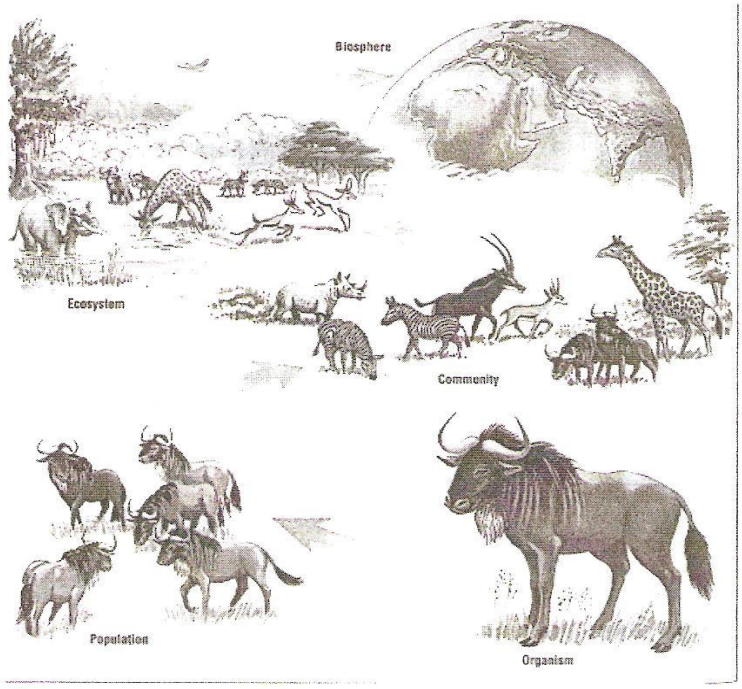
Study Guide for Post-test 1

Standard – Students will examine the dependence of organisms on one another and their environment.

Element(s):

a) **Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments.**
b) **Explain in a food web that sunlight is the source of energy and that this energy moves form organism to organism.**

1) What is an organism? A living thing
2) Organisms find these needs in their habitat :
   1. Food, 2. water, 3. shelter, 4. Air (oxygen)
3) An environment that provides these things is called its Ecosystem or Habitat.

