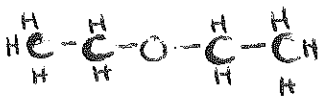
Name (KEY) Exam Date _____

Biology Mid Year Exam Graphic Organizer

CHEMISTRY OF LIFE

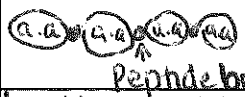
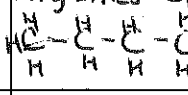
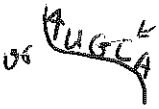
What are the six elements that make up living organisms?* C – Carbon ← Backbone of every living thing
H – hydrogen
N – nitrogen
O – Oxygen
P – phosphorous
S – Sulfur



Place a star next to the most important element.

Atoms → molecules → Organelles → cells → ....
Elements

There are four major types of organic molecules. Fill in the information below for each molecule:

Molecule	Building Blocks (MONOMER)	Structure	Function
C Carbohydrates	monosaccharide Simple sugars ie. Glucose	 C = circles of C, H, O	Short term energy (cellular respiration)
P Protein	amino acids	 Peptide bonds	Carry out genetic expression (phenotype)
L Lipids	(glycerol + fatty acids)	Long Lines C, H, O 	long term energy
NA Nucleic Acids	nucleotide (Sugar + phosphate) Nit. base	 or  ← RNA	holds genetic info (genotype)

What is the order of digestion?
mouth → esophagus → stomach → Sm. intestine → Lrg intestine → Rectum
(*Most Absorption → into blood → H_2O Absorbed)

How are organic molecules digested by the body? Be specific and include organs from various body systems?
Chemical digestion → enzymes (ex. Amylase) in mouth, acids in stomach
Mechanical digestion → chewing, churning

CATALASE
Enzyme
$H_2O_2 \rightarrow H_2O + O_2$
(Poison)

What is the role of the circulatory system?
transporting nutrients (O_2, H_2O, lipids, carbs, etc...) throughout the body

What is the role of the muscular system?
Movement

What is the role of the respiratory system?
Brings O_2 in & CO_2 out of the body

Once oxygen and glucose are diffused into the blood and brought to the cells, what are these two reactants used for?
Cellular Respiration
O_2 + Glucose → H_2O + CO_2 + ATP
Energy

CELL BIOLOGY

6 Kingdoms:

K. Archaebacteria
K. Eubacteria

What cellular characteristics distinguish each kingdom?

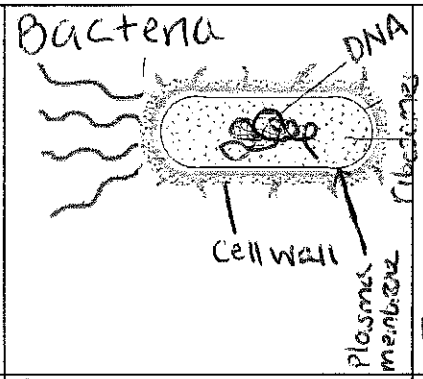
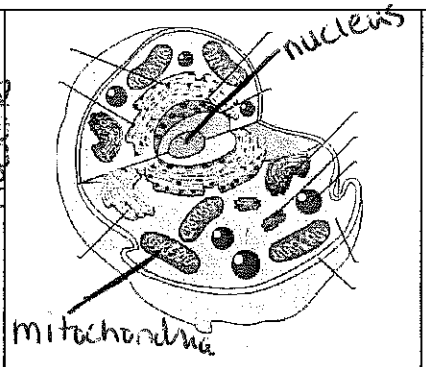
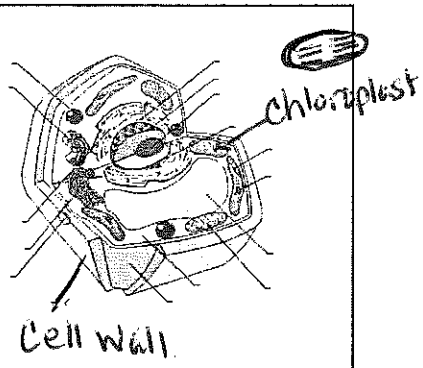
Single celled vs. Multicellular

nucleus?

Chloroplast? + Cell wall?

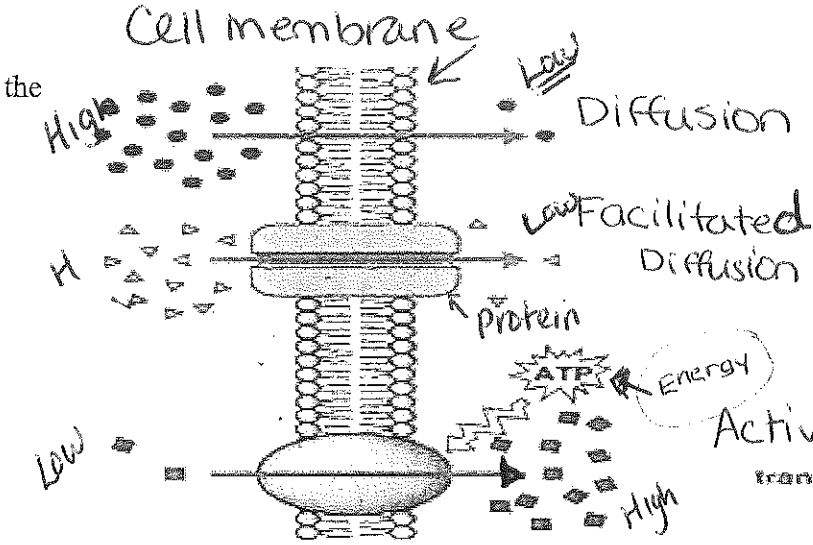
Protists - single celled eukaryote ex. Amoeba
Fungus - multicelled eukaryote - heterotroph ex. Mushrain
Plants - multicelled eukaryote - autotrophs ex. pine tree
Animals - multicelled eukaryote - heterotroph ex. human

