Keystone Kramming:

By:Chelby, Cindy, Mekhya, Natalie and Leon

Modules:

I. Cells and Cell Processes
II. The Chemical Basis for Life
III. Bioenergetics: Photosynthesis and Cellular Respiration
IV. Homeostasis and Transport
V. Continuity and Unity of Life
VI. Genetics
VII. Theory of Evolution
VIII: Ecology

Cells and Cell Processes

Basic Biological Principles-Mekhya

Key terms:

- **Cell theory** - Is the theory that all living organisms are made up of cells.
- **Evolution** - The change in the heritable characteristics of biological populations over successive generations.
- **Gene theory** - Traits are passed down from parents to offspring through gene transmission.
- **Homeostasis** - The ability to maintain stable conditions because of environmental changes.
- **Laws of thermodynamics** - The 1st law is the Law of Conservation of Energy, which means energy can't be destroyed or created in an isolated system. The 2nd law is the Law of Thermodynamics, which means that the entropy of any isolated system will always increase. The 3rd law is Law of Thermodynamics, which is when the entropy of a system reaches a constant rate when the temperature reaches the lowest temperature possible(absolute zero).

Essential questions:

- What are the characteristics of living organisms?
- How do organisms grow and reproduce?
- How do organisms interact with their environment around them?
- How do the structures of organisms allow life's functions?

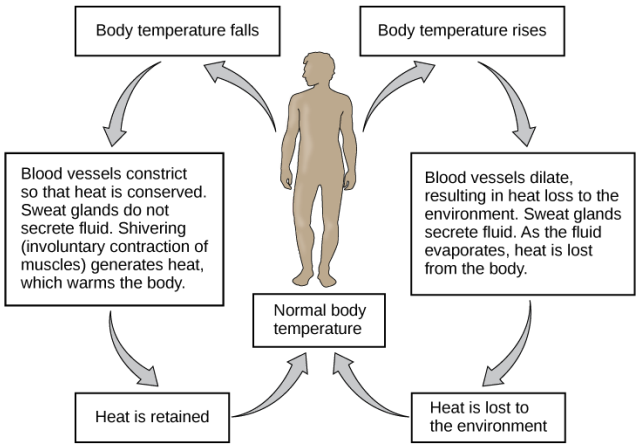
Objective:

To learn and understand what are the characteristics of life. And why are they essential to all living organisms. The student should know how to answer all of the questions and have an explanation to back it up.

Summary:

The characteristics of life are obtaining and using energy, homeostasis, the ability to grow and reproduce and responding to stimuli in their environment. All organisms made of cells have these characteristics are that are important to life. All living organisms can obtain and use energy either by sunlight or taking in energy from other organisms. Living organisms go through homeostasis to maintain a stable environment internally. They have the ability to grow and reproduce by duplicating their cells. Then in cell division they'll reproduce when the cell divide. Living organisms respond to the change in their environment which is responding to stimuli. These cells are made up of different layers essential to life. The plasma membrane is the outer layer of a cell. That controls what goes in and out of the cell. Then it's the cytoplasm, DNA and ribosomes that made up in the cell. The 2 different type of cells are prokaryotic and eukaryotic. Prokaryotic cells aren't as complex as eukaryotic cells and they're unicellular. Eukaryotic cells are multicellular or unicellular and can be larger than prokaryotic cells. Organelles have functions specific for them and are made from a part of the cell. The ribosomes in the eukaryotic cells makes proteins that are transported out of the cell.

Visuals:



Testing Strategies:

- Reread the question and understand what it's asking.
- Highlight important information
- Process of elimination

Original practice questions (3 multiple choice, 2 short answer)

1.) How do living organisms maintain a stable internal environment?

Answer- Organism have set conditions best for them to function. This process is called homeostasis. This keeps the level balanced and stop them being unstable.

2.) Compare and contrast prokaryotic and eukaryotic cells.

Answer - Prokaryotic cells are less complex and smaller than eukaryotic cells. And they don't have a nucleus in them. Eukaryotic cells have membrane bound organelles in the plasma membrane.

1.) **Which is not a characteristic of life?**

A. Obtain and use energy
B. Transform
C. Reproduce
D. Homeostasis

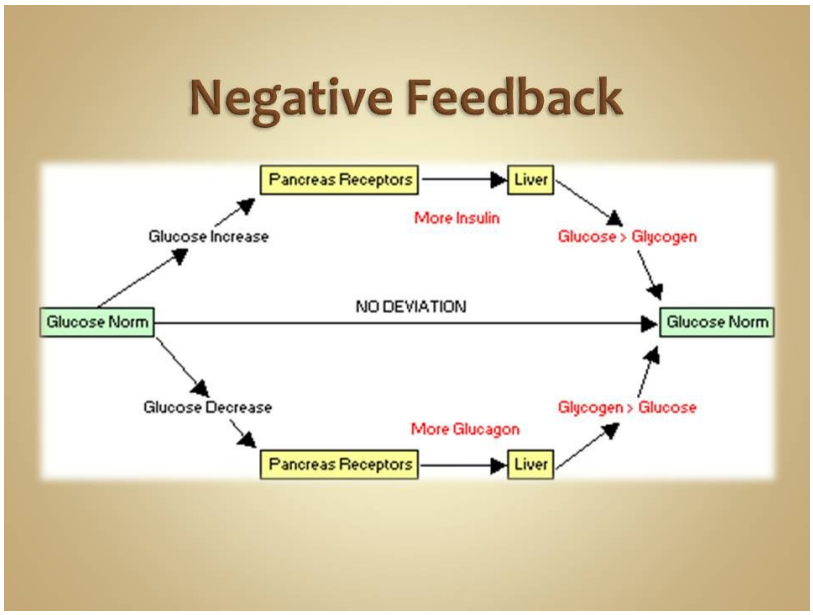
What's not inside of the cell? -

A.) Oxygen
B.) Plasma Membrane

C.) DNA
D.) Ribosomes

True or False :
All organisms are multicellular?
A.) True
B.) False

Visuals:



The Chemical Basis for Life- Mekhya

Key Terms:

Solubility - the ability of one substance(solute)to dissolve in other substance(solvent).
Ionic Compound - it's made up of two ions with opposite charges.
Organic Compound - Has carbon atoms bonded to hydrogen atoms.
Adhesion - The tendency of water molecules sticking to other surfaces
Cohesion - The tendency of water molecules sticking together.

Essential questions:

When does covalent bonding happen?
What the relationship between water and density?

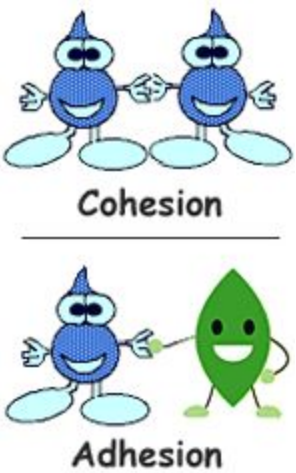
Objective:

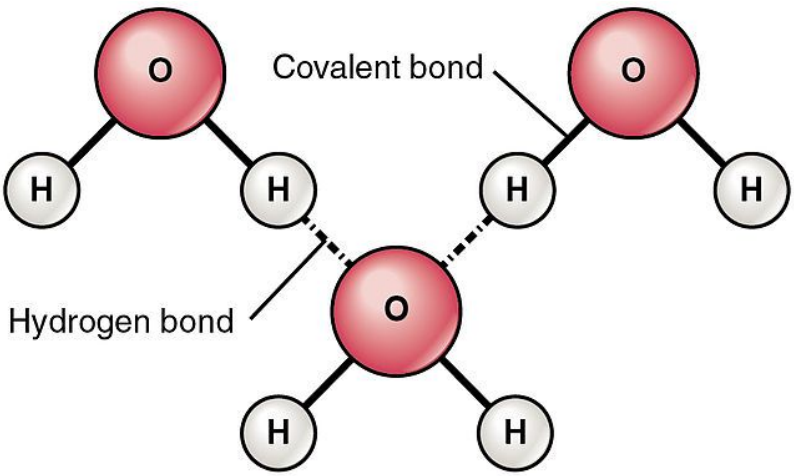
The objective is for students to understand the properties of water and learn the chemical basis of life. The student should know the different properties and what they mean.

Summary:

Atoms form a covalent bond when they share electrons. The organic compounds are made up of carbon and hydrogen. For the covalent bond to be stable all of the 4 slots should be filled. The structure of the carbon makes the form of the macromolecules. Then there are nonpolar molecules that are not soluble in water. Such as lipids, they can't dissolve in water. Their functions are to storage energy, form the cell membranes, protect some of the organisms and be messengers. In living cells nucleic acid, DNA and RNA are very important. They are polymers which are made of nucleotides. You can make a polymer by joining the phosphate group of one nucleotide. The functions of the nucleic acids are encoding genetic information, protein synthesis, and composing ribosomes. Then there's proteins which helps catalyze the reactions, copy DNA and transport molecules. Their roles are to provide the structure for the cell, create animal structures and act as enzymes. Enzymes job is too speed up a chemical reaction. They lower the activation energy when doing it. No matter how many enzymes a organism has each of the enzymes have a different reaction. And the substrate binds with the active site during the process.

Visuals:





Testing strategies:

*Write out what you already know about the topic
*Reread your answers
*Relate the questions to other past questions.

Original practice questions:

What is the process of enzyme bonding with a substrate?

Answer - the enzyme goes with the substrate it's made for. Then the substrate binds with the active site. Which causes for the enzyme to catalyze the reaction. The end of the process is when the productions of the reactions release.

What is the equation for lactose?

Answer -
A.)sucrose -> glucose + fructose
B.) glucose -> fructose
C.) sucrose + fructose
D.) none of the above

What is denaturation?