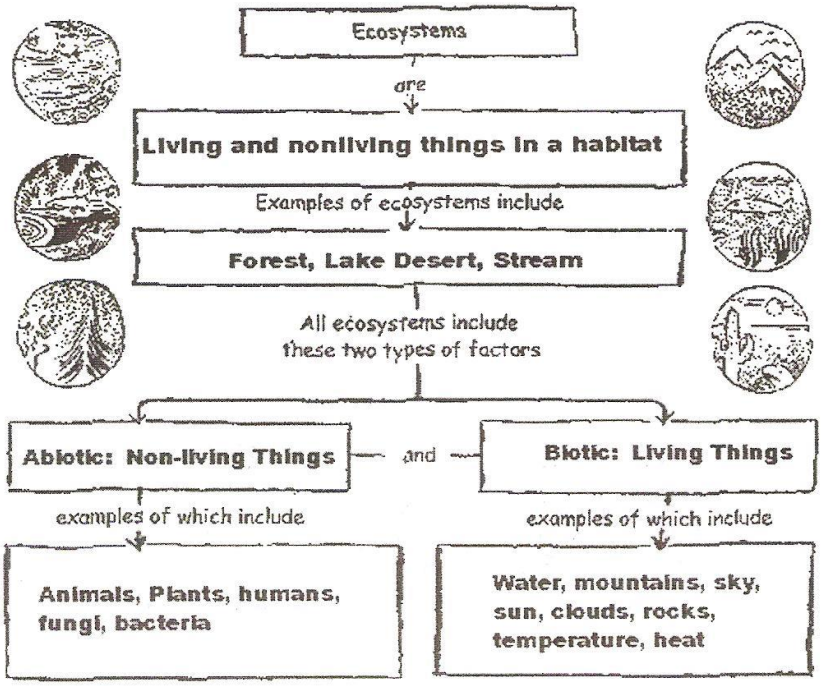


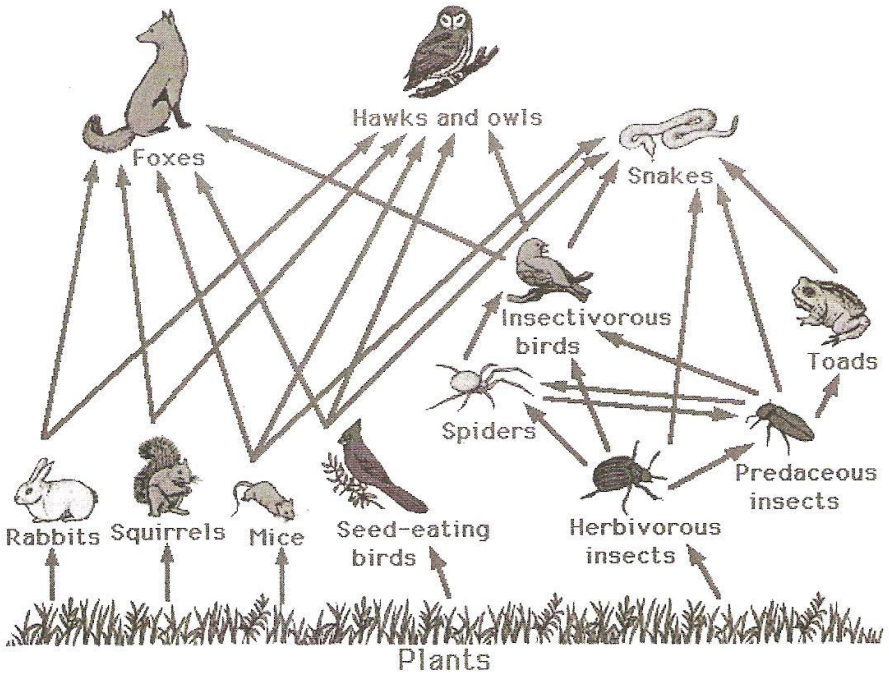
	Definition	Example
Organism	A living thing	Frog
Population	group of SAME species	5 frogs
Community	groups of different species	frogs, lizards, bugs
Ecosystem	living organisms & parts of environment	frogs, water, grass, bug
Biome/Biosphere	Similar climate & species	Rainforest

Organism → Population → Community → Ecosystem → Biome

Population Change

1) If a forest can only support a population of 400 squirrels, then 400 is the _____ of the forest for squirrels.
   a) Population density
   b) Volume capacity
   c) Carrying capacity
   d) Volume capacity
2) In a habitat, rabbits were the main source of food for wolves. A forest fire killed many of the young rabbits. Which of the following best describes what probably happened the next year?
   a) Some wolves died or moved to another habitat.
   b) The deer moved to have their young.
   c) The deer population was completely destroyed.
   d) The wolves learned to eat producers.
3) If the population of rabbits in a rural area is increasing, which of the following was a possible result due to the increase in the rabbit population:
   a) The snake population will decrease
   b) The mole population will increase
   c) The coyote population will increase
   d) All of the above

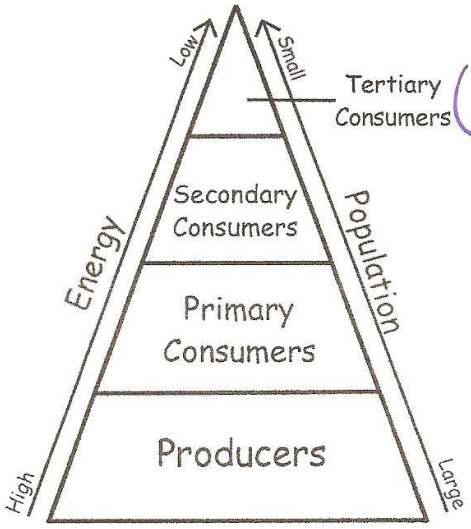




The energy pyramid tell us two things about how energy moves in an ecosystem:

1. In an ecosystem the producers have the most energy and the amount of energy goes down as you move up the pyramid, the tertiary consumers have the least amount of energy in an ecosystem.

2. The producers in an ecosystem have the largest population and the size of the population goes down as you move up the pyramid, the tertiary consumers have the smallest population in an ecosystem.



Every organism also has a niche its habitat. A niche is an organisms job or what the organism does in the habitat. No two organisms have the same niche.

