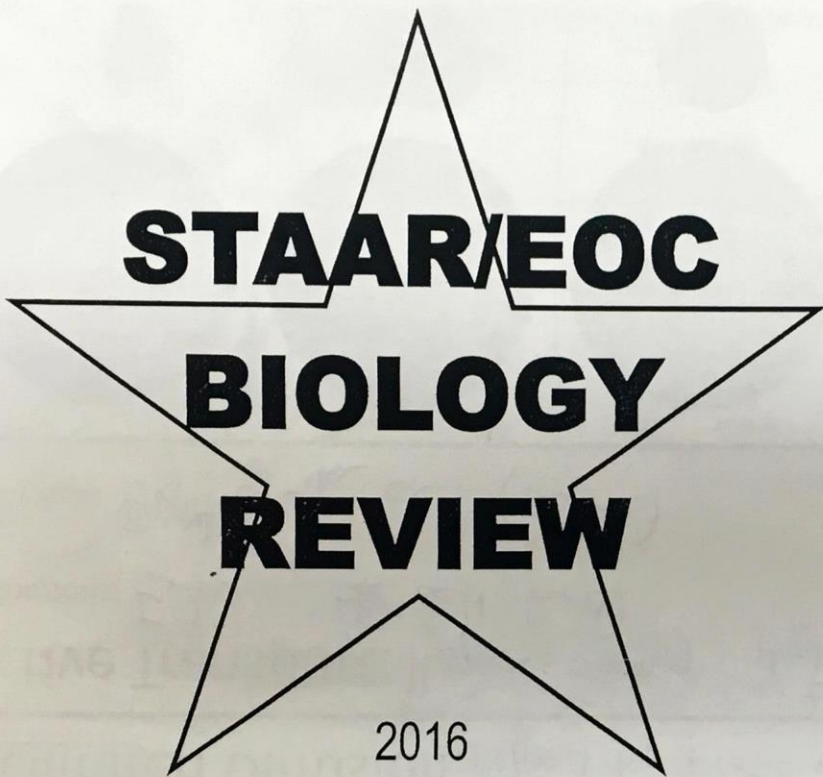


HW

Reporting Category 1

Cell Structure & Function. You will have a total of 11 questions from the concept



Need to know the function & type of cell

DNA:

Nucleus:

Cell membrane:

Cell Wall:

Flagella:

Ribosome:

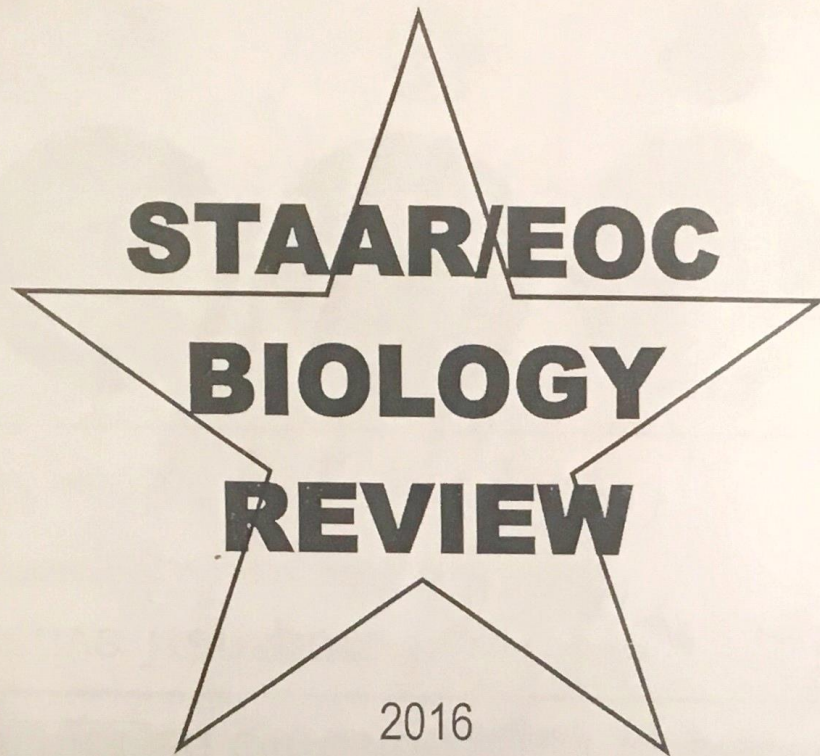
Mitochondria:

KEY

Name

Period

Teacher



Name: _____

Period: 4

Teacher: _____

HW
Reporting Category 1

Cell Structure & Function. You will have a total of 11 questions from the concept

Need to know the function & type of cell

DNA: Stores genetic info. All cells

Nucleus: Control center of cell, contains DNA; Eukaryotes

Cell membrane: Boundary of cell, decides what goes in + out; All cells

Cell Wall: Rigid outer layer for support; Plant

Flagella: Movement; Bacteria (Prokaryotes)

Ribosome: Makes proteins; All Cells

Mitochondria: Makes energy (ATP) Eukaryotes (Plant & Animal)