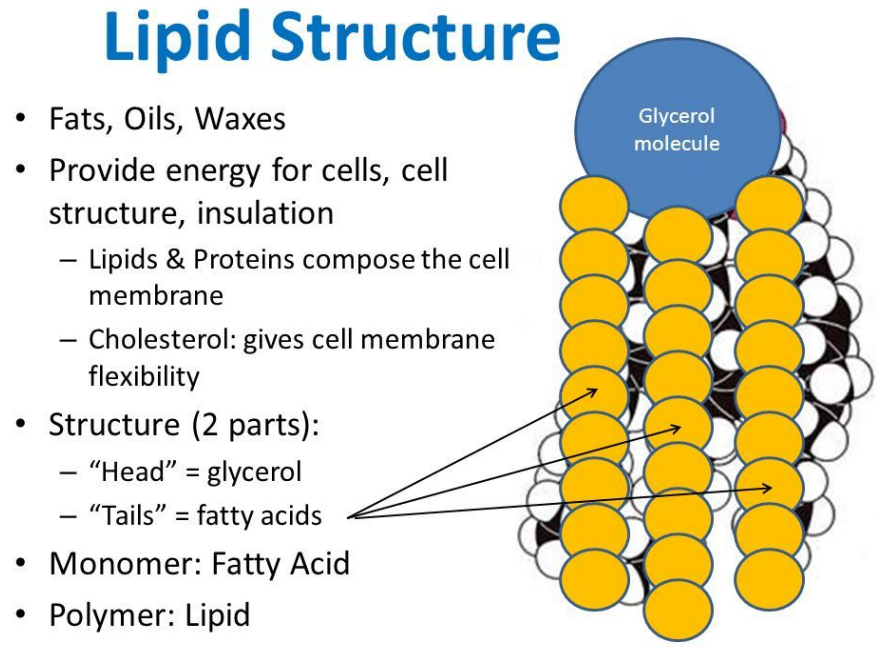
Answer - When the enzyme becomes inactive because of changes that alter the enzyme's function.

True or False?
Lipids can be dissolved in water?

False

True or false?
Adhesion is when water sticks to the surface?

True



Bioenergetics: Photosynthesis and Cellular Respiration - Natalie

Key Terms:

- Chloroplast - Organelles in plant cells which conduct photosynthesis
- Chlorophyll - Pigment inside Chloroplast which captures light energy
- Thylakoid - An organ (typically formed as a stack called, granum) inside Chloroplast which uses light and water to produce oxygen
- Stroma - Liquid inside the chloroplast which Carbon Dioxide and ATP react to produce glucose.
- Carbon Dioxide (CO_2) - Reactant needed for photosynthesis to occur
- ATP - A molecule that stores energy in high volumes
- Oxygen (O_2) - Product of photosynthesis
- Glucose - Glucose, a product of photosynthesis
- Cellular Respiration - Process that provides energy by breaking down glucose and other food molecules
- ATP - A molecule that stores energy in high volumes

- Electron Transport Chain - A series of electron carrier molecules that move electrons during reactions, reactions that make ATP
- Fermentation - A process that makes ATP from glucose without an Electron Transport Chain but produces lactic acid or ethyl alcohol.

Essential questions:

1. How does a Chloroplast perform Photosynthesis?
2. How is ATP used in both Cellular Respiration and Photosynthesis?
3. What are the reactants and products of Photosynthesis?
4. What is the purpose of Cellular Respiration?
5. What is the use of light in Photosynthesis?

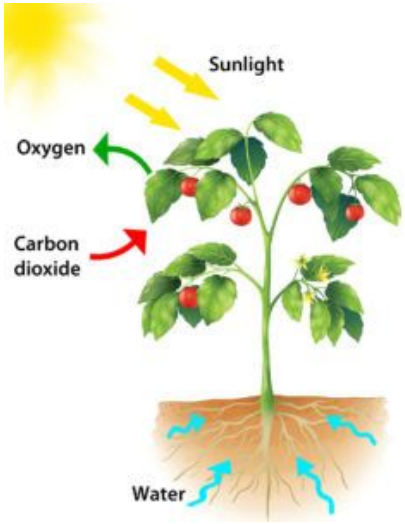
Objective:

- To understand how both animals and plants create energy through the complex systems of both Photosynthesis and Cellular Respiration.

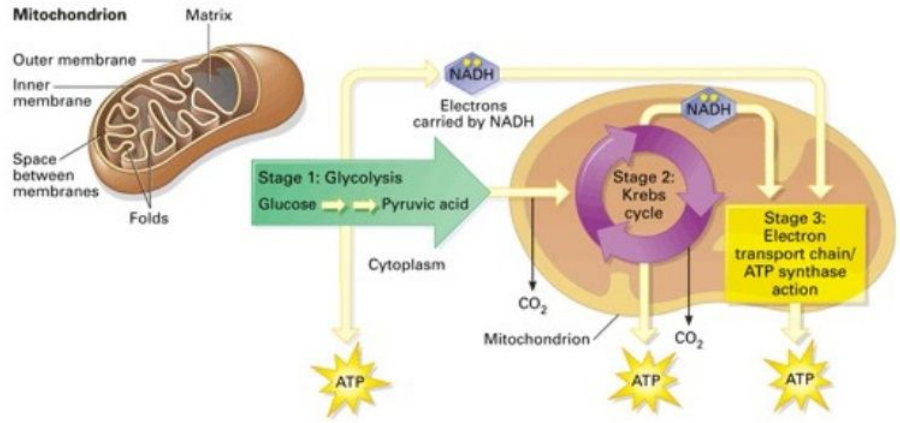
Summary:

