



Name: _____

Per: _____

Biology EOC WebQuest Study Guide

BIOLOGY & THE CHARACTERISTICS OF LIFE

Use the link to watch the "What Is Biology? The Characteristics of Life" video by The Science Classroom. As you watch, take notes in the table below.

<https://www.youtube.com/watch?v=7nKKoxnmTEA> (Video 1 on review page of class website)

Characteristics of Life	Notes From Video
1. Cells	
2. DNA	
3. Energy	
4. Homeostasis	
5. Reproduction	
6. Evolution	

HYPOTHESES, THEORIES, and LAWS

Click on the link below to watch the "Fact V. Hypothesis V. Theory V. Law" video from It's Okay To Be Smart. After you watch the video, decide if the following statements are True or False. If they are false, replace the underlined term in the statement with a new term that would make the statement true. Write that word on the line next to the statement.

<https://youtu.be/lqk3TKuGNBA> (Video 2 on review page of class website)

7. Hypotheses are observations about the world around us. 7. _____
8. A hypothesis is a proposed explanation for a phenomenon made as a starting point for further investigation. 8. _____
9. A law is a scientific explanation developed through the scientific method through repeated testing, observation, and experimentation. 9. _____
10. In science, a theory is a detailed description usually using math to explain how something happens. 10. _____

SCIENTIFIC METHOD

Click on the link below to play the "Inky the Squid and the Scientific Method" game from the Bioman Biology website. Choose Baby Squid Infinite Lives Level to complete all levels of the game. When you have completed the game, write down three facts you reviewed and your final score in the space below.

<https://www.biomanbio.com/HTML5GamesandLabs/SciMethodGames/inkysmhtml5page.html>

11. Fact #1: _____
12. Fact #2: _____
13. Fact #3: _____
14. Your Score (bottom left corner of game screen): _____

PROPERTIES OF WATER

Click on the link below to watch "How Polarity Makes Water Behave Strangely" by TedEd. As you watch the video, take notes in the table below about each property of water.

<https://youtu.be/ASLUY2U1M-8> (Video 3 on review page of class website)

Property of Water	Description Of This Property of Water
15. Polarity	
16. Hydrogen Bonding	
17. Surface Tension	
18. Cohesion	
19. Adhesion	

20. Density	
-------------	--

MACROMOLECULES / BIOMOLECULES / ORGANIC MOLECULES

Use the link to complete the "Molecules of Life" Tutorial. As you complete the tutorial, answer the following questions.

<http://www.cpalms.org/Public/PreviewResourceStudentTutorial/Preview/111955>

Opening Slide Tab

21. What are the four predominant elements in biology? _____

Molecules Tab

22. What are the building blocks of macromolecules? _____

23. When monomers are linked together, the resulting molecule is called a _____

24. A monomer is a single _____. A polymer is a link of _____

In biological systems a polymer is called a _____

25. A train car is to a train, as a _____ is to a polymer an a molecule is to a _____

Carbohydrates Tab

26. What are two important functions of carbohydrates? _____

27. What type of complex carbohydrate is cellulose and what is its role in plant cells? _____

Lipids Tab

28. What are three functions of lipids: _____

Proteins Tab

29. What are proteins made from? _____ What cell organelle makes proteins? _____

30. Enzymes are an example of proteins. List some other types of proteins: _____

Nucleic Acids Tab

31. What are the main functions of nucleic acids? _____

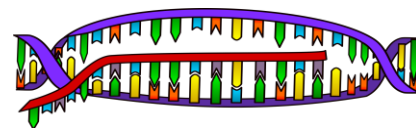
32. How many strands make up RNA? _____ How many strands make up DNA? _____

33. What are the three types of RNA? _____

34. What process do RNA molecules play a role in? _____

35. During the Nucleic Acid Practice, write the statement that refer to nucleic acids in the space below.

- a) _____
- b) _____
- c) _____
- d) _____



EUKARYOTIC AND PROKARYOTIC CELLS

Click the link below to watch the "Prokaryotes and Eukaryotes" video by The Amoeba Sisters. As you watch, answer the questions. <https://youtu.be/ruBAHij4EA> (Video 4 on review page of class website)

36. Why aren't antibiotics effective against fungi infections? _____

37. What are some common organelles, or parts of, all cells? _____

38. What are two differences between prokaryotic and eukaryotic cells? _____

39. Why do and quantities of different organelles vary slightly within different cells? _____

EUKARYOTIC CELL ORGANELLES

Click on the following link to play the "Cell Explorer" Game from the BioMan Bio website. Make sure you read EVERY screen that pops up in order to answer the following questions.

