

Pond Life Clues

Compare cell type, cell number, and energy source.

6.13.B "identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, and autotrophic and heterotrophic; and"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each organism's name. Beside its evidence, write P (prokaryotic) or E (eukaryotic), U (unicellular) or M (multicellular), and A (autotrophic), H (heterotrophic), or both when supported.

Three Organisms at a Pond

- ① At the edge of a pond, Maya collects water from a green film on a rock. She studies a unicellular kind of cyanobacterium in the sample. Each cell is prokaryotic because it has no nucleus. In daylight, these organisms use sunlight, water, and carbon dioxide to make sugars, so they are acting as autotrophs. Their pigments help capture light energy, and the cells release oxygen during photosynthesis. Other kinds of cyanobacteria can form multicellular filaments; Maya's sampled kind is unicellular.
- ② In a nearby jar, Maya sees a euglena moving through the water with a whip-like flagellum. This one-celled organism is eukaryotic because its cell has a nucleus. In bright light, its chloroplasts capture sunlight to make sugars. In darkness, however, many euglena can take in organic food instead. A euglena is unicellular, but its way of getting energy can change with conditions. Like the sampled cyanobacteria, it can be autotrophic in light. It can also act as a heterotroph; some cyanobacteria can use organic food, too.
- ③ Maya also examines a mushroom growing on a fallen log. The mushroom is a multicellular eukaryote. Its many cells have nuclei and work together to form threads and a fruiting body. The mushroom cannot make sugars from sunlight. Instead, its fungal threads release enzymes that break down dead material, and the fungus absorbs nutrients. Therefore, it is heterotrophic. Unlike the sampled unicellular cyanobacteria and euglena, a mushroom depends on many specialized cells and gets food from other organic matter in its environment.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What cell feature makes cyanobacteria prokaryotic?

2 Give one way the sampled cyanobacteria and euglena are alike and one way they are different.

3 Classify the mushroom as prokaryotic or eukaryotic, unicellular or multicellular, and autotrophic or heterotrophic. Use passage evidence.

4 How does light affect the way a euglena gets energy? What food-making process is described for the sampled cyanobacteria?

3 YOUR TURN _____ Your own words

Choose an organism not named in the reading. Write three sentences that identify whether it is prokaryotic or eukaryotic, unicellular or multicellular, and autotrophic or heterotrophic. Include one fact that supports each choice.

PART 1 • READ AND MARK

Underline each organism's name. Beside its evidence, write P (prokaryotic) or E (eukaryotic), U (unicellular) or M (multicellular), and A (autotrophic), H (heterotrophic), or both when supported. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What cell feature makes cyanobacteria prokaryotic?	Cyanobacteria are prokaryotic because their cells have no nucleus.
2	Give one way the sampled cyanobacteria and euglena are alike and one way they are different.	Both sampled organisms are unicellular and can make sugars using sunlight. Cyanobacteria lack nuclei, while euglena have nuclei.
3	Classify the mushroom as prokaryotic or eukaryotic, unicellular or multicellular, and autotrophic or heterotrophic. Use passage evidence.	The mushroom is eukaryotic because its cells have nuclei. It is multicellular because many cells work together. It is heterotrophic because it absorbs nutrients from broken-down dead material instead of making sugars from sunlight.
4	How does light affect the way a euglena gets energy? What food-making process is described for the sampled cyanobacteria?	In bright light, a euglena uses chloroplasts to make sugars. In darkness, it can take in organic food. The sampled cyanobacteria use sunlight to make sugars by photosynthesis.

PART 3 • YOUR TURN (SAMPLE ANSWER)

A dog is a eukaryotic organism because its cells have nuclei. It is multicellular because it is made of many cells that work together to form body parts. A dog is heterotrophic because it gets energy by eating plants or other animals.

Accept any accurate comparison supported by the passage. For the open task, accept a different valid organism if all three classifications and supporting facts are accurate.