- Photosynthesis is a chemical reactions which main goal is to produce glucose which serves as food for plants. Photosynthesis relies on two main elements, carbon dioxide and sunlight. Photosynthesis has two reactions. In the first reaction, sunlight and water react with temporary ATP energy which produces oxygen. In the second reaction, carbon dioxide and ATP + NADPH, react which creates glucose for plants to consume.
  ATP is the main spent resource as each chemical reaction consumes ATP to conduct many different reactions.
  Cellular respiration is a chemical reaction which main goal is to create energy (ATP) for animals and plants while also releasing waste. Cellular respiration is dependant on many chemical reactions, three reactions which produce energy and those that consume energy. Cellular respiration can produce energy by converting glucose into ATP energy, this is called fermentation but can produce a byproduct. Energy can also be created by the use of the Electron Transport Chain, the ETC are a series of electron carrier molecules moving electrons around which ultimately result in ATP being created without a byproduct. Lastly, ADP can be attached to a phosphate group which also will create ATP energy.

Visuals:



Cellular Respiration: Energy for Life



Testing strategies:

- Pay attention to what the question is really asking. Sometimes, the test givers may try to throw your off or trick you
- Be mindful of the information given to you. They give you a lot of information, but most of the time, most of it really isn't important. Stay focused on what is relevant and important to the topic

- Process of Elimination. This is a useful strategy in those times where you're stuck on a question and you don't know the answer. Use common knowledge to eliminate answers that don't make sense.

Homeostasis and transport- Natalie

Key Terms:

- Thermoregulation- An organism being able to keep its body temperature at a certain degree, even if its in an environment with a different temperature.
- Osmoregulation- Constant Osmotic pressure that can be found in fluids of an organism controlled by salt and water levels.
- Gas exchange- When you get rid of carbon dioxide, and get oxygen.
- Regulation of Blood Glucose- Hormones, a chemical signal that gets released into your blood, only affect certain tissues with specific proteins.
- Homeostatic Mechanism- The processes when an organism is able to monitor and maintain a constant state.
- Ion and Molecular Pumps- These are both mechanisms of active transport.
- Diffusion- The movement of molecules/ions down a concentration gradient.
- Concentration Gradient- A gradual difference in the concentration of a substance in solution as a function of distance.
- Passive Transport- The movement of particles across the membrane *without* the use of energy.
- Active Transport- The movement of particles from an area of low concentration across the membrane to an area of high concentration, *using* energy.
- Osmosis- The movement of water from where dissolved substances are less concentrated to where they are *more* concentrated.
- Endocytosis- This takes extracellular material into the cell by forming a membrane vesicle around it.

Essential questions:

1. What would happen if our bodies didn't use homeostasis?
2. How does your body use homeostasis to maintain a consistent body temperature?

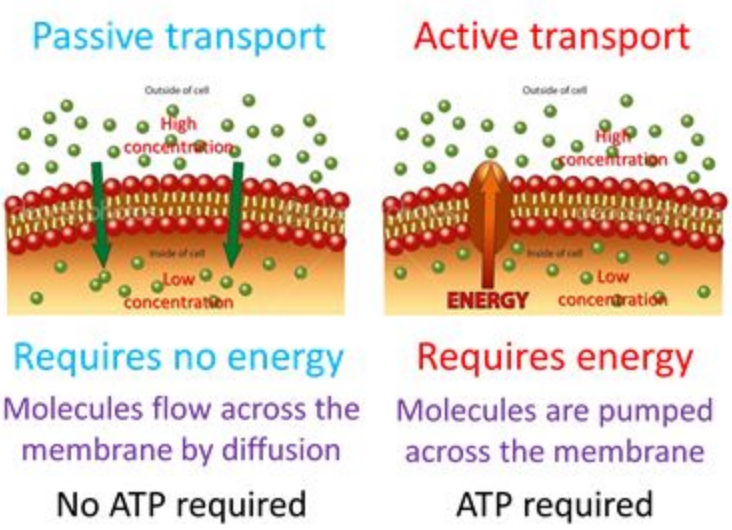
Objective:

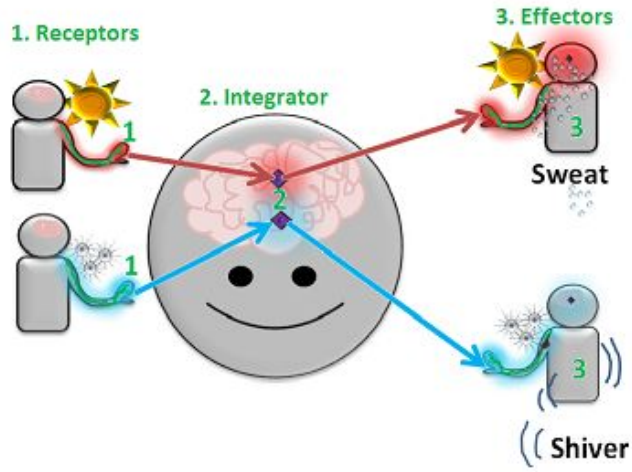
- The objective is for students to understand the concept of how homeostasis and transport work. This helps them to understand why and how your body does certain things.

