Classification & Kingdoms Worksheet Name_____

Section A: Classification

1. What criteria are used to place organisms into their domains and kingdoms? _____
   _____
2. Use the chart in your notes to help answer these questions. Identify which kingdom the organisms are in based on the following description.
   a. An organism contains a cell wall and is a multicellular autotroph. _____
   b. An organism is unicellular, has a chloroplast and a nucleus. _____
   c. An organism contains peptidoglycan in their cell walls, unicellular and autotroph. _____

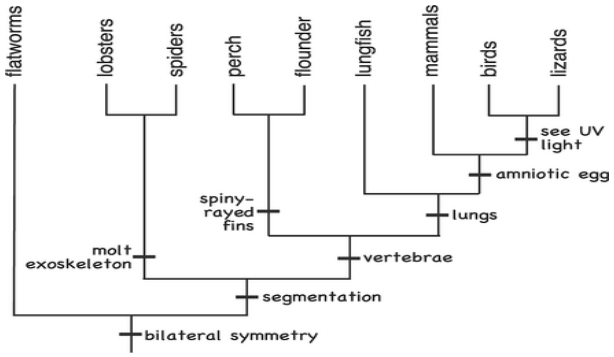
Taxons	Green Frog	Mountain Lion	Domestic Dog
Kingdom	Animalia	Animalia	Animalia
Phylum	Chordata	Chordata	Chordata
Class	Amphibia	Mammalia	Mammalia
Order	Anura	Carnivora	Carnivora
Family	Ranidae	Felidae	Canidae
Genus	*Rana*	*Felis*	*Canis*
Species	*clamitans*	*concolor*	*familiaris*

3. Which taxon includes the most specific characteristics? _____
4. Which taxon includes the broadest characteristics? _____
5. Which taxon includes only organisms that can successfully interbreed? _____
6. Which two organisms are more closely related? How did you know? _____
   _____
7. If an organism is in the same **order**, what other taxa would be the same? _____
8. Using the information on the chart, what can you conclude about the classification taxa of an organism with the scientific name *Rana temporaria*? _____

9. According to the cladogram, what characteristic do all of the organisms in the cladogram share?

10. According to the cladogram, which are more closely related: Lungfish and Flounder **OR** Lungfish and Mammals?

11. What is a major difference between mammals and birds according to the cladogram above?



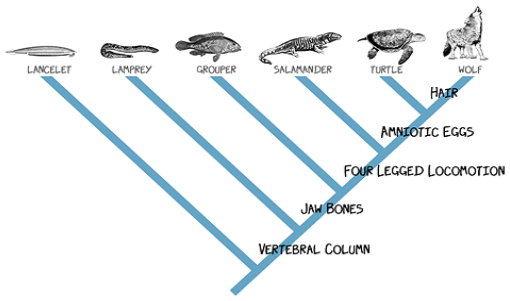
12. Who devised a system of naming organisms that is still in use today? _____
13. The taxon that is larger than a genus and smaller than an order is a(n) _____.
14. Organisms are placed in _____ or classification groups.

15. According to the cladogram, what trait(s) are found in a salamander, but not in the grouper?

16. Which trait is found in all organisms, but the lancelet?

17. How is phylogeny used to classify organisms?

18. Linnaeus classified organisms based on physical characteristics. What do scientists use today to classify organisms?



- Classification Game -- http://www.quia.com/rr/220195.html

Section B: Dichotomous Key

Introduction: The identification of biological organisms can be greatly simplified using tools such as dichotomous keys. A dichotomous key begins with general characteristics and lead to couplets indicating progressively specific characteristics. Follow the key and identify the following salamanders. Adapted from: www.biologyjunction.com

