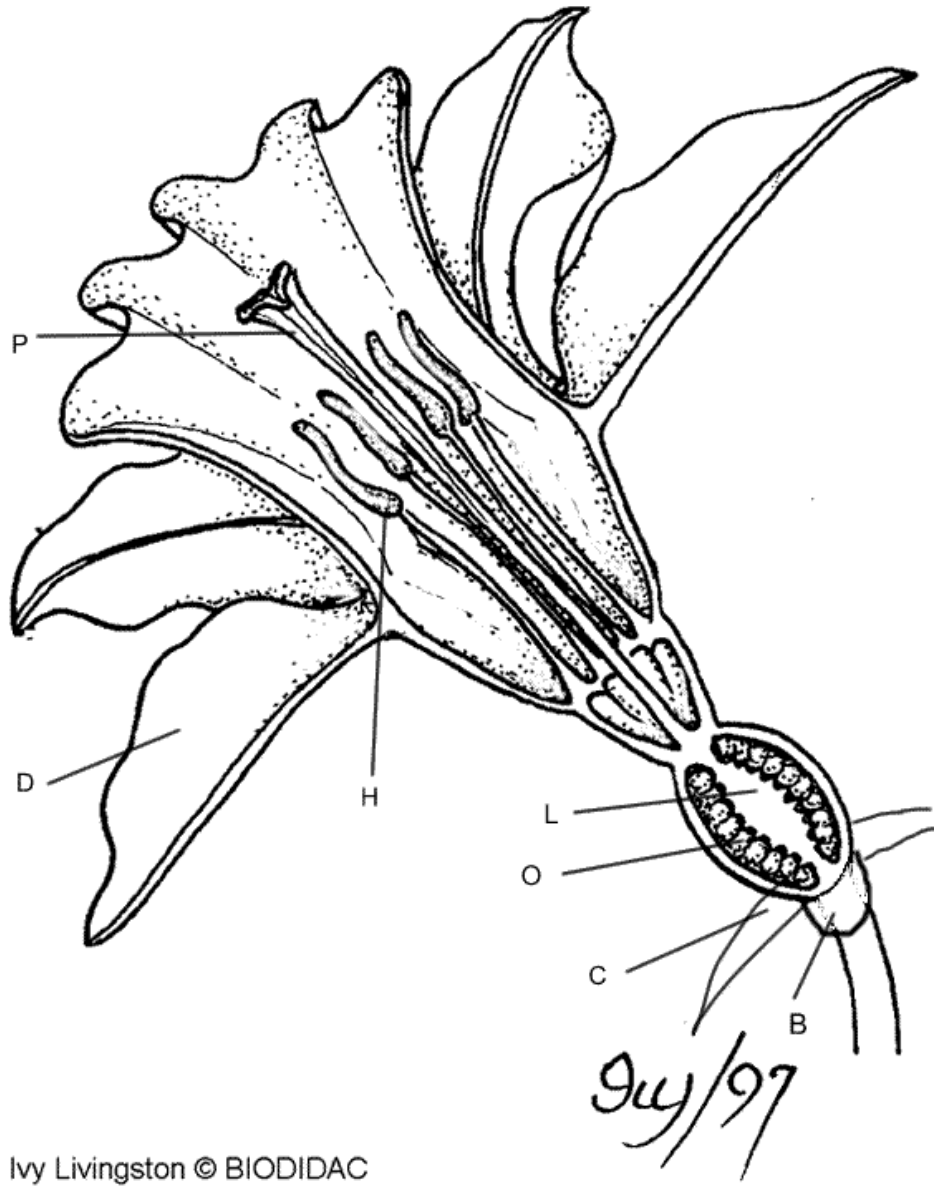
Ex. Ferns, grass, trees, bushes, etc….

The type of vascular tissue that conducts water from the roots to the leaves is known as ___+_____.

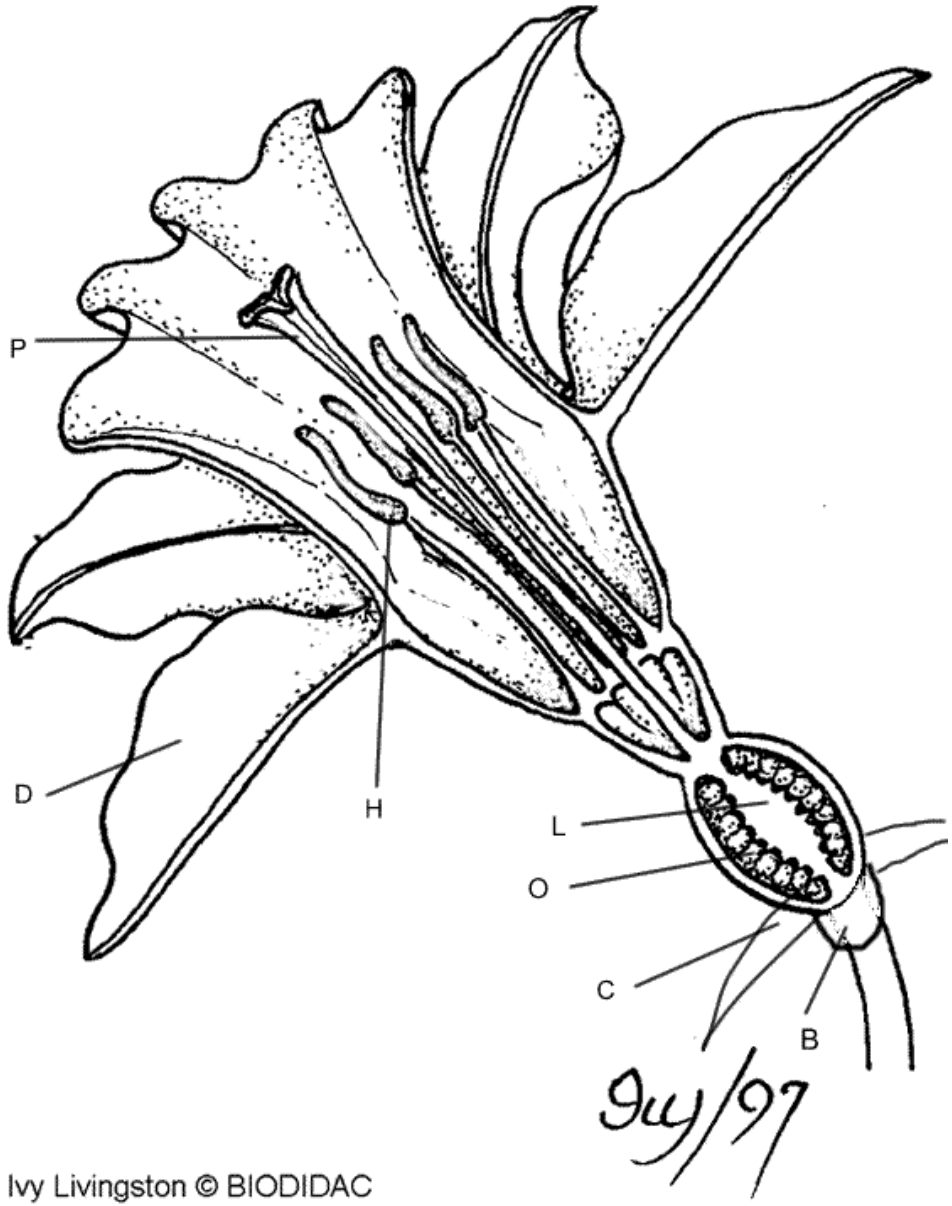
The type of vascular tissue that conducts sugar from the leaves to the roots is known as _____.