Summary:

- Homeostasis is the maintenance of a constant internal state. In other words. Our bodies use homeostasis to keep our bodies at a regulated and constant temperature. For example, to make sure we don't overheat, our body sweats. To make sure we don't freeze, our body begins to shiver. This is our body's way to ensure that we stay healthy. Passive transport takes place when particles move across the membrane, without requiring energy. Active transport is when particles move across the cell membrane, although active transport does require energy. Together, homeostasis and cell transport work together as a system to keep our body as healthy as it can. There are four different kinds of homeostasis that include: Thermoregulation, this is an organism that is able to keep its body temperature at a certain degree, despite the temperature in the surrounding environment. Osmoregulation, which is constant osmotic pressure that can be found in fluids of an organism controlled by salt and water levels. Gas exchange, where you get rid of carbon dioxide and get oxygen in return. And Regulation of Blood Glucose. These are hormones that are a chemical signal that gets released into your blood.

Visuals:





Original practice questions:

1. What is Passive Transport?
2. What is Active Transport?
3. What are the four kinds of Homeostasis?
4. How does your body use Homeostasis? Include examples.
5. Why does active transport require energy but passive does not?

Answer key:

1.
   a. Constant Osmotic pressure that can be found in fluids of an organism controlled by salt and water levels.
   b. The movement of particles across the membrane *without* the use of energy.
   c. The processes when an organism is able to monitor and maintain a constant state.
   d. The movement of particles from an area of low concentration across the membrane to an area of high concentration, *using* energy.
2.
   a. The movement of particles from an area of low concentration across the membrane to an area of high concentration, *using* energy.
   b. a chemical signal that gets released into your blood, only affect certain tissues with specific proteins.
   c. being able to keep its body temperature at a certain degree, even if its in an environment with a different temperature.
   d. The movement of particles across the membrane without the use of energy.

3.

a. Thermoregulation, Gas Exchange, Osmoregulation, Diffusion
b. Diffusion, Gas Exchange, Osmoregulation, Endocytosis
c. Diffusion, Thermoregulation, Osmoregulation, Endocytosis
d. Thermoregulation, Osmoregulation, Gas Exchange, Regulation of Blood Glucose

4.

- Your body uses homeostasis to maintain a constant body temperature.
  Examples: shivering when cold, sweating when hot

5.

- In active transport, it requires energy because particles move **against** the concentration gradient.

Continuity and Unity of Life

Cell growth and Reproduction - Cindy

Key terms:

- **Cell cycle**: The stages of a cell's life.
- **Interphase**: This is the longest phase of the cell cycle and during this stage the cells grow, replicates DNA, and then prepares to be split.
- **Chromosomes**: A piece of DNA and it contains genes that has certain traits.
- **DNA replication**: The process where DNA makes a copy of itself
- **Meiosis**: Cell division produces cells used in sexual reproduction.
- **Mitosis:** Nuclear division that produces the most cells of the body.
- **Cytokinesis**: This is the final stage of the cell cycle and this is when the cytoplasm splits in two.
- **Crossing over**: This is an exchange of genetic material between homologous chromosomes and it occurs in Meiosis stage I.
- **Gamete:** An egg or sperm used in sexual reproduction.
- **Allele:** a version of a gene.

Essential Questions-

- What is the cell cycle and what role does it play in the body?
- What are the primary stages of the cell cycle?

- What are the stages of interphase?

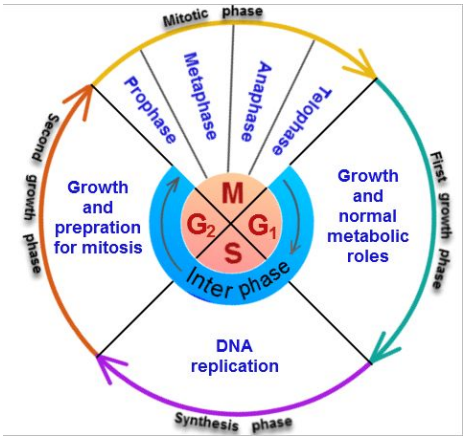
Objective-

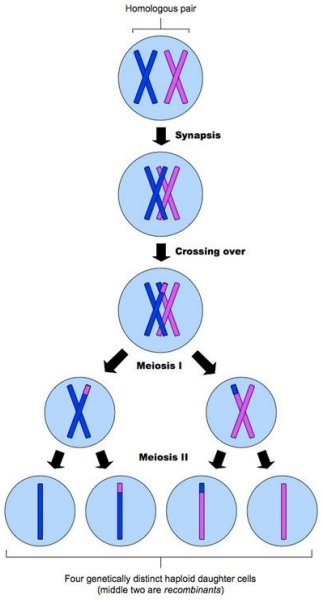
The objective is for students to understand that cells go through a life cycle.

