Biology EOC Highlight Review

Organic Compounds

- All living things are made of organic compounds.
- Contain the element _____
- Carbohydrates, Proteins, Lipids, Nucleic Acids

Carbohydrates

- Monomer- _____
- Function- _____ source and structure
- Tests: glucose-Benedicts, starch- Iodine
- Ex: Glucose, fructose, cellulose, glycogen, starch

Lipids

- Made of _____ _____ and glycerol
- Function- energy storage and _____
- Tests: brown paper test
- Examples: _____ and steroids

Nucleic Acids

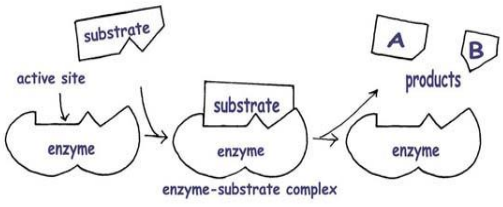
- Monomer- _____
- Function- carry _____ information
- Ex. DNA and RNA

Proteins

- Monomer- _____ _____
- Function- building and repairing cells, communication, transport, and regulation
- Tests- Biurets
- Examples: _____, hemoglobin

ENZYMES are Proteins

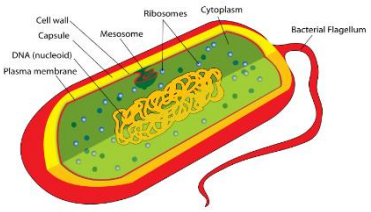
- _____ in living things
- Specific to a particular _____
- Reusable
- Affected by _____ and _____



Biology EOC Highlight Review

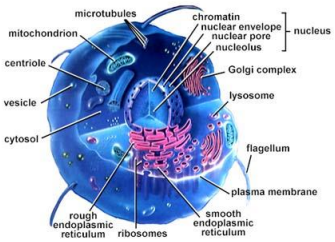
Cells

Prokaryotes



- Simple, no membrane bound organelles
- _____ only
- One circular chromosome
- Includes: chromosome, ribosomes, and plasma membrane
- Circular DNA: _____

Eukaryotes



- Membrane bound organelles
- Plants and Animals
- True _____ containing chromosomes

Organelles

Nucleus

- "Control Center"
- Contains _____

Mitochondria (singular: Mitochondrion)

- "_____" of the cell
- Produces energy in the form of _____
- Site of _____ _____

Chloroplast

- Site of _____
- _____ cells ONLY
- Contains the pigment chlorophyll

Vacuole

- Storage of excess materials (_____, sugars, and waste)
- _____ cells usually contain one large vacuole

Ribosomes (also found in prokaryotes)

- _____ are synthesized
- Found in both prokaryotes and eukaryotes

Biology EOC Highlight Review

Plasma Membrane

- Surrounds the cell
- Regulates what enters/leaves the cell
- Helps maintain _____
- Made of _____ with embedded proteins

Cell Wall

- Plant cells ONLY (also in prokaryotes)
- Surrounds cell and provides _____ and _____.
- Made of _____

Eukaryotes

Plant

- _____ _____
- Chloroplast
- Large central vacuole

Cell Organization: Cell → Tissue → Organ → Organ system → Individual organism

Cell Specialization

- Process: _____
- cells develop to perform different functions
- Regulated by _____

Cell to Cell Communication

- Chemical Signals (_____) can be sent from one cell to another
- _____ proteins on the plasma membrane receive the signal

Diffusion

- Form of passive transport (NO _____ NEEDED) across a membrane
- Solutes move from high concentration to low concentration

Osmosis

- Diffusion of _____ (also passive transport)

Biology EOC Highlight Review

Active Transport

- Particles moving _____ the concentration gradient which _____ _____ (ATP)
- _____ concentration to _____ concentration

ATP

- Energy _____ molecule
- Can be used for quick energy by the cell
- Energy is _____ in the _____ bonds

Photosynthesis

- SUNLIGHT, Water and Carbon Dioxide used to produce Glucose and Oxygen
- _____ + _____+_____→_____+_____
- Occurs in the _____

Aerobic Respiration

- Used to release energy (ATP) for cellular use
- _____ + _____→_____ + _____ + _____
- Occurs in the mitochondria

Anaerobic Respiration aka Fermentation

- Does _____ require _____
- also used to release energy, but _____ as _____ as aerobic respiration (less ATP)
- Products include _____ and _____ _____ or _____
- Two Types: Alcoholic Fermentation and Lactic Acid Fermentation