Organism that can maintain a constant body temperature regardless of external temperature are known as ***Endothermic.***
Also known as warm-blooded.
Organisms whose body temperature is similar to the temperature of the environment are known as ***ectothermic.*** Also known as cold-blooded.
bryophytes plants have no vascular tissue, no roots, stems, or leaves. Ex. Mosses, hornworts, and liverworts.
tracheophytes plants have vascular tissue to transport food and water.
Ex. Ferns, grass, trees, bushes, etc….
The type of vascular tissue that conducts water from the roots to the leaves is known as ***xylem.***
The type of vascular tissue that conducts sugar from the leaves to the roots is known as ***phloem.***

Label the flower below using the following terms: Petal, Pistil, stamen, ovary, ovule, sepal, stem

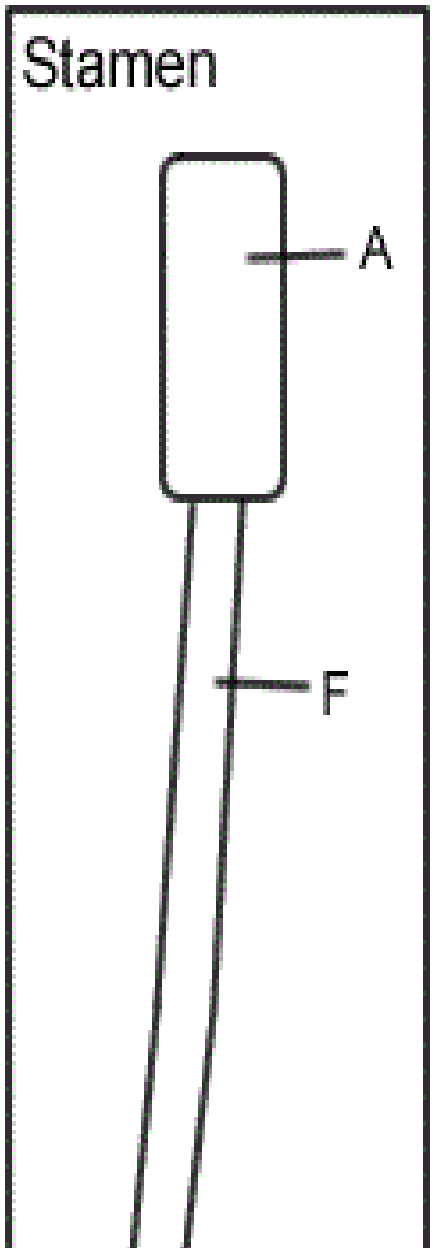


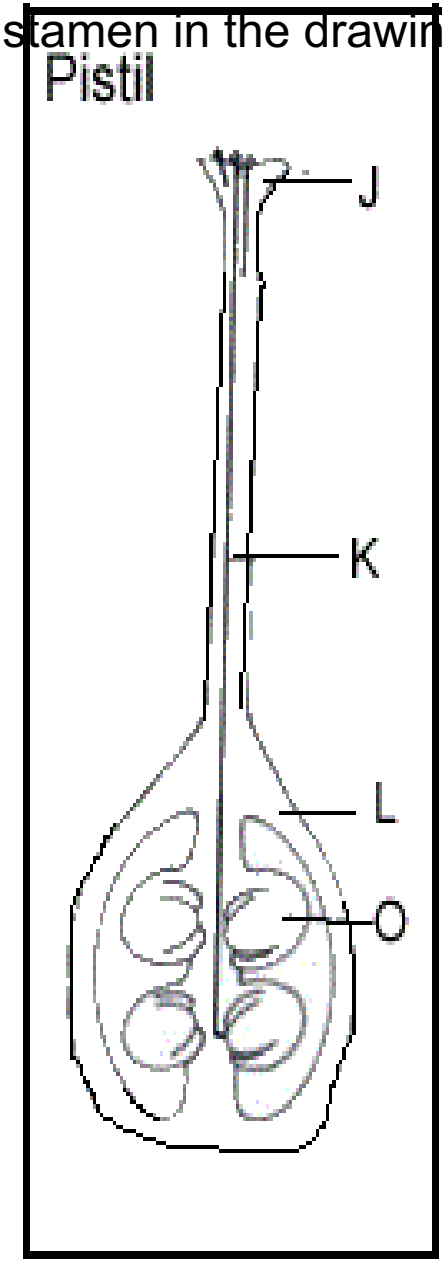
Label the flower below using the following terms: Petal, Pistil, stamen, ovary, ovule, sepal, stem



P- Pistil
H-stamen
D-petals
L-ovary
O-ovules
C-sepals
B-stem

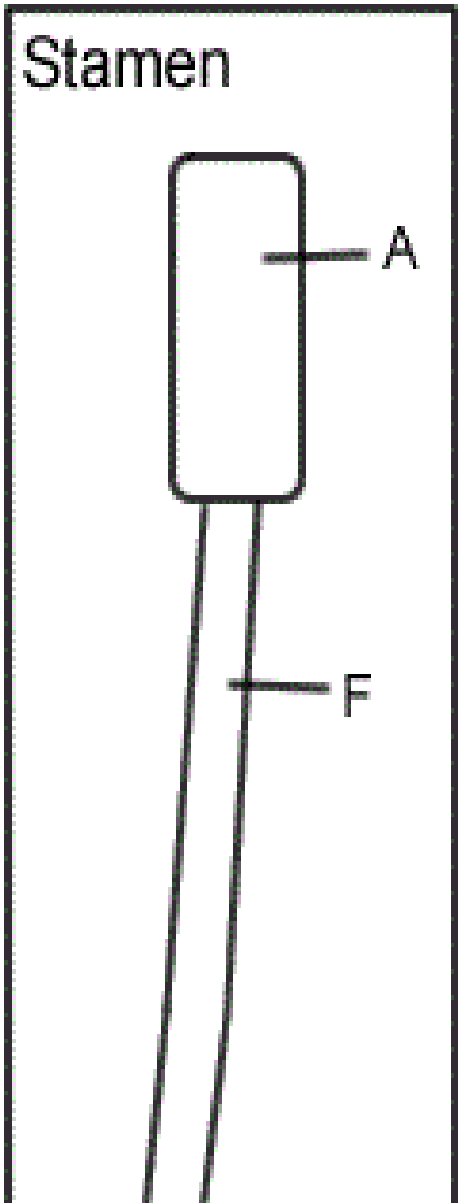
Label the 3 parts of the pistil, and the 2 parts of the stamen in the drawings below.

