Name _____ Date _____

Organizing Life's Diversity

Section 2 Modern Classification

Main Idea — **Details**

Scan *the illustrations in Section 2 of the chapter and read the captions. Select one illustration and state why you think it will be important.*

Illustration: Accept all reasonable responses.

Why it will be important: _____

Review Vocabulary

Use your book or dictionary to define evolution.

evolution — the historical development of a group of organisms

New Vocabulary

Use your book or dictionary to define each term.

phylogeny — The evolutionary history of a species

character — inherited feature that varies among species; can be morphological or biochemical

molecular clock — a model that uses comparisons of DNA sequences to estimate how long species have been evolving independently

cladistics — a method of analysis that reconstructs phylogenies

cladogram — a branching diagram that represents the proposed phylogeny or evolution of a species or group

Academic Vocabulary

Define corresponding *to show its scientific meaning.*

corresponding — being similar or equivalent in character, quantity, origin, structure, or function

Name _____ Date _____

Section 2 Modern Classification (continued)

Main Idea | **Details**

Determining Species

I found this information on page _____.

SE, pp. 490–491
RE, pp. 202–204

Compare *the four concepts that biologists have used or are using to classify organisms.*

Concept	Basis of Classification	Limitations
Typological species concept	physical characteristics	does not account for variations in species or the fact that species change over time
Biological species concept	group of organisms that can interbreed and produce fertile offspring in a natural setting	does not account for extinct species or species that reproduce asexually
Evolutionary species concept	groups that evolve independently from their ancestral population	unknown evolutionary histories for some species
Phylogenetic species concept	clusters of organisms that are distinct from other clusters and share a pattern of ancestry	unknown evolutionary histories for some species

Name _____ Date _____

Section 2 Modern Classification (continued)

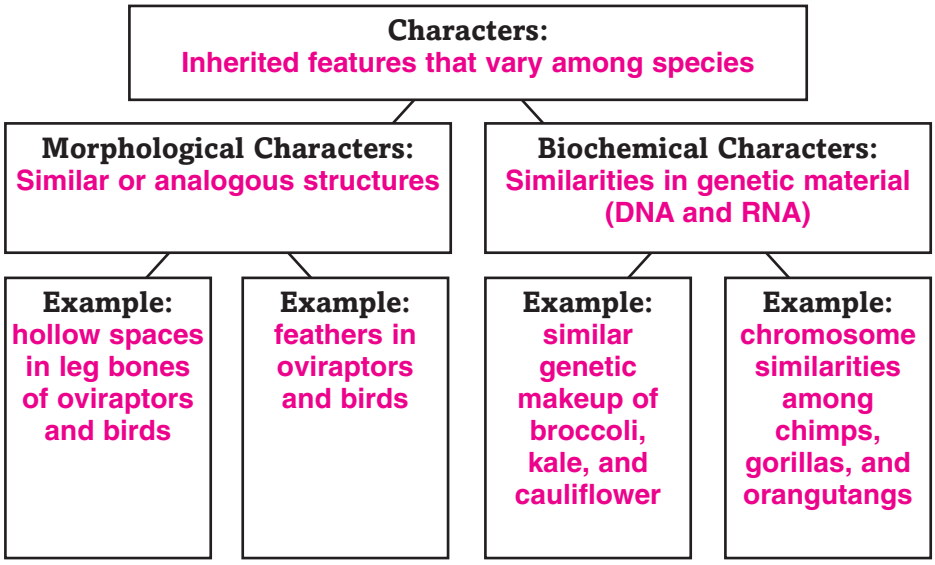
Main Idea **Details**

Characters

I found this information on page _____.

SE, pp. 492–495
RE, pp. 204–205

Identify *and give examples of the two types of characters in the concept map.*



Phylogenetic Reconstruction

I found this information on page _____.

SE, pp. 495–498
RE, pp. 206–207

Describe *cladograms by completing the paragraph.*

A cladogram is a branching diagram that represents the proposed phylogeny or evolution of a species or group. The groups used in cladograms are called clades. To develop a cladogram, derived characters are identified. Then the ancestry of various species is identified based on the presence or absence of the derived characters in the species. In making a cladogram, systematists assume that groups that share more derived characters have a more recent common ancestor.

SUMMARIZE **Describe a process scientists use to construct a cladogram that includes a new species of vascular plant that was recently discovered in the rainforest.**

Accept all reasonable responses. Scientists would identify derived characters and ancestral characters. They would place the new species close to other species that share the most derived characters.