1	a	Hind limbs absent	*Siren*
	b	Hind limbs present	Go to 2
2	a	External gills present in adults	*Mud puppy*
	b	External gills absent in adults	Go to 3
3	a	Large size	Go to 4
	b	Small size	Go to 5
4	a	Body background black, large white spots irregular in shape and size completely covering body & tail	*Tiger salamander*
	b	Body background black, small, round, white spots in a row along each side from eye to tip of tail	*Spotted Salamander*
5	a	Body background black with white spots	Go to 6
	b	Body background light color with dark spots and or lines on body	Go to 7
6	a	Small white spots on a black background in a row along each side from head to tip of tail	*Jefferson salamander*
	b	Small white spots on a scattered throughout a black background from head to tip of tail	*Slimy salamander*
7	a	Large irregular black spots on a light background extending from head to tip of tail	*Marbled salamander*
	b	No large irregular black spots on a light background	Go to 8
8	a	A light stripe running the length of the body and bordered by dark pigment extending downward on the sides	*Red-backed salamander*
	b	A light stripe extending the length of the body, a marked constriction at the base of the tail	*Four-toed salamander*

1._____

2. _____

3._____

Section C: Viruses

1. Explain why viruses are considered nonliving particles. _____

   _____

2. What is a host cell? _____
3. Why can't viruses be grown in agar petri plates like bacteria? _____

   _____

4. What two structures are found in all viruses? _____
5. Identify the function(s) of the viral particle structure.
   a. Capsid - _____

      _____

   b. RNA strand - _____

      _____

   c. Envelope - _____

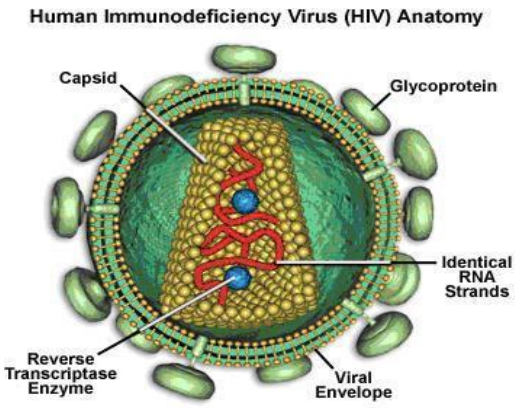
      _____

   d. Reverse Transcriptase - _____

      _____

   e. Glycoprotein - _____

      _____



6. Why can't viruses attach to any cell it encounters?

7. Explain what occurs in the lytic cycle.

8. Explain what occurs in the lysogenic cycle.

9. Which replication cycle do you see symptoms? _____
10. Suppose Jon contracted the influenza virus. How would he proceed to treat this viral infection? _____

    _____
11. Shingles and chickenpox are both viral diseases caused by the varicella-zoster herpes virus. Shingles usually occurs years after a person has had the chickenpox. Based on this information, what kind of infection cycle do you think the varicella-zoster virus has? _____
12. Why don't vaccines work on all viruses? _____

    _____

Section D: Who's got the FLU?

Exchange #1: _____
Exchange #2: _____
Exchange #3: _____

1. How would the results differ if people were continuously entering and leaving class?

2. How would the results differ if the infected person died very quickly or very slowly after contracting the disease?

Section E: Archaebacteria & Eubacteria

All bacteria were once classified into Kingdom Monera. Scientists discovered there were differences among the evolutionary history and biochemistry which led them classify them into two very different kingdoms – Archaebacteria and Eubacteria. Archaebacteria and Eubacteria are thought to have split from each other billions of years ago. Archaebacteria and Eubacteria have similar in size and shape. All bacteria are unicellular and do not have a nucleus – prokaryotes. The general structure of archaea and bacteria are the same, but the composition or some structures are different in archaea. Archae differ in the composition of their cell wall --- the cell wall does not contain peptidoglycan. Other structural differences include lipids in their cell membrane. Archaea and Eubacteria both reproduce asexually by binary fission, fragmentation and budding. Eubacteria have the ability to form spores to remain dormant over years, something not found in Archaea. Archaea can survive in extreme, harsh environments such as hot springs, salt lakes, marshes, oceanic vents and guts of ruminants and humans. Eubacteria are found everywhere and live in different types of habitats.

