

<b>Grade 6</b>			
<b>Ch. 3 Lesson 1</b>			
<b>Life Science</b>			
<b>Page #</b>	<b>Question</b>	<b>Answer(s)</b>	<b>Links/Sources</b>
82	How is DNA evidence of God's design?	*DNA's intricacy of design, its high level of organization, and the fact that it carries information directing cell processes are evidence of God's design.	
82	What is the possibility that DNA could be assembled by chance?	*The chance that it could develop randomly by chance is inconceivably small.	
83	Have you ever written a message in code?	Sample answer: Yes.	
83	How is it read by the recipient?	Sample answer: It was read by matching random numbers with letters.	
84	What type of technology do you think must have been in place in order to discover DNA?	*Sample answer: The right type of microscope, radioactive material, X-rays, and photography were necessary.	
84	What parts of your body function like the construction workers	Sample answer: Muscular and skeletal systems.	
84	What would happen if some of these workers became sick?	Sample answer: Work on the project would slow down or possibly stop.	
84	Have you every thought about how the discovery of DNA happened?	Sample answer: Yes.	
84	What questions do you think early scientists posed in their search for DNA?	Sample answer: What is DNA? What is it made from? How does it spell out coded instructions that cells are able to follow?	
85	Was one scientist's contribution more important than any of the others? Explain.	*One scientist's contribution is not more important than the others. As in the case of the discovery of the structure of DNA molecules, scientists used the knowledge of other scientists to build their work upon.	
85	Why do you think so many people were involved in discovering the secrets of DNA?	Sample answer: DNA is a complex molecule that has many parts and functions process it goes through to communicate the directions to the cells. The complexity of all of this required many scientists with different skill to come together to work out a solution to the problem.	

85	Do you think there are ever important scientific discoveries that can be credited to just one person?	Sample answer: Usually multiple scientists are involved in making discoveries, however, there are some discoveries are made by one person who then gets help from other scientists to detail the discovery.	
85	Where are the blueprints your body uses to build new cells kept?	Sample answer: In the nucleus.	
86	How does the double-helix structure and base pairs of DNA help it code information?	Sample answer: This arrangement allows for a huge amount of diversity in the directions contained in the DNA. The double-helix decreases the amount of space needed to store all of the DNA in the nucleus.	
86	What is the probability of two randomly made DNA strands being similar?	Sample answer: It is improbable that randomly made DNA strands would be similar to each other.	
87	How would you describe the relationship between chromosomes, genes, and DNA?	*Chromosomes are thread-like structures of DNA. Sections of DNA are genes.	
87	Do you think people in Bible times knew anything about inherited traits? Explain.	*Although they recognized that traits were passed from parent to child, they would have not understood anything about the process by which it happened.	
87	What is the proportion of proteins to genes?	*There are 80 proteins to every gene.	
88	Where are the sugar and phosphate groups found in DNA?	*Outside the backbone in the twin side chains.	
88	Where are the bases located?	*Inside the helix; they form the rungs of the twisted ladder.	
88	Why do you think the bases are located inside the molecule?	*Sample answer: Being on the inside of the molecule helps protect the bases.	
88	Why is the DNA that makes up the chromosomes coiled up tightly?	*The DNA molecule is much longer than the chromosome it makes up. It needs to be coiled so it will fit inside the nucleus with enough room for the other cell organelles to work properly.	
88	What might happen if your cells misread those instructions?	*The instructions may not work and the cell could be harmed.	

88	Now that you have learned more about base pairing, would make any changes to your DNA model you built in the Structured Inquiry? Could you have paired any of the bases differently?	Sample answer: I might want to order the base pairs to form a code that someone might be able to read successfully. Yes.	
88	What pattern do you see?	Sample answer: The molecule looks like a twisted ladder with a specific sequence of base pairs making up the rungs of the ladder.	
88	What do you think is the advantage of the twisted shape of the DNA molecule	Sample answer: More DNA can be stored in a defined space if it is coiled up.	
89	What do you think DNA will look like when it is extracted from cells?	Sample answer: I think the DNA will look stringy.	
89	What do you think are some of the instructions DNA gives the cells in the body?	Sample answer: How to make specific proteins and enzymes need to make specific kinds of cells.	
90	How can DNA fingerprinting help identify an unknown virus?	*If scientists have the DNA fingerprints of a known virus, then the fingerprints from an unknown virus can be compared to it. Because DNA fingerprints are unique to each organism, including viruses, comparing an unknown against a known will help with identification.	
90	Is there anything that our Creator designed that would be considered "junk?"	Sample answer: No. Often we think certain structures are not needed and that they are "junk," but end up having important functions such as the appendix. For hundreds years, scientists thought that the appendix had no function. Today we understand that the appendix is an important part of our immune system, helping to make new cells to fight new diseases.	
90	Why do you think it is important for the DNA to be duplicated before the cell divides?	Sample answer: So an exact copy of the full DNA of the original cell can end up in the two new cells.	
90	How would scientists identify the unknown virus?	Sample answer: By comparing it to known viruses looking for similarities and differences that would help them to understand the virus and how to deal with it.	
90	Why would this be important?	See above answer.	

90	Did you and your group members always agree on the identification of the unknown?	Sample answer: No. There was disagreement in how to interpret the code.	
90	How are the barcodes like DNA?	Sample answers: Barcodes like DNA have a specific sequence of lines that identify the product. DNA has a specific code that identifies specific instructions unique to each cell product.	
90	Besides identifying unknown viruses, for what other reasons would scientists use DNA fingerprints?	Sample answer: To identify people involved in various crimes. To identify possible genetic disorders in people. To assess the risk of someone getting a particular disease.	
91	Why is it important for proteins to error check DNA before it is zipped back up?	*Each protein has a specific function in the cell. Proofreading the DNA before zipping it up ensures that the cell will continue to function properly.	
91	What is the purpose of DNA replication?	*To make sure there are two copies -- one for each new cell.	
91	What base does guanine pair with?	*Guanine pairs with cytosine.	
91	What would be a benefit of beginning duplication at several different places at once?	*Sample answer: Starting at different locations at the same time would make the duplication process happen faster.	
	* Means the answer is found in the TE.		