Some niche's include

Predator: An animal that eats another animal.

Prey: The animal that gets eaten

Producer: An orgainsm that gets its energy from the sun, such as a plant.

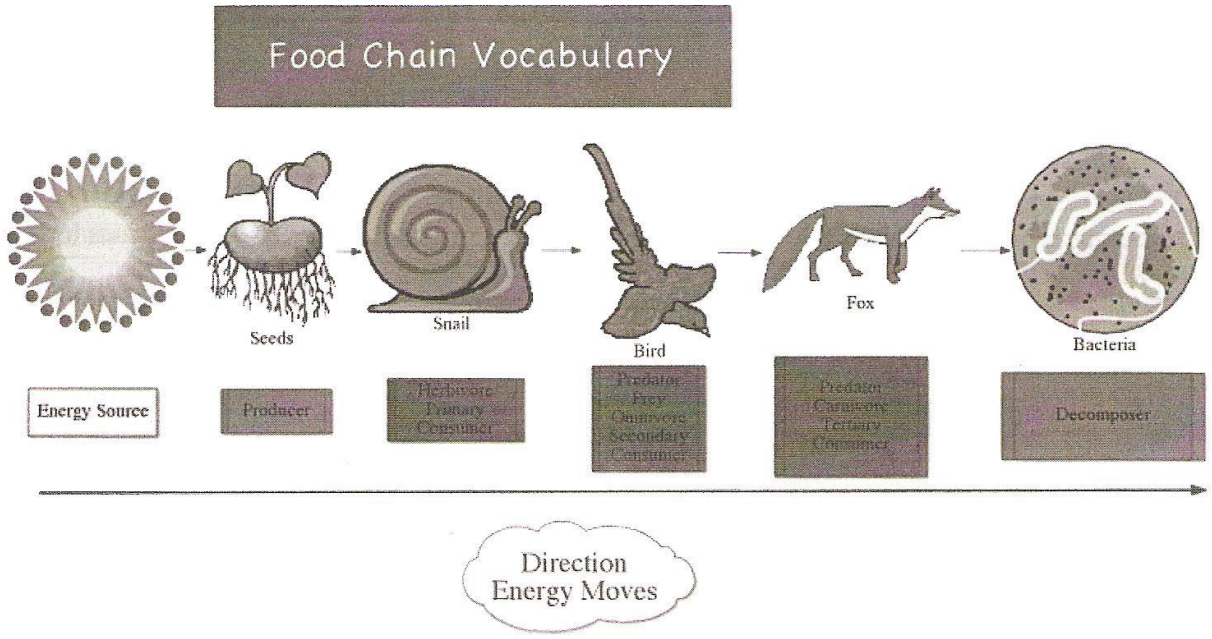
Consumer: An animal that eats another animal for energy and nutrients, they are at 3 levels.

Primary Consumer: An animal that eats a producer (plant).

Secondary Consumer: An animal that eats a primary consumer.

Tirtiary Consumer: An animal that eats a secondary consumer.

Decomposer: An organism that gets its energy and nutrients from dead organisms and turns them into soil, such as fungi and bacteria.



How does energy move through a food web?

All the food chains in a habitat are put together in a food web to show how the food chains overlap. Energy starts with the sun, then goes to plants (producers) and then consumers and then to decomposers.

QUESTIONS

1. The rabbit, mice and seed eating birds are all____.

   small animals

   a. Producers
   b. Predators
   c. Prey
   d. Parasites

2. In the diagram above, the spider competes for food with what other organisms;

   a. Hawks and owls
   b. Insectivorous birds and Predaceous Insects
   c. Rabbits and squirrels
   d. Snakes and Toads

3. The food web is incomplete. Which organisms should be added complete the food web and show that matter is being recycled:

   a. Autotrophs
   b. Carnivores
   c. Decomposers
   d. Herbivores

4. Which organisms are carnivores?

   a. Mice
   b. Rabbits
   c. Squirrels
   d. Fox

5. At the beginning of every food chain in every food web you will find what type of organism?

   a. Consumers
   b. Heterotrophs
   c. Producers
   d. Insectavores

6. Which section from the food web above shows the greatest amount of energy?

   a. Snakes
   b. Fox
   c. Plants
   d. Toads

7. What is the ultimate source of energy for all organisms?

   a. Plants
   b. Consumers
   c. Producers
   d. Sun

8. In the food chain above, if the birds all died, which population would be effected?

   either

   a. The fox population would increase
   b. The snail population would decrease
   c. The snail population would increase
   d. The fox population would decrease