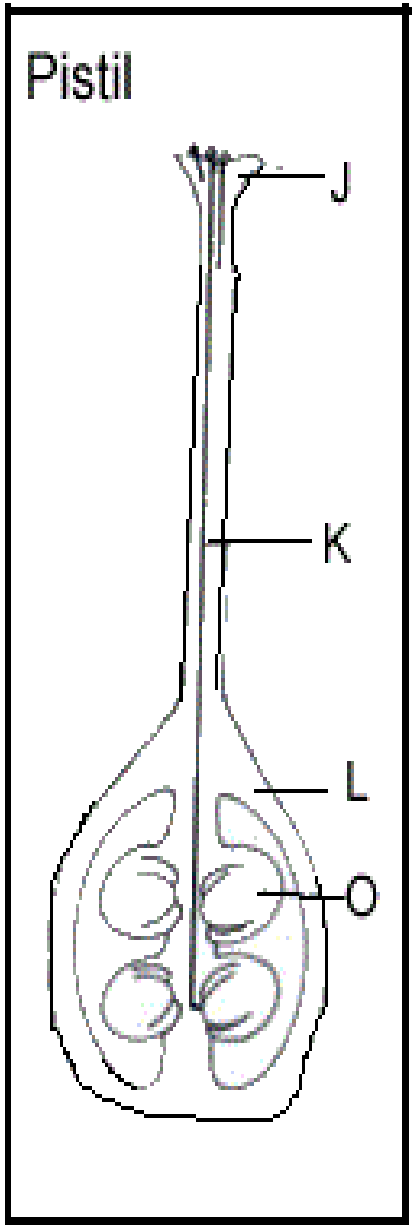




Label the 3 parts of the pistil, and the 2 parts of the stamen in the drawings below.

A-Anther
F-filament





J-stigma
K-style
L-ovary
O-ovule

The _____ is a waxy substance that reduces water loss in plants.

_____ are openings in the epidermis of a leaf that allows for gas exchange and transpiration.

The ***cuticle*** is a waxy substance that reduces water loss in plants. ***stomata*** are openings in the epidermis of a leaf that allows for gas exchange and transpiration.

Chromosomes are made up of the organic molecules called _____acids.

There are 2 kinds of nucleic acids _____ and _____.

How do these 2 kinds differ?

1.
2.
3.
4.

Chromosomes are made up of the organic molecules called ***nucleic*** acids.
There are 2 kinds of nucleic acids ***DNA*** and ***RNA***.
How do these 2 kinds differ?

1.DNA is double stranded & RNA is single stranded

2. DNA has Thymine & RNA has Uracil

3.DNA has deoxyribose sugar & RNA has ribose sugar

4.DNA has the genetic code & RNA translates the genetic code.

List the four kinds of nitrogenous bases found in the DNA molecule showing which bonds to which.

List the four kinds of nitrogenous bases found in the RNA molecule showing which bonds to which.

Name the 3 kinds of RNA

_____,

_____, and

_____.

Know the function of each.

List the four kinds of nitrogenous bases found in the DNA molecule showing which bonds to which. ***Adenine, Thymine, Guanine, & Cytosine***

List the four kinds of nitrogenous bases found in the RNA molecule showing which bonds to which. ***Adenine, Uracil, Guanine, & Cytosine.***

Name the 3 kinds of RNA ***mRNA***, ***tRNA***, and ***rRNA***. Know the function of each.

The DNA molecule has the shape of a _____.

The RNA molecule is _____ stranded.

The process by which DNA makes a copy of itself is known as _____ and it takes place during _____ of the cell cycle.

Where does the above process take place in the cell?_____

The DNA molecule has the shape of a ___*double helix*

The RNA molecule is __*single*_____ stranded.

The process by which DNA makes a copy of itself is known as _*replication*____ and it takes place during _*Synthesis*_____ of the cell cycle.

Where does the above process take place in the cell?_*nucleus*_____

The process of protein synthesis occurs in 2 stages. _____ is the first stage and must take place in the nucleus.

_____ is the second stage and occurs on ribosomes in the cytoplasm.

If the sequence of codons on an mRNA are **ACGAACCUUAGG**, what would the ones on the DNA have been?_____

_____

What does a codon on the RNA molecule code for?_____

Humans have _____ chromosomes in every body cell. This is known as the _____ number and is abbreviated by **2N**.

The process of protein synthesis occurs in 2 stages. ***transcription*** is the first stage and must take place in the nucleus. ***Translation*** is the second stage and occurs on ribosomes in the cytoplasm.

If the sequence of codons on an mRNA are **ACGAACCUUAGG**, what would the ones on the DNA have been? ***TGCTTGGAATCC***

What does a codon on the RNA molecule code for? ***an amino acid***

Humans have ***46*** chromosomes in every body cell. This is known as the ***diploid*** number and is abbreviated by **2N**.

Humans have _____ chromosomes in their sex cells. This is known as the _____ number and is abbreviated by **N**.

Cells divide by the process of _____ for growth and repair.

List the 4 phases of the above cell division in order.

1._____ 2. _____ 3. _____ 4._____

During which phase do the chromosomes line up in the middle?_____

During which phase do replicated chromosomes separate from each other?_____

Humans have ***23*** chromosomes in their sex cells. This is known as the ***haploid*** number and is abbreviated by **N**.

Cells divide by the process of ***mitosis*** for growth and repair.

List the 4 phases of the above cell division in order.

1._prophase 2._metaphase_3._anaphase 4._telophase

During which phase do the chromosomes line up in the middle?__*metaphase_*

During which phase do replicated chromosomes separate from each other?__*anaphase_*

The division of the cytoplasm of the cell is known as cytokinesis. How does this differ between plant and animal cells?

Another name for sex cells is _____.

Meiosis is different from mitosis in that in meiosis _____daughter cells are formed instead of _____ as in mitosis. Also in meiosis the chromosome number is _____ from diploid to haploid. What is the diploid number for humans?_____

The male gamete is the _____ and the female gamete is the _____.

The division of the cytoplasm of the cell is known as cytokinesis. How does this differ between plant and animal cells? *Animals pinch in and plants form a cell plate*
Another name for sex cells is _*gamete*_____.
Meiosis is different from mitosis in that in meiosis ___*four*_____daughter cells are formed instead of ___*two*____ as in mitosis. Also in meiosis the chromosome number is _*reduced*___ from diploid to haploid. What is the diploid number for humans?_*46*_____
The male gamete is the _*sperm*_____ and the female gamete is the _*egg or ovum*___.