Chloroplast: site of photosynthesis; Plant

Smooth ER: Transports proteins; Eukaryotes

Rough ER: Has ribosomes, transports proteins; Eukaryotes

Golgi: Prepares, packages, ships proteins Prokaryotes

Lysosome: Cleans up cells, removes waste; All cells

Reporting Category 1

Cell Structure & Function. You will have a total of 11 questions from the concept

Passive Transport: *w/o Energy High to Low*

Osmosis: Diffusion of H_2O

Diffusion: *High concentration to Low Concentration (amount)*

Facilitated Diffusion: *Helped by protein*

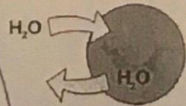
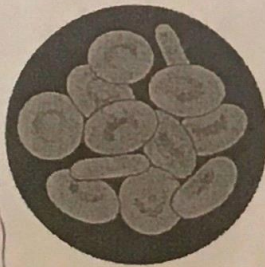
Active Transport: *Requires Energy Low to High*

Endocytosis: *Entering the cell (food)*

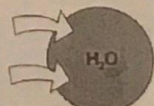
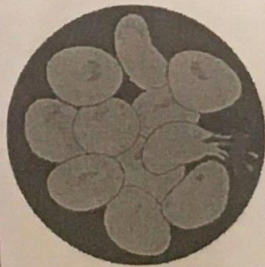
Exocytosis: *Exiting the cell (waste)*



Hypertonic
More H_2O leaves than enters



Isotonic
Same H_2O enters as leaves



Hypotonic
More H_2O in than out

Finish as HW

Reporting Category 1

Cell Structure & Function. You will have a total of 11 questions from the concept

| | Mitosis | Meiosis |
|---|---------------------------------|-------------------------------------|
| What is the function? | Repair, Replace Growth | Make gametes (sex cells) |
| When does this happen? | All the time | After maturity |
| How many cells are made? | 1 → 2 | 1 → 4 |
| Describe the cells (different or identical; haploid or diploid) | Identical Diploid - Full set of | Different Haploid (1/2) (sex cells) |

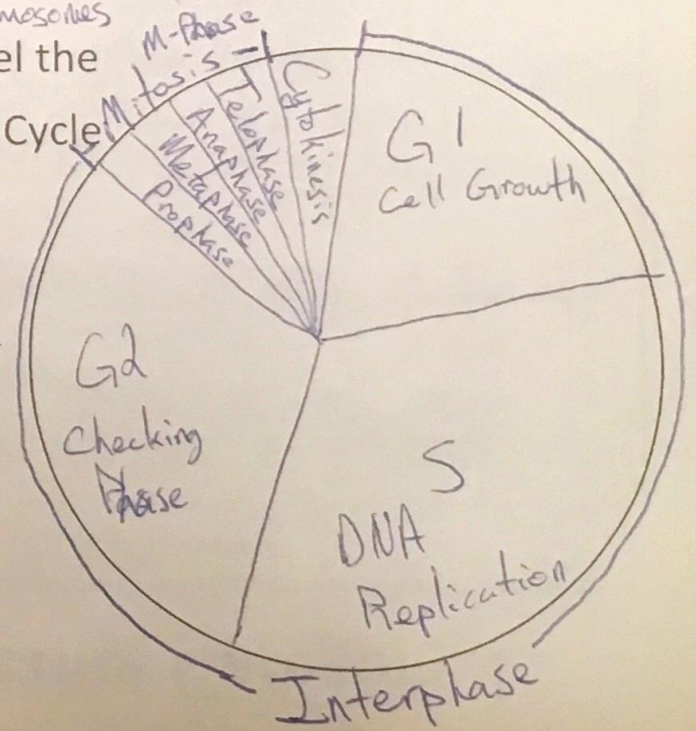
What is the cell cycle?
Life cycle of the cell

What happens if there is an error in the cell cycle?
Mutations/Cancer

When is DNA replicated?
S phase

Somatic Chromosomes (body)

Label the Cell Cycle

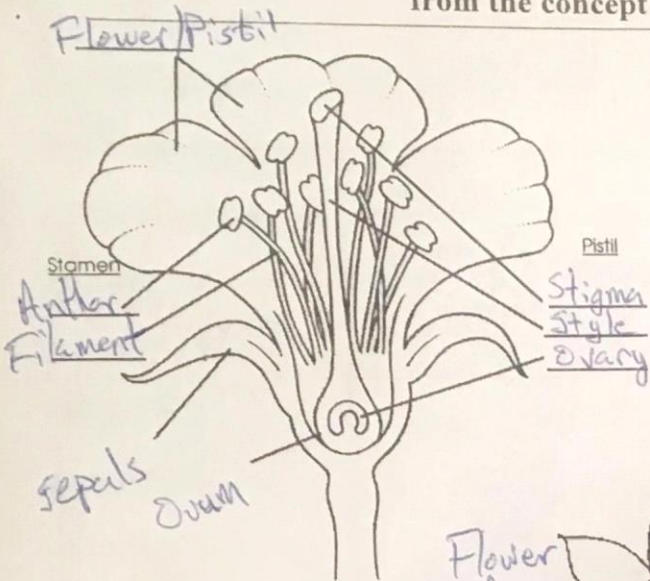


What is cell differentiation?
When cells become specialized w/ their specific function.