auto – self
hetero – different
uni – one
multi – many
di- two

			
Cell Type	Prokaryote	Eukaryote	
Type of Organisms	~~Bacteria~~ Bacteria	Animal	Plant
Similarities	4 things ALL cells have: mitochondria Cytoplasm ribosomes DNA Cell membrane	Structures found only in the cells above: → Other membrane bound organelles ie. vacuole, endoplasmic reticulum, golgi → nucleus	Chloroplast + Cell walls

transport thru Cell membrane

Label the different types of transport in the diagram below:

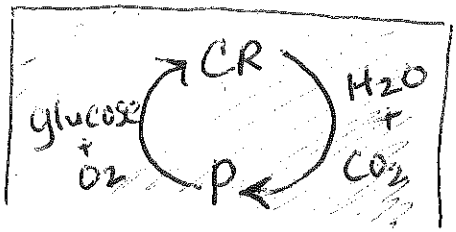


Passive transport

Facilitate = to help make possible

Active transport → moves low → high, ATP is needed

Osmosis = diffusion of water



What is the equation for photosynthesis?	What is the equation for cellular respiration?
Sunlight + Water + CO_2 → Energy Glucose + O_2	Glucose + O_2 → ATP energy + Water + CO_2

Chloroplast — Mitochondria

Circle the "goal" of each process above. (What is the organism trying to produce?)

Draw a simple food chain that uses the following organisms: mouse; snake; seeds; hawk

1000 Kcal 100 Kcal 10 Kcal 1 Kcal

Grass → mouse → snake → hawk

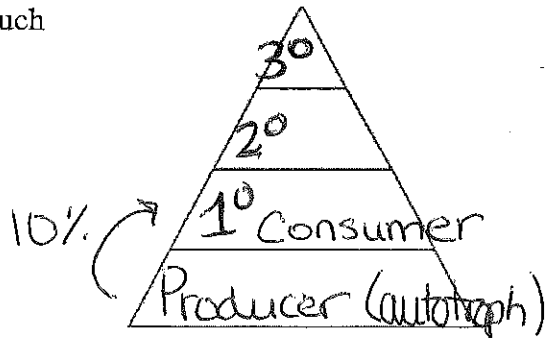
Identify the different levels of the energy pyramid. Also depict how much energy is transferred from one trophic level to the next.

primary – 1

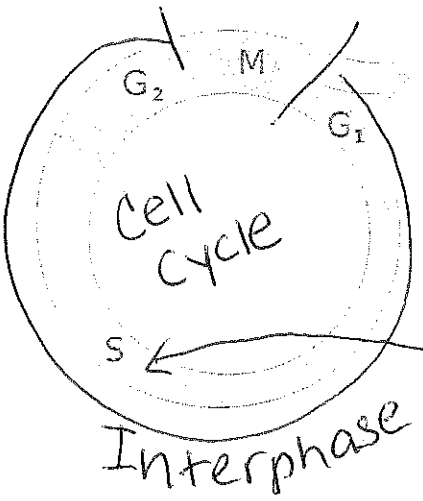
secondary – 2

tertiary – 3

10% Rule



Identify key events of the cell cycle:



Compare mitosis and meiosis below:

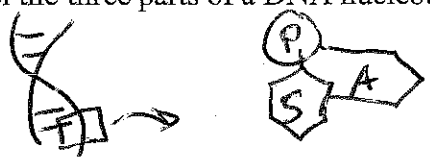
Mitosis Meiosis

Protein Synthesis DNA → mRNA → amino acids

GENETICS

Draw and label the three parts of a DNA nucleotide:

A-T
G-C



(sugar + phosphate + nitrogen base)
A, T, G, C

What are three differences between DNA and RNA?

DNA
- stays in nucleus
- double stranded
- holds code

A-T
G-C

RNA
A-U
G-C
- carries code (part of the) to the ribosome

Fill in the Protein Synthesis flow chart by identifying the molecules, processes, and locations within the cell:

DNA → Process: transcription → Location: nucleus → mRNA → Process: translation → Location: ribosome → Protein (polypeptide chain of amino acids)

ex. TAC → transcription → ex. AUG → translation

What do proteins do in the body once they are made? Give examples of some proteins in the body?

Proteins carry out the phenotype

ex. Methionine

ex. DNA = gene for eye color protein = makes eye BLUE

What do enzymes do?

Speed up chemical rxns ( ) are types

Draw and label (enzyme, active site, substrate) a diagram that shows how enzymes work: