

## NAZARETH ACADEMY SCIENCE DEPARTMENT AP BIOLOGY 2021 SUMMER ASSIGNMENT

**Dear Student:**

**Welcome to AP Biology!** The course that you have chosen may well be one of the most challenging, demanding and exciting courses you have taken so far in your school career. You are studying biology at a time of many scientific advances. Perhaps more new knowledge is being realized today in biology than in any other area of science.

AP Biology is an intense comprehensive survey course that follows strict guidelines set forth by The College Board. AP Biology is equivalent to an introductory college biology course and as such will include: lectures, discussions, and laboratory investigations.

The AP curriculum emphasizes eight basic units in Biology:

Unit One:	Chemistry of Life	Unit Five:	Heredity
Unit Two:	Cell Structure and Function	Unit Six:	Gene Expression and Regulation
Unit Three:	Cellular Energetics	Unit Seven:	Natural Selection (Evolution)
Unit Four:	Cell Communication and The Cell Cycle	Unit Eight:	Ecology

The two main goals of AP Biology are to help students develop a conceptual framework for modern biology and to help students gain an appreciation of science as a process. The ongoing information explosion in biology makes these goals even more challenging. Students are encouraged to focus on understanding important relationships, processes, mechanisms, and potential extensions and applications of concepts. **NOT memorization of facts.**

The summer assignment is to help you review information from your previous science classes that you should already know. AP Biology refers to this as previous knowledge and assumes you **know** it and **can work with it without the teacher re-teaching it.**

You are responsible for reviewing the following Chemistry section on your own. Print out and complete the following questions. Since you will not receive your textbook until the beginning of the new school year, you can use any resource available to you. This material will be included on the Unit One Chemistry of Life Test when we complete it.

If you have any questions, e-mail me any time at [wiz@nazarethacademyhs.org](mailto:wiz@nazarethacademyhs.org).

Have a wonderful summer and come back to school refreshed and **READY TO GO!**

**Miss Wizz (Frances Wiecezyski)**

## AP Biology Basic Chemistry Review

The following review is for your use **ONLY!** So, complete it in any way that will make it easier for you to study when test time comes along.

1. What is an **atom**?
2. Name and define the subatomic particles that are part of an atom.  
How do they differ from each other?  
How do these differences contribute to the properties of atoms and molecules?
3. How do **elements** differ from **compounds**?
4. What is the difference between **atomic number** and **atomic weight**?
5. Write the **symbol** for each of the following elements.  
Determine their **atomic number** and **atomic weight**.

a. Carbon	e. Calcium
b. Oxygen	f. Hydrogen
c. Nitrogen	g. Potassium
d. Phosphorus	h. Sulfur
6. What is the difference between  $^{12}\text{C}$  and  $^{14}\text{C}$ ?  
What is  $^{14}\text{C}$  called?
7. Explain radioactive isotopes and state one medical application that uses them.
8. What are **valence electrons**?  
Why are they important?

9. What is a **chemical bond**?
10. How do **ionic bonds** compare with **covalent bonds**?
11. What is **electronegativity**?
12. Explain the difference between a **nonpolar covalent bond** and a **polar covalent bond**.
13. What is an **ion**?
14. Define **anion** and **cation** and give an example of each.
15. What is the difference between a **structural** and **molecular** formula?
16. Why is **water** considered a polar molecule?
17. Briefly **define** the following properties of water.
  - a. Cohesion
  - b. Adhesion
  - c. Surface tension
  - d. High Specific heat
  - e. Heat of Vaporization
  - f. Evaporative cooling

18. What is **special** about water and density?
  
19. Define the following terms:
  - a. Solute
  - b. Solvent
  - c. Hydrophilic
  - d. Hydrophobic
  - e. Molarity
  
20. What define an **acid** and a **base**? Give an example of each.
  
21. What does the pH scale tell you?
  
22. What is a buffer?
  
23. If a solution becomes more acidic, does its pH go up or down?
  
24. How does one neutralize a basic solution?
  
25. What is special about **carbon** that makes it the central atom in the chemistry of life?