<https://biomanbio.com/HTML5GamesandLabs/Cellgames/cellexplorerpagehtml5.html>

Mission 1: RECON

Click on Mission 1 Recon. Follow the directions to answer questions in this section.

40. *Shoot the Golgi Apparatus.* Fill in the blanks: Golgi receives _____ containing _____ that were sent by the _____. Then it modifies _____ and send them where they need to go.

41. *Shoot the cytoskeleton.* The cytoskeleton is like the _____ of the cell. The cytoskeleton is made of _____ and _____. It helps to keep the cell's _____ and shape. It also helps the cell to _____.

42. *Shoot the Plasma Cell Membrane.* The cell membrane is the _____ of all cells. It regulates what _____ and _____ the cell to help maintain homeostasis. The cell membrane is _____ which means it allows substances to pass through, but not others.

43. *Shoot the Mitochondria.* What do mitochondria make _____? What is ATP? _____ The process of making ATP in cells is called _____. Respiration uses the _____ you eat and the _____ you breathe to make _____, _____, and _____.

44. *Shoot the Ribosomes.* Ribosomes make _____.

45. *Shoot the Smooth ER.* Smooth ER makes _____ and performs other _____. It also _____ poisons. It does not have _____ so it does not make _____.

46. *Shoot the Nucleus.* The nucleus holds and protects the cell's _____. The DNA is the _____ for the cell and carries the _____ and _____ that directs the cell. The dark spot in the nucleus is the _____. The nucleolus makes _____.

47. *Shoot the Rough ER.* The rough ER is covered with _____. The rough ER is involved with transporting _____. The proteins are sent away from the rough ER in _____ that transport them to the _____.

48. *Shoot a lysosome.* The lysosome has hydrolytic _____ that break down or digest things in the cell. They also destroy _____ and other invaders. They also digest _____ particles and recycle _____.

49. *Shoot a vesicle.* A vesicle transports _____ substances to where they need to go in the cell.

Mission 2: ESCAPE

Click on Mission 2 ESCAPE from the main menu. Follow the directions to answer questions in this section.

50. Follow the directions to play the game. At the end of the game, you will receive a final score. Write it here: _____

Mission 3: DEFENSE

Click on Mission 3 DEFENSE from the main menu. Follow the directions to answer questions in this section.

51. Follow the directions to play the game. At the end of the game, you will receive a final score. Write it here: _____

Mission 4: CONSTRUCT

Click on Mission 4 CONSTRUCT from the main menu. Follow the directions to answer questions in this section.

52. Follow the directions to play the game. At the end of the game, you will receive a final score. Write it here: _____

PHOTOSYNTHESIS

Use the link to watch the "Simple Story of Photosynthesis & Food" video by TedEd. As you watch, fill in the blanks below. <https://youtu.be/eo5XndJaz-Y> (Video 5 on review page of class website)

53. What are the pores in a plant's skin called? _____

54. What light absorbing pigment is found in chloroplasts? _____

55. The sun helps convert carbon dioxide into a simple carbohydrate called: _____

56. What is another name for cellulose? _____

57. What does starch do for a plant? _____

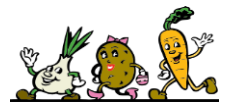
58. When we break down glucose, what energy molecule is produced? _____

59. What are three ways we use ATP? _____

60. How is ATP like dollars? _____

61. Which organelle is responsible for breaking down carbohydrates into useable energy? _____

62. Do plants have mitochondria? _____ Why? _____



ANAEROBIC & AEROBIC RESPIRATION

Use the link to watch the "Respiration" video. As you watch, fill in the blanks below.