Define cancer:
Uncontrolled cell growth

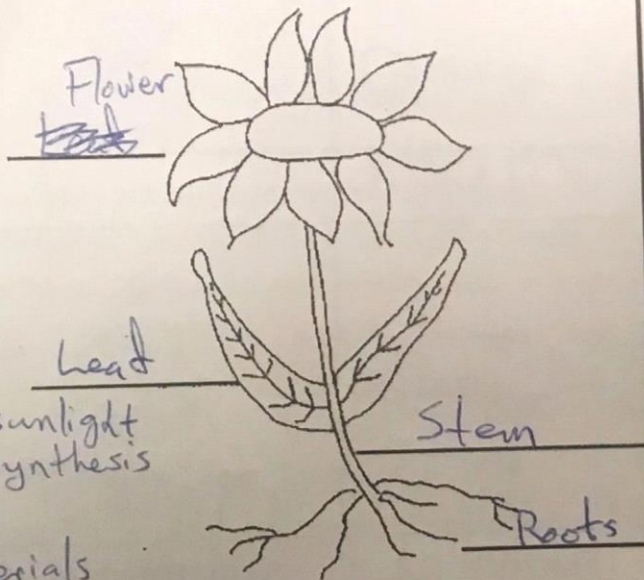
Reporting Category 1

Cell Structure & Function. You will have a total of 11 questions from the concept



Word Bank:

- Stem Flower Anther
- Ovary Filament
- Roots Flower Style
- Roots Stigma
- Leaf Sepals



What does each specialized cell do for the plant?

Leaves: Absorbs sunlight
Site of photosynthesis

Stems: Support
transports materials

Xylem vs Phloem: Xylem: transport H_2O up
Phloem: transport H_2O + nutrients down + up

Roots: Absorbs water, anchors plant

Flowers:
Sexual Reproduction

Reporting Category 1

Cell Structure & Function. You will have a total of 11 questions from the concept

Viruses

Why NOT

ALIVE? Do Not replicate on own

Symptoms

- Lytic: ① Virus attaches to host
② Inject DNA/RNA
③ Host cell make virus parts
④ Host bursts release virus

Lysogenic: dormant
Do not see symptoms

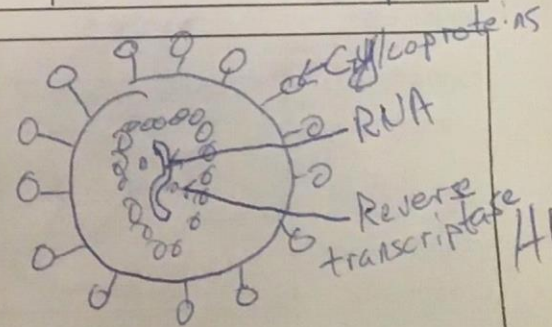
Components:

- Way to attach
- Nucleic acid (DNA/RNA)
- Capsid (protect DNA/RNA)

Examples:

HIV / Measles
Influenza / HPV
Smallpox / Herpes

Sketch and label HIV.



What is HIV?

Retrovirus
Human Immunodeficiency Virus

What does it

do? Attacks T-cells (immune system) and can lead to AIDS

Reporting Category 1

Cell Structure & Function. You will have a total of 11 questions from the concept

| Elements | Monomers | Functions |
|---|---|--|
| <p>Nucleic Acid</p> <p>C, H, O, N, P</p> <p>Ex. DNA RNA</p> | Nucleotide | Stores Genetic Info. |
| <p>Protein</p> <p>C, H, O, N</p> <p>Ex. muscle hair, nails</p> | Amino Acid | Needed for Growth + Repair |
| <p>Lipid</p> <p>C, H, O</p> <p>Ex. oil, fats waxes</p> | <ul style="list-style-type: none"> - Triglycerides - fatty acids - Phospholipids | <ul style="list-style-type: none"> - Insulation - Protection - Store Energy |
| <p>Carbohydrate</p> <p>Ex. starches cellulose</p> <p>Ex. C, H, O</p> | - Monosaccharide | <ul style="list-style-type: none"> - Provide Energy - Plant Structure |

Reporting Category 2

Mechanisms of Genetics. You will have a total of 11 questions from the concept

| | DNA | RNA |
|-----------------------------|---|------------------------------|
| Draw and label a nucleotide | | |
| Double or single strand | Double | Single |
| Type of sugar | Deoxyribose | Ribose |
| Nitrogenous Bases: | <p>A ↔ T</p> <p>G ↔ C</p> <p>Chargoff's law</p> | <p>G ↔ C</p> <p>A ↔ U</p> |
| Where is it found? | In Nucleus | Outside Nucleus Ribosomes |

A change in DNA is called a: **mutation**

Gene

Mutations:

Frame shift:

Insertion: Adding a Nucleotide

Deletion: Removing a Nucleotide

Point:

