

**MCAS Questions: Diversity of Life****Reporting Category: Life Science**

*Standard: 1 - Classify organisms into the currently recognized kingdoms according to characteristics that they share. Be familiar with organisms from each kingdom.*

*Standard: 2 - Recognize that all organisms are composed of cells, and that many organisms are single-celled (unicellular), e.g., bacteria, yeast. In these single-celled organisms, one cell must carry out all of the basic functions of life.*

*Standard: 3 - Compare and contrast plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, cytoplasm, chloroplasts, mitochondria, vacuoles).*

*Standard: 4 - Recognize that within cells, many of the basic functions of organisms (e.g., extracting energy from food and getting rid of waste) are carried out. The way in which cells function is similar in all living organisms.*

*Standard: 16 - Recognize that producers (plants that contain chlorophyll) use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.*

1. (2013) Anya is observing an organism in the laboratory. The table below shows her observations.

| Question                                  | Yes | No |
|-------------------------------------------|-----|----|
| Do the organism's cells have chlorophyll? | X   |    |
| Can the organism move?                    |     | X  |
| Is the organism multi-cellular?           | X   |    |
| Do the organism's cells have a cell wall? | X   |    |

The organism Anya is observing **most likely** belongs to which kingdom?

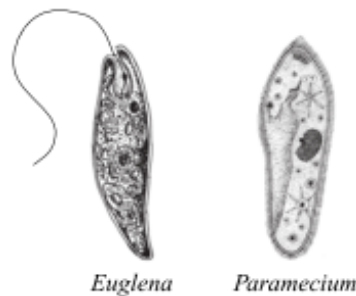
- A. Animalia
  - B. Eubacteria
  - C. Fungi
  - D. Plantae
2. (2013) Which of the following parts of a plant cell has a function that is **most** similar to the function of an animal skeleton?
- A. cell membrane
  - B. cell wall
  - C. chloroplast
  - D. nucleus



3. (2013) Muscle cells need to quickly convert energy from food molecules into a usable form. For this reason, which of the following do muscle cells have in **greater** numbers than most other types of cells?

A. chromosomes  
B. mitochondria  
C. nuclei  
D. vacuoles

4. (2012) The illustration below represents two protists.



What do these two organisms have in common?

- A. They are unicellular.  
B. They cause diseases.  
C. They live underground.  
D. They are photosynthetic.
5. (2011) A student prepared the following list of characteristics about a cellular organelle.
- present in animal cells
  - present in plant cells
  - helps make energy available to the cell

Which of the following cellular structures is the student describing?

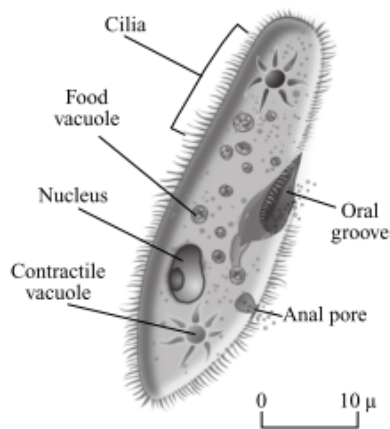
A. cell wall

- B. chloroplast
- C. mitochondrion
- D. nucleus

6. (2011) Which of the following statements **best** describes photosynthesis?

- A. Carbon dioxide and water are turned into sugar and oxygen.
- B. Sugar and oxygen are turned into water and carbon dioxide.
- C. Oxygen and carbon dioxide are turned into water and sugar.
- D. Water and sugar are turned into oxygen and carbon dioxide.

7. (2011) The picture below shows a paramecium.



In which kingdom is the paramecium classified?

- A. Animalia
- B. Fungi
- C. Plantae
- D. Protista

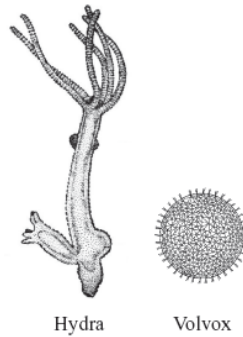
8. (2010) Substances enter any plant or animal cell by passing through which of the following structures?

- A. nucleus

- B.** cell membrane
- C.** vacuole
- D.** chloroplast

9. (2009) How is a skin cell from a mouse similar to an amoeba?
- A. Both need energy.
  - B. Both have cell walls.
  - C. Both move with pseudopodia.
  - D. Both consume carbon dioxide.
10. (2009) Which of the following materials are direct products of photosynthesis?
- A. fats and starches
  - B. oxygen and sugar
  - C. proteins and amino acids
  - D. carbon dioxide and water
11. (2008) If a new organism were discovered, which of the following would **most likely** be used to classify it into the appropriate kingdom?
- A. the color of the organism
  - B. the organism's natural habitat
  - C. the structure of the organism's anatomy
  - D. the location where the organism was found
12. (2008) Which of the following structures is **not** present in animal cells?
- A. cell membrane
  - B. cell wall
  - C. mitochondrion
  - D. nucleus