1. What was the name of the kingdom that all bacteria were once classified into? _____
2. When do scientists believe the two types of bacteria split? _____
3. Fill in the chart – similarities and differences among Archaebacteria and Eubacteria.

DIFFERENCES	SIMILARITIES

Section F: Archaebacteria

On the 'Websites-Evolution' page, click on 'Bacteria'…..then click on "Archaebacteria Kingdom". Answer these questions.

1. When and why did scientist decide to place Archaebacteria into their own kingdom? _____
   _____
2. In a Nutshell…..

Kingdom Archaebacteria	
Type of Organism	
Cellular Structure	
Habitat	
Peptidoglycan in Cell Wall	
Reproduction	
Nutrition Mode	

3. What 6 characteristics distinguish Archaebacteria from Eubacteria?
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____
   f. _____
4. Are archaebacteria pathogenic? _____ What does that mean? _____
   _____
5. List some basic characteristics and habitat of the three subgroups of archaebacteria.

Methanogens	
Halophiles	
Thermoacidophiles	

6. List a few examples of how archaea are important organisms. _____
   _____
   _____
   _____

Section G: Eubacteria

1. In a Nutshell….

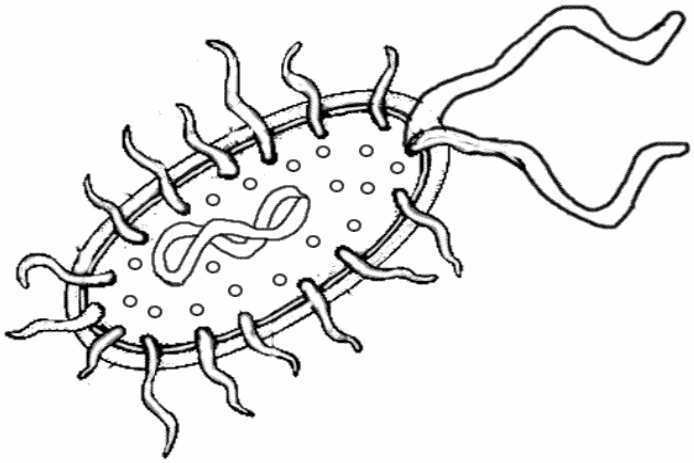
Kingdom Eubacteria	
Type of Organism	
Cellular Structure	
Habitat	
Peptidoglycan in Cell Wall	
Reproduction	
Nutrition Mode	

2. What is the process of using inorganic compounds to make your own food? _____
3. Identify the following bacteria – _____

4. Gram test are used to identify how much _____ is found in the cell wall.
5. What's the difference between obligate aerobes and obligate anaerobes? _____
_____

➢ *On the "Websites-Evolution" page, click on 'Bacterial Structure' to help answer questions below.*

6. Label the diagram of a bacterial cell and color the structures.
   cell wall – blue
   cell membrane – orange
   pili – red
   DNA – green
   cytoplasm – yellow
   ribosomes – black



7. In a bacterium, where is the DNA located?
_____
8. Which structure(s) allows bacteria to adhere to substances? _____
9. Which structure is a sticky protective layer that helps bacteria evade the immune system?
_____
10. Why do bacteria form endospores? _____
_____
11. What are plasmids? _____

➢ *On the 'Websites-Evolution' page, click on 'Bacteria'…..then click on the different headings to help answer these questions.*

12. Why is sexual reproduction important for the survival of a bacterial species? _____
_____
13. In a petri dish, how can you tell if an antibiotic or chemical is killing the bacteria? _____
_____
14. Compare how you treat a bacterial infection to the treatment of a viral infection. _____
_____
15. How are bacteria beneficial to the environment? _____
_____
_____
_____
16. How are bacteria beneficial to humans? _____
_____
17. How do bacteria become resistant to antibiotics? _____
_____

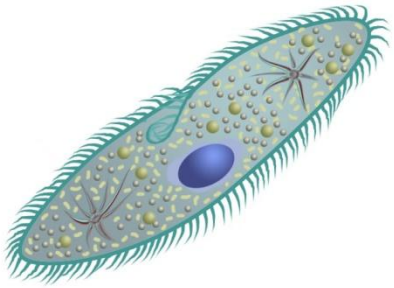
Section H: What is it? --- Identify the term for each description about bacteria.