<https://youtu.be/Xp0o19gWX7E> (Video 6 on review page of class website)

63. What is the difference between respiration and breathing? _____

64. What is more efficient? - Anaerobic or Aerobic Respiration? _____

65. What compound is responsible for the cramps that we feel when we run out of oxygen? _____

66. The build up of lactic acid causes: _____

67. What is the name of the length of time needed for us to pay back our oxygen debt? _____

PHOTOSYNTHESIS & CELLULAR RESPIRATION

Use the link to access the Photosynthesis & Respiration Game by Bioman Bio. As you move through the game, answer the following questions.

<https://biomanbio.com/HTML5GamesandLabs/PhotoRespgames/photoresphtml5page.html>

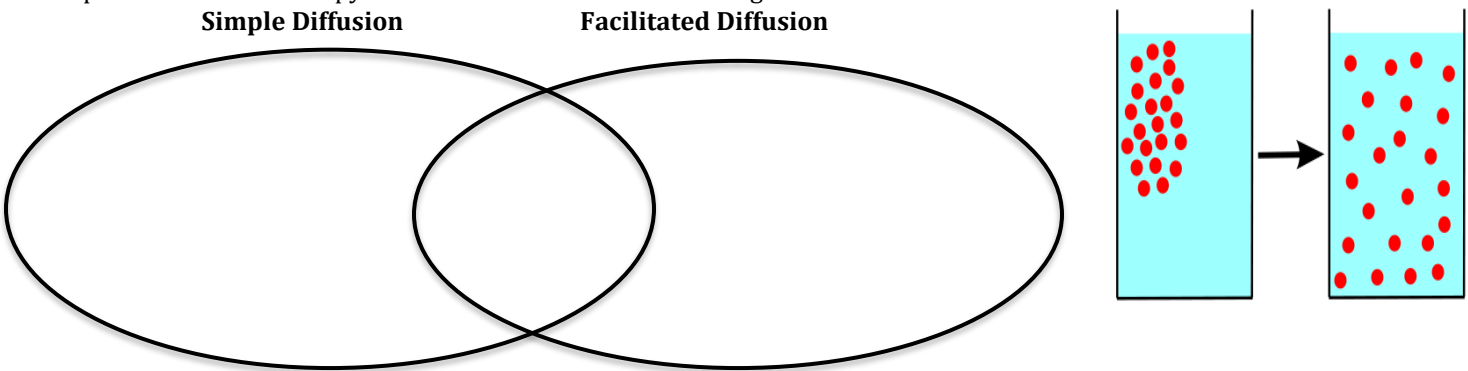
67. What molecule does the fruit represent? _____

68. The molecules you use in a chemical reaction are called the: _____
69. The molecules you produce in a chemical reaction are called the: _____
70. How many ATP molecules are produced in one reaction during cell respiration? _____
71. What are the reactants in respiration? _____
72. What are the reactants in photosynthesis? _____
73. What are the products in cellular respiration? _____
74. What are the products in photosynthesis? _____

ACTIVE & PASSIVE CELL TRANSPORT

Click on the following link to watch the “Cell Membrane and Cell Transport” video by the Amoeba Sisters. As you watch, answer the following questions. <https://youtu.be/Ptmlvtei8hw> (Video 7 on review page of class website)

75. Keeping a stable environment inside cells is also known as keeping _____
76. The important cell organelle structure that controls what goes in and out of the cell is the _____
77. The cell membrane is made of a phospholipid _____. A bilayer means it has two layers of _____
78. Phospholipids have a head that is _____ and a tail that is _____
79. What two gases easily diffuse through the phospholipid bilayer? _____ and _____
80. In a concentration gradient molecules move from a _____ concentration to an area of _____ concentration.
81. Stop the video at 3:51. Copy the information into the Venn Diagram below.



82. Force against the concentration gradient flow from low to _____ concentration takes _____ because it is against the flow and typically requires _____ energy.
83. ATP has _____ phosphates and powers _____ which forces molecules to go against the concentration gradient.
84. If a cell needs a large molecule, such as a polysaccharide, it must fuse with the cell membrane to bring it inside the cell in a process known as _____. “Endo” in the word endocytosis means _____
85. The three main type of endocytosis are _____, _____, and _____
86. The process that is the reverse direction of endocytosis when the cell moves material out of the cell is _____
87. Exocytosis helps the cell get rid of _____ and moves out valuable materials the cell has made.