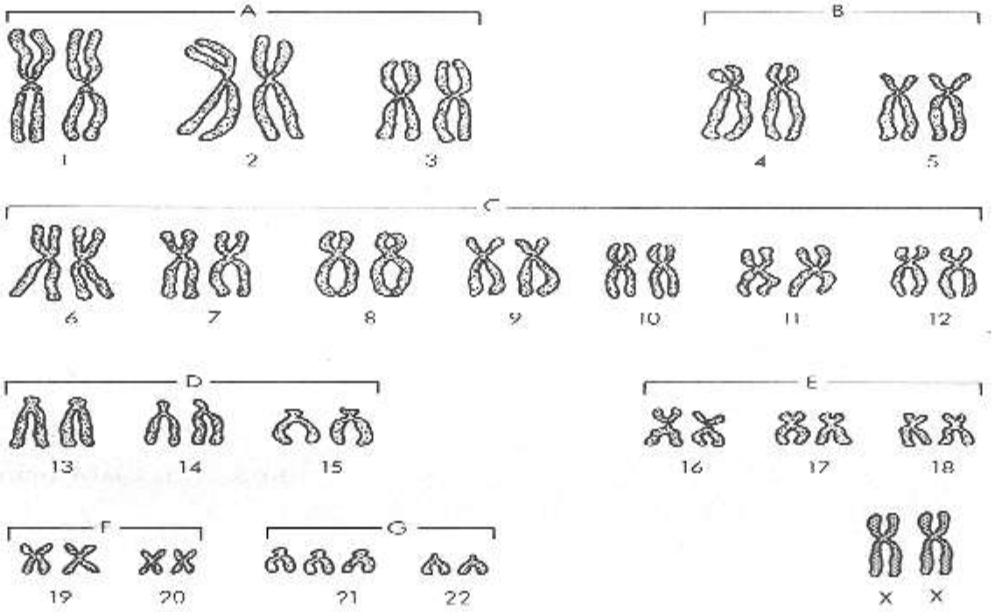
Chromosomes come in pairs known as

_____.

During meiosis, when these pairs don't separate properly, genetic disorders can occur. This failure to separate is known as

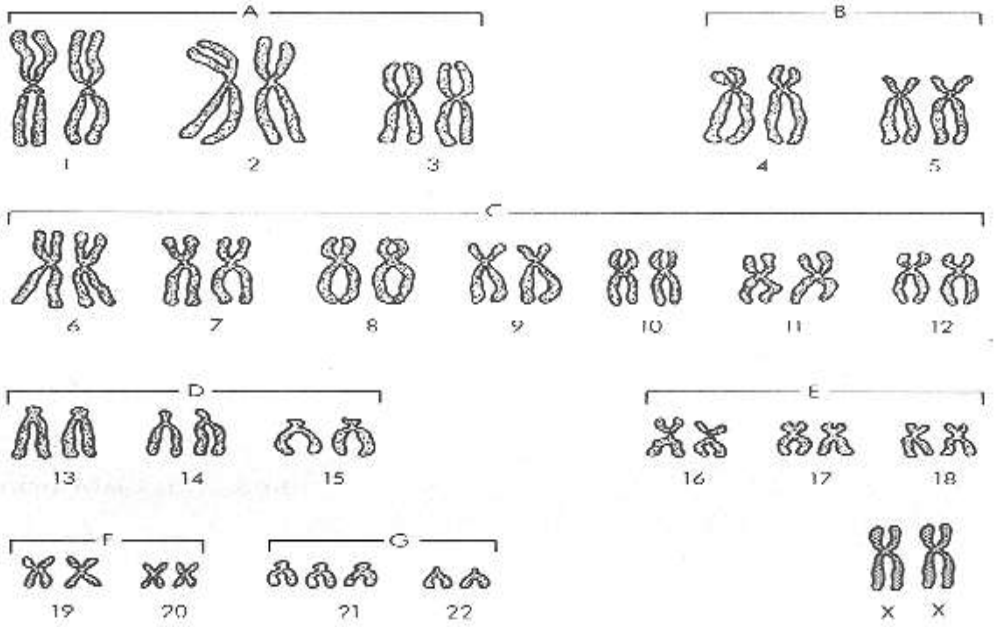
_____.

The karyotype below illustrates what would happen if this mutation occurred. What type of disorder would this individual have? What is the sex of the individual?



Down Syndrome

Chromosomes come in pairs known as ***tetrads.***
During meiosis, when these pairs don't separate properly, genetic disorders can occur. This failure to separate is known as ***nondisjunction***.
The karyotype below illustrates what would happen if this mutation occurred. What type of disorder would this individual have? ***Down Syndrome*** What is the sex of the individual? ***female***



Down Syndrome

What occurs to the homologous pairs in prophase 1 of meiosis that gives us genetic variation?_____

The study of inheritance is known as

_____.

An Austrian monk

named_____ is known as the father of genetics.

He explained the principles of dominance, independent assortment and segregation. Name the plant he used to make crosses to discover these principles._____

What occurs to the homologous pairs in prophase 1 of meiosis that gives us genetic variation? ***crossing over***

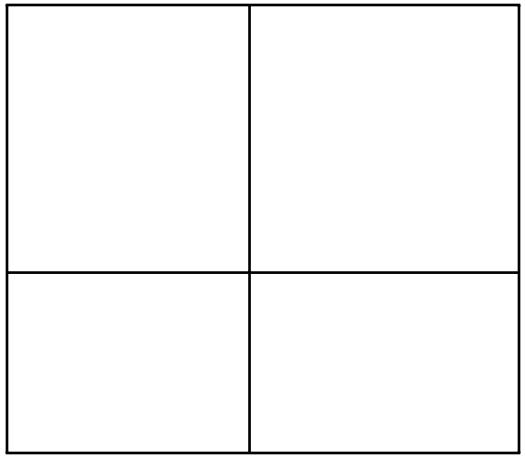
The study of inheritance is known as ***genetics.***

An Austrian monk named ***Gregor Mendel*** is known as the father of genetics.

He explained the principles of dominance, independent assortment and segregation.

Name the plant he used to make crosses to discover these principles. ***pea plant***

The _____ square is used to determine the outcome of a genetic cross. Cross a homozygous tall plant with a short plant. Tall is dominant. What would the genotype of the tall plant be _____? What would the genotype of the short plant be_____?



What would be the phenotype of all the offspring?

The _*Punnett*__ square is used to determine the outcome of a genetic cross.

Cross a homozygous tall plant with a short plant. Tall is dominant. What would the genotype of the tall plant be _*TT*___? What would the genotype of the short plant be_*tt*_?

	T	T
t	Tt	Tt
t	Tt	Tt

What would be the phenotype of all the offspring? Tall

Tt

If you cross a red flower and a white flower all the offspring are pink. This is an example of _____.

Blood type is an example of codominance. _____ and _____ are both dominant and _____ is recessive.