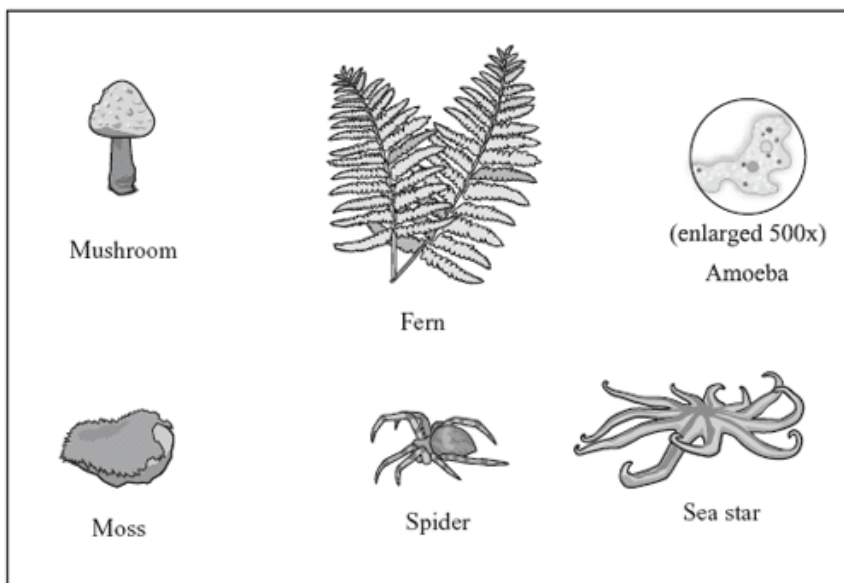
13. (2008) The organisms shown below are both found in aquatic environments.



- Which of the following is common to both of these organisms?
- A. They contain blood.
  - B. They contain nerves.
  - C. They are both producers of food.
  - D. They are both composed of cells.
14. (2007) Which of the following groups of organisms uses sunlight to convert carbon dioxide and water into sugar and oxygen?
- A. carnivores
  - B. decomposers
  - C. herbivores
  - D. producers

**Open Response Questions**

1. (2007) Individual organisms can be sorted into different kingdoms based on their characteristics. Pictures of six organisms and a table listing four kingdoms are shown below.



**Four Kingdoms of Living Organisms**

| Animalia    | Plantae | Fungi | Protista |
|-------------|---------|-------|----------|
| SAMPLE ONLY |         |       |          |

- Copy the table above into your Student Answer Booklet.
- Write the name of each pictured organism under the correct kingdom in your copy of the table.
- For each kingdom listed in the table, describe one characteristic that all organisms in that kingdom have in common.

## MCAS Questions: Diversity of Life

### Multiple Choice Answers

- |      |       |
|------|-------|
| 1. D | 8. B  |
| 2. B | 9. A  |
| 3. B | 10. B |
| 4. A | 11. C |
| 5. C | 12. B |
| 6. A | 13. D |
| 7. D | 14. D |

### Open Response Answers

#### 1. Kingdoms of Living Organisms

##### Score Point 4

a)

| Animalia | Plantae | Fungi    | Protista |
|----------|---------|----------|----------|
| spider   | fern    | mushroom | amoeba   |
| sea star | moss    |          |          |

b)

c) All organisms in Kingdom Animalia are consumers. They cannot create their own food, so they eat other organisms. All members of Kingdom Plantae are producers. Using photosynthesis, plants use light energy, carbon dioxide, and water to make glucose (their food.) Organisms in the Fungi Kingdom break down decomposing matter. They break down matter and absorb it for energy, recycling the matter. In the Protist Kingdom, all of the organisms have eukaryotic cells. Whether they are one-celled or many, resembling animals, plants, or fungi, the protists<sup>all</sup> have cells with nuclei in them.

## Score Point 4

| Animalia                                | Plantae                                                           | Fungi                                          | Protista             |
|-----------------------------------------|-------------------------------------------------------------------|------------------------------------------------|----------------------|
| Spider<br>Sea star                      | Fern<br>Moss                                                      | Mushroom                                       | Amoeba               |
| They get their food from somewhere else | They make their own food from CO <sub>2</sub> , water, and light. | They absorb energy from other, dead organisms. | Made out of one cell |

## Score Point 3

a.

|     |          |         |                  |          |
|-----|----------|---------|------------------|----------|
|     | Animalia | Plantae | Fungi            | Protista |
| B → | spider   | fern    | mushroom<br>moss | Amoeba   |
|     |          |         |                  |          |

© In the Animalia Kingdom all those organisms have to catch or eat other organisms for their food. All those organisms also have multicellular bodies.

In the Plantae Kingdom those organisms use photosynthesis to make their own food.

In the Fungi Kingdom these organisms decay other organisms like trees or dead organisms.

In the protista Kingdom these organisms only have one cell. They live off of just one cell in their whole bodies.

Score Point 2

a & b

|                    |              |          |          |
|--------------------|--------------|----------|----------|
| Animalia           | Plantae      | Fungi    | Protista |
| spider<br>sea star | fern<br>moss | mushroom | Amoeba   |

© All animalia organisms are living animals. All plantae organisms are plants, so they use photosynthesis. All fungi organisms are fungus and grow on living things. All protista organisms are <sup>tiny</sup> protists.

Score Point 1

|    |                   |        |                       |          |
|----|-------------------|--------|-----------------------|----------|
| A. | Animalia          | Plante | Fungi                 | Protista |
| B. | Spider<br>SeaStar | fern   | mush-<br>room<br>Mass | Amoeba   |
|    |                   |        |                       |          |

C. Animalia- they both are living creatures.

Plante- it is a plant that needs water and

Fungi- both don't need water or sunlight and have bacteria.

Protista- this is a kind of cell and you need a microscope to see it.

## Score Point 0

Four Kingdoms of Living  
organisms

| Animalia | Plantae                    | Fungi    | Protista |
|----------|----------------------------|----------|----------|
|          | Moss<br>Mushroom<br>Spider | Sea star | enlarged |

Moss - a short, soft plant that  
grows on the ground and on trees  
adjective mossy.