Autotroph vs. Heterotroph

Autotrophs

- Obtain _____ from the environment
- Photosynthesis or chemosynthesis
- _____

Heterotrophs

- Obtain energy from other living things
- _____

Biology EOC Highlight Review

DNA/RNA

- Carry _____information
- Made of a chain of _____
- Nucleotides contain a sugar, phosphate, and a nitrogen base

DNA

- Double stranded
- "Double Helix"
- Four base pairs: _____
- Sugar is _____
- Found in _____

RNA

- _____ stranded
- Four base pairs: _____
- Sugar is _____

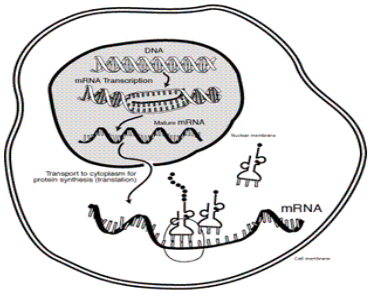
Base Pair Rule

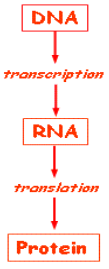
- In DNA,

  Adenine always pairs with Thymine, and Guanine always pairs with Cytosine

Replication

- Making of an _____ strand of DNA
- "semi" conservative





Central Dogma

DNA → RNA → protein → trait

Transcription

- DNA → _____
- Occurs in _____
- Complementary mRNA strand is produced from a segment of DNA

Biology EOC Highlight Review

Translation

- Connects amino acids in the correct order to make a protein
- Occurs in the _____ within the _____

A-

B-

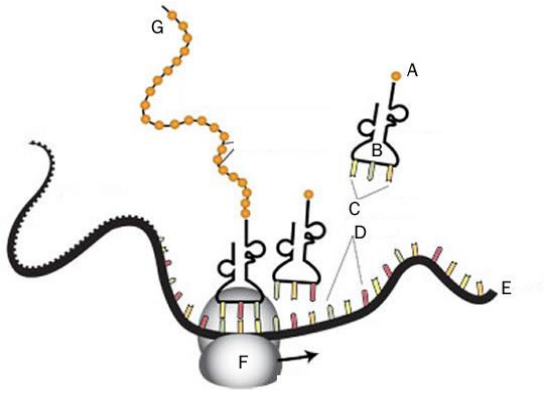
C-

D-

E-

F-

G-



Codon

- Sequence of _____ mRNA nucleotides that code for an amino acid

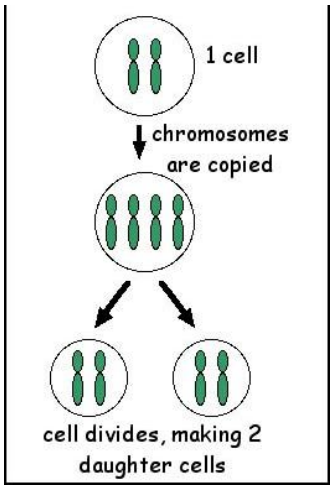
First Letter	Second Letter				Third Letter
	U	C	A	G	
U	phenylalanine	serine	tyrosine	cysteine	U
	phenylalanine	serine	tyrosine	cysteine	C
	leucine	serine	stop	stop	A
	leucine	serine	stop	tryptophan	G
C	leucine	proline	histidine	arginine	U
	leucine	proline	histidine	arginine	C
	leucine	proline	glutamine	arginine	A
	leucine	proline	glutamine	arginine	G
A	isoleucine	threonine	asparagine	serine	U
	isoleucine	threonine	asparagine	serine	C
	isoleucine	threonine	lysine	arginine	A
	(start) methionine	threonine	lysine	arginine	G
G	valine	alanine	aspartate	glycine	U
	valine	alanine	aspartate	glycine	C
	valine	alanine	glutamate	glycine	A
	valine	alanine	glutamate	glycine	G

Mutations

- Change in _____ code
- May cause a change in protein produced
- NOT always harmful

Mitosis

- Cell division
- Produces two _____ _____ daughter cells
- Occurs in body cells to _____ and repair



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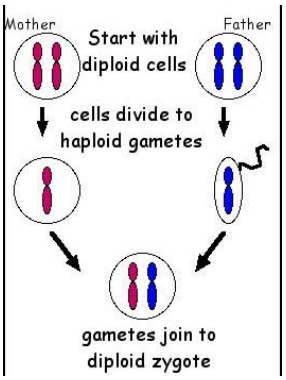
Cancer