Summary-

The cell cycle is made up of three stages, the interphase, mitosis, and cytokinesis. The interphase is also divided into three stages, in it, cells grow in the G1 stage, replicates DNA during the S stage, and then prepares to divide in the G2 stage. After interphase, comes the mitosis stage where the cell's nucleus makes another replica of the nucleus. Then in the final stage, cytokinesis, the cytoplasm divides and two new daughter cells are formed. Just like in mitosis, cell division also occurs in meiosis but produces gametes or cells used in sexual reproduction. 46 chromosomes are found in homologous pairs, each member is inherited from one parent. They have the same gene but they can also have different alleles. For gametes, since it only holds one chromosome from each pair this means they only hold one allele of each gene. This is useful for sexual reproduction since the offspring would inherit one chromosome for each homologous pair and gain the normal amount of chromosomes. During the meiosis stage, pairs of homologous chromosomes are separated in the first stage, in the second stage, the chromosome is separated into two chromosomes. The cell cycle is the growth and division that cells go through.

Visuals-





Testing strategies-

- Only highlight or read what is important. Sometimes there is a lot of facts but they tend to not be relevant to the topic.
- When you come down to multiple choice questions, make sure to always cancel out the ones that do not sound right to you or are irrelevant to the question.
- If you're stuck on a short answer question, always reread whatever the test has given you and don't just read what you think is important. Everything is important, even the small details!!

Original practice questions-

- What kind of role does cell division play in the cell cycle?

- How many stages are in the cell cycle and what are they called?

- What are the three main stages of the cell cycle?

A. Interphase, Cytokinesis, Mitosis **B.** Interphase, Metaphase, Anaphase **C.** Mitosis, Cytokinesis, Anaphase **D.** Metaphase, Mitosis, Cytokinesis

- What is the final stage of the cell cycle?

A. Interphase **B.** Cytokinesis **C.** Metaphase **D.** Anaphase

- When cells divide what do we call them?

A. sister cells **B.** Partners **C.** Cell membrane **D.** Nucleus

Answer key:

- It allows the growth and the replacement of unhealthy/damaged cells.
- There are 4 phases in the cell cycle known as the G1 phase, S phase, G2 phase, and M phase, known as the interphase.)
- Interphase, Cytokinesis, Mitosis
- Cytokinesis
- Sister cells

Genetics *(Exceeding)* -Cindy

Key Terms:

- **Gene:** A DNA sequence that

- **Allele:** A version of a gene
- **Polygenic:** traits are polygenic, they are determined by the number of different genes located on different chromosomes.
- **Dominant:** if the person only inherits a single copy of the allele then it is a dominant allele
- **Recessive:** if the person inherits two copies of the allele
- **Incomplete dominance:** a heterozygous individual has a phenotype that differentiates from homozygous genotype.
- **Codominant alleles:** heterozygous express both the dominant and recessive phenotypes.
- **Multiple alleles**: genes can have multiple alleles.
- **Sex linked traits:** traits that are dominated by the genes on a sez chromosome.

Essential questions:

- What are genes?
- How are chromosomes, genes, and inheritance related?
- What is hereditary and how does it happen?

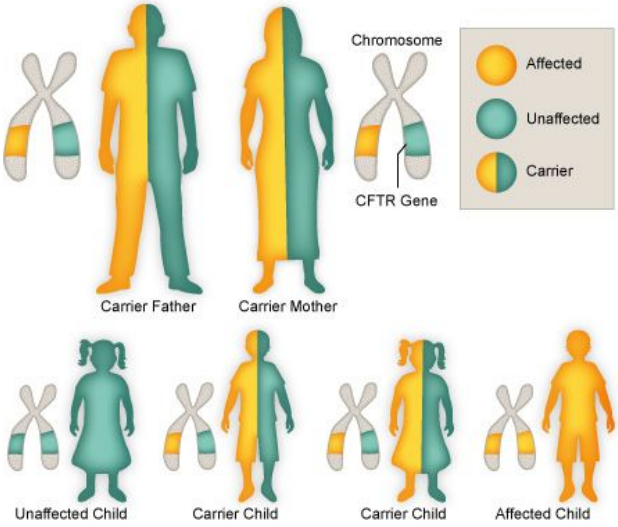
Objective:

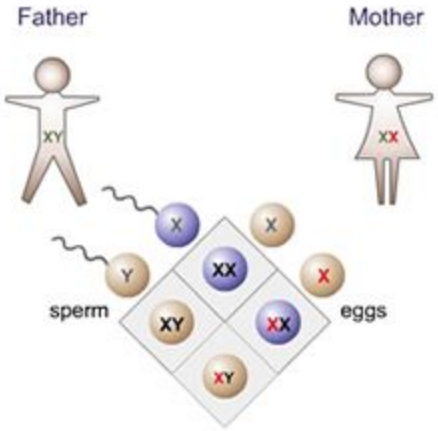
To understand what a gene is and explore genetic inheritance theory.

Summary:

A gene determines a trait, they come in different versions called alleles. The organism of the allele determines the organism's traits. A polygenic trait is determined by the number of different genes located on different chromosomes. Since there are different versions of traits then there are also different versions of genes that determine those traits. You have a phenotype that determines the appearance of a trait and genotype that is the combination of alleles of a certain gene. If an organism were to inherit two dominant alleles then it would be a dominant phenotype but if it would inherit two recessive alleles then it would express a recessive phenotype. If there are genotypes with two matching alleles then they are described as homozygous. Scientists predict inheritance by punnett squares to figure out the allele combinations and the phenotypes of the offspring of a given set of parents. Most genes won't always have one dominant and one recessive gene but some will have incomplete dominance which is when a heterozygous individual has a genotype that differentiates from those with a homozygous genotype. They may also show co-dominance which means that heterozygotes express both dominant and recessive phenotypes.