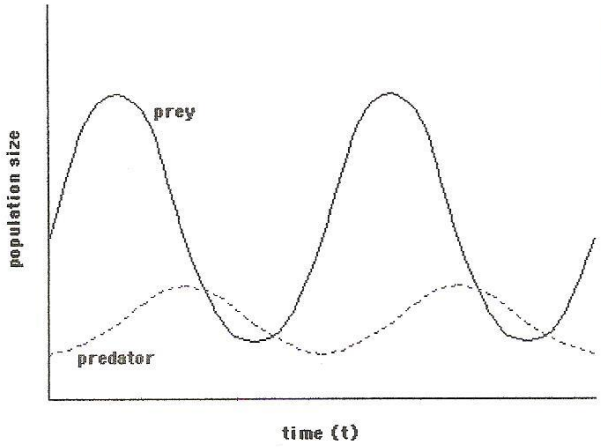
9. Having decomposers in a food web is important because their role in the ecosystem is

   a. To convert sun's energy to stored energy
   b. To live in extreme conditions
   c. To return dead plant and animal nutrients to the soil
   d. To serve as a major food source for animals

10. What is the correct order of energy flow in a food web:

   a. sun – consumers – predators – parasite – hosts
   b. sun – producers – herbivores – scavengers – carnivores
   c. sun – producers – herbivores – carnivores – decomposers
   d. sun – producers – decomposers – consumers - omnivores.

What is the relationship between Predator and Prey?



A predator is an animal that eats another animal. The animal getting eaten is the prey.

The graph above shows that as the population of the predator (fox) gets too high then the prey population (rabbit) goes down. When the prey population goes down then the predator doesn't have enough food and the prey population goes down. Because there are less predators then the prey population goes back up. This goes on and on and on....

1. In an ecosystem with a healthy predator population, predators usually cause which of the following:
   a) An increase in the number of predators
   b) A limit in the size of the prey population
   c) Food and resources become less scarce
   d) An increase in food and other resources
2. An example of a predator prey relationship would be:
   a) Deer – grass
   b) Tick – dog
   c) Snake – mouse
   d) Grass – water

predators hunt their prey

STUDY ALL YOUR NOTES IN SCINECE JOURNAL !!!!

Study Guide for Posttest 2 **Name:**_____

Dichotomous keys are one kind of classification key that scientists use to identify **organisms.**
The word dichotomous means "divided into two **parts.**

1) If you were creating a dichotomous key, how many possible answers should each question have?
   a. 0
   b. 1
   c. 2
   d. 4
2) Juan is developing a dichotomous key to classify the trees around his home. Which of these questions would MOST useful for J?
   a. Is it alive?
   b. Does it grow?
   c. Do its roots grow into the soil?
   d. Does it have flat leaves or needles?

   All of this would apply to all trees.
3) Your are developing a dichotomous key. What is the true about the characteristics you include in your key?
   a. They should always be about body shape or size.
   b. Only one choice in each pair should be true for an organism.
   c. They must be stated in the form of a question.
   d. They should focus only on traits shared by all organisms.

Classification **is the process of grouping things based on their similarities.**

The scientific study of how living things are classified is taxonomy.

Phylogeny **is the evolutionary history of an organism and is used to classify organisms.**

Carolus Linnaeus **developed the system of naming organisms in the 1750s.**

He used a two-part naming system called binomial nomenclature.

The system uses the genus **and** species **for identifying organisms.**

A species **is a group of organisms that share similar characteristics and can reproduce among themselves.**

Genus **refers to a group of similar species.**

The more levels of classification two organisms have in common the more closely related they are.

