Grade 8

Ch. 1 Lesson 3

Life Science

Page #	Question	Answer(s)	Links/Sources	Student Resources
36	What are some differences between the domains Archaea, Bacteria, and Eukarya.	Sample answer: All organisms in Archaea and Bacteria are unicellular, whereas only some species of Eukarya are unicellular, while others are multicellular. Eukaryotic cells have a nuclei, organisms in Archaea and Bacteria have no nuclei. There is only one kingdom each in Archaea and Bacteria, Eukarya has four kingdoms classified under it.		
36	When you sort your room or organize this class, does your view of where things come from affect how you classify things?	Sample answer: Sometimes.		
36	How does the scientists worldview change the classification of life?	Sample answer: They might see relationships between living things that may not exist.		
36	Does the assumptions of where something comes from change the classification of science?	Sample answer: Yes.		
36	Can you think of an example?	Sample answer: As more information was observed and learned about living organisms, classification changed from a two kingdom classification - plant and animal; to a three kingdom classification - plant, animal, and protist; to a four kingdom system - plant, animals, protist, fungi;, to a five kingdom system - plant, animal, protist, fungi, Monera, to six kingdom system, then to a seven kingdom system; and most recently to nine kingdom system that is accepted by many scientists.		
36	What do you recall about the reasons for classifying organisms, the scientists who began this work, and the categories into which organisms are classified?	Sample answer: The reason for classification was to organize living things into groups that had similar characteristics and then subdivide these groups into smaller and smaller groups each showing similar characteristics. Carlos Linnaeus started this process believed in the Creation story and organized things according the kinds of organism that God created. He developed a 7-level system made up of two kingdoms - plant and animal.		

37	How does new information affect the classification of organisms?	*Sample answer: When new information is gathered, it can alter the way organisms are classified. It may combines species that were once thought were different. Or, it may split what was thought to be one species into two or more species.		
38	How can dichotomous keys help scientists identify organisms?	They help identify the organism by pairing characteristics and determining which given characteristic an organism has.		
38	How can an unknown organism be identified using a dichotomous key?	By looking closely at the characteristics of a specimen and accurately answering the questions in the key, you can work through the key and identify the specimen.		
38	How can a field key be used to identify organisms found in your surroundings?	By looking closely at the characteristics of a specimen and accurately answering the questions in the key, you can work through the key and identify the specimen.		
39	According to this phylogenetic tree, what might a scientist infer about the relationship between a hagfish and a chimpanzee?	*Sample answer: The hagfish is farther away form the chimpanzee on the tree, so an inference might be that the two organisms are not closely related to each other. The idea of relatedness suggests an evolutionary development from simple to complex development over time.		
40	How are these mammals' teeth similar?	*The mandril and lion have sharp, pointed teeth on the top and bottom jaws. The horse and nutria have flat teeth.		
40	How are they different?	*The nutria's teeth are extremely long. The number of teeth in each mammal's mouth is different.		
40	Would a scientist place these mammals on a phylogenetic tree based solely on teeth structure? Explain.	* It is unlikely that a scientist would classify these animals based solely on teeth structure because there are so many other body structures and behaviors to consider before grouping them.		
41	What characteristics make us like a family?	*Matthew 12:26-50 explains that those who do the will of God become like family to Jesus.		
41	Describe a phylogenetic tree.	*It is a drawing used by evolutionists to show relatedness of organisms. It is made of lines that connect and resemble a tree with a few branches or many branches.		
41	Have students student the first tree on the page. Why is C so far from A on the tree?	*C has fewer similarities, so it is placed farther away from A on the tree.		
41	Why might a computer program generate more than one phylogenetic tree for the same organism?	*There may be different physical characteristics observed and entered into a computer program. Why each additional bit of information, the computer man suggest a new version of the phylogenetic tree.		

41	What do you think might account for differences in data?	Sample answer: The characteristics that were selected to be analyzed.		
42	What are some potential problems that scientists should consider before making conclusions about evolutionary groups?	*Organisms can obtain genes through two different ways: parents to offspring (vertical gene transfer) or genes are transferred between unrelated organisms (horizontal gene transfer). Drawing conclusions or developing hypotheses about groups of organisms ca be a "tricky" situation. Another thing to discuss with students is where outside influences disturbed the process.		
42	What other clades can you identify?	Sample answer: Another clade on the cladogram contains *Canis familiaris* , *Canis lupus* , *Canis* and *Canidae* .		
42	How many ways can the same organisms be grouped into different cladograms?	Sample answer: Depending on the observations made and the assumptions made about how structures formed and function, organisms can be listed in a variety of ways on the cladogram.		
	* Means the answer is found in the TE.			