OSMOSIS

Click on the following link to access the Tonicity and Osmosis on Cells Virtual Lab from the Glencoe Science website. Follow the directions on this handout to complete the lab.

http://www.glencoe.com/sites/common_assets/science/virtual_labs/LS03/LS03.html

Place each cell in all three different liquids. In the chart below, record your results. Write “Shrink” if the cell shrinks, “Swell” if the cell swells, and “Normal” if the cell stays the same. In the last column, explain why this change or no change is occurring in your own words. Use the words water, solute, and concentration in all the answers to the fifth column.

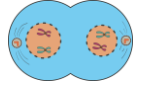
Type of Solution	Red Blood Cell	Elodea Cell	Paramecium Cell	Where is the Water Going? Why?
88. Hypotonic Solution				

89. Isotonic Solution				
90. Hypertonic Solution				

MITOSIS, THE CELL CYCLE, AND CANCER

Use the following link to watch the "Mitosis" video by the Amoeba Sisters. As you watch, answer the following questions.

<https://youtu.be/f-ldPgEfAHI> (Video 8 on review page of class website)



91. Mitosis produces ONLY what type of cells? _____
92. Why is it important that during mitosis, your cells only make identical cells? _____
93. Do cells divide all the time? _____ What is cancer? _____
94. In what phase of cell division do cells spend the most of their time? _____
95. What 3 things do cells do during interphase? _____
96. What percentage of time do cells spend in Interphase? _____ What percent of time do they spend in mitosis? _____
97. What two things are chromosomes made of? _____
98. How many chromosomes do human body cells contain? _____

In the table below, draw what each phase of mitosis looks like. Be sure to draw the chromosomes, spindle fibers, and nuclear membrane in the appropriate phases.

Interphase	Prophase	Metaphase	Anaphase	Telophase	Cytokinesis
99.	100.	101.	102.	103.	104.

MEIOSIS & GENETIC DIVERSITY

Use the following link to complete the Snurfle Meiosis and Genetics 2 Game. Read the introduction to the game by clicking through the first two screens until you come to the main menu. Click on the "Crossing Over" tab. Answer the questions or fill in the blanks as you move through this activity.

<https://biomanbio.com/HTML5GamesandLabs/Genegames/snurflemeiosis2diversityhtml5page.html>

Crossing Over!

105. At the start of meiosis you have _____ cell. At the end of Meiosis I, you have _____ . At the end of Meiosis II, you have _____
106. If there is no crossing over, the gametes are _____ identical. What is true about such a cell that does not cross over during meiosis? _____
107. Remember, the letters shown represent alleles for specific genes. G and g represent two different alleles for fur color. B and b represent two different alleles for the butterfly wing trait.
- G = _____ B = _____
- g = _____ b = _____
108. Since the fur color and butterfly wing _____ are the same _____ and are inherited together, we say the genes are _____.
109. Crossing over occurs during _____ of Meiosis I. Homologous chromosomes trade _____ information.
110. What trades genetic information during crossing over? _____
111. More _____ results because there is more _____ in the possible _____ due to _____
112. Recombination allows for more potential _____ of offspring.



Independent assortment - Return to the Main Menu. Click on the "Independent Assortment" tab. Fill in the blanks and answer the questions below as you move through this section of the game.

113. Independent assortment also produces _____ of gametes during meiosis. Independent assortment refers to how the chromosomes _____ during Metaphase _____ and Metaphase _____.
114. The homologous chromosomes are the _____ size and have the same _____.
115. During Metaphase I of Meiosis I, these homologous pairs of chromosomes can line up in several _____ ways. This is known as _____
116. The way that one pair of chromosomes line up does _____ affect the way that any other pair _____.

Each pair lines up _____, hence the name independent assortment.
 118. Independent assortment can also happen in cells during meiosis II, specifically during _____
 119. Independent assortment produces many _____ possible genetic _____ in the gametes produced by an individual. This genetic _____ in _____ produces genetic _____ in the population.

INHERITANCE & GENETICS

120. SKIP QUESTION 120 CONTINUE TO 121

121-124. Use the following link to watch the “Incomplete Dominance Codominance” video by the Amoeba Sisters. After you watch, answer the following questions.

<https://youtu.be/YJHGfbW5510> (Video 9 on review page of class website)

121. Explain the difference between incomplete dominance and codominance. _____

122. In chickens, the gene for feather color is controlled by codominance. The allele for black is B, and the allele for white is W. The heterozygous phenotype is black and white speckled.