If you cross a red flower and a white flower all the offspring are pink. This is an example of *incomplete dominance*.

Blood type is an example of codominance. *A* and *B* are both dominant and *O* is recessive.

Content Domain IV: Ecology

_____is the branch of biology that studies the interaction of living organisms in their environments. The living things are called _____factors and the non-living factors such as wind, air, water, soil, etc. are the _____ factors. Where an organism lives such as an owl in a tree is its_____ and the job the organism has in the environment is its _____. An owl's niche would be that of a _____. The

Content Domain IV: Ecology

Ecology is the branch of biology that studies the interaction of living organisms in their environments. The living things are called *biotic* factors and the non-living factors such as wind, air, water, soil, etc. are the *abiotic* factors. Where an organism lives such as an owl in a tree is its *habitat* and the job the organism has in the environment is its *niche.* An owl's niche would be that of a *predator.*

The

mouse an owl eats would be a ____.This relationship plus what the mouse eats could be shown in a _____. If several food chains intertwine showing many feeding relationships and energy flow you would have a _____. If the flow of energy is shown in a food or energy pyramid, which kinds of organisms normally form the base of the pyramid?_____(or autotrophs).

mouse an owl eats would be a ***prey***.
This relationship plus what the mouse eats could be shown in a ***food chain***. If several food chains intertwine showing many feeding relationships and energy flow you would have a ***food web***. If the flow of energy is shown in a food or energy pyramid, which kinds of organisms normally form the base of the pyramid?***producers*** (or autotrophs)

How much energy is available for the next level?____.The total amount of living matter produced in an environment is called its _____. All of the biotic and abiotic factors interacting in an area form a(n) _____. An area characterized by a dominant climate and plant/animal life is known as a _____.Plants are the only organisms that can convert sunlight into

How much energy is available for the next level?***10%.*** The total amount of living matter produced in an environment is called its ***biomass.*** All of the biotic and abiotic factors interacting in an area form a(n) ***ecosystem.*** An area characterized by a dominant climate and plant/animal life is known as a ***biome.*** Plants are the only organisms that can convert sunlight into

chemical energy in the form of carbohydrates. Plants are the _____or _____and the animals and fungi are the _____ or _____. The process by which plants trap the energy from sunlight to make glucose or other sugars is known as_____. Organisms that break down dead organic matter and return nutrients to the soil are called _____. Sometimes two

chemical energy in the form of carbohydrates. Plants are the ***autotroph*** or ***producers*** and the animals and fungi are the ***heterotrophs*** or ***consumers***. The process by which plants trap the energy from sunlight to make glucose or other sugars is known as_***photosynthesis.*** Organisms that break down dead organic matter and return nutrients to the soil are called ***decomposers***. Sometimes two

two organisms live together in a relationship known as _____. If both organisms benefit from the relationship such as in lichens, the relationship is called _____, but if one organism is harmed due to the relationship it is called _____. All organisms require things in order to live. When these things are not available, they cannot reproduce or stay alive. These factors are called the _____ factors.

two organisms live together in a relationship known as _***symbiosis***__. If both organisms benefit from the relationship such as in lichens, the relationship is called _***mutualism***___, but if one organism is harmed due to the relationship it is called __***parasitism***__. All organisms require things in order to live. When these things are not available, they cannot reproduce or stay alive. These factors are called the _***limiting***_ factors.

They could include space, food, nutrients, water, etc. When an area has reached the maximum capacity of individuals, it is said to be at _____. The gradual change of an ecosystem or environment to a different kind of environment is known as _____. When it occurs after a fire, hurricane, or other natural disaster it is known as _____ _____, but when it occurs where there has never been any life

They could include space, food, nutrients, water, etc. When an area has reached the maximum capacity of individuals, it is said to be at ___*carrying capacity*_____. The gradual change of an ecosystem or environment to a different kind of environment is known as _*succession*____. When it occurs after a fire, hurricane, or other natural disaster it is known as _*secondary succession*_____, but when it occurs where there has never been any life

life before it is called _____ _____. The first plants, such as lichens, mosses, and ferns to live on bare rock or ground are called _____ _____. The stable community containing mostly hardwood trees would be known as the _____ _____.

life before it is called ___*primary succession*_____. The first plants, such as lichens, mosses, and ferns to live on bare rock or ground are called _*pioneer*_____*plants*. The stable community containing mostly hardwood trees would be known as _*climax community*___.

Content Domain V: Evolution

_____was an English naturalist who traveled to the _____ islands making careful notes and descriptions of the organisms there such as tortoises and finches?

His theory of _____ stated that organism who were well suited to the environment would survive and pass on their traits to their offspring.

Favorable variations within a species that allow them to be well suited to the environment are known as _____.

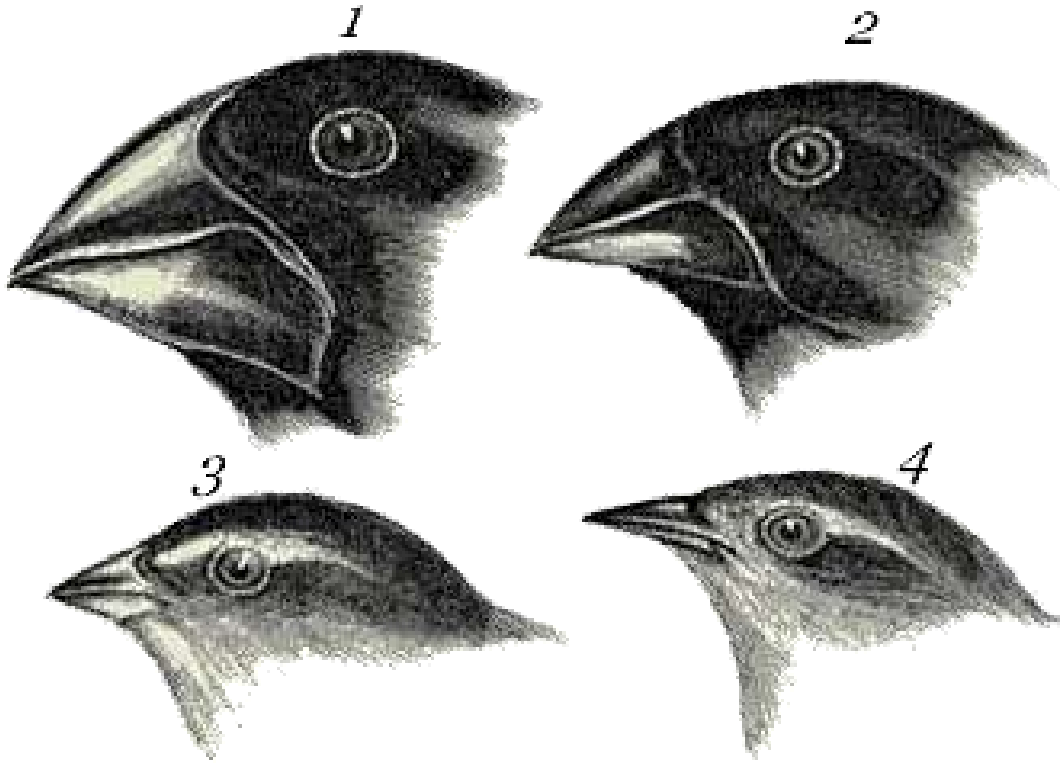
Content Domain V: Evolution

*Charles Darwin* was an English naturalist who traveled to the _*Galapagos*___ islands making careful notes and descriptions of the organisms there such as tortoises and finches?