1. bacteria that require oxygen _____
2. number of chromosomes in bacteria _____
3. rod shaped bacteria _____
4. bacteria living in very salty environments _____
5. corkscrew shaped bacteria that may cause disease such as syphilis _____
6. bacteria that live in very hot, acid environments such as hot springs _____
7. bacteria that gram stain purple _____
8. live in swamps and in sewage and produce methane gas _____
9. long whip-like tails for movement in some bacteria _____
10. term used to refer to most bacteria _____
11. prefix used when bacteria grow in chains _____
12. thought to be the ancestors of eukaryotes _____
13. structure formed to help bacteria survive harsh environments _____
14. bacteria that can carry on photosynthesis _____
15. bacteria that do not need oxygen _____
16. organisms without a nucleus or membrane-bound organelles _____
17. short hairs on the cell wall of some bacteria for attachment _____
18. produces sticky sugars for attachment of bacteria to objects _____
19. protein-carbohydrate in the cell walls of eubacteria _____
20. prefix used when bacteria grow in grapelike clusters _____

Section I: Protist

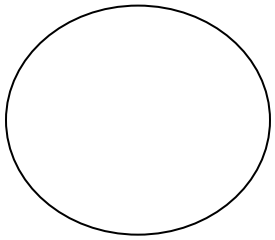
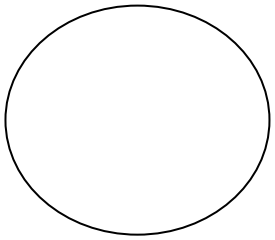
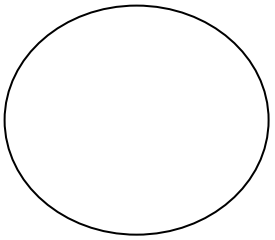
Use your notes to answer these questions and use the website. On the 'Websites-Evolution', click on Protist…read and answer these questions.

1. What are the three types of protist? _____
2. The cell walls of diatoms contain _____.
3. An amoeba is a type of _____.
4. Red tide is caused by an explosion of _____.
5. Amoebas use their _____ to find food and to move.
6. Label the contractile vacuole and the nucleus in the diagram of the paramecium. Answer these questions about the paramecium.
    a. How does the paramecium move? _____
    b. If the contractile vacuole were to malfunction, what effect would this likely have on the organism? _____
    _____
    c. Is this a unicellular or multicellular protist? _____
    d. If the cilia were to malfunction, what effect would this likely have on the organism? _____
    _____



7. Euglenas have an eye spot. What do you think the function of this structure is? _____
8. Why are algal blooms harmful to an aquatic ecosystem? _____
_____
9. What type of sexual reproduction does most protist undergo? _____
10. What type of asexual reproduction does most protist undergo? _____
11. Why are phytoplankton essential for an aquatic food web? _____
_____
12. How can someone contract an *Entamoeba* species or a *Giardia* species? _____
13. How is Malaria contracted? _____
14. How is African Sleeping Sickness contracted? _____
15. How are protist beneficial to humans and the environment? _____
_____
_____
16. How are plant-like protist similar to plants? _____
17. How are fungi-like protist similar to fungi? _____

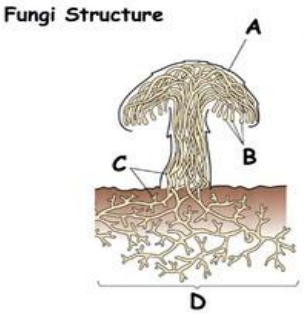
18. Select three different prepared slides and sketch the protist. Identify the name and type of protist.

