Grade 8

Ch. 1 Lesson 1
Life Science

Page #	Question	Answer(s)	Links/Sources	Student Resources
14	What characteristics do scientists use to classify organisms?	*Body type, cell type, cell structure.		
14	How might DNA help us understand how life on Earth has changed?	*If organisms have changed over time, so has DNA.		
15	What scientific evidence are you aware of that supports the story written in Genesis 1-2?	*Answers will vary. Students should be encouraged to provide specifics rather than generalities. Students may suggest evidence of Design to support the Creation story.		
15	How do you think the horseshoe crab survived so long without much change?	Sample answer: The body plan and adaptations have continued to enable the horseshoe crab to survive its environment throughout geologic history		
15	Why have some populations become extinct, while others survived?	Sample answer: Species that become extinct are those that are unable to adapt to changes in their environments, while those that survive are those that are able to adapt to the changes that occur.		
15	Is the survival of species random or something more involved?	Sample answer: The survival of a species is not random or accidental, it happens because the species has what is needed to survive.		
16	If Aristotle how might he have tested his hypothesis?	*He might have looked for fish eggs surviving in the dried mud of the pond.		
16	Do you know the two primary theories of origins--how life began on Earth?	Yes. Creation and evolution.		
16	What do these two theories have in common?	Sample answer: They both give and explanation of how life began, they both use evidence to support their ideas, they both accept certain assumptions.		
16	What are their differences?	Sample answer: Creation claims that God created life out of nothing and that sin changed the original creation, evolution claims that life came from non-living matter by chance and that macroevolution resulted in the diversity of life on Earth.		
16	What have you learned before to help you answer this question?	I have learned about the ideas of Creation and evolution in earlier classes I have taken in school.		

16	Is it possible to use the scientific method determine the origins of life? Why or why not?	Sample answer: It is possible to use the scientific method to gather evidence present in the natural world that may provide support for one theory or another, based on the interpretation of the evidence, but neither theory can be proved, because the origin of life cannot be directly observed.		
17	What does Isaiah 45:18 say about God's purpose in Creation?	*Isaiah 45:18 says that He created the Earth to be inhabited.		
18	Why might air be an important variable in Redi's experiment?	*By using the net, Redi controlled all the variables in his experiment except the one he wanted to study: the access of flies to the meat. In the experiments in which he sealed out the air, his result might have caused by the absence of air, and his conclusion could have been questioned.		
18	How did Redi's experiment refute Aristotle's idea?	*It showed that life did not spring from nonliving matter. The source of the maggots was the flies that landed on the meat and laid their eggs there.		
18	What did Miller and Urey do?	*They boiled a mixture of water and gases in a flask then sent electrical charges periodically through it.		
18	What did Miller and Urey find?	*Several types of amino acids formed in the mixture.		
18	How did the Miller-Urey experiment impact the idea of evolution?	*The results showed that it was possible for organic molecules (amino acids) to form from inorganic molecules. However, many of the amino acids that were formed were not the ones found in living organisms. Furthermore, recent experiments have cast doubt on the composition of the original mixture		
18	How did Redi's experiment support his hypothesis?	*The results of Redi's experiment proved that spontaneous generation does not happen. Specifically, maggots do not come from meat, they come from flies.		
18	Where do the offspring of a mouse, a fly, or any other organisms come from?	*The offspring comes from the parent.		
18	Why was it important for Redi to leave some jars of meat uncovered and others covered?	*Redi hypothesized that flies come from other flies. It was important to keep some jars uncovered so that flies had a chance to come in contact with the meat. They covered jars kept the flied away.		
18	Imagine you are a scientist in 1670. How would you set up an experiment to disprove the idea that mice came from dirty sheets and grain?	Sample answer: I would place dirty shirts and grain in a sealed jar and set the jar next to the dirty shirts and grain an a barn. I would observe the jar and barn everyday until mice were observed in one of the areas.		