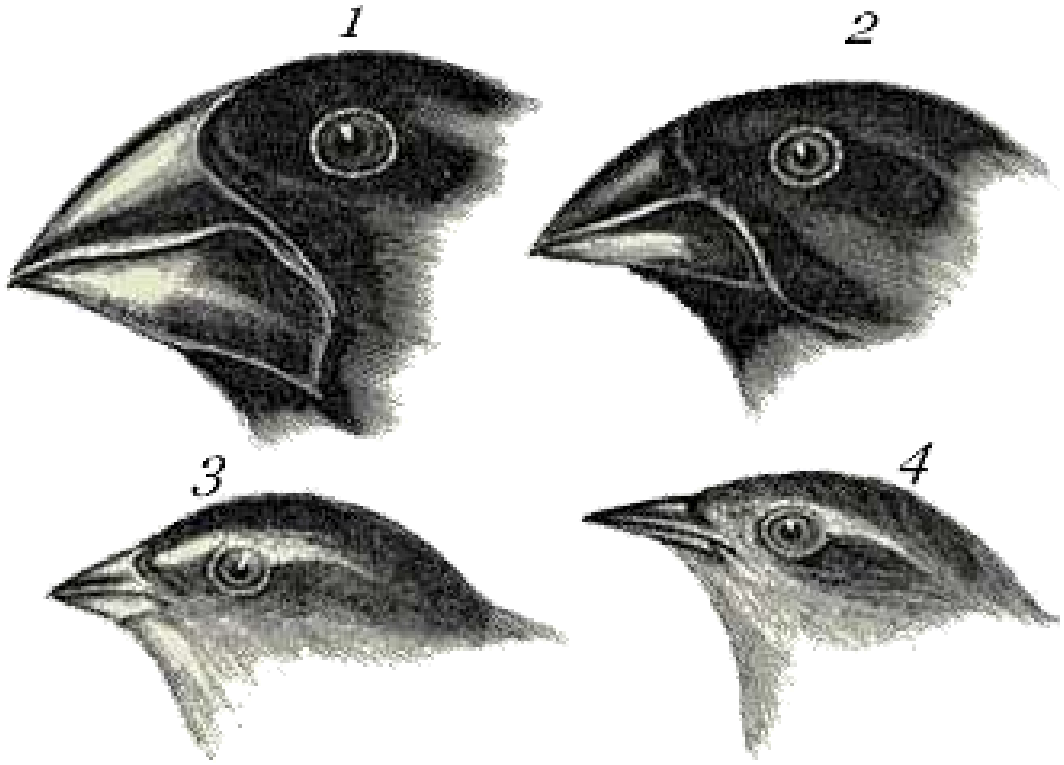
His theory of __*natural selection*__ stated that organism who were well suited to the environment would survive and pass on their traits to their offspring.

Favorable variations within a species that allow them to be well suited to the environment are known as ___*adaptations*_____.

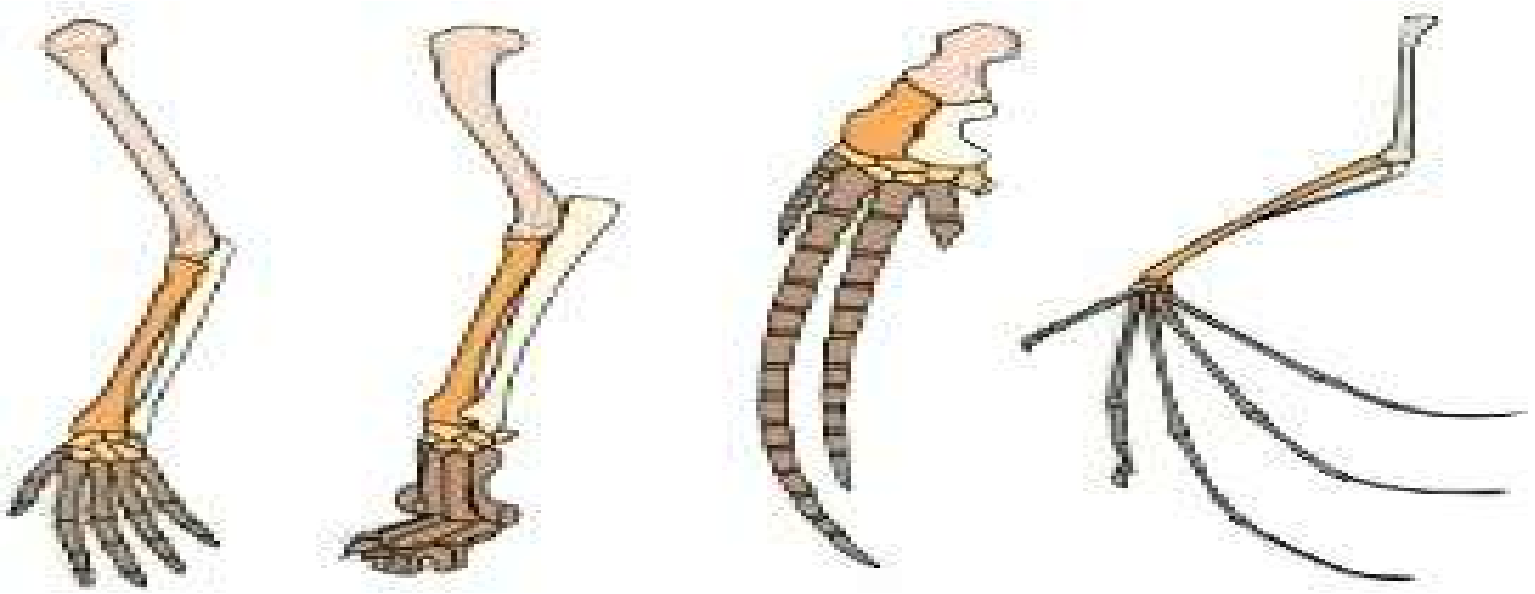
The finches below show similar birds with variations in beaks and eating habits. This could have been a result of _____ radiation.