- **D** Domain — **Dear**
- **K** Kingdom — **King**
- **P** Phylum — **Phillip**
- **C** Class — **Came**
- **O** Order — **Over**
- **F** Family — **For**
- **G** Genus — **Great**
- **S** Species — **Steaks**

BIOMES:

1. A biome that receives less than 25cm of precipitation per year is a desert
2. A biome with a warm, humid climate with over 300cm of rain per year is a rainforest
3. A biome that receives more than 300cm of rain each year and has moderate temperatures is a rainforest
4. An extremely cold biome is the tundra where the top layer is always frozen in a state of permafrost.
5. A biome typically having coniferous trees that begins where the tundra ends (also known as a boreal forest) is the taiga
6. A group of land ecosystems with similar climates and organisms is a biome
7. An area that receives 25-75cm of rain per year and is populated by grasses and non-woody plants is a grassland / savannah

4) Tim is doing a project on cats. There are many different types of cat but chooses to do his project on the Puma (Felis concolor), marbled cat (Felis marmorata) and house cat (Felis dommesticus. Tim can conclude that these three types of cats:
   a. Belong to different families but are the same species
   b. Belong to the same genus but different kingdoms
   c. Belong to the same genus but are different species
   d. Belong to the same genus but different classes
5) The scientific name for owls is Bubo virginianus. Which level of classification is Bubo?
   a. Genus
   b. Class
   c. Phylum
   d. Species
6) Two organisms belonging to the same Order must also be classified in the same:
   a. Phylum
   b. Family
   c. Genus
   d. Species
7) The more characteristics that two organisms have in common:
   a. The closer together they live on Earth
   b. The easier it is to tell them apart
   c. The more classification levels the share.
   d. The more distantly relate they are related.
8) Which grouping generally contains the smallest number of species:
   a. Phylum
   b. Order
   c. Genus
   d. Class

Kingdom	Eubacteria	Archae bacteria	Protista	Fungi	Plantae	Animalia
Type of Cell	Prokaryote	Prokaryote	Eukaryote	Eukaryote	Eukaryote	Eukaryote
Cell Structures	Cell walls	Cell walls	Cell walls	Cell walls	Cell walls	NO Cell walls
Number of Cells	Unicellular	Unicellular	Most uni some multi	Most multi some uni	Multi.	Multi.
Nutrition	Autotroph or Heterotroph	Autotroph or Heterotroph	Auto. or Hetero.	Hetero.	Auto.	Hetero.

9) An organism is made of only one cell. It is a heterotroph and has a cell wall made of chitin. In which kingdom should the organism be classified.
   a. Archabacteria
   b. Protista
   c. Fungi
   d. Plantae

10) Which of the following is a characteristic of protists, plants, fungi, and animals?
   a. The ability to make their own food
   b. Eukaryotic cells
   c. Ability to move
   d. Multicellular

11) An organism is made up of only one eukaryotic cell. It is heterotrophic and its cell wall contains cellulose. In what kingdom would you classify this orgains?
   a. Plantae
   b. Protista
   c. Animalia
   d. fungi

12) A multicellular organism has no chloroplast, does not move, and is a decomposer. This organism belong is to what kingdom?
   a. Plant
   b. Animal
   c. Fungus
   d. Protest

13) List 4 differences between plants and fungi:
   1. Autotroph/Heterotroph
   2. Cellulose/Chitin
   3. Plants have Chloroplast
   4. Fungi decomposer

14) Which kingdom is single-celled, reproduces asexually, is a decomposer, and cell does not have a nucleus
   a. Animal
   b. Protist
   c. Bacteria
   d. fungi

15) A group of organisms that share similar characteristics and can reproduce among themselves must be members of the same:
   a. Kingdom
   b. Genus
   c. Class
   d. species

16) Which kingdom includes only multicellular autotrophs?
   a. Protists
   b. Archaebacteria
   c. Plant
   d. Animal

17) Which kingdom includes only multicellular heterotrophs?
   a. Protists
   b. Archaebacteria
   c. Plant
   d. Animal