- Error in cell growth with causes _____ cell growth
- Has _____ and genetic variables



Meiosis

- Cell division
- Produces _____ different haploid daughter cells (gametes)
- Occurs in sex cells to form _____

Crossing Over

- _____ chromosomes exchange parts of their DNA
- Creates _____ in gametes

Nondisjunction

- Homologous chromosomes fail to _____ during meiosis
- Can lead to Down Syndrome, Turners Syndrome, and Klinefelters Syndrome

Asexual vs. Sexual Reproduction

Asexual

- _____ parent
- Identical offspring
- Variation only thru mutations
- Examples: budding, fragmentation, fission

Sexual

- _____ parents
- Offspring _____ from parents
- _____ _____
- Fertilization (fusion of gametes)

Inheritance

- Traits are specific _____ inherited from parents
- Genes are the factors that determine _____
- The different forms of a gene are called _____

Dominant/Recessive Alleles

- _____ alleles are expressed, if present, and _____ are hidden (MASKED)

Biology EOC Highlight Review

Genotype

Actual _____ an individual has for a trait

Homozygous

- Both alleles are the _____
- Ex. BB or bb

Heterozygous

- Both alleles are _____
- Ex. Bb

Phenotype

- The actual _____ displayed by the individual (ex. brown eyes, Hemophiliac)

Incomplete Dominance

- Heterozygote shows a _____ of the dominant and recessive phenotypes

Codominance

- Heterozygote expresses _____ dominant and recessive traits
- Ex. Roan animals

Polygenic Traits

- Traits are influenced by _____
- Ex. skin color, height

Multiple Alleles

- More than _____ alleles for a trait (an individual still only inherits two)
- Ex. Blood Type (IA,IB, i)

  type A = IAIA or IAi

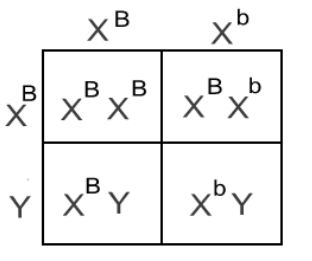
  type B = IBIB or IBi

  type AB= IAIB

  type O = ii

Sex-linked Traits

- _____ Chromosomes
  - Female = _____
  - Male = _____
- Sex linked traits are carried on the _____ chromosome



1/2 of the females will be carriers
1/2 of the females will be normal

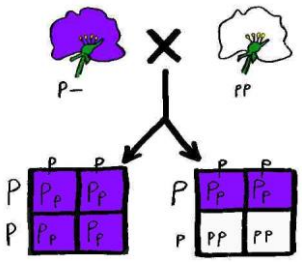
1/2 of the males will be normal
1/2 of the males will be colorblind

Biology EOC Highlight Review

- Ex. Hemophilia, red-green colorblindness

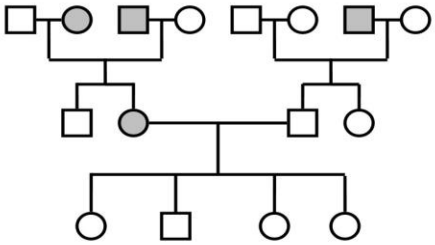
Test Cross

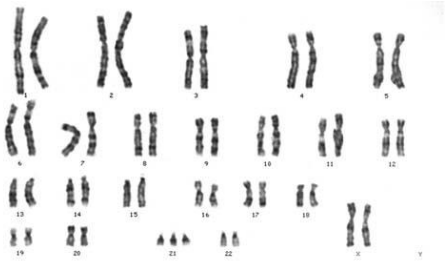
- used to determine the _____ of an unknown dominant individual
- uses a homozygous _____ individual as the “test”



Pedigree

- similar to a family tree
- Shows pattern of inheritance of a specific _____ through a family





Karyotype

- Picture of someone's _____
- Can detect chromosomal disorders

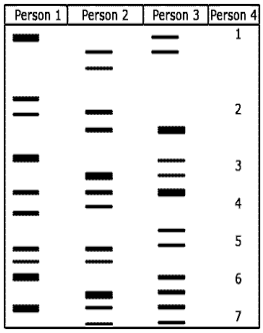
Ex. Down Syndrome, Klinefelter’s Syndrome, and Turners Syndrome

Human Genome Project

- Sequencing of human DNA
- Being used to develop gene _____

Gel Electrophoresis

- Technique used to separate molecules (DNA or proteins) based on their _____
- Sometimes called a _____ _____
- Used to analyze and compare _____



Recombinant DNA

- Cell with DNA from another source
- Bacteria used to produce human insulin
- Human gene inserted into bacterial _____

Biology EOC Highlight Review

Transgenic Organism

- An organism with a _____ from another source
- used to improve food _____, _____, and healthcare

Clone

- An organism made from one cell of _____ organism
- A genetically _____ copy

Origin of Life

- Abiotic earth _____ Oxygen
- Early organisms _____ prokaryotes

Endosymbiotic Theory

- _____ cells evolved from prokaryotes
- Early prokaryotes engulfed other prokaryotes and developed _____ relationships
- Evidence includes _____ and _____ have prokaryotic type DNA

Abiogenesis

- Living from non-living or _____ generation
- Disproved by Redi and Pasteur's experiments

Biogenesis

- Living from _____

Natural Selection

- Theory of Evolution
- Fit organisms _____, _____, and pass on _____

Requirements:

- _____
- _____

Adaptations

- Trait that increases _____

Biology EOC Highlight Review

- For Example,
  - Beaks that make it easier to eat insects
  - Bright flowers to attract pollinators
  - Vascular tissue in plants to adapt to life on land

Evidence for Evolution

- _____ Record
- _____ Similarities (_____)
- Shared _____ structures (homologous structures)

Speciation

- Evolution of a new species
- must be _____ between populations

Antibiotic and Pesticide Resistance

- Populations will eventually become _____ to pesticides and antibiotics with overuse

Coevolution

Two organisms evolve in _____ to each other

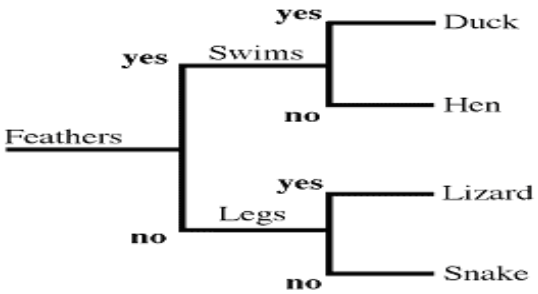
Ex. Flowering plants and their pollinators

Binomial Nomenclature

- Two word naming system
- Scientific name is much smaller than full classification
- Uses *Genus* and *Species* names only (not full classification of Kingdom, Phylum, Class, Order, Family, Genus, Species)
- *Ex.* Dogs: *Canis familiaris*

Dichotomous Keys

- Used to identify organisms
- Paired set of questions with two choices



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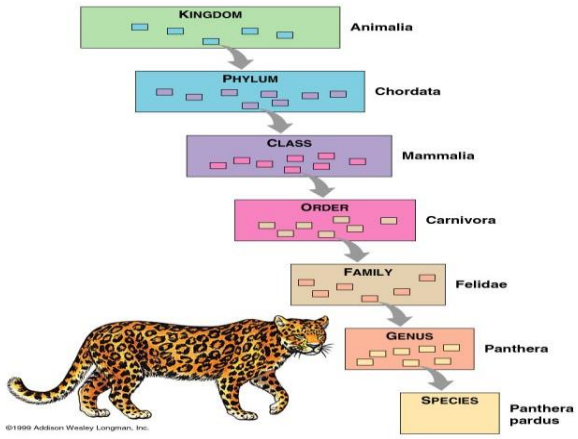
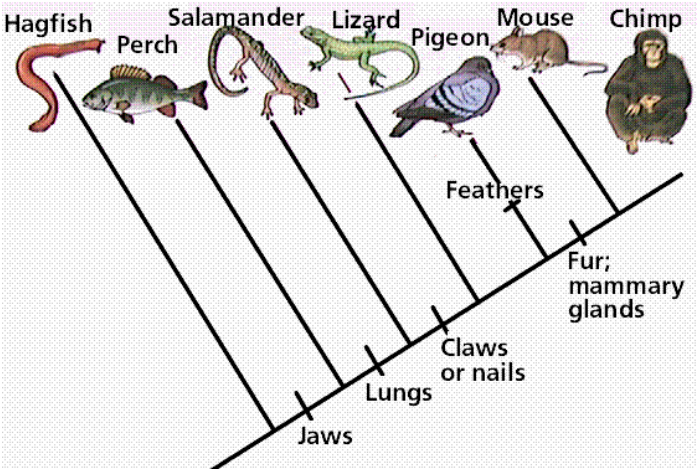
Levels of Organization



Phylogenic tree

BASED ON EVOLUTIONARY RELATIONSHIPS!!!