Visuals:





Testing strategies:

- Read the questions and use context clues.
- Don't forget to read all the answers and don't just assume the first one you read is right.
- As you read underline key words or phrases that are relevant to the question.

Original practice questions:

- What are the units of heredity?

a. Genes b. Active transport c. Fats d. Lipids

- What does phenotype determine?

a. Appearance b. Blood type c. favorite color d. Personality

- What would be the genotypes of parents?

a. Homozygous dominant b. Heterozygous dominant c. homozygous dominant d. Male is homozygous recessive and female is homozygous dominant

- What is the difference between a dominant allele and a recessive allele?

- What is sex linked traits?

Answer key:

- Genes
- Appearance
- Heterozygous dominant
- A dominant allele only needs one copy of dominant allele and recessive allele has a phenotype effect that is hidden.
- They are traits controlled by genes located on sex chromosomes.

Theory of Evolution *(Exceeding)*- Leon

Key Terms:

Evolution: the change in allele frequencies that results in a new species from pre-existing ones.

Natural Selection: The process in which alleles for characteristics that increase an advantage in survival and reproduction are likely to be passed on

Allele Frequency: How often an allele occurs in a population. An allele with a higher frequency is more common than a lower frequency

Population: A group of organisms of the same species in the same geographical location and is of the same breed.

Genetic drift: A change in allele frequency due to chance events rather than viability and optimality.

Migration: Movement of individuals in and out of a population

Founder effect: The decrease in genetic variation due to a new population forming which reduces amount of different alleles

Speciation: Formation of new species due to population isolation

Species: A group of organisms capable of reproducing and making fertile offsprings

Isolating mechanism: A physical or behavioral trait that makes organism from a specie unable to reproduce with another organism from a different species.

Fossil: Remains and or traces of an organism from long ago that has been preserved.

Homologous structures: Similar physical features due to descending from a common ancestor.

Analogous Structure: Similar functions due to living in the same conditions

Mutation: A change in a DNA sequence

Essential questions:

What is the theory of evolution ?
How is allele frequency related to genetic variation?
How does geography affect population and speciation

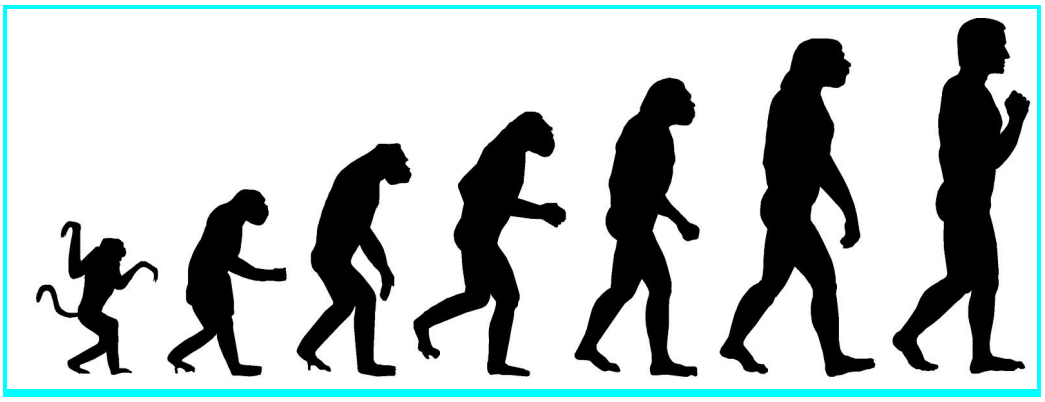
Objective:

i. Explain how natural selection impacts allele frequency in a population
ii. Describe the factors that contribute to the development of a new species
iii. Explain how mutations may result in genotypic and phenotypic variations in a population
iv. Interpret evidence that supports the theory of evolution
V. Distinguish between the scientific terms: hypothesis, inference, law, theory, principle, fact, and observation

Summary:

The theory of evolution came to be from Darwin and the theory is the theory that every organism originates from a single ancestor. How every organism cam to be the way it is due to mutations in the DNA sequence, geographical barriers that caused the organisms to adapt and change to the newly introduced environment and natural selection which made it so that the best traits would be passed on to further generations in order to increase odds of survival. There are multiple sources of arguments and evidence that support this theory. The main piece would be fossils. Fossils are the reserves of an organism that passed long ago and its remains were preserved. The fossils would provide information regarding the similarities between ancient animals and animals of the present. These similarities are what lead the scientist to draw conclusions based on the evidence presented. Another thing that leads to belief in evolution is that fact that similar species are still considered differently due to possible differences in physicality and behavior. Differences in physicality can separate species into their own like alligators and crocodiles. Both of them behave and are physically similar but the differences between them such as environment and physical structure are enough to separate the two kinds of organisms into separate species.

Visuals:



Testing strategies:

Know the difference between Homologous structure and Analogous structure
Know that Allele frequency is related to genetic variation and how similar the population is genetically.