_____ _____ _____
_____ _____ _____

Section J: Fungi

On the 'Websites-Evolution', click on Fungi…read and answer these questions.



1. Identify the structures in the diagram.
   a. _____
   b. _____
   c. _____
   d. _____
2. Where do fungi grow best? _____
3. The body of a fungus usually consists of thin filament called _____.
4. Are most fungi multicellular or unicellular? _____
5. What is the name of the structure that grows above ground? _____
6. A mass of hyphae is called _____.
7. How do fungi obtain nutrients through extracellular digestion? _____
   _____
8. What compound is found in the cell walls of fungi? _____
9. _____ obtain food by feeding on dead organisms.
10. Explain the role of both organisms in a mycorrhiza relationship. _____
    _____
    _____
11. Is lichen only a fungus? If not, what else lives within it? How do they benefit each other? _____
    _____
    _____
12. What are spores? _____
13. What type of asexual reproduction occurs when fungi cells break off and grow new fungi with identical haploid spores? _____
14. How are fungi used in the fermentation process? _____
15. How do fungi function as parasites? _____

Section K: Plants

1. Green alga is thought to be the ancestor of plants. What characteristics do green algae and plants share?
   _____
2. Write the formula for photosynthesis. _____
3. What are the cell walls of plants composed of? _____
4. What are the basic characteristics that all plants share? _____
5. What trend is present in the evolution of plants? _____

6. Plants are composed of three organs: roots, stems and leaves. How are these structures beneficial?
    a. Roots - _____
    b. Stems - _____
    c. Leaves - _____
7. Earlier plant forms didn't have vascular tissue. How did the formation of vascular tissue allow plants to move away from a watery environment? _____
    _____
8. What modifications do plants have to help them retain water? _____
    _____
9. How has the formation of the seed and pollen grains changed the reproductive ability of plants? _____
    _____
    _____
10. Why is lignin an essential component of cell walls? _____
    _____

Section L: Plant Adaptations

On the "Website-Evolution" page, click on "Plant Adaptations".....go through each biome and fill in the chart.

Biome	Adaptations that a plant might have in order to survive in this specific biome.
Desert	
Tundra	
Tropical Rain Forest	
Temperate Deciduous Forest	
Taiga	
Grassland	
Temperate Rain Forest	

Section M: Plant Types & Hormones

1. Identify the type of PLANT **-** Put an 'X' in the box if the group of plants has the following characteristics:

	Bryophytes	Seedless Vascular	Gymnosperms	Angiosperms
has vascular tissue				
avascular or nonvascular				
obtains H_2O by osmosis				
produces spore				
produces seeds				
produces cones				
needs water for fertilization				
produces flowers & fruit				
pine trees				
apple tree				
moss				
ferns				

2. What is the function of xylem? _____
3. What is the function of phloem? _____
4. What stimuli is causing roots to grow down and stems to grow up? _____
5. Why do some plants grow towards the sides instead of straight up? _____
6. Which hormone levels would increase during the fall? _____
7. Which hormone levels would increase during the spring and summer, but decrease during the fall? _____

Section N: Animals

On the "Website-Evolution" page, click on "Animal Adaptations".....go through each adaptation and fill in the chart.

1. What is an adaptation? _____ _____
2. Explain the difference between anatomical, behavioral, and physiological adaptations. Provide an example for each.
   a. Anatomical adaptations – _____ _____
   b. Behavioral adaptations – _____ _____
   c. Physiological adaptations – _____ _____

3. Fill in the information on the chart.

Adaptation	What is it? How does the animal use it?
Parasitic	
Bioluminescence	
Chemical communication	
Mimicry	
Warning coloration	
Courtship displays	

Moulting	
Camouflage	
Territorial	
Aestivation	
Hibernation	
Migration	
Poisonous	
Predation defense	