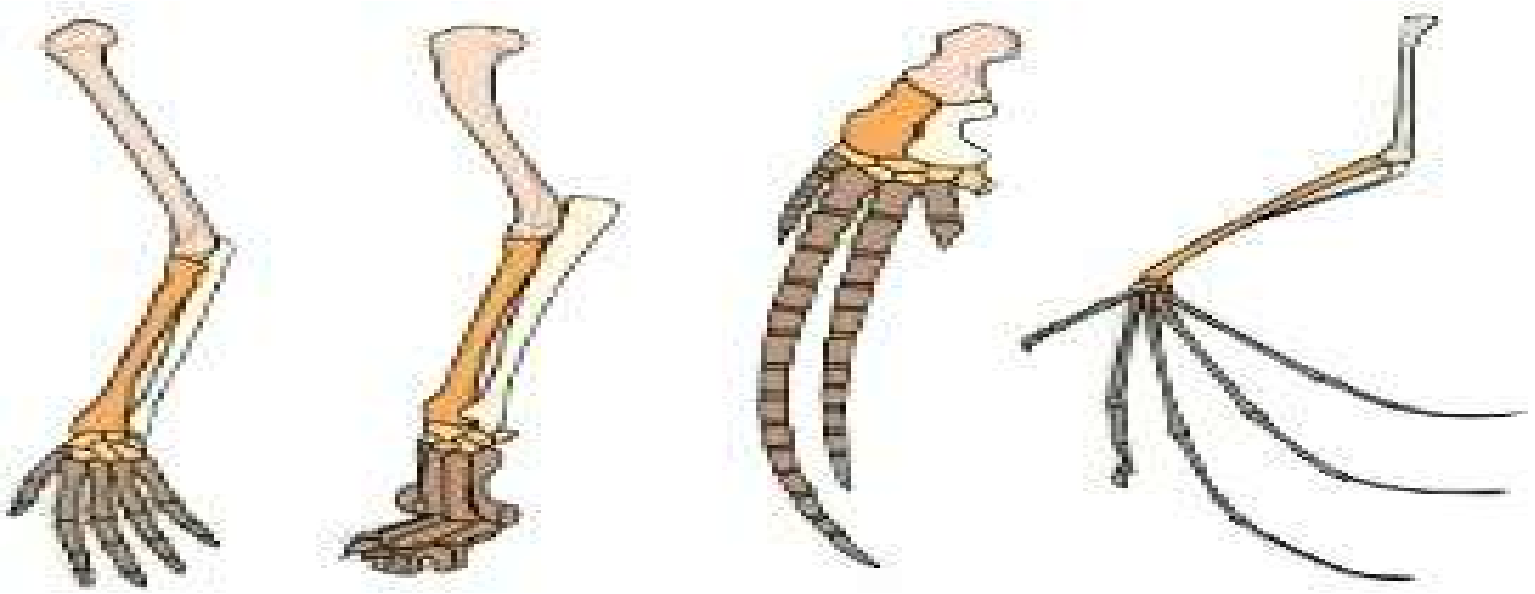
The finches below show similar birds with variations in beaks and eating habits. This could have been a result of _*adaptive*__ radiation.



The diagram below shows anatomical evidence for evolution. These structures are known as _____ structures.



The diagram below shows anatomical evidence for evolution. These structures are known as ***homologous*** structures.



_____ evolution occurs when two unrelated species have similar form.

Would breeding race horses be an example of artificial or natural selection?_____

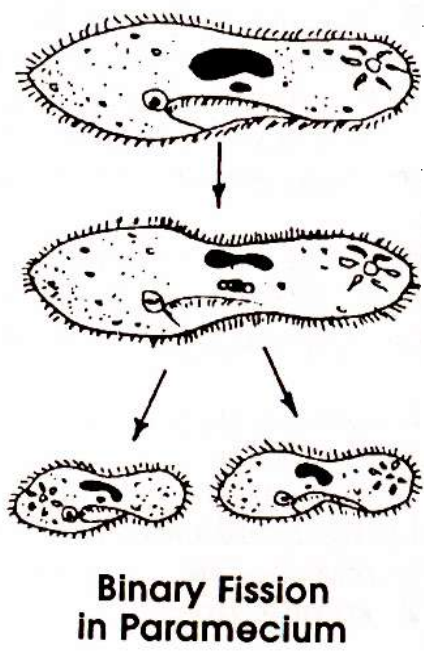
_____ or the traces of organisms that once lived are also evidence for evolution.

_***Convergent***___ evolution occurs when two unrelated species have similar form.

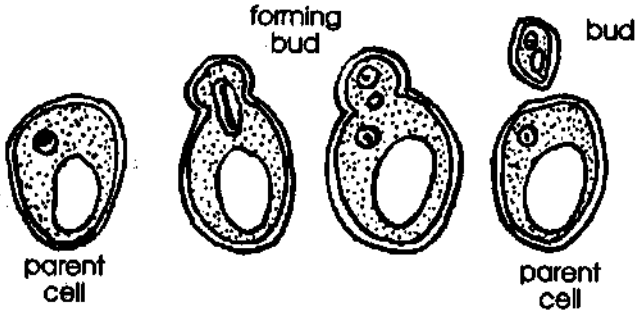
Would breeding race horses be an example of artificial or natural selection?_***artificial***____

*Fossils* or the traces of organisms that once lived are also evidence for evolution.

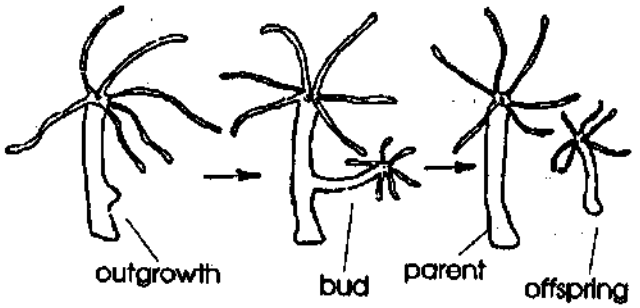
Label the following diagrams as either Sexual or Asexual Reproduction



