

SOL REVIEW
DAYSHEET 76: Kingdoms of Life, Ecology, and Evolution

Biology I

Name: _____

Date: _____

Catalyst/Bellringer: Because of our shortened class period today, please follow these instructions in order to start Part III of our SOL review:

1. Take out your tablet
2. Go to www.biomonsters.com
3. Click on Academic Biology
4. Click on Video Podcasts
5. PLAY the SOL Review Part 3: Cells Podcast

Please remember you are expected to use every minute of class time to prepare for the SOL!!!!

SOL Top Facts to Know: Kingdoms of Life, Evolution, and Ecology

1. Organisms can be classified into different _____ (groups)

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____

2. Every organism has a scientific name with two parts: 1) _____ 2) _____.

3. There are 6 kingdoms of life:

Kingdom of Life	Prokaryote or Eukaryote?	Unicellular or Multicellular?	Autotroph or Heterotroph	Example / Important Facts
Eubacteria				
Archaeobacteria				
Protista				
Plantae				
Fungi				
Animalia				

4. _____ is the process of living things changing over time.

5. Organisms evolve through _____ (or _____). In every generation the organisms with the _____ that make them more successful at _____ AND _____ will pass on their traits to the next generation. Organisms without these good traits will _____ or have fewer _____.

6. An _____ is any trait that helps an organism _____ or _____.

7. _____ is an organism's ability to _____ and _____. Organisms with the best adaptations are more _____.

8. There are different types of evidence for evolution

i. _____ = remains of extinct organisms.

ii. _____ = how organisms are put together

a. _____ structures are structures that came from a common ancestor but may have been modified for different purposes. Homologous structures are evidence of _____ evolution.

b. _____ structures are structures that did NOT come from a common ancestor but look similar because the organisms use them for a similar purpose. Analogous structures are evidence of _____ evolution

c. _____ structures are structures that an organism has but DOES NOT USE

iv. _____ = comparing the DNA, mRNA, proteins, and other molecules in organisms to determine how closely related they are to each other

9. Organisms can be classified into different groups based on how they get their energy:
- a. _____ or _____ make their own food using
 - b. _____ eat plants only
 - c. _____ eat both plants and animals
 - d. _____ eat animals only

10. We can show what organisms eat using a food _____ or _____

11. Organisms can also be placed in different _____ (feeding) levels
- a. The first level is the _____ or autotrophs
 - b. The second level is the _____
 - c. The third level is the _____
 - d. The fourth level is the _____

12. There are not usually more than 4 – 5 trophic levels, because as you move up the food chain, energy is _____!

13. The process of an ecosystem changing over time is called ecological _____.

14. When organisms move into a new environment their population size changes over time:

Activity 2: Kingdoms of Life

1. Which pair of organisms would you expect to have more in common? Circle the answer

Two organisms from the same species OR Two organisms from the same kingdom

Two organisms from the same family OR Two organisms from the same order\

Two organisms from the same phylum OR Two organisms from the same genus

2. The scientific name for a dog is *Canis familiaris*.

What genus does a dog belong to? _____

What species does a dog belong to? _____

3. *Homo habilis* and *Homo habilis* were two ancestors of modern humans. How are these two organisms related?

- a. They are in the same kingdom, but different phyla
- b. They are in the same class, but different orders
- d. They are in the same family, but different geneses
- e. They are in the same genus, but are different species

4. Directions: Identify which kingdom of life each statement is describing

Eubacteria Archaeobacteria Protista Plantae Fungi Animalia

a. I have no nucleus and live in an extreme environment with lots of salt _____

b. I am eukaryotic and unicellular _____

c. I am prokaryotic and can be pathogenic _____

d. I am a multicellular, photoautotroph. My cells have cell walls and chloroplasts _____

e. I am eukaryotic. My cells have cell walls. I feed through absorption. _____

f. I am multicellular, heterotrophic, and motile! _____

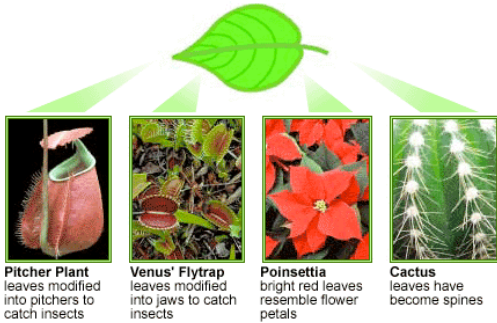
Activity 3: Evolution

1. **IDENTIFY** if the following are examples of **homologous**, **analogous**, or **vestigial** structures