Viruses

- Not considered living things
- _____ that can mutate to resist vaccines
- Ex. _____, _____, _____

Genetic Disorders and the Environment

- Many diseases have both genetic and _____ factors
- Ex. Cancer, diabetes, PKU

Biology EOC Highlight Review

Immune Response

B-cells

- Fight _____ in body fluids
- B-cells make _____
- Make memory cells after exposure to antigen

T-cells

- Fight pathogens inside living _____
- May help B-cells to make antibodies
- Make _____ cells after exposure to pathogen

Immunity

Passive Immunity

- _____ are introduced into the body
- _____ term
- Such as mother transfers antibodies to infant through breast feeding

Active Immunity

- Antibodies are acquired when an immune response is _____ in the body
- _____ term
- Ex. _____ are weak/dead antigens that are introduced to the body

Parasites

- Lives on or within a _____
- Benefits while causing _____ to the host
- Ex. Plasmodium causes malaria (genetic influence- carriers of sickle cell are resistant to malaria)

Toxins

- Chemical that causes _____ to the body
- Can be man-made or produced by microorganisms
- Ex. _____ and _____

Ecosystems

- Collection of _____ (nonlivng) and _____ (living) factors in an area
- Together they influence growth, survival, and productivity of an organism

Symbiotic Relationships

Biology EOC Highlight Review

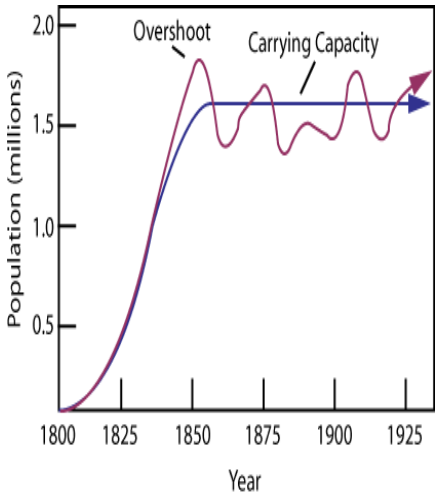
- Relationship between two organisms
- Types:
  - Mutualism (_____, _____)
  - Commensalism (_____, _____)
  - Parasitism (_____, _____)

Predation

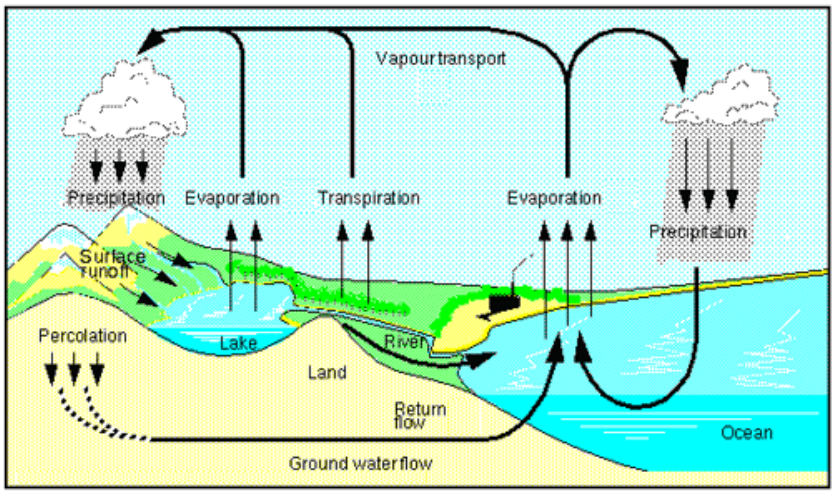
- Predator _____ prey
- Evolve in response to one another

Carrying Capacity

- Maximum number of individuals that an _____ can support
- Limiting factors:
  - Food availability
  - Competition
  - Disease
  - Predation
  - Natural Disasters



