Teach, *continued*

READING TOOLBOX

Mnemonic Devices sample answer: Dear King Phillip Came Over For Ginger Snaps

Close

Formative Assessment

In the Linnaean system, scientists classify organisms based on _____.

A. external characteristics (Incorrect. Internal characteristics are also important.)

B. similarities in form and structure (Correct! The more similarities in form and structure, the more closely two organisms are probably related.)

C. where organisms live (Incorrect. Organisms located very far apart can be very closely related.)

D. species name (Incorrect. The process of classification results in the species name.)

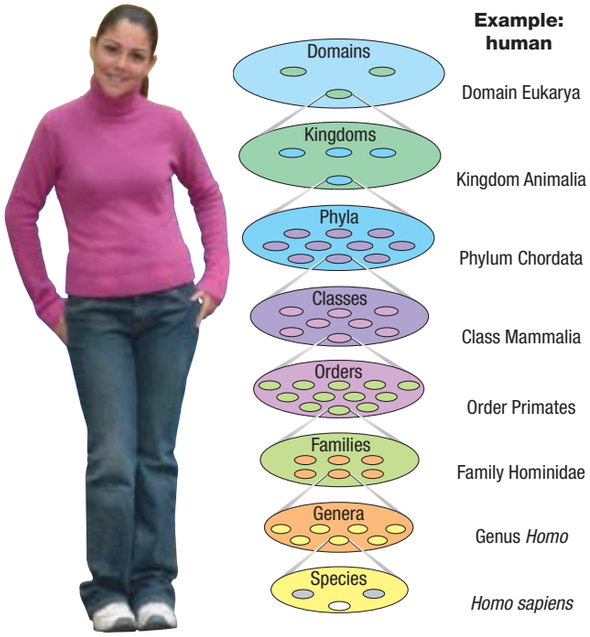


Figure 4 A species can be classified at each level of the Linnaean system.

READING TOOLBOX

Mnemonics To remember the eight levels in their proper order, use a phrase, such as "Do Kindly Pay Cash Or Furnish Good Security," to represent *Domain, Kingdom, Phylum, Class, Order, Family, Genus,* and *Species*.

Levels of the Modern Linnaean System

Each level has its own set of names for taxa at that level. Each taxon is identified based on shared traits. Similar species are grouped into a genus; similar genera are grouped into a family; and so on up to the level of domain. **Figure 4** shows the classification of humans in this system.

- **Domain** Since Linnaeus's time, the category *domain* has been invented in order to recognize the most basic differences among cell types. All living things are now grouped into one of three domains. For example, humans belong to the domain Eukarya.
- **Kingdom** The category *kingdom* encompasses large groups such as plants, animals, or fungi. Six kingdoms fit within the three domains.
- **Phylum** A *phylum* is a subgroup within a kingdom. Many phyla exist within each kingdom. Humans belong to the phylum Chordata.
- **Class** A *class* is a subgroup within a phylum.
- **Order** An *order* is a subgroup within a class.
- **Family** A *family* is a subgroup within an order. Humans belong to the family Hominidae.
- **Genus** A *genus* (plural, *genera*) is a subgroup within a family. Each genus is made up of species with uniquely shared traits, such that the species are thought to be closely related. Humans belong to the genus *Homo*.
- **Species** A *species* is usually defined as a unique group of organisms united by heredity or interbreeding. But in practice, scientists tend to define species based on unique features. For example, *Homo sapiens* is recognized as the only living primate species that walks upright and uses spoken language.

Reading Check ***How many kingdoms are in the Linnaean system?***

Section 1 Review

KEY IDEAS

1. **Explain** why biologists have systems for naming and grouping organisms.
2. **Describe** the structure of a scientific name for a species.
3. **List** the categories of the modern Linnaean system of classification in order from general to specific.

CRITICAL THINKING

4. **Logical Reasoning** Describe additional problems that might occur for biologists without a logical taxonomic system.
5. **Anticipating Change** Although the basic structure of the system that Linnaeus invented is still in use, many aspects of this system have changed. Suggest some possible ways that the system may have changed.

ALTERNATIVE ASSESSMENT

6. **Classification Poster** Create a poster that shows the major levels of classification for your favorite organism. Write a description of the general characteristics of the organism at each level. For each level, include a list of other organisms that belong to the same taxon.

Answers to Section Review

1. Biologists use taxonomic systems to name and categorize organisms in consistent ways to prevent confusion.
2. All scientific names for species are made up of two Latin or Latin-like terms; no two species may have the same two-part name.
3. domain, kingdom, phylum, class, order, family, genus, species
4. Biologists might not realize that they are studying the same species; they might not see similarities and relationships between organisms.
5. Scientists might have added more levels or "in between" levels; names of taxa at each level might have changed; taxa might have been "promoted" or "demoted" among levels.
6. Posters should show the classification of an organism at all eight levels, as well as a general description of characteristics and a list of similar organisms in each taxon. Check that students capitalize and italicize taxon names as appropriate.