Substitution: Changing 1 for another

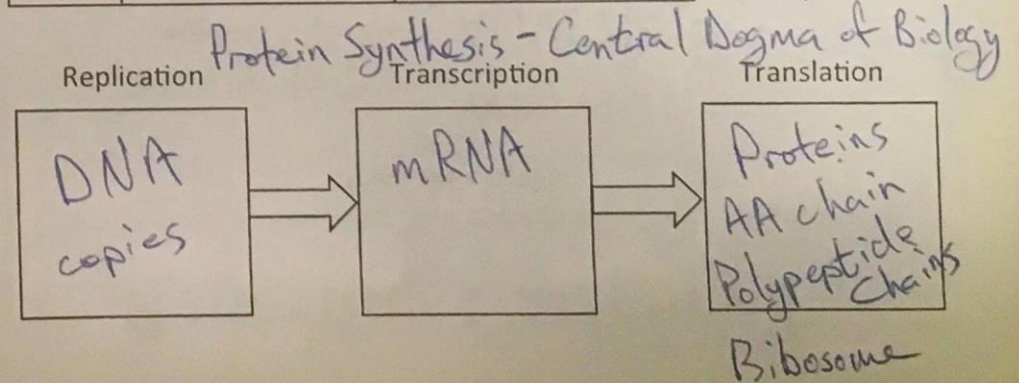
Chromosomal

Mutations:

Translocation:

Moving location

swapping location



Reporting Category 2

Mechanisms of Genetics. You will have a total of 11 questions from the concept

Dominant: The trait that will show itself, ^{capital} letter

Recessive: Trait will be masked, lower case letter

Homozygous: Both the same allele

Heterozygous: Different alleles

Allele: Different forms of a ~~gene~~ gene

Trait: genetically determined characteristic

Genotype: Genetic make-up

Phenotype: Physical appearance

Facial dimples and free earlobes are both considered dominant human traits. What are the expected phenotypes of the offspring of a female with dimples and free earlobes (DDff) and a male with no dimples and attached earlobes (ddff)?

DDff

ddff

PHENOTYPES: DD Dimple, free lobes
dd No Dimple, attached lobes

| | | | | |
|----|------|------|------|------|
| | DF | Df | dF | dF |
| Df | DdFf | Ddff | DdFf | Ddff |
| dF | DdFf | Ddff | DdFf | Ddff |
| df | DdFf | Ddff | DdFf | Ddff |
| df | DdFf | Ddff | DdFf | Ddff |

Reporting Category 2

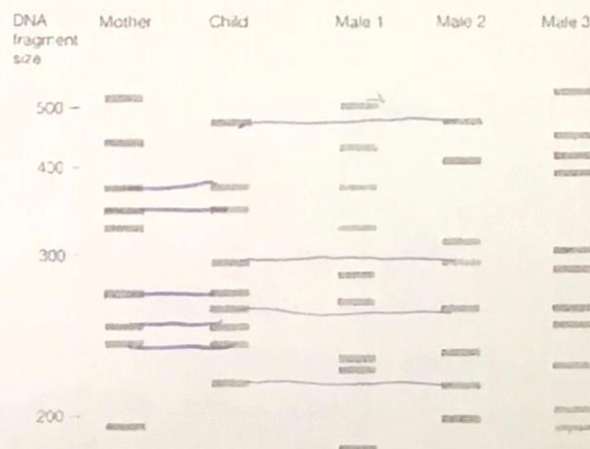
Mechanisms of Genetics. You will have a total of 11 questions from the concept

What is DNA profiling?

Using DNA to identify individuals, similar to fingerprints

Who is the father of the child?

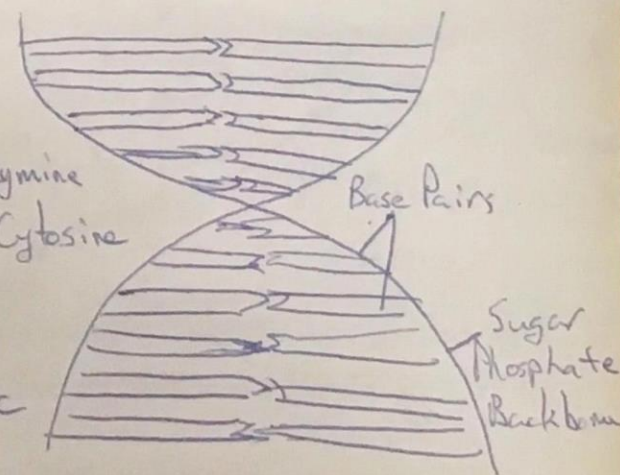
Male 2



Taken from Audesirk, T., and G. Audesirk, 1993. Biology: Life on Earth, 5th ed. Prentice Hall, Upper Saddle River, New Jersey. pg. 251

Draw and Label a DNA molecule

Base:
Adenine ↔ Thymine
Guanine ↔ Cytosine



What does DNA do?

Store genetic info

What shape is DNA?

Double Helix

HW Reporting Category 3

Biological Evolution and Classification. You will have a total of 10 questions from the concept

Linnean Taxonomy

| | |
|---------|---------------|
| Domain | Most Broad |
| Kingdom | |
| Phylum | |
| Class | |
| Order | |
| Family | |
| Genus | |
| Species | Most Specific |

What is a scientific name?

A name used by scientists for an organism consisting of the genus and species, usually Latin or Greek.

