Week 3

EOC Review

Classification and Plants

Benchmarks:

SC.912.L.15.6 Discuss distinguishing characteristics of the domains and kingdoms of living organisms

SC.9.12.L.18.15.4 Describe how and why organisms are hierarchically classified and based on evolutionary relationships

SC.912.L.1.15.5 Explain the reasons for changes in how organisms are classified

SC.912.L.14.7 Relate the structure of each of the major plant organs and tissues to physiological processes.

Summary:

You need to know the following:

- The distinguishing characteristics of the domains and kingdoms of living organisms.
- How organisms are classified based on evolutionary relationships.
- To explain the reasons for changes in how organisms are classified.
- How the structures of plant tissues and organs are directly related to their roles in physiological processes.
    - Plant organs are limited to roots, stems, leaves, flowers, fruit and cones.
    - Physiological processes are limited to photosynthesis, cellular respiration, transpiration, and reproduction.
    - Plant tissues are limited to meristematic, ground, dermal and vascular tissues.
    - Plant structures are limited to cambium, guard cells, phloem, seed, stomata and xylem.

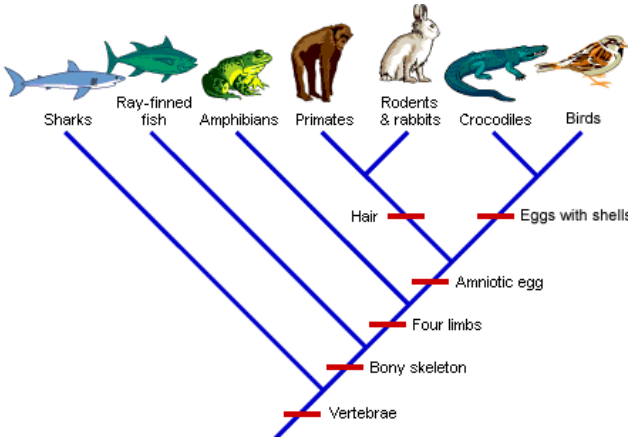
Additional Support

- Holt McDougal Biology Interactive Reader:
    - Chapter 17, Section 17.1, 17.2, 17.4
    - Chapter 18, Section 18.4, 18.5
    - Chapter 19, Section 19.1
    - Chapter 20, Section 20.1, 20.2, 20.3
    - Chapter 21, Section 21.1, 21.2 (transpiration), 21.3, 21.4 (guard cells)
    - Chapter 22, Section 22.2
- Everglades Biology End-Of-Course Review
    - Pages 161-172, 174-182
- Web Site
    - http://www.ecsd-fl.schoolloop.com/BiologyEOCReview
    - http://fcat.fldoe.org/eoc/

Sample Questions

SC.912.L.15.6: Classification

1. Based upon the information shown in the cladogram below, which trait would most likely be observed in ray-finned fish?



A. amniotic egg
B. bony skeleton
C. four limbs
D. hair

2. Mushrooms are a type of fungus. What characteristic of fungi makes them different from plants?

A. Fungal cells are eukaryotic.
B. Fungi are multicellular.
C. Fungi are heterotrophic.
D. Fungi have cell walls.

3. The Florida Panther was once considered to be a subspecies of cougars and given a special trinomial taxonomy of *Puma concolor coryi*. Current scientists however, have studied the Florida Panther and removed the subspieces classification to only *Puma concolor.* Which of the following would **most likely** explain why the classification of the Florida Panther changed.

A. New genetic evidence suggests a much closer relationship between the Florida Panther and other cougars.

B. Shared features between the Florida Panther and other cougars were also found in newly discovered organisms in the world.

C. Advanced technologies have shown a large difference in cell structure between the Florida Panther and other cougars.

D. Trinomial naming conventions are no longer used by longer used by scientists because only the genus and species are important in taxonomy.

4. In 1990, Carl Woese introduced the three domain system for classifying living things, after the advancement of DNA analysis allowed for a comparison of species genetic code. Which of the following is the best explanation for why domains were added to the previous system of classification?

A. The old system of classification was wrong and needed to be corrected.

B. New species are evolving too quickly to keep up with the old system of classification.

C. Domains have always been included, they were just made official recently.

D. Some organisms, which were previously characterized together, were determined to be genetically very different.

5. Many protists are single-celled organisms, as are bacteria. However, protists and bacteria are in different biological kingdoms. Which of the following comparisons of protists and bacteria is NOT true?

A. Both protists and bacteria can be motile.

B. Both protists and bacteria are microorganisms.

C. Protists are eukaryotes, while bacteria are prokaryotes.

D. Protists may be photosynthetic, but bacteria cannot be photosynthetic.

SC.912.L.14.7: PLANTS

1. Terrestrial plants have stomata on the surface of their leaves. Stomata are surrounded by two guard cells that change shape in response to environmental factors and open or close the stoma. Which of the following best explains how the structure of the leaf is used in processes that occur in plants?

A. Water enters the plant through the surface of the leaf for transpiration

B. Gases for photosynthesis are exchanged through the surface of the leaf.

C. Energy for cellular reproduction is absorbed through the surface of the leaf.

D. Carbon dioxide enters the plant through the surface of the leaf for cellular reproduction.

2. Plant cells that are specialized for cell division are most likely found in what part of the plant?

A. root tips

B. leaf epidermis

C. stem epidermis

D. vascular tissue

3. If the xylem in a young tree is damaged, which process is first affected?

A. performing photosynthesis

B. transporting sugar to the roots

C. transporting water to the leaves

D. absorbing water from the soil

4. A plant species lives in an area with limited sunlight. Which physiological adaptation would be most useful to the plant?

A. colorful flowers

B. large leaves

C. deep roots

D. thin cuticle

5. What is the main function of leaves?

A. Leaves provide support for growth and a place to store food.

B. Leaves provide a place for photosynthesis to occur.

C. Leaves absorb water and minerals and transport nutrients to the stem.

D. Leaves create a barrier that prevents water in the plant's tissues from evaporating.

6. The cambium is a section of cells in a plant that can become either part of the xylem or phloem, depending on the growth and needs of the plant. If the cambium of a particular plant was damaged, what would be the most likely effect on the plant?

A. The plant would lose its ability to carry out photosynthesis.

B. the plant would have uncontrolled growth.

C. The plant would not experience any change in physiology.

D. The plant would not be able to transport nutrients and water.

7. Which structure in the leaf controls the opening and closing of the stoma?

A. cuticle
B. epidermis
C. guard cell
D. spongy mesophyll

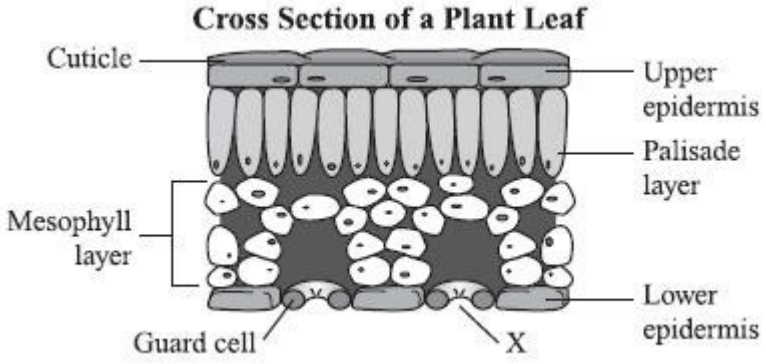
8. Which statement describes the role of flowers in plant survival?

A. Flowers can absorb carbon dioxide for sugar production.
B. Flowers produce oxygen through cellular respiration.
C. Flowers contain cells that carry out photosynthesis.
D. Flowers contain cells that produce gametes.

9. What is the main purpose of seeds in plants that have them?

A. To protect and distribute the zygote.
B. To entice animals to eat the plant.
C. To be fertilized by other plants.
D. To store water for the mother plant.

10. The diagram below shows a cross section of a plant leaf.



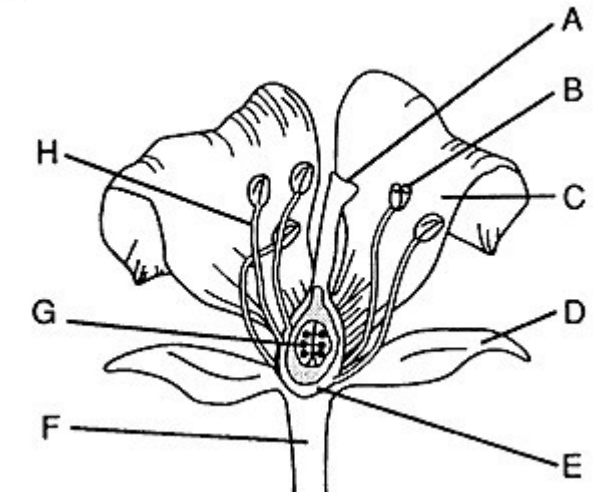
How does the structure marked X contribute to the survival of the plant?

A. It allows the intake of gases necessary for photosynthesis.
B. It allows the intake of minerals necessary for plant growth.

C. It allows the intake of sunlight necessary for ATP production.

D. It allows the intake of sugars necessary for plant reproduction.

11. The diagram below represents a flower, the reproductive structure of some plants. Most flowers have both male and female structures for fertilization and reproduction.



Which structure is represented by the letter A in the diagram above?

A. the stamen, a male structure which produces pollen

B. the pistol, a female structure which collects pollen and passes it to the ovary

C. the sepal, a modified leaf used for protection of the flower

D. the petals, decorative structures which attract pollinators

12. Jake conducted an experiment with four bean plants. They were placed next to one another on a sunny windowsill. He gave each plant equal amounts of a different type of water. The plants were given tap water, distilled water, flavored water, or carbonated water. He made the following observations after three weeks.

PLANT EXPERIMENT OBSERVATIONS		
Plant	**Type of Water Given Daily**	**Final Observations**
A	Tap	All leaves have turned brown and fallen off. No change in height recorded. Plant appears dead.
B	Distilled	Plant is 3 centimeters taller at the end of experiment. Leaves are green. Plant appears healthy.
C	Flavored	New green leaves have appeared. No change in height recorded. Plant appears healthy.
D	carbonated	Leaves appear yellow. Many leaves have fallen, others are drooping. Plant does not appear healthy.

Based on his results, Jake concluded that tap water is not good for plants. How can Jake change his experimental design to improve the validity of his results?

A. carry out multiple trials, and increase the number of plants that are given each type of water
B. establish a control group that includes different types of plants
C. establish another dependent variable to generate more data
D. carry out multiple trials that include fewer plants, and increase the types of water given to the plants