

Sorting Life's Clues

Read how classification connects organism traits to ecosystem roles.

7.14 "Organisms and environments. The student knows how the taxonomic system is used to describe relationships between organisms. The student is expected to: describe the taxonomic system that categorizes organisms based on similarities and..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline every occurrence of these taxonomic rank labels, including plural forms: domain, kingdom, phylum, class, order, family, genus, and species. Circle each capitalized domain or kingdom name every time it appears: Bacteria, Archaea, Eukarya, Protista, Fungi, Plantae, and Animalia, so you can track how groups are organized.

How Scientists Sort Living Things

- ① Scientists organize living things with taxonomy, a system that groups organisms by shared traits and differences. The broadest rank is domain. The three domains are Bacteria, Archaea, and Eukarya. Each domain is divided into kingdoms, then groups become narrower: phylum, class, order, family, genus, and species. Organisms in the same species share the most traits and can reproduce with one another. A scientific name uses the genus and species, which helps scientists communicate clearly about organisms.
- ② The Bacteria domain contains microscopic, single-celled prokaryotes, meaning their cells lack a nucleus. Its kingdom is also called Bacteria. Many bacteria are helpful. In a human gut, some bacteria help digest food and may make vitamins. The Archaea domain also contains single-celled prokaryotes, but its members differ from bacteria in cell structures and genes. Some archaea live in extreme places, while others live in ordinary soil, water, or oceans, where they take part in nutrient cycles.
- ③ Eukarya includes organisms whose cells have nuclei. Four kingdoms belong to this domain: Protista, Fungi, Plantae, and Animalia. Protists are diverse, but many are single-celled and some make food by photosynthesis. Fungi absorb nutrients from organic material. As decomposers, fungi break down dead leaves and other remains, returning nutrients to ecosystems. Plants are usually multicellular producers that make food by photosynthesis. Animals are multicellular consumers that eat organisms or organic material. These kingdom traits help explain ecosystem roles.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How does taxonomy show relationships among organisms? Describe what happens to shared traits as groups become narrower.

2 List the taxonomic ranks in order, from the broadest rank to the narrowest rank.

3 What four kingdoms belong to Eukarya?

4 Describe one way bacteria and fungi are important in ecosystems or living organisms.

3 YOUR TURN _____ Your own words

Choose two organisms from the same outdoor place, such as a park or garden. Write three sentences that name each organism's kingdom and one supporting trait, then explain an ecosystem role for at least one organism.

PART 1 • READ AND MARK

Underline every occurrence of these taxonomic rank labels, including plural forms: domain, kingdom, phylum, class, order, family, genus, and species. Circle each capitalized domain or kingdom name every time it appears: Bacteria, Archaea, Eukarya, Protista, Fungi, Plantae, and Animalia, so you can track how groups are organized. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How does taxonomy show relationships among organisms? Describe what happens to shared traits as groups become narrower.	Taxonomy groups organisms by shared traits and differences. As groups become narrower, organisms share more traits, and organisms in the same species share the most traits.
2	List the taxonomic ranks in order, from the broadest rank to the narrowest rank.	Domain, kingdom, phylum, class, order, family, genus, species.
3	What four kingdoms belong to Eukarya?	Protista, Fungi, Plantae, and Animalia.
4	Describe one way bacteria and fungi are important in ecosystems or living organisms.	Some gut bacteria help digest food and may make vitamins. Fungi decompose dead organic material and return nutrients to ecosystems.

PART 3 • YOUR TURN (SAMPLE ANSWER)

An oak tree belongs to Plantae because it is multicellular and makes food by photosynthesis. A mushroom belongs to Fungi because it absorbs nutrients from organic material. The oak is a producer, and the mushroom can decompose dead material and return nutrients.

Accept equivalent descriptions of taxonomy that explain grouping by shared traits and increasing similarity in narrower groups. For the open response, accept any accurate pair of organisms, correct kingdom assignments with trait evidence, and an accurate ecosystem role.