Original practice questions:

A butterfly that has a tiger striped pattern and a butterfly that has a brown pattern live in the woods. After some time the tiger striped butterfly dies out because it can't blend in to its surroundings. What is this an example of?

A. **Evolution**
B. **Natural Selection**
C. **Speciation**
D. **Migration**

A fish and a shark live in the same geographical location and they function very similarly what kind of structure is this

A. **Analogous Structure**
B. **Homologous Structure**

A population of monkeys is separated by a fissure in the ground. The split monkey population eventually becomes another species after a long period of time. This is

A. **Genetic Drift**

B. **Migration**
C. **Speciation**
D. **Isolation Mechanism**

How is allele frequency related to the founder's effect?

The allele frequency is drastically increased in the founder's effect due to there being a lack of genetic variation

How do mutations help cause evolution and a creation of a new species?

Mutations help cause evolution and a creation of a new species because the change in DNA sequences could result in a phenotype change in the animal which could possibly lead to Natural Selection which could evolve the species to a more optimal state.

Ecology (Exceeding)-Chelby

Key terms:

- **Environment:** A place where a person, animal, or plant lives.
- **Habitat:** The home of a plant or animal.
- **Population:** The number of people in a community.
-**Life:** The existence of an individual human being or animal.
-**Food Chain:** A set of organisms that depend on each other as their next meal.
- **Community:** Organisms living in one place.
-**Biotic:** relating to or resulting from living things, especially in their ecological relations.
-**Abiotic:** physical rather than biological; not derived from living organisms.
-**Biome:** a large naturally occurring community of flora and fauna occupying a major habitat.
-**Food Web:** A system of interlocked food chains.

Essential Questions:

- What is the study of ecology?
- What does biotic mean?
- What does Abiotic mean?
- What's the difference between Biotic and Abiotic?
- How does a food chain work?
- What is an example of an ecosystem?
- What is a food web?

Objectives:

The objective of ecology is to learn about how the ecosystem works and how organisms interact with one another in their environments.

Summary:

Ecology is how organisms work and interact in their environment with other organisms. Ecology includes the study of biology, geography, and the science of Earth. Humans affect ecology a lot based on the decisions that they make. The actions that humans make affect how other organisms are and how their environment will be. For organisms to survive, they have to interact with the other organisms in their community so they can survive. In ecology, there are different levels of the study. There's organismal ecology, population ecology, community ecology, and ecosystem ecology. Organismal ecology focuses on how individuals interact in their environment, population ecology focuses on what affects population density and distribution, community ecology focuses on how the different populations interact with one another, and ecosystem ecology focuses on how things are working in the ecosystem. They have these different levels because ecology is such a broad field of study when it comes to researching how organisms work in their environment. Ecology is so important because if we don't help make our ecosystem better, us humans and the Earth won't stay healthy. Ecology is also very important because different ecosystems provide us humans with different resources to survive. All the ecosystems are connected and if one ecosystem gets hurt the other ones will be affected by it, and that's why we need to take care of our ecosystem.

Testing Strategies:

Testing strategies that you could use during the test is that you can first use process of elimination. If you use this you can cross out the answers that don't make sense or answers that you know that are wrong and focus on two possible answers. Another testing strategy you can use is answering all of the easy answers first. Don't take to much time on one question when you can return to that one later. One last testing strategy you can use is to answer a question you can't figure out in the best way possible, just take your best guess and move on.

Original practice questions:

1) **What is a food chain?**
    a) Organisms dependent on each other as their next source of food.
    b) Food on a chain.
    c) A community of animals.

2) **What's the difference between a food chain and a food web?**
    a) A food web is many food chains and a food chain is where animals are dependent on one another as their next food source.
    b) A food web is where organisms catch their food and a food chain is where animals are dependent on one another as their next food source.
    c) They're the same thing and you can use both terms whenever you want.

3) **What is the difference between abiotic and biotic?**
    a) They're the same thing.
    b) Abiotic is non-living ecosystem and Biotic is a living ecosystem.
    c) Abiotic is a living ecosystem and Biotic is non-living ecosystem.

4) **What is an example of an ecosystem?**
    a) _____

5) **What is the difference between Carnivores, Herbivores and Omnivores?**
    a) _____

Answer Key:

6) **What is a food chain?**
    a) Organisms dependent on each other as their next source of food.
    b) Food on a chain.
    c) A community of animals.

7) **What's the difference between a food chain and a food web?**
    a) A food web is many food chains and a food chain is where animals are dependent on one another as their next food source.
    b) A food web is where organisms catch their food and a food chain is where animals are dependent on one another as their next food source.
    c) They're the same thing and you can use both terms whenever you want.

8) **What is the difference between abiotic and biotic?**
    a) They're the same thing.
    b) Abiotic is non-living ecosystem and Biotic is a living ecosystem.
    c) Abiotic is a living ecosystem and Biotic is non-living ecosystem.

9) **What is an example of an ecosystem?**

a) Forests, Deserts, Oceans, Grassland, etc

10) What is the difference between Carnivores, Herbivores and Omnivores?

a) Carnivores eat meat, Herbivores eat plants, and Omnivores eat other animals or plants.

Visuals: