Benchmark 3 Life Science

Study guide

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_\_

**S7L2a. Explain that cells take in nutrients in order to grow and divide and to make needed materials.**

**Define:** passive transport, diffusion, equilibrium, osmosis, active transport, endocytosis, exocytosis

Answer the questions below on your own paper.

1. **Identify** How does water move into and out of cells?
2. **Identify**  What is needed to move particles from areas of low concentration to areas of high concentration?
3. **Compare** How is endocytosis different from exocytosis? How are they similar?
4. **Explain** How is osmosis related to diffusion?
5. **Compare** What are the difference between active and passive transport?
6. **Identify** What structures allow small particles to cross cell membranes?
7. **Identify**  In which cell structures does photosynthesis take place?
8. **Identify** What two materials are produced during photosynthesis?
9. **Identify** What two materials are needed for cellular respiration?
10. **List** What three things are produced during cellular respiration?
11. **Apply Concepts** How do the processes of photosynthesis and cellular respiration work together?
12. **Explain** Do your body cells always use cellular respiration to break down glucose? Explain your answer.
13. What is it called when cells use energy to move molecules?
14. Diffusion B. osmosis c. Active transport D. Passive transport
15. Explain where the starch in s potato comes from.
16. Cellular respiration b. reproduction c. photosynthesis homeostasis
17. What is the source of energy for the photosynthesis reactions?
18. Chemical energy b. sunlight energy c. mechanical energy d. thermal energy
19. Where do the photosynthesis reactions take place in a cell?
20. Cell membrane b. nucleus c. cell wall d. chloroplast

**S7L2c. Explain that cells are organized into tissues, tissues into organs, organs into systems, and systems into organisms.**

Define: cell, tissue, organ, organ system

1. What are the four levels of organization?
2. **Apply Concepts** Could an organism have organs but no tissues? Explain
3. **Compare** How are structure and function different?
4. Which of the following do groups of different tissues form?
5. Organ b. organelle c. organ system d. organism
6. What is a group of similar cells that work together?
7. Tissue b. organ c. organ system d. organism
8. If a group of organs work together to perform a specific job, what are they called?
9. Tissue systems
10. An organism
11. Helper organs
12. An organ system
13. Put the level of organization in order from smallest to largest.
14. Cells, tissues, organs, and organ systems
15. Organ system, organs, tissues, and cells.
16. Organs, tissues, cells and organ system.
17. Cells, organs, tissues, and organ systems.
18. Which of the following is NOT an organ?
19. Skin
20. Blood tissue
21. The heart
22. Bones

25. What is the purpose of the circulatory system?

a. to supply oxygen to the body’s cells b. to supply nutrients to the body’s cells c. to transport hormones and cellular waste products d. to fight germs e. all of the above

26 What ‘disease-fighting’ system is the lymphatic system a part of?

a. respiratory b. cardiovascular c. digestive d. immune e. excretory

27. What happens when your tonsils/lymph nodes swells up.

a. you are going to have a baby b. you are fighting an infection c. you are about to have a heart attack d. nothing happens e. you are healthy

28. What does the respiratory system do? a. removes carbon dioxide from the body b. supplies oxygen to the body c. pumps blood d. both a and b (e). a, b, and c

29. What are the two systems that make up the nervous system? a. the neuron and ganglion systems b. the central and peripheral nervous systems c. the ganglion and spinal cord d. the axon and the neuron system e. excretory and lymphatic

30. Which of the following does the nervous system do? a. regulates the body’s activities b. responds to stimuli c. transmits nerve impulses d. activates muscles e. all of the above

31. The endocrine system uses what kind of chemicals secreted into the bloodstream from glands, which help to control and coordinate the body?

a. enzymes b. helpers c. hormones d. targets e. none of the above

32. What do the organs of the digestive system do?

a. break down food into basic nutrients b. breaks down oxygen c. packages unused digestive wastes for disposal d. both a and b (e). both a and c

33. The muscle system supports the skeleton and allows for skeletal movement. What else does it do? a. pumps blood b. controls the digestive system c. regulates body temperature d. protects soft tissue e. all of the above

34. What does the skeletal system do besides providing shape and support for the body? a. protects the internal organs b. allows for bodily (or skeletal) movement c. produces blood cells d. stores minerals e. all of the above

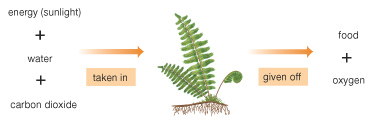
35. The integumentary system protects the body from infectious organisms and dehydration. What else does it do? (read all of the answers carefully) a. acts as a touch receptor b. protects the body against abrupt changes in temperature c. helps dispose of wastes (excess salts...) d. stores water, fat, and vitamin D e. all of the above

36. The urinary system is part of what larger system that is responsible for ridding the body of waste products? a. regulatory b. excretory c. fecal d. heart e. anal

**S7L4 a,b,c,d,e Students will examine the dependence of organisms on one another and their environments.**

1. One model that shows how energy passes from organism to organism is called
2. An energy link
3. A food chain
4. A phytoplankton cycle
5. photosynthesis
6. Producers make food using \_\_\_\_\_\_ to trap the Sun's energy in a process called photosynthesis
7. Food chains
8. Chlorophyll
9. Cellular respiration
10. Microscope organization

The process shown in this diagram is

1. 
2. Waste elimination
3. Cellular respiration
4. A food chain
5. Photosynthesis
6. What do ecologists call the transfer of energy that begins with the Sun and passes from one organism to the next in a food chain?
7. Food web
8. A top consumer
9. Energy flow
10. Pyramid of numbers

Give an example and explanation for each symbiotic relationship.

***Parasitism***

Example :

Explanation:

***Mutualism***

Example :

Explanation :

***Commensalism***

Example:

Explanation :

**S7L4e. Describe the characteristics of Earth’s major terrestrial biomes and aquatic communities.**

1. How do plants adapt to the desert climate?

|  |  |
| --- | --- |
|  | They grow far apart. |
|  | They grow only at night. |
|  | They have roots above the ground. |
|  |  |

1. Which of the following is an abiotic factor in a biome?

|  |  |
| --- | --- |
|  | the average temperature |
|  | the mosses and algae |
|  | the kinds of trees |

1. Certain types of worms live in the mud at the bottom of lakes. What does the mud represent for the worm?

|  |  |
| --- | --- |
|  | an ecosystem |
|  | a niche |
|  | a habitat |

1. Trees that lose their leaves in the winter are called

|  |  |
| --- | --- |
|  | evergreen trees. |
|  | coniferous trees. |
|  | deciduous trees. |

1. .Which of the following statements best describes a tropical rain forest?

|  |  |
| --- | --- |
|  | It has coniferous trees and little rainfall. |
|  | It has permafrost and mosses. |
|  | It has diverse plant and animal life. |

1. A biome with clumps of trees and seasonal rains is

|  |  |
| --- | --- |
|  | the desert. |
|  | the savanna. |
|  | the temperate grassland. |
|  | all of the above |

1. The most biologically diverse biome is the

|  |  |
| --- | --- |
|  | swamp. |
|  | tundra. |
|  | tropical rain forest. |
|  | all of the above |

1. The interaction of the abiotic and biotic factors in an environment constitutes a (an)

a. biome b. ecology c. ecosystem d. biosphere

48. A student found a particular pond community to consist primarily of turtle, bass, snail, algae, and fungi populations. The producer in this community would be the \_\_\_\_.

**S7L1. Students will investigate the diversity of living organisms through inherited characteristics that promote survival of organisms and the survival of successive generations of their offspring.**

Define: Phylogeny, kingdom binomial nomenclature, genus, dichotomous key, prokaryotic, eukaryotic, sexual, asexual, autotroph, heterotroph, taxonomy, classification binary fission.

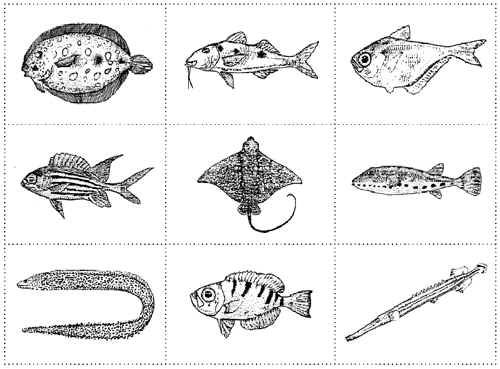
1. How do scientists classify organisms?
2. How do scientists name groups of organisms?
3. **Explain** How did Linnaeus classify organisms?
4. **Identify** What are the two parts of a scientific name?

**Compare** How are members of Archae different from other prokaryotes?

1. **Describe** How do fungi get food?
2. **Identify** how do prokaryotes reproduce?
3. **List** What are three common shapes of bacteria?
4. **Identify** What two kinds of genetic material can viruses have?
5. **Identify**  one way viruses are like living things.
6. **Explain** What happens to a host cell when the new viruses are released?
7. **List** name three traits protists have in common.
8. **List** Name four ways in which protists obtain food.
9. **List**  three ways that fungi can get food?