What is the genotype for a black chicken? _____ What is the genotype for a white chicken? _____

What is the genotype for a speckled chicken? _____

123. Complete a Punnett square showing the cross between a speckled chicken and white chicken.

What percent of offspring is white? _____

What percent of offspring is black? _____

What percent of offspring is speckled? _____

124. A homozygous black bird is crossed with a homozygous white bird. The offspring are all gray. Complete a Punnett square showing this cross.

Is this an example of incomplete dominance or codominance? _____

DNA, RNA, & PROTEIN SYNTHESIS

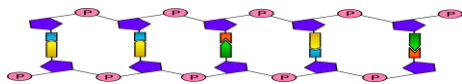
Use the following link to access the DNA-The Double Helix Game from the Nobel Prize.org website. Fill in the question blanks and table as you go. https://www.nobelprize.org/educational/medicine/dna_double_helix/dnahelix.html

125. Most organisms have the same sort of _____ in their cells.

126. The shape of DNA is called a _____.

127. The back bone or intertwining strands are made up of _____ and _____. The rungs are _____, made up of _____ different _____ represented by the letters : _____

128. The base pair on a DNA molecule are connected by hydrogen bonds. The bases always pair up the same way. Adenine (A) pairs with _____, and Cytosine (C) pairs with _____.



DNA Replication Data Table

	Organism 1	Organism 2	Organism 3
# of genes			
# of chromosomes			
# of base pairs (millions)			
# of mutations (it's supposed to have)			
Name of organism			
Total Points			

Use the link below to play the Protein Synthesis Race Video Game from the BioMan Biology Website. Click “Start a New Game” to begin. Read the screens and follow the directions to complete the game. As you complete the game, answer the following questions on the handout.

<https://biomanbio.com/HTML5GamesandLabs/LifeChemgames/protsynthracehtml5page.html>

Transcription In the Nucleus

129. Transcription is the process of copying a gene to create _____
130. Transcription is the first process that must happen in order to make a _____
131. In order for transcription to happen, DNA must _____
132. How many strands of DNA are used for transcription? _____
133. Will you be playing with the top or bottom strip of DNA? _____
134. What is the name of the enzyme used to make RNA nucleotides? _____
135. What type of molecule did you create when you transcribed all of the nucleotides? _____
136. What does the messenger RNA (mRNA) do? _____
137. What happens to the DNA molecule after transcription? _____
138. Where does the messenger RNA have to travel to after transcription? _____

Transcription - Did You Get It? Answer the 9 multiple choice questions in the game. Write down your score here _____

Translation in the Ribosome

139. A protein is a chain of _____
140. The _____ of amino acids in the chain and the _____ of the chain determine what kind of protein it will be.
141. Codons are triplets of nitrogenous bases on mRNA that code for a specific _____

***Hint! Look at the chart at the upper right of the screen to see what codons code for which amino acid! Pick up the complementary tRNA anticodon to pair with the mRNA codon. When you are pairing the two codons, look at the mRNA code to pair with the correct amino acid color. Use the black line above the tRNA to pick up the correct color. Each code for amino acids is a specific color!*

142. Which type of RNA is responsible for translation of mRNA? _____
143. What is another name of a chain of amino acids? _____
144. What happens to the ribosome after translation? _____
145. What does the shape of a folded polypeptide indicate? _____

Translation - Did You Get It?

Click on the correct term where the arrow or bracket is indicating. How many did you get correct? _____
Answer the 8 multiple-choice questions. Write your score here: _____

MUTATIONS

Use the following link to watch the "Mutations" video by Bozeman Science. Answer the questions below as you watch the video. <https://youtu.be/eDbK0cxKKsk> (**Video 10 on review page of class website**)

147. What are some causes of mutations? _____

Fill in notes in the following table as you learn about each type of mutation.