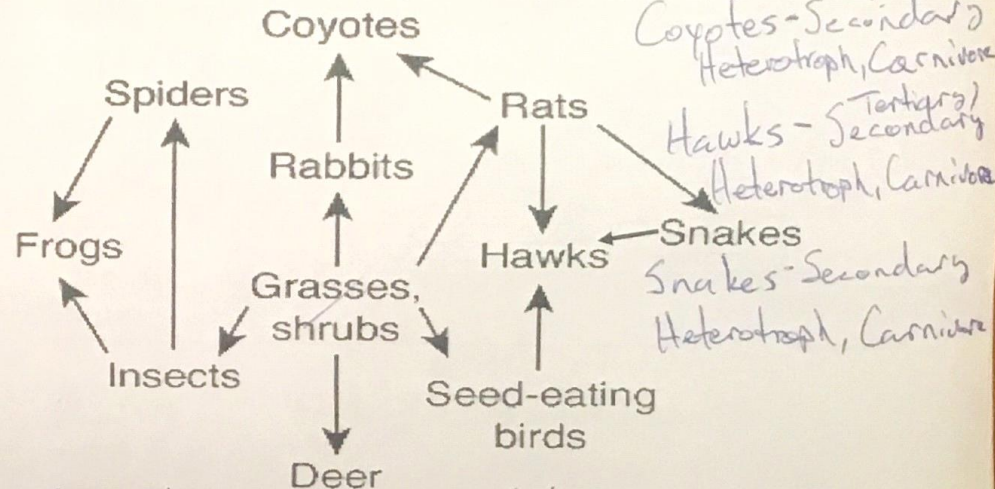
What is binomial nomenclature?

2 word naming system

HW Reporting Category 3

Biological Evolution and Classification. You will have a total of 10 questions from the concept

List the organisms in the food web below and label as producer/type of consumer, herbivore/omnivore/carnivore, and autotroph/heterotroph



Grasses/shrubs - Producer, autotroph
 Insects - Primary Cons., heterotroph, herbivore
 Deer - Primary Cons., heterotroph, herbivore
 Seed-eating birds - Primary, heterotroph, herbivore
 Rabbits - Primary, heterotroph, herbivore
 Rats - Primary, heterotroph, herbivore
 Frogs - ~~Secondary~~ Secondary, heterotroph, Carnivore
 Spiders - Secondary, heterotroph, Carnivore

List the levels of organization in ecology from biosphere to atom:

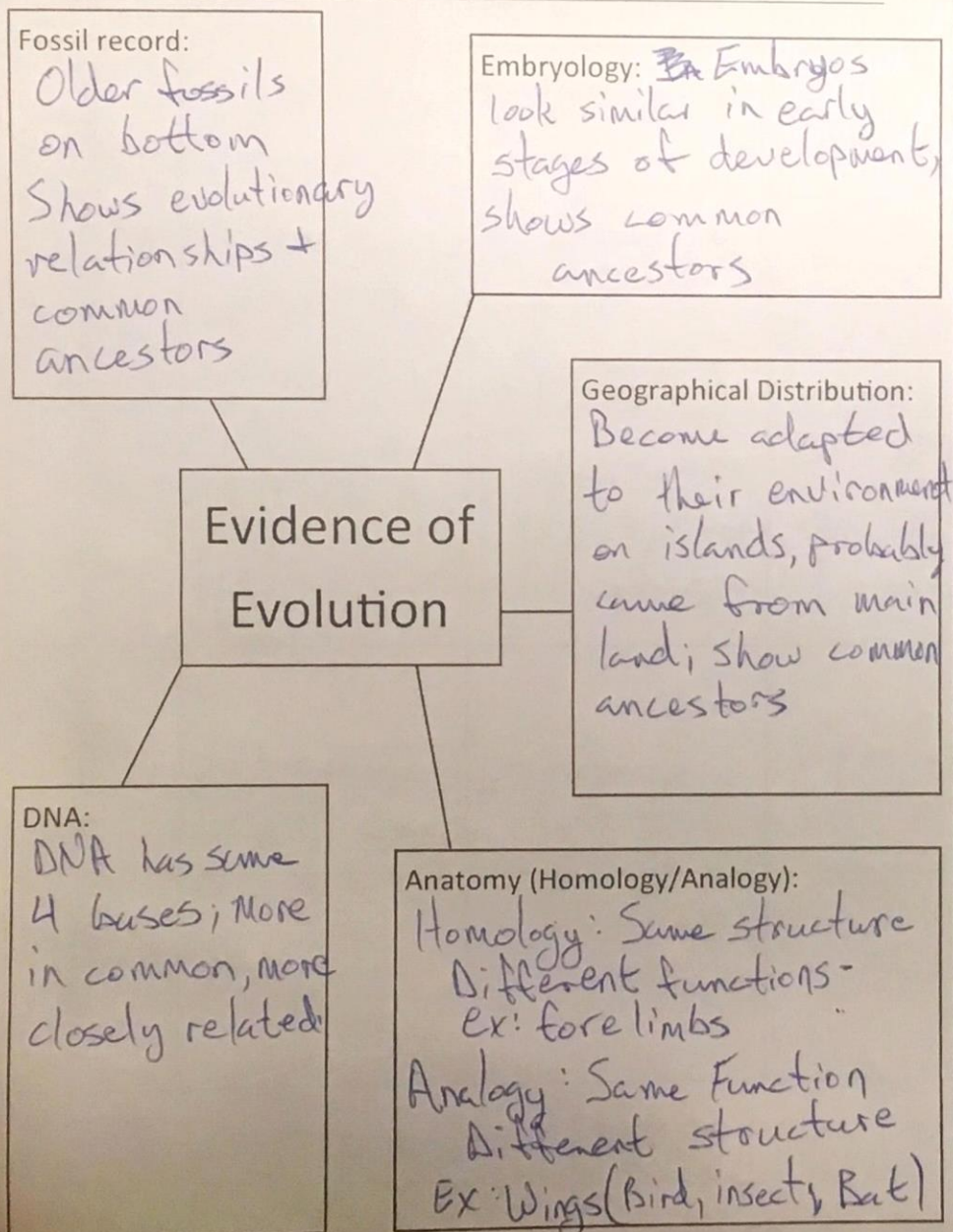
Atom → Cell → Tissues → Organs → Organ Systems
 → Individual (Organism) → Population →
 Community → Ecosystem → Biome → Biosphere

