AP BIO SUMMER WORK 2020

PHILADELPHIA HIGH SCHOOL FOR GIRLS
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****ALL OF THE FOLLOWING IS DUE BY THE FIRST DAY OF SCHOOL****

****IT WILL BE WORTH THE EQUIVALENT OF 4 QUIZZES, WHICH WILL BE 100 QUIZ POINTS****

++PART 1++

This must be HANDWRITTEN. NO TYPED-OUT versions of the work will be accepted. Each question should be numbered and answered in complete sentences. Submit the assignment on the first day of class. There will be a test over the PART 1 AND PART 2 material the first week of school. This should be a separate document from PARTS 2, 3 and 4.

***TEXTBOOK CHAPTER 1, PAGES 2-29**
(USE THE PDF TITLED APBIOSUMMERWORK2020TEXT.PDF)

++1.1

1. What is **biology**?
2. Looking at FIG 1.2 you see 7 properties of life. Name the 7 properties, explain the property, give the example as seen in the text and give a new example.
3. Define **hierarchy**. (YOU MAY HAVE TO RESEARCH THIS.)
4. Looking at FIG 1.3 you see 10 levels of hierarchy. For each level, name it, describe it, give an example of it.
5. What is the importance of energy conversion?
6. Describe what is happening in FIG 1.5.
7. Describe each step of FIG 1.6.
8. What is the relationship between **DNA, genes** and **chromosomes**?
9. What is the importance of a **genome**?
10. Compare and contrast **eukaryotic cells** and **prokaryotic cells**.
11. Why do plants have more in common at the cellular level with animals than bacteria?

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12. What are some examples of biological **systems**?
13. What are **emergent properties**?
14. What is the importance of **reductionism**?
15. How is modern biology an information science?
16. What is the ultimate goal of **systems biology**?
17. Describe FIG 1.10.
18. Define and describe the following:
    a. **High-throughput technology**
    b. **Bioinformatics**
    c. **Interdisciplinary research teams**

19. Contrast **positive feedback** from **negative feedback.**
20. Describe FIG 1.11 and FIG 1.12.
21. Read CONCEPT CHECK 1.2 #3 and answer it.

++1.3

22. Why is diversity the hallmark of life?
23. How is life classified? Name the 8 parts of the taxonomic scheme in descending order.
24. What are the 3 domains? How do they differ? How are they similar?
25. How can life be so diverse yet have unity?
26. Read CONCEPT CHECK 1.3 #2 and answer it.

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27. What do evolutionary connections among organisms show?
28. What are the 2 observations and 2 inferences that solidified evolution by natural selection? Describe each observation and inference.
29. Describe FIG 1.20.
30. What are the 4 parts of natural selection as shown in FIG 1.21?
31. Read CONCEPT CHECK 1.4 #1 and answer it.
32. Read CONCEPT CHECK 1.4 #2 and answer it.

++1.5

33. Why does **science** literally mean?
34. What is at the heart of science?
35. What is the difference between **qualitative data** and **quantitative data**?
36. Give an example of how evolutionary adaptation is a product of natural selection.
37. What are the hallmarks of the scientific process?
38. Define **hypothesis.**
39. Define **deductive**.
40. What is the difference between **inductive reasoning** and **deductive reasoning**?
41. What is a **hypothesis**?
42. What is the **scientific method**?
43. Experimental analysis: Between pages 21 and 24, you are given information on a snake experiment. Using the info provided write out the following:
    a. EXPERIMENT:
    b. HYPOTHESIS/PREDICTION:
    c. RESULTS:
    d. CONCLUSION:
44. What is a **controlled experiment** and what is a common misconception about them?
45. What is a **theory**?
46. What is a **model**?
47. Read CONCEPT CHECK 1.5 #2 and answer it.
48. Read CONCEPT CHECK 1.5 #3 and answer it.

++1.6

49. What are the 11 themes that unify biology? Name and describe each.
50. Read CONCEPT CHECK 1.6 #1 and answer it.

++PART 2++

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***AP BIO BIG IDEAS PDF DOCUMENT**

~~Do the following for each big idea:

a. Name the idea
b. Describe the idea in 2-3 sentences
c. Describe what you have learned about it before
d. Ask 2 questions

++PART 3++

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***CER (CLAIM, EVIDENCE, REASONING)**

~~You will read an article entitled **CELL MEMBRANE PROTEINS: To understand the origins of pain, ask a flatworm**
~~You will answer the following question after reading the article: How is hydrogen peroxide related to sensing pain?
~~You will answer this question by doing a CER analysis. Use the template provided and the rubric. You will share this with classmates on the first day of school to refine your CER for a second draft to be submitted later.
~~In short:

- CLAIM: Statement about the results of an investigation. It should be one sentence, answering the question posed to you. It should not start with a YES or NO and should describe the relationship between dependent and independent variables.
- EVIDENCE: Scientific data used to support the claim. It must be enough evidence to support the claim. Do not include information that does not support the claim. It should be quantitative and qualitative, if possible.
- REASONI9NG: This ties the claim and evidence together. It has to include one or more scientific principles that are key to the claim and evidence. It shows how or why data count as evidence to support the claim. It also provides the justification for why this evidence is important to the claim.

++PART 4++

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***GETTING TO KNOW YOU**

~~Write out the following on a blank sheet of paper from the rest of the assignment:

a. First and Last Name
b. Preferred first name
c. Parent and guardian phone numbers
d. PhilaSD email address
e. What are the previous science classes you have had in high school?
f. Why are you taking AP Biology?
g. What is your favorite subject and why is it your favorite subject?
h. What do you want to major in in college?
i. What career do you hope to have?
j. What is a hobby of yours?