Topic	Notes
148. Point Mutation	
149. Substitution	
150. Insertion	
151. Deletion	
152. Frameshift Mutation	
153. Duplication	
154. Translocation	
155. Inversion	

ORIGIN OF LIFE – ENDOSYMBIOTIC THEORY

Use the following link to watch the "How We Think Complex Cells Evolved" video by TedEd. Answer the questions below as you watch the video. <https://youtu.be/9i7kAt97XYU> (**Video 11 on review page of class website**)

156. What type of organisms do scientists think were on Earth 2 billion years ago? _____
157. What is the process of cells living together called? _____

158. List three pieces of evidence that support endosymbiotic theory. 1) _____
2) _____ ; 3) _____

EVOLUTION & NATURAL SELECTION

Use the following link to watch the "What Is Evolution" video by Stated Clearly. Answer the questions below as you watch the video. <https://youtu.be/GhHOjC4oxh8> (Video 12 on review page of class website)

159. What is evolution? _____

160. How do DNA mutations influence evolution? _____

161. What ancestor did all modern dogs evolve from? _____

162. What is responsible for all the biodiversity that we see today? _____

163. According to Darwin and Wallace, what is another force capable of driving evolution? _____

*****Use the following link to complete Natural Selection and Beaks .Follow the directions and answer the questions below as you complete the activity.**

http://media.hhmi.org/biointeractive/click/finch/?_ga=2.34987426.2058532321.1522815628-826879463.1504551425

164. How do finches recognize members of their own species? _____

165. The Galápagos islands are considered to be "young" islands. Explain what this means. _____

166. The medium ground finch (*Geospiza fortis*) and the cactus finch (*Geospiza scandens*) are similar in size and appearance.

a. As you can tell from their scientific names, they belong to different species. What taxonomic ranks do they share?

b. Which physical trait varies the most between these two species? _____

167. From the map, in what ocean are the Galápagos Islands found? Where are they in relation to the United States?

168. Zoom all the way in to Daphne Major. Describe its appearance in two sentences. What is a spectrogram? What variables are on the *x*- and *y*-axes? _____

169. Listen to the three examples of sound and related spectrogram. Make one observation about each of the three spectrograms.

170. When do the finches on the Galápagos Islands learn their songs? From whom do they learn their song?

Click on the "Get Started!" button and answer the questions below as you proceed through the Click and Learn.

171. How easy was it to sort finches by song? _____

172. When the spectrograms were revealed, did you have to change the grouping of any of the finches? _____. Which characteristic did you find it easier to sort by, song or spectrogram? _____

173. Did seeing the photos help you sort the finches? Explain. _____

174. Did you change the grouping of any of the finches after zooming in on the beak? _____

At the end of the exercise, which trait allowed you to more easily tell which birds belonged to the same species? (The species name is not a trait!)

PHYLOGENY & THE TREE OF LIFE

Use the following link to complete the "Evolution Lab" by PBS Nova. Answer the questions below as you complete the lab. <http://www.pbs.org/wgbh/nova/labs/lab/evolution/research#/chooser>

175. Click on "Mission One Training Trees." Watch the video to learn how to complete the lab. Write three things you learned in the video in the space below.

- a) _____
- b) _____
- c) _____

Complete All Three Parts of The Training Trees Lab

176. Part 1: Red, Green, and Gecko

- a) What trait does a gecko, fungus, and palm tree share? _____
- b) Is an animal or plant more closely related to a fungus? _____

177. Part 2: Familiar Faces

- a) What are amniotes? Which organism(s) is/are not amniotes? _____
- b) What trait does all these organisms have in common? _____

178. Part 3: Tree of Life Vegetarian Edition

- a) Is a banana more closely related to a lemon or an onion? _____

TAXONOMY & DICHOTOMOUS KEYS

Use the following link to watch the "What is Taxonomy" video by MonkeySee. Then answer the questions below.

https://youtu.be/aiC_Z8Za7wc (Video 13 on review page of class website)

179. What is taxonomy? _____

180. What system is used for assigning a scientific name to an organism? _____

181. What are the 5 Kingdoms of Life? 1. _____ 2. _____
3. _____ 4. _____ 5. _____

182. What 2 taxonomic groups are used to make up a scientific name? _____

183. What are the 3 domains of life? 1. _____ 2. _____ 3. _____

184. What do we analyze today to classify organisms? _____

Use the following link to complete the "Classifying Life" interactive from Nova.