Classification of Living Things

| | | Eukarya | | | |
|--------------------------------|--|---|--|---|--|
| Domain | Archaea | Protista | Fungi | Plantae | Animalia |
| Bacteria | | | | | |
| Kingdoms | Archaeobacteria | Protista | Fungi | Plantae | Animalia |
| Characteristics of the Kingdom | <ul style="list-style-type: none"> Prokaryote Cell walls w/ peptidoglycan Unicellular Autotroph or Heterotroph | <ul style="list-style-type: none"> Eukaryote Most Unicellular Some Multicellular Autotroph or heterotroph | <ul style="list-style-type: none"> Eukaryote Cell walls of chitin Most multicellular Some unicellular Heterotroph | <ul style="list-style-type: none"> Eukaryote Cell walls of cellulose Chloroplast Multicellular Autotroph | <ul style="list-style-type: none"> No cell walls or chloroplast Multicellular Heterotroph |
| Examples | Methanogens Halophiles | Amoeba (lives in water) | Mushrooms Yeasts | Mosses Ferns Flowering plants | Sponges, worms insects, fishes Mammals |

HW Reporting Category 3

Biological Evolution and Classification. You will have a total of 10 questions from the concept



Reporting Category 3

Biological Evolution and Classification. You will have a total of 10 questions from the concept

Define natural selection: "Survival of the fittest"
Organism w/ favorable traits are more likely to reproduce + survive
Give an example of natural selection for each of the following

A: Darwin's finches

Beak shape + size on each island depending on food source

B: Galapagos tortoises

Shell shape + neck length depending on food source

C: Peppered Moth

If it matched the color of the tree then it was better suited (more fit) for its environment

What are the four principles of natural selection?

1. Variations - differences w/in populations
2. Overproduction - more offspring than can survive
3. Adaptation - variations that help to survive + reproduce
4. Descent w/ Modification - # w/ advantageous adaptations increase each generation

Define biological fitness and give an example:

- Most likely to reproduce + survive
ex. woman w/ 10 babies

Reporting Category 4

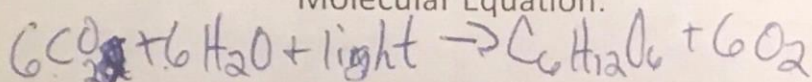
Biological Processes and Systems. You will have a total of 11 questions from the concept

PHOTOSYNTHESIS

Organelle Involved:

Chloroplast

Molecular Equation:



In simple English this means...

Uses CO_2 + H_2O , light to make Glucose + Oxygen

Occurs in what type of cells:

Plant

What comes in, what goes out:

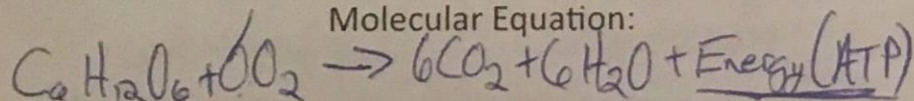
In: CO_2 , H_2O Out: Glucose, O_2

CELLULAR RESPIRATION

Organelle Involved:

Mitochondria

Molecular Equation:



In simple English the means...

Use Glucose + Oxygen to make CO_2 , H_2O + Energy (ATP)

Occurs in what type of cells:

Animal + Plant

What comes in, what goes out:

In: Glucose, Oxygen Out: CO_2 , H_2O , ATP ENERGY

Reporting Category 4

Biological Processes and Systems. You will have a total of 11 questions from the concept

Animal Body Systems

| | |
|----------------------|---|
| Nervous System | Transport signals throughout the body |
| Respiratory System | Gas exchange; brings in O_2 exhaled CO_2 |
| Excretory System | Removes waste from body |
| Muscular System | Movement |
| Endocrine System | Produces hormones (signals) helps maintain homeostasis |
| Immune System | Prevents + fights disease |
| Integumentary System | Barrier for body; Skin, Hair, nails |
| Digestive System | Breaks down food, absorbs nutrients; removes solid waste |
| Skeletal System | Support; makes blood cells |
| Circulatory System | Moves nutrients, O_2 , CO_2 throughout body - Blood |
| Reproductive System | Makes gametes Protects embryos |