ORGANELLE	LOCATION	DESCRIPTION	FUNCTION
Cell Wall	plant, not animal	*outer layer *rigid, strong, stiff *made of cellulose	*support (grow tall) *protection *allows H_2O, O_2, CO_2 to pass into and out of cell
Cell membrane	both plant/animal	*plant - inside cell wall *animal - outer layer; cholesterol *selectively permeable	*support *protection *controls movement of materials in/out of cell *barrier between cell and its environment *maintains homeostasis
Nucleus	both plant/animal	*large, oval	*controls cell activities
Nuclear membrane	both plant/animal	*surrounds nucleus *selectively permeable	*Controls movement of materials in/out of nucleus
cytoplasm	both plant/animal	*clear, thick, jellylike material and organelles found inside cell membrane	*supports /protects cell organelles
Endoplasmic Reticulum	both plant/animal	*network of tubes or membranes	*carries materials through cell
Ribosomes	both plant/animal	*small bodies free or attached to E.R.	*produces proteins
Mitochondria	both plant/animal	*bean-shaped with inner membranes	*breaks down sugar molecules into energy
Vacuole	plant - few/large animal - small	*fluid-filled sacs	*store food, water, waste (plants need to store large amounts of food)
Lysomes	plant - uncommon animal - common	*small, round, with a membrane	*breaks down larger food molecules into smaller molecules *digests old cell parts
Chloroplast	plant, not animal	*green, oval usually containing chlorophyll (green pigment)	*uses energy from sun to make food for the plant (photosynthesis)

18) What is the function of the mitochondria?

a. Bringing nutrients into the cell
b. Production of energy
c. Getting rid of waste products
d. Production of food

19) What is known as the "control center of the cell"?

a. Cell wall
b. Nucleus
c. Cytoplasm
d. Lysosome
e.

20) Which organelle in plant cells is responsible for the process of photosynthesis allowing plant cells to produce food?
   a. Vacuole
   b. Cell wall
   c. Chloroplast
   d. nucleus

21) Which cell structure is found in plant and animal cells and controls what can enter and leave the cell?
   a. Nucleus
   b. Cytoplasm
   c. Cell membrane
   d. Cell wall

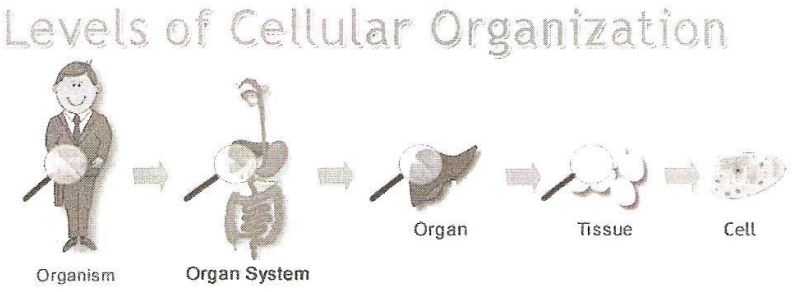
22) What is the function of the cell wall?
   a. To provide strength and structure for the plant cell
   b. To provide extra storage for the plant cell
   c. To provide extra nutrients for the plant cell
   d. To control the activity of the plant cell

23) Which of the following terms could be used to describe the cell membrane?
   a. Impermeable
   b. Selectively permeable
   c. Transport
   d. Carbon dioxide

24) In which cell structure does photosynthesis take place in plant cells?
   a. Nucleus
   b. Mitochondria
   c. Chloroplast
   d. Cell wall

25) Plants make a sugar called glucose during photosynthesis. This sugar is broken down during cellular respiration. In which organelle does cellular respiration take place?
   a. Chloroplast
   b. Lysosome
   c. Mitochondria
   d. Nucleus

26) What is the internal fluid (jelly like substance) of a cell along with all the dissolved minerals?
   a. Chromatin
   b. Cytoplasm
   c. Mitochondria
   d. Golgi body



27) Cells work together to connect and support part of the body. A group of cells that work together to perform the same function is called:
   a. An organism
   b. A system
   c. A tissue
   d. An organ

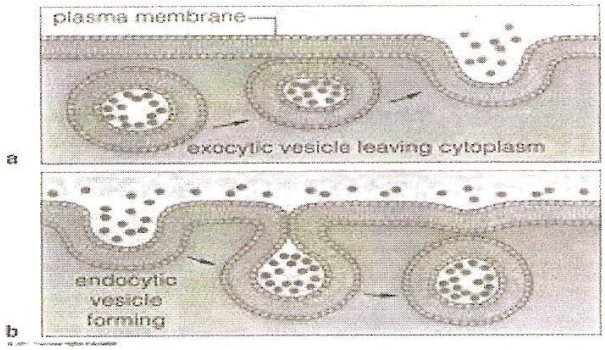
28) A group of organ systems makes up
   a. A cell
   b. An organism
   c. A tissue
   d. An organelle