<http://www.pbs.org/wgbh/nova/nature/classifying-life.html>

185. List the Genus and Species for each of the following animals:

- a) Bear: _____
- b) Orchid: _____
- c) Sea Cucumber: _____

Use the following link to watch the "Dichotomous Key" video by Mark Drollinger. Then, answer the question below.

<https://youtu.be/M51AKIqx-7s> (Video 14 on review page of class website)

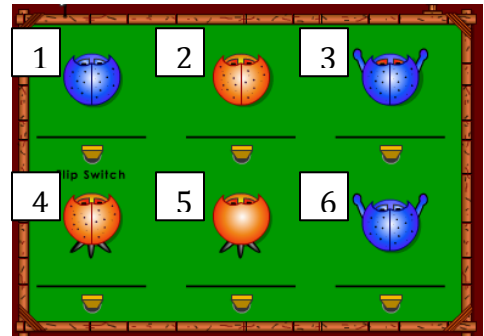
186. Write out step-by-step directions for using a dichotomous key in the space below.

Use the following link to complete the Dichotomous Key for Bugs interactive. Then, answer the questions below.

SKIP QUESTIONS 187-192

Use the Dichotomous Key in the interactive to identify the names of each bug. Use the graphic to the right for the bug numbers.

- 187. What is the name of Bug #1? _____
- 188. What is the name of Bug #2? _____
- 189. What is the name of Bug #3? _____
- 190. What is the name of Bug #4? _____
- 191. What is the name of Bug #5? _____
- 192. What is the name of Bug #6? _____



HUMAN BODY SYSTEMS & REPRODUCTION

Use the following link to watch the “Human Body Systems” video by the Amoeba Sisters. Then, identify which body system that best fits each description below. Write that system on the line provided next to the description.

<https://youtu.be/gEUu-A2wfSE> (Video 15 on review page of class website)

- 193. Coordinates and controls all voluntary and involuntary actions. _____
- 194. Support the body, protect organs, and makes blood cells. _____
- 195. Breaks down and absorbs nutrients. _____
- 196. Provides ability to reproduce. _____
- 197. Intakes oxygen and releases carbon dioxide. _____
- 198. Keeps the body safe against pathogens. _____
- 199. Excretes waste, such as urine. _____
- 200. Exchanges gases and transports nutrients. _____
- 201. Secretes hormones. _____
- 202. Largest and most protective organ system. _____
- 203. Includes skeletal, smooth, and cardiac tissues. _____

Use the following link to watch the “The Reproductive System” video by Bozeman Science. Then, answer the question below.

<https://youtu.be/QSN5gfbzgwC> (Video 16 on review page of class website)

- 204. What type of reproduction produces clones? _____
- 205. Where are sperm created in the male reproductive system? _____
- 206. Where in the reproductive system is the egg fertilized? _____
- 208. What occurs to the uterine lining during the month? _____
- 209. What is a blastula and what does it develop into? _____

To the Google! Do a safe Internet search to research each of the three trimesters of human pregnancy. Describe what occurs in each stage in the table below.

Trimester	Weeks Spent In This Trimester	Describe the Development of the Human in This Trimester.
210. First Trimester		
211. Second Trimester		
212. Third Trimester		

BIOGEOCHEMICAL CYCLES

Click on the link to watch the “Biogeochemical Cycling” video by Bozeman Science. Then, answer the following questions.

https://youtu.be/09_sWPxQymA (Video 17 on review page of class website)

- 213. What elements cycle between living and non-living organisms? _____
- 214. What is a mnemonic device to help you to remember the elements that life needs to survive? _____
- 215. True or False: Nutrients are recycled again and again in the biogeochemical cycles. _____

Complete the table below about how each element is stored and cycled between living and non-living things.

	216. Water	217. Carbon	218. Nitrogen	219. Phosphorus
Where is it stored?				
How does it get into animals?				
How does it get into plants?				
How does it get recycled again?				

ECOLOGICAL SUCCESSION

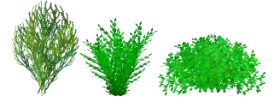
Click the link below to access the next activities.

<https://www.texasgateway.org/resource/ecological-succession>

Look at the menu on the left side of the screen. Click "Explore: Ecosystem Construction Site". Click to start the game and follow the interactive directions to answer the following questions.