**Complete the Dichotomous key:** Write your answer inside of the box

Coral Reef Fish Key



|  |  |
| --- | --- |
| **Step 1** If fish shape is long and skinny then go to step 2  If fish shape is not long and skinny, then go to step 3 | **Step 5** If fish has spots, then go to step 6 If fish does not have spots, then go to step 7 |
| **Step 2** If fish has pointed fins, it is a trumpet fish If fish has smooth fins, it is a spotted moray eel | **Step 6** If fish has chin "whiskers," it is a spotted goat fish If fish does not have chin "whiskers," it is a band-tail puffer |
| **Step 3** If fish has both eyes on top of the head, then go to step 4 If fish has one eye on each side of the head, then go to step 5 | **Step 7** If fish has stripes, then go to step 8 If fish does not have stripes, it is a glassy sweeper |
| **Step 4** If fish has long whip-like tail, it is a spotted eagle ray If fish has short, blunt tail, it is a peacock flounder | **Step 8** If fish has a v-shaped tail, it is a squirrel fish If fish has a blunt tail, it is a glass-eye snapper |

Define: heredity, allele, genetics, hybrid, dominant, recessive, Punnett Square, genotype, phenotype, homozygous, heterozygous, incomplete dominance, polygenic inheritance, sex-linked gene, genetic engineering, selective breeding, Gregor Mendel.

1. **Identify** What kind of alleles does a heterozygous individual have?
2. **Identify Relationships** How are genes and alleles related?
3. Manipulating the arrangement of DNA that makes up a gene is called
4. Genetic engineering. B. chromosomal migration. C. Viral reproduction.

d. cross breeding

|  |  |
| --- | --- |
|  | 1. Heredity is |

|  |  |
| --- | --- |
| **A.** | The process by which parents pass characteristics or traits on to their children. |

|  |  |
| --- | --- |
| **B.** | Seen in plants, people and other organisms where there are parents and offspring. |

|  |  |
| --- | --- |
| **C.** | A way that some diseases and disorders are passed from parents to offspring. |

|  |  |
| --- | --- |
| **D.** | All of the above |
|  |  |
|  | 1. What are genes? |

|  |  |
| --- | --- |
| **A.** | Something that you wear on your legs. |

|  |  |
| --- | --- |
| **B.** | Segments of DNA that carry instructions for the traits of the offspring. |

|  |  |
| --- | --- |
| **C.** | Both A & B |

|  |  |
| --- | --- |
| **D.** | None of the above |
|  | |  | | --- | | 1. An organism with two different alleles for a trait is said to be: |  |  |  | | --- | --- | | **A.** | Recessive |  |  |  | | --- | --- | | **B.** | Hybrid |  |  |  | | --- | --- | | **C.** | Dominant |  |  |  | | --- | --- | | **D.** | Purebred | |

|  |
| --- |
| 1. An allele whose trait is masked in the presence of a dominant allele is: |

|  |  |
| --- | --- |
| **A.** | Dominant |

|  |  |
| --- | --- |
| **B.** | Recessive |

|  |  |
| --- | --- |
| **C.** | Purebred |

|  |  |  |
| --- | --- | --- |
| **D.** Hybrid | |  |
|  | |  |
| 1. Heterozygous alleles are also considered to be: | |

|  |  |
| --- | --- |
| **A.** | Hybrid |

|  |  |
| --- | --- |
| **B.** | Purebred |

|  |  |
| --- | --- |
| **C.** | Phenotype |

|  |  |
| --- | --- |
| **D.** | Genotype |

.For each genotype, indicate whether it is heterozygous (HE) or homozygous (HO)

|  |  |  |  |
| --- | --- | --- | --- |
| AA \_\_\_\_ Bb \_\_\_\_ Cc \_\_\_\_ Dd \_\_\_\_ | Ee \_\_\_\_ ff \_\_\_\_ GG \_\_\_\_  HH \_\_\_\_ | Ii \_\_\_\_ Jj \_\_\_\_ kk \_\_\_\_ Ll \_\_\_\_ | Mm \_\_\_\_ nn \_\_\_\_ OO \_\_\_\_ Pp \_\_\_\_ |

For each of the genotypes below, determine the phenotype.

|  |  |
| --- | --- |
| *Purple flowers are dominant to white flowers* PP \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pp \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pp \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | *Brown eyes are dominant to blue eyes* BB \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Bb \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bb \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Practice with Crosses. Show all work!**

70. A TT (tall) plant is crossed with a tt (short plant).   
     What percentage of the offspring will be tall? \_\_\_\_\_\_\_\_\_\_\_

71. A Tt plant is crossed with a Tt plant.   
    What percentage of the offspring will be short? \_\_\_\_\_\_

72. A heterozygous round seeded plant (Rr) is crossed with a  
homozygous round seeded plant (RR).   
What percentage of the offspring will be homozygous (RR)? \_\_\_\_\_\_\_\_\_\_\_\_

\*Please also review using Teacherr’s website. Thank You.