Reporting Category 4

Biological Processes and Systems. You will have a total of 11 questions from the concept

Interactions of PLANT systems

| | |
|--|---|
| <p>Transport</p> <p>Xylem: H_2O up</p> <p>Phloem: H_2O + nutrients down + up</p> | <p>Tropisms (4) Response</p> <p>phototropism - light</p> <p>geo/gravitropism - gravity</p> <p>hydrotropism - H_2O</p> <p>thigmotropism - touch</p> |
| <p>Reproduction (Flower)</p> <p>Flower - Sexual</p> <p>Pistil - female</p> <p>Stamen - male</p> <p>Seed</p> <p>Cone</p> <p>Asexual</p> | <p>Examples of Adaptations:</p> <ul style="list-style-type: none"> - Shallow roots to absorb H_2O quickly - Waxy leaves to keep H_2O in - Spines for protection + prevent H_2O loss |

Reporting Category 5

Interdependence within Environment Systems. You will have a total of 11 questions from the concept

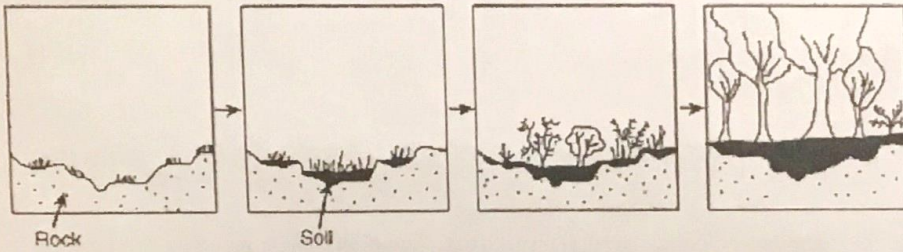
Interpret Relationships

| Relationship | Description | Example |
|--------------|---|--|
| Mutualism | Both Benefit +, + ☺, ☺ | Rhino + bird Bee + flower |
| Commensalism | + , 0 One gains, one is not affected | Shark + remora fish Tree + squirrel |
| Parasitism | + , - One gains, one is harmed | Dog + flea |
| Competition | - , - fighting for same resources | Fighting for mate |
| Predation | + , X One gains, one dies | Wolf eats rabbit |

Reporting Category 5

Interdependence within Environment Systems. You will have a total of 11 questions from the concept

Ecological Succession: Gradual change of ecosystem over time



1. Rock w/ some pioneer species
2. Soil w/ weeds + grass
3. More soil w/ shrubs + bushes
4. Mature forest (climax community)

| | Primary Succession | Secondary Succession |
|----------------------------|------------------------------------|----------------------|
| Soil present? Y/N | No | Yes |
| Example of Pioneer Species | lichen, mosses | weeds, grasses |
| Cause | Volcano | Forest Fire |
| Time frame | 300 yrs 1000s of yrs | 150-300 yrs |
| Additional info. | | |

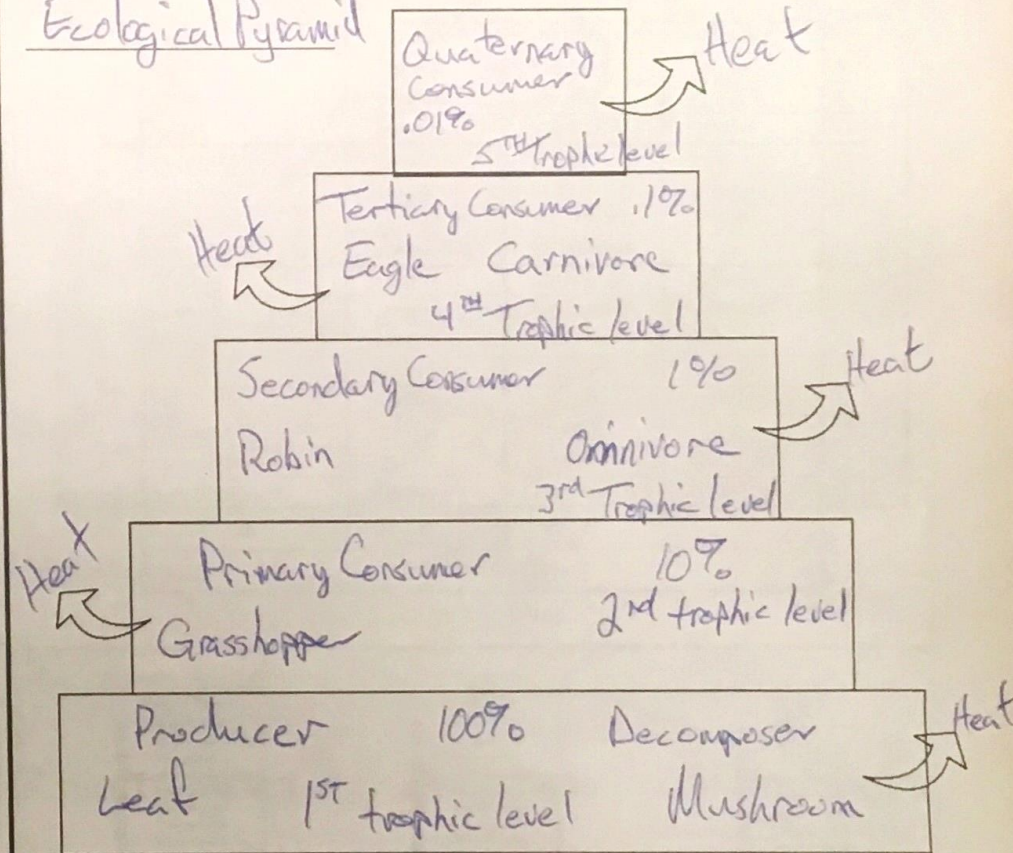
Pioneer species:
1st living thing in an area don't need soil