220. Read the prompt and click **skip** (upper left of game screen). What are the three ecosystem-building missions that you will be completing?

1. _____
2. _____
3. _____



221. Why is sequence important? _____

222. Pioneer species are _____

223. Play the game by manipulating the weather, vegetation, and animals on the island until you have reached maturity. In three or more sentences, describe what you did to create a successful this ecosystem. _____

*Using the same website link above, scroll down the screen until you find the "Succession Vocabulary" Game. Play the game until all your answers are correct. When you are finished, write the definitions of the following terms below.

224.

- Pioneer Species: _____
- Intermediate Species: _____
- Primary Succession: _____
- Secondary Succession: _____
- Mature Forest: _____

BIODIVERSITY AND BIOMAGNIFICATION

Click on the link the below to play the "Eco-Detectives: The Peril River Problem" video game from the BioMan Biology website. Click "Start a New Game" to begin. Read the screens and follow the directions to complete the game. As you complete the game, list 5 facts you learned in the space below.

<https://biomanbio.com/HTML5GamesandLabs/EcoGames/ecodetectiveshtml5page.html>

225. Fact 1: _____

226. Fact 2: _____

227. Fact 3: _____

228. Fact 4: _____

229. Fact 5: _____

HUMAN IMPACT ON THE ENVIRONMENT

Use the link below to watch the Human Population Impacts video from Bozeman Science. As you watch, answer the questions.

<https://youtu.be/Z1haK55QKJ8> (Video 18 on review page of class website)

226. Which hemisphere of the Earth releases the most Carbon dioxide into the atmosphere? Why? _____

227. What happens to Carbon dioxide (CO₂) levels in the Summer months? Why? _____

228. What happens to Carbon dioxide (CO₂) levels in the Winter months? Why? _____

229. What is an ecological footprint? _____

230. What does the I, P, A, and T stand for in the equation $I = PAT$? _____

231. The bigger the population is the _____ (larger/smaller) the environmental impact.

232. Although Burundi and U.A.E. have the same population of 9 million, why does Burundi have a smaller ecological impact? _____

233. As countries develop, do they have more or less of an impact on the planet? Explain. _____

234. What is biocapacity? _____

235. What does the line at 2.0 on the graph represent? _____

236. In worldmapper.org, where is the highest level of poverty, population, and hunger in the world? _____

237. Look at the US for income and resource use. Did the US grow larger or smaller in size? How do you think this impacts the environment? _____
238. If the economy is too big, does it have a negative or positive effect on the environment? _____

FOOD CHAINS & WEBS

Click on the following link to watch the “Food Webs and Energy” video by the Amoeba Sisters. Answer the following questions as you watch the movie. <https://youtu.be/-oVavgmveyY> (Video 19 on review page of class website)

239. Why do the arrows in a food chain point to the organism doing the eating? _____
240. What trophic level contains the most amount of energy? _____
241. What is the energy lost between trophic levels go? _____
242. What percentage of energy is gained as you move up trophic levels? _____
243. What is the difference between a food chain and food web? _____
244. How does biodiversity contribute to the sustainability of an ecosystem? _____

245. Click on the following link to play the “Food Chain Game” on the Kids Corner website. After you play the game, draw last food chain you created in the space below.

<http://www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm>



Watch video and take notes on this page

1. 10 Things Not to Forget for the Biology EOC - by Mary Marshall (6:08) Write all 10 things and supporting notes

<https://youtu.be/6zyXCaqi1Mo> (Video 20 on review page of class website)

10 MORE Things Not to Forget for the Biology EOC - by Mary Marshall (4:01) Write all 10 things and supporting notes below.

<https://youtu.be/anELTNd3Xa4> (Video 21 on review page of class website)

ONE LAST THING -Practice Activities- IF you still want more preparation.

1. Varsity Tutors: Free Diagnostic Biology Exam Review (helps you identify what your strengths and weaknesses are in regards to your knowledge of biology content). You can take online practice exams!

https://www.varsitytutors.com/high_school_biology-practice-tests?irgwc=1&irclickid=wWZRbiUK5yNQXxfSzA34R0QIUkjwJN3d2T3AVA0&network=af&utm_source=ir&utm_medium=affiliates&affid=27795&vtmedium=affiliate&vtsource=impactradius&vtcampaign=27795