Water Cycle

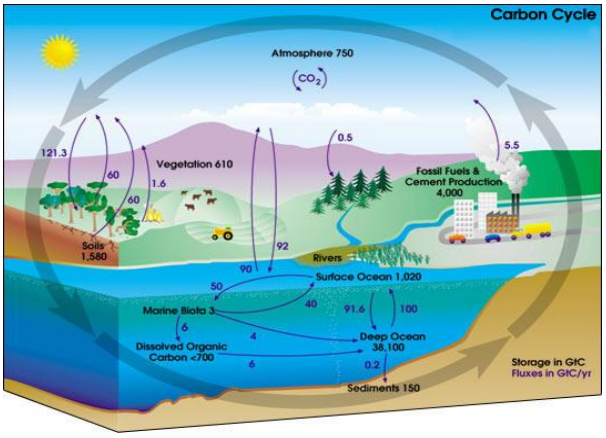


Courtesy Erich Roeckner, Max Planck Institute for Meteorology

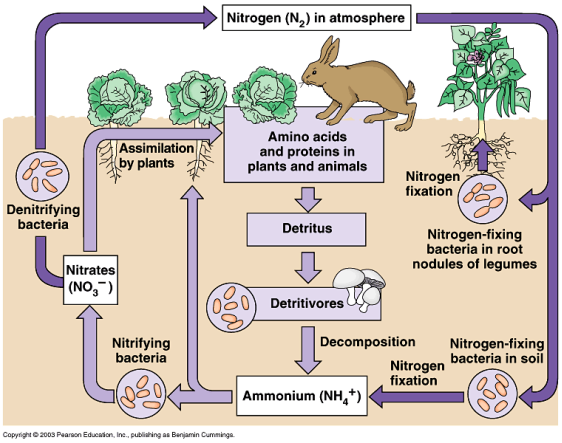
Biology EOC Highlight Review

Carbon Cycle

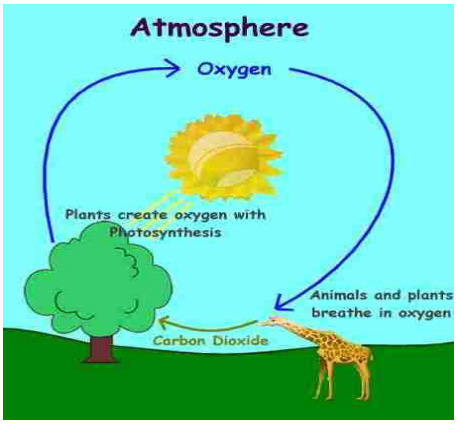
CARBON ENTERS THE FOOD CHAIN THROUGH _____!!!!!



Nitrogen Cycle

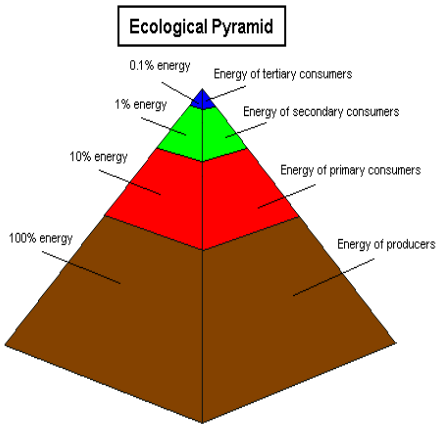


Oxygen Cycle



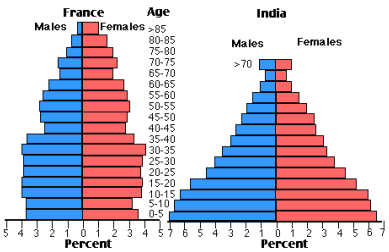
Trophic Levels

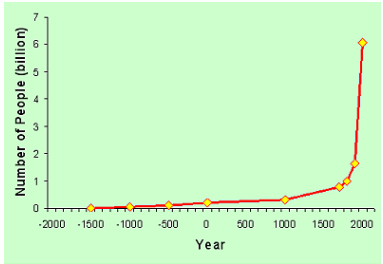
- Steps in a food chain/web
- Energy passes from one organism to another
- About _____ of the energy at one level passes to the next



Human Population

- Growth= (birth rate + immigration) – (death rate + emigration)





Biology EOC Highlight Review

Human Impacts

Positive

- _____
- Cover Cropping
- Recycling
- _____ practice

- _____Rain
- _____
- _____ Destruction
- _____ Species
- Ozone depletion from the release of _____

Negative

Global Warming

- Increase in the average temperature of the earth
- Caused by the release of too much _____ into the atmosphere which amplifies the _____ effect
- Burning of _____ _____, volcanic eruptions

Bioaccumulation

- An increase in environmental _____ at higher tropic levels
- Ex. _____ and birds of prey

Innate Behavior

- Behaviors an animal is _____ with
- Includes _____, _____, _____
- Ex. weaving of spider webs

Learned Behavior

- Behavior an animal acquires during its lifetime
- Includes
  - _____
  - _____conditioning
  - _____ and _____