Climax Community: Stable grp of plants + animals, end result of succession.

Reporting Category 5

Interdependence within Environment Systems. You will have a total of 11 questions from the concept

Ecological Pyramid



Word Bank:

- ~~Producer~~ ~~1%~~ ~~0.1%~~ ~~0.01%~~ ~~Primary consumer~~ ~~10%~~ ~~100%~~
~~Secondary consumer~~ trophic level ~~Tertiary consumer~~ ~~Heat~~
~~Ecological pyramid~~ ~~Quaternary consumer~~ ~~Carnivore~~ ~~Decomposer~~
~~Omnivore~~ ~~Leaf~~ ~~Grasshopper~~ ~~Eagle~~ ~~Robin~~ ~~Mushroom~~

Processing Skills

This information is not going to be tested directly but you will have questions that use this information to test other concepts.

Define the following:

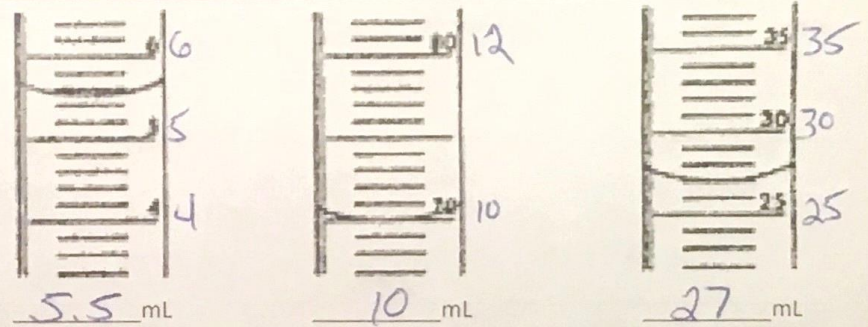
- Nature of science- Key principles + ideas which provide a description of science as a way of knowing
- Scientific theory- Well-substantiated explanation of some aspect of the natural world that is acquired through the scientific method, repeatedly tested + confirmed
- Scientific law- a statement based on repeated experimental observations that describes some aspect of the universe
- Hypothesis- Educated guess w/limited evidence
- Homeostasis- Internal balance, equilibrium

How did the following scientists contribute to science

- Darwin- Theory of Evolution + Natural Selection
- Hooke- Saw cells under microscope for first time; develops cell theory
- Linnaeus- father of taxonomy; developed modern classification system
- Watson & Crick- credited w/discovery of the structure/shape of DNA
- Rosalind Franklin- Pictures of molecular structure of DNA; Watson + Crick use her data.

Processing Skills

This information is not going to be tested directly but you will have questions that use this information to test other concepts.



Codon Chart

| | | Second Letter | | | | |
|---|---|--------------------|-----------|------------|------------|---|
| | | U | C | A | G | |
| U | U | Phenylalanine | Serine | Tyrosine | Cysteine | U |
| | | Phenylalanine | Serine | Tyrosine | Cysteine | C |
| | | Leucine | Serine | (STOP) | (STOP) | A |
| | | Leucine | Serine | (STOP) | Tryptophan | G |
| C | C | Leucine | Proline | Histidine | Arginine | U |
| | | Leucine | Proline | Histidine | Arginine | C |
| | | Leucine | Proline | Glutamine | Arginine | A |
| | | Leucine | Proline | Glutamine | Arginine | G |
| A | A | Isoleucine | Threonine | Asparagine | Serine | U |
| | | Isoleucine | Threonine | Asparagine | Serine | C |
| | | Isoleucine | Threonine | Lysine | Arginine | A |
| | | Methionine (START) | Threonine | Lysine | Arginine | G |
| G | G | Valine | Alanine | Aspartate | Glycine | U |
| | | Valine | Alanine | Aspartate | Glycine | C |
| | | Valine | Alanine | Glutamate | Glycine | A |
| | | Valine | Alanine | Glutamate | Glycine | G |

A segment of DNA produces methionine, threonine, histidine, aspartate, and glycine when translated. A substitution mutation occurs and causes the synthesis of the segment as shown.

New DNA strand: 3'-TACAGGCGTCTACCCACT-5'

What is the new peptide chain when the new DNA segment is translated?

Met-Ser-His-Asp-Gly-Stop