Binary Fission in Paramecium



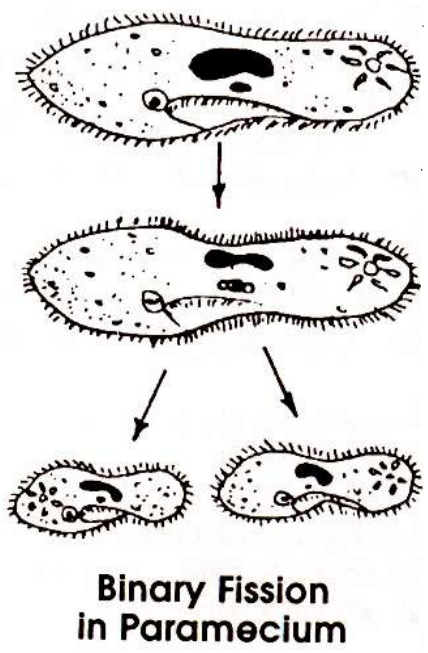
Budding in Yeast



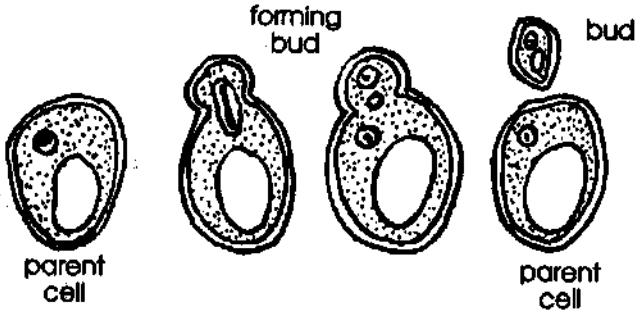
Budding in Hydra

Label the following diagrams as either Sexual or Asexual Reproduction

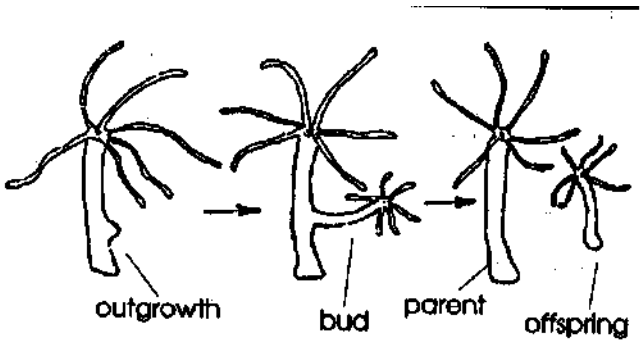
Asexual *asexual_* *asexual_*



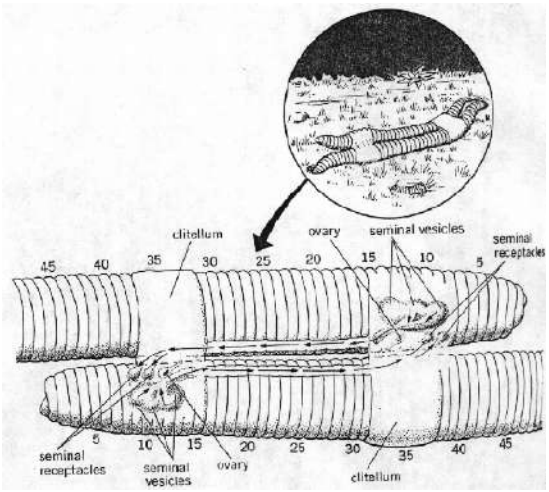
Binary Fission in Paramecium



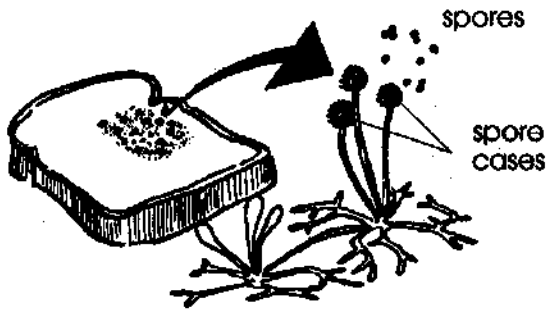
Budding in Yeast



Budding in Hydra

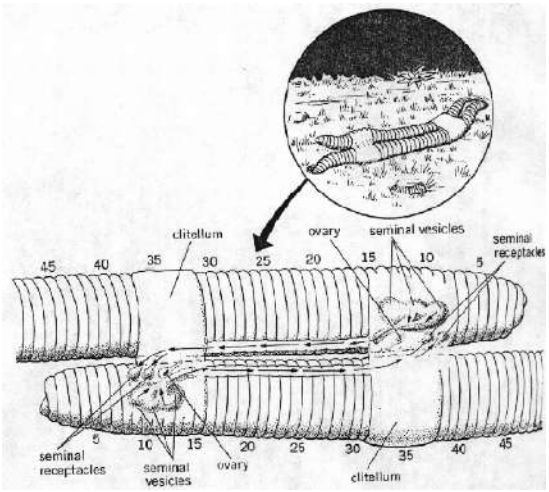


tubers -potato



Sporulation - Bread Mold

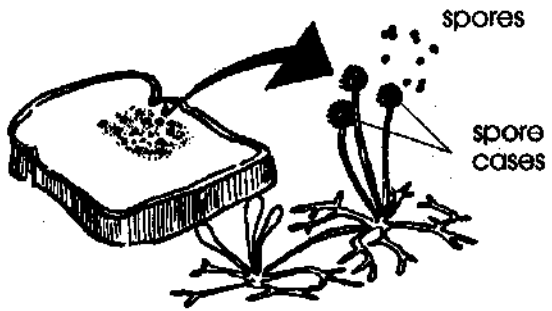
sexual



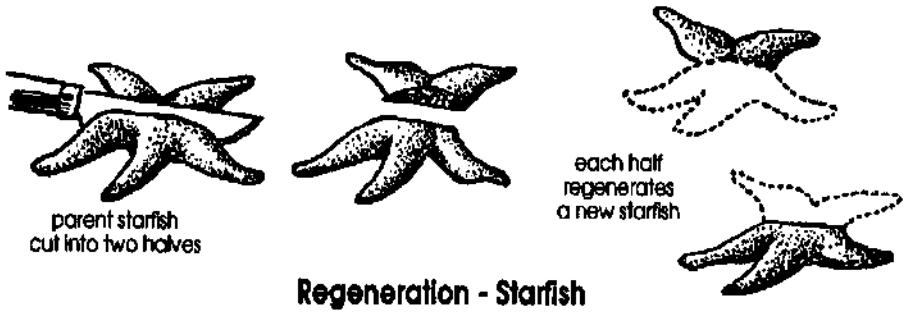
sexual

tubers -potato

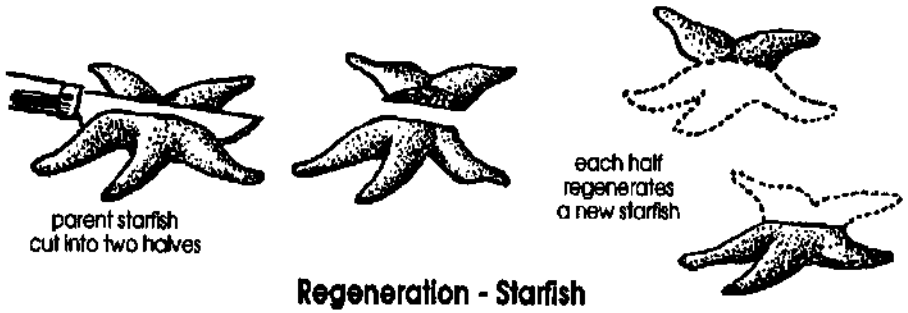
sexual



Sporulation - Bread Mold



Regeneration - Starfish



Regeneration - Starfish

*asexual_*

*asexual_*