18	What was an important variable in Redi's experiment?	Covering or not covering the jars.		
18	What other method could Redi have used to test spontaneous generation?	Answers will vary. Give students time to share their ideas with their classmates.		
18	How did Miller and Urey know the composition of the Earth's atmosphere?	The didn't, they made a guess. It turns out the mixture they used was not exist on early Earth.		
19	In what ways does this help naturalistic scientists show how life originated on Earth?	It gives them a way to explain life on Earth without relying on an explanation that requires abiogenesis.		
19	Does suggesting that the origins of life happened somewhere else in the Universe solve any of the problems associated with its origin on Earth?	No, they still have to explain how life would have originated somewhere else in the Universe, the same problems exist.		
20	How does natural selection work?	Natural selection states that the organisms best suited for the environment are most likely to survive and reproduce?		
20	How will background color affect the selection of the colored dots?	The dots that best match the background will not be picked up and will "survive."		
20	How does color affect the natural selection or organisms?	The organisms that best match the background will be the least likely to be picked up and will "survive."		
21	What might cause scientists to have different explanations even though they have access to the same data?	*Sample answer: Scientists may receive the data at different times, in different orders. The order in which the data is received may affect their hypothesis. A scientists worldview may also influence how the information is interpreted.		
22	How much variation is there in a species?	All species show variation to different degrees.		
22	How much variation will you find in lengths of cricket femurs, human fingers, and leaves.	The lest amount of variation will be in the cricket femurs and the length of leaves. The greatest variation will be in the length of human fingers.		
22	What are examples of competition among individual animals or species?	Competition for food, water, shelter, mates.		
22	How do dogs of the same breed differ? How do students in your classroom differ?	Sample answer: Differences in individual dogs of the same species include: size, color pattern, color shade. Differences in students include: height, weight, skin and hair color, eye color, facial features.		
22	What are some characteristics of individual polar bears that might make they better suited than other polar bears to survive in an Arctic environment?	Sample answer: weight, height, color of fur, the size of their feet, their sense of smell, the amount of blubber they have.		
23	*What effect have humans had on natural selection?	8Sample answer: Human activity affected which variations in species were more likely to be passed on.		

23	What changes would a single-celled eukaryote have to undergo to become a large, multi-celled organism, such as a whale?	*Single-celled eukaryotes would have to develop a multitude of different systems that could be organized into the different kinds of tissues, organs, and organ systems that compose most multi-cellular organisms.		
23	In your opinion, are changes like this possible? Why or why not?	*Answers will vary, but students should base their answers on scientific proof, observations, and their beliefs.		
23	Which color of moth would be better camouflaged then?	The dark colored moths.		
23	How do you think that affected the population of peppered moth?	The population became predominately made up of the dark-colored moth.		
23	What do you think happened when improved environmental standards improved the problem?	The population became predominantly mad up of the light-colored moth.		
23	What kind of new structures and physiological processes would have to evolve to change a prokaryote to a eukaryote, a single-celled organism to a multi-celled one, an aquatic creature to one that lives on land, or an earthbound creature to one that flies?	Sample answer: Prokaryote to eukaryote-- nuclear membranes, cell organelles; single-celled-to multi-celled-cell differentiation, meiosis, development of tissues, organs, and organ systems; an aquatic creature to one that lives on land-lungs, appendages able to walk on land; an earthbound creature to one that flies - wings, muscular structure need to work the wings.		
24	What does the evidence indicate about how much change a species might experience over hundreds of year.	*The evidence indicates that the amount of change in living organisms is limited.		
24	What other animals have experienced similar changes?	Sample answer: the peppered moths and rat snakes.		
24	What evidence do you think an evolutionary scientists would cite as proof of macroevolution?	Sample answer: Genetic evidence of related DNA and similar structures with the same or different uses, for example, bat wings and penguin wings		
24	How would a creationist explain these similarities?	A single designer reused some design elements to create variety among species.		
24	How do these color variations help the survival of the species?	Color variations help the species survive in many locations with adaptations to their specific environment for better camouflage or to mimic other dangerous species.		
	* Means the answer is found in the TE.			