

Section Review 18-1

1. As biologists study diversity, they name organisms and group them in a logical manner. **2.** Scientific names are based on the Greek and Latin languages. **3.** Each species receives a two-part scientific name written in italics. The first word is capitalized, the second is not. **4.** In the name *Homo erectus*, the word *Homo* identifies the genus. **5.** In order from smallest to largest, the categories are: species, genus, family, order, class, phylum, and kingdom. **6.** Possible answer: Mountain lions, pumas, cougars, and panthers are four common names of an animal with one scientific name, *Felis concolor*. **7.** Possible answer: Early scientific names were often very long and hard to standardize. Names produced by binomial nomenclature are only two words long and hold more closely to a common standard. **8.** Possible answer: The largest group, all pets, could be grouped into indoor and outdoor pets, with indoor pets grouped into those that roam free and those in containers or cages, and with the smallest group made up of goldfish. **9.** The smallest taxon in Linnaeus's system that could contain all these animals is the phylum Chordata.

Section Review 18-2

1. Species are classified into the same genus because they are closely related; that is, they share a more recent common ancestry. **2.** Instead of grouping organisms only according to physical similarities, evolutionary classification also considers evolutionary history. **3.** Cladistic analysis considers only evolutionary innovations, new characteristics that arise as a lineage changes over time. **4.** Mutations that have no effect on phenotype accumulate in DNA at a steady rate. Comparison of such mutations in several species shows how closely related the species are. **5.** derived characters **6.** DNA; RNA **7.** genes **8.** Possible answer: American and African vultures were once thought to be closely related, but DNA comparisons showed that American vultures are more closely related to storks. **9.** B and C appear to be most closely related because their insulin molecules have the fewest differences.

Section Review 18-3

1. e **2.** a **3.** d **4.** b **5.** f **6.** c **7.** A domain is the largest and most inclusive taxonomic category in

biology. **8.** Organisms are grouped into three domains: Archaea, Bacteria, and Eukarya. **9.** All members of the domain Eukarya are eukaryotes; that is, their cells contain a nucleus. **10.** To figure out which domain a prokaryote belongs to, you must know whether or not its cell walls contain peptidoglycan. **11.** Plantae, Eukarya **12.** Fungi, Eukarya **13.** Animalia, Eukarya **14.** Bacteria, Eubacteria **15.** Protista, Eukarya

Chapter Vocabulary Review

1. taxonomy **2.** binomial nomenclature **3.** taxon **4.** species, genus, family, order, class, phylum, kingdom **5.** d **6.** b **7.** b **8.** c **9.** d **10.** a **11.** c **12.** b **13.** a **14.** b **15.** d **16.** a **17.** c **18.** a **19.** b **20.** a

Enrichment

1. Possible answer: Theophrastus used common words to describe plant structures because, at that time, there were no scientific words in use to describe plants. Theophrastus could have made up new scientific words, but no one else would have understood them. **2.** Possible answer: Aristotle's work could still be useful today, first, because his carefully described observations tell us about the plants and animals of his time, and second, because his work shows how early scientists worked.

Graphic Organizer

1. Unicellular **2.** Unicellular and multicellular **3.** Prokaryotic **4.** Eukaryotic **5.** Cell walls with peptidoglycan **6.** Varied types of cell walls and cells without walls **7.** Eubacteria **8.** Protista, Plantae, Fungi, Animalia

Real-World Lab

Analyze and Conclude 1. I: *Betula* (birch); II: *Aesculus* (buckeye); III: *Carya* (pecan); IV: *Liquidambar* (sweet gum); V: *Cercis* (redbud); VI: *Magnolia* (magnolia); VII: *Robinia* (locust) **2.** Characteristics chosen will depend on the writing implements or groups of items provided. **3.** Students' answers will depend on which characteristics they chose for their classifications. **4.** Paired statements must be opposites because each statement leads either to another step or to identification of the species.