Small, functionless wings

a. The kiwi is a flightless bird. It has small wings with no function.



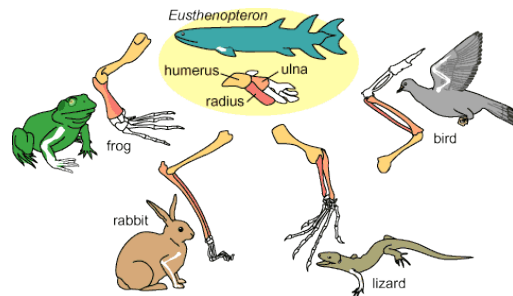
Pitcher Plant
leaves modified
into pitchers to
catch insects

Venus' Flytrap
leaves modified
into jaws to catch
insects

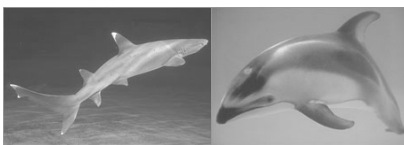
Poinsettia
bright red leaves
resemble flower
petals

Cactus
leaves have
become spines

b. Almost all plants have leaves, but they have been modified for different purposes. For example, cactus leaves are modified into spines for protection, while the venus flytrap's leaves have been modified for catching prey.



c. All tetrapods (organisms with four limbs) have leg bones with a humerus, ulna, and radius.



d. Sharks and dolphins both have a streamlined-shape, an adaption for swimming. However, sharks and dolphins do not share a recent common ancestor – sharks descended from other fishes, but dolphins descended from land mammals.



e. The Texas blind salamander lives in caves and has useless eyes.

2. Scientists obtained DNA samples from four different organisms and from an ancestral organism and analyzed the samples using gel electrophoresis.

Common Ancestor	Species A	Species B	Species C	Species D
— —	—	—	— —	—
—	—	— —	—	
—	—	—	—	
—				—
—			—	

Which species is **most** closely related to the common ancestor?

- A. Species A
- B. Species B
- C. Species C
- D. Species D

How do you know? _____

3. Scientists analyzed the amino acid sequence of a particular protein from several new species of bacteria and from a known bacterial species. Their results are summarized in the table below:

Species	Amino Acid Sequence
Known Species	Trp – Ser – Ser – Phe – His – Arg –Gln
Species I	Trp – Gly – Asp – Phe – Iso – Arg –Lys
Species II	Trp – Ser – Asp – Phe – His – Arg –Lys
Species III	Trp – Ser – Asp – Phe – Iso – Arg –Lys
Species IV	Trp – Ser – Asp – Phe – His – Arg –Gln

Which species is **most** closely related to the known species?

- A. Species I
- B. Species II
- C. Species III
- D. Species IV

4. Which species is **least** closely related to the known species?

- A. Species I
- B. Species II
- C. Species III
- D. Species IV

Amino-Acid Differences Compared with Human Hemoglobin

Species	Number of amino-acid differences
Lamprey	125
Frog	67
Dog	32
Macaque	8

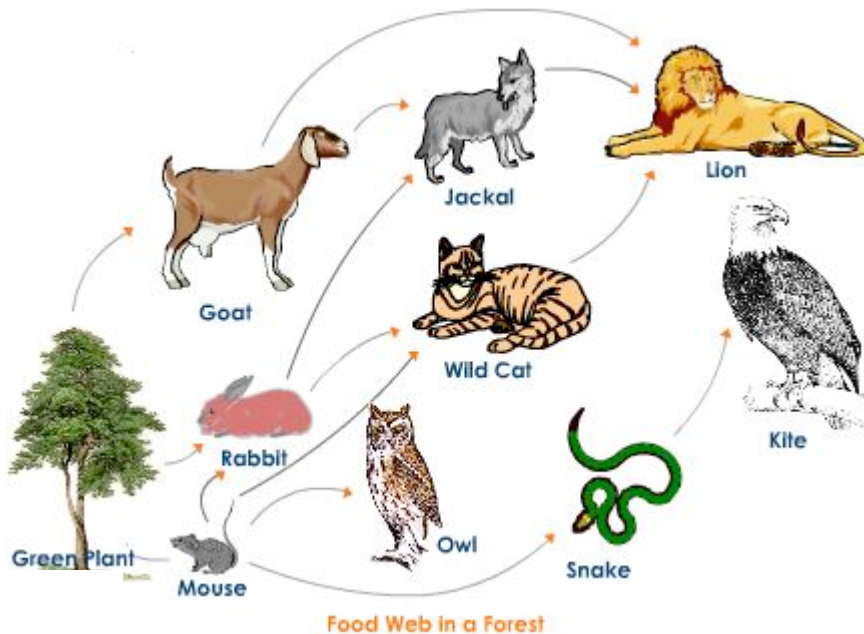
The table indicates the number of amino acids that differ in the amino-acid sequence of the hemoglobin from selected organisms when compared to human hemoglobin. On the basis of this information, which organism would be classified as *most* closely related to humans?

- A Lamprey
- B Frog
- C Dog
- D Macaque

Activity 4: Ecology

1. Directions: Label the organisms in the food web using the following vocabulary:

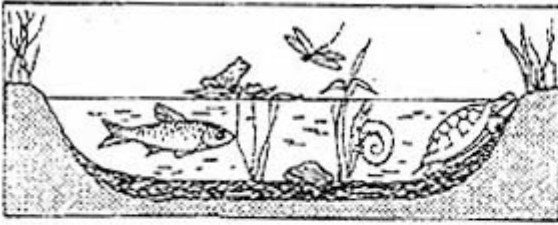
Producer (P) Herbivore (H) Omnivore (O) Carnivore (C)



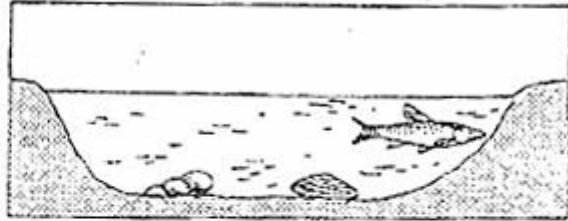
2. How many trophic levels are represented in this food web? _____

3. Ecological succession is the process of an ecosystem changing over time. The pictures below show the process of ecological succession in a small pond. Put the pictures below in order from first to last:

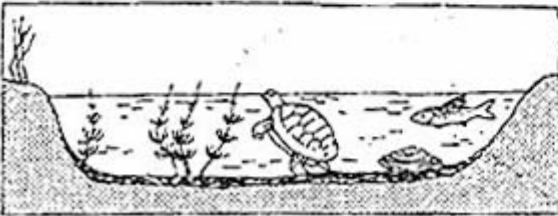
Pond A



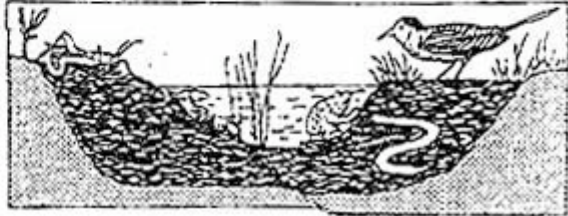
Pond B



Pond C



Pond D



4. Identify the following examples as **primary** or **secondary** ecological succession:

- a. after a volcanic eruption, pioneer species, such as lichens, start to grow on the rock

- b. after a farm is abandoned, small shrubs and trees begin to grow

5. On the population growth curve below, label the following:

Exponential Growth

Carrying capacity

Population arrives in new area