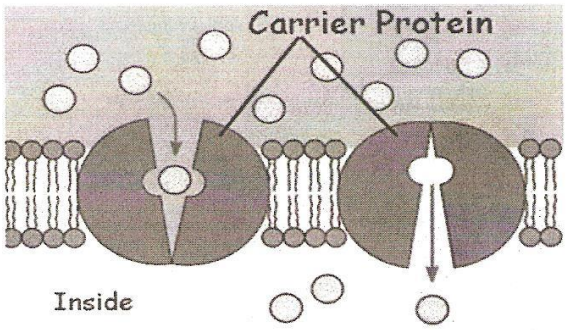
29) The stomach, which is made up of epithelial, connective, and muscle tissue, helps to digests food. The stomach is a/an:
   a. Organelle
   b. Species
   c. Cell theory
   d. Organ

30) Which of the above shows the correct order of the levels of cellular organization from simplest to most complex?
   a. Organ system, organ, tissue, cell
   b. Cell, tissue, organ, organ system
   c. Tissue, cell, organ system, organ
   d. Organ system, tissue, cell, organ

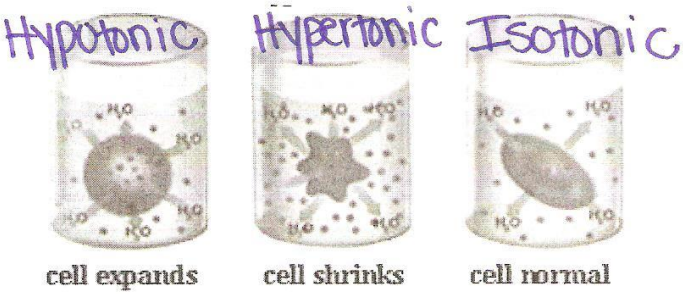
31) Specialized cells that perform specific functions are found only in :
   a. Bacteria
   b. Single-celled organisms
   c. Animals
   d. Multi-celled organisms

- **Active Transport** occurs when a cell must uses energy to pass molecules across its membrane.
- For larger materials to pass through the cell membrane endocytosis takes place.
- During endocytosis the cell membrane forms a pocket called a vesicle around the particle.
- The pocket then breaks loose from the outer layer of the cell and pulls the material into the cell.
- In exocytosis, vesicles carry particles to the cell membrane and release them from the cell.





- Passive Transport occurs when materials cross the cell membrane in ways that do not require the cell to use any energy.
- Diffusion is the main method by which small molecules move across the cell membrane.
- In diffusion molecules arrange themselves so that areas of higher and lower concentration becomes the same. When the molecular concentration is the same inside and outside of the cell it reaches a state of equilibrium.
- Osmosis is the diffusion of water through the cell membrane from an area of high concentration to an area of low concentration.
- The cell will equalize water pressure by allowing water in or out until pressure is equal on both sides of the cell membrane.



32) The diffusion of water through a selectively permeable membrane is called
   a. Osmosis
   b. Endocytosis
   c. Active transport
   d. Facilitated diffusion

33) When the cell membrane folds inward (cellular ingestion) and pinches off to form a vesicle around the molecule bringing it into the cell is known as endocytosis.

34) When materials are removed from the cell by fusing with the cell membrane and forming a vesicle to remove the material is known as exocytosis.

35) Which of the following is an example of active transport?
   a. Pores found in the cell membrane
   b. Transport proteins embedded in the cell membrane
   c. Diffusion across the membrane
   d. Facilitated diffusion

36) When cells take in nutrients, which of the following occur in every cell in our body?
   a. Production of materials
   b. Division
   c. Growth
   d. All of the above

37) List and define the different types of active transport:
   1. Endocytosis
   2. Exocytosis
   3. Transport Proteins

38) List and define the different types of passive transport:
   1. Diffusion
   2. Osmosis

Parents Signature:_____