

Name: _____

Date: _____ Per: _____

Summer Assignment

Course Title: AP BIOLOGY

Teacher name: Mrs. Dawn McCoart

Teacher contact information: dawn.mccoart@apsva.us

Purpose of Assignment:

Welcome to AP Biology!! ☺ The summer assignment aims to ensure that we can "hit the ground running" and start learning new biology material as soon as possible. By doing these 4 relatively simple tasks before the first day of school, you will have a little less rushing and stress during the first 2 weeks. It is the equivalent of 3 assignment grades. I also want you to become familiar with the reading level of the textbook and learn how to use the reading guides. It is also a good way to get some solid grades under your belt before we begin the year.

Estimated time to complete Assignment: 4- 6 Hours



Join **REMIND TODAY!!**
Activate Notifications so you
do not miss reminders.
Text @ 64873kf to 81010

Due dates and method of assessment for Assignment:

1. **Classroom supplies are due FIRST DAY of class.**
2. *****REALLY, you need them on day one. TWO GRAPH PAPER(9.5 x 7.5 inch) composition books. We set them up on day one. Check Staples in late July for a sale on them. You need TWO ! *****
3. Introduction Email to Mrs. McCoart due by August 10th 2022
4. Reading guides Due Sept 6, 2022.

ASSIGNMENT 1: Letter of Introduction.....**DUE AUGUST 10th 10 point HW grade**

Your first digital assignment is to send me a formal email.

Draft your e-mail according to the following rules:

1. Use clearly written, **FULL SENTENCES**. Do not abbreviate words like you are texting. Use **spell check**. This is professional communication like you would have with a college professor, so let's practice for your rapidly nearing future!
2. **Address** it to Mrs. McCoart at: dawn.mccoart@apsva.us
3. **You will join REMIND to get text messages from me, be sure that you have an email address that you check once a day.....** join **Remind** right **now** by texting
@64873kf to 81010
4. Make the **subject** line: **AP BIO: Introduction to (your name)** ...do not include the parentheses.
5. Begin the email with a formal salutation, like "Mrs. McCoart," or "Dear Mrs. McCoart,"
6. The message need not be long, you may choose 1-2 topics listed below or a topic you think of yourself:
 - Do you have any hobbies?
 - Do you play Sports?
 - Do you have a job?
 - What was the last book you read for fun?
 - What are you looking forward to the most in AP Biology?

- What are you most anxious about in AP Biology?
 - Anything else you want me to know?
 -
7. End the email with a formal closing: "Cordially", "Sincerely", "Regards", etc. and add your name as if you signed a letter.
 8. I'm looking forward to seeing what you have to say!

ASSIGNMENT 2:	DUE: First Day of School	20 pt HW grade
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Take the opportunity over the summer to gather the materials you need and take advantage of the summer sales and tax-free shopping days!

Supplies:

1. **TWO QUAD RULED (graph paper) COMPOSITION NOTEBOOKS** for Cornell notes/Biology interactive notebook. **GLUE STICK AND CLEAR TAPE** are also required for your notebook. We need these on **DAY ONE** of class. We will be setting it up; if you do not have your books, you cannot participate. (20 pt grade)
- 2.. A Set of **COLORED** pens, some #2 pencils, an eraser, and a **ruler!**
3. A Highlighter. Buy your **own Metric ruler**; you will need it daily for your Cornell Notes.

ASSIGNMENT 3	Reading Guides...	DUE: September 6, 2022	30 pt grade
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Read chapters 51, 53, and 54 and fill in the reading guide for each. You will be completing these reading guides for each chapter we read. (You can print out the Reading Guides for Chapters 51, 53, and 54 from the summer assignment page on the Washington-Liberty website if you did not get this in hard copy from me). You will want to pick up the textbook from me ASAP

Please NOTE: These reading guides do not match up exactly with the text, but they are very close, and you can figure it out as you read along. Pearson has not published the 12th edition yet.

Looking forward to meeting you all!

Sincerely,

☺ Mrs. McCoart

Name _____ Period _____

Chapter 52: An Introduction to Ecology and the Biosphere

Overview

1. What is *ecology*?
2. Study Figure 52.2. It shows the different levels of the biological hierarchy studied by ecologists. Notice also the different types of questions that might be studied by an ecologist at each level of study. Use this figure to define or explain the following terms:

organismal ecology

population

population ecology

community

community ecology

ecosystem

ecosystem ecology

landscape ecology

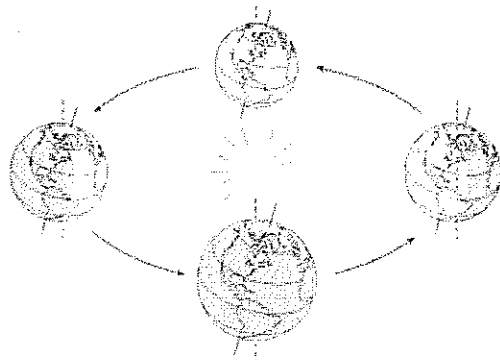
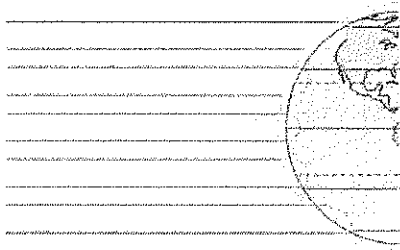
biosphere

global ecology

Concept 52.1 Ecology integrates all areas of biological research and informs environmental decision making

3. Contrast the terms *ecology* and *environmentalism*. How does ecology relate to environmentalism?

8. What is *climate*? What abiotic factors are its components?
9. Study Figure 52.10, which summarizes Earth's climate patterns and how they are formed. Explain how Earth's curvature and axis of rotation influence the amount of sunlight reaching a given area, and how these factors influence the temperature and precipitation in that area.



10. Let's look at factors that affect climate on a smaller scale. Begin by studying Figure 52.11. Why is the Pacific Northwest so rainy? What causes the Mediterranean climate?

16. The aquatic biomes are listed in the chart. Give a description of the biome below its name, and then complete the other parts of the chart.

Aquatic Biome	Typical Autotrophs	Typical Heterotrophs	Human Impact
<i>Lakes</i>			
<i>Wetlands</i>			
<i>Streams and rivers</i>			
<i>Estuaries</i>			
<i>Intertidal</i>			
<i>Oceanic pelagic</i>			

Concept 52.4 *The structure and distribution of terrestrial biomes are controlled by climate and disturbance*

17. Figure 52.20 shows a *climograph* for some major biomes in North America. What two abiotic factors shown here are most important in determining the distribution of the biome?

chaparral

temperate grassland

northern coniferous forest/taiga

temperate broadleaf forest

tundra

Testing Your Knowledge: Self-Quiz Answers

Now you should be ready to test your knowledge. Place your answers here:

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____

Name _____ Period _____

Chapter 53: Population Ecology

The next three chapters on population, community, and ecosystem ecology provide the academic backbone for this unit on ecology. Each chapter is a different organizational level in ecology, starting with population ecology. Before beginning your study of each chapter, be sure you have a clear understanding of the terms in the chapter title.

Concept 53.1 Dynamic biological processes influence population density, dispersion, and demographics

1. What two pieces of data are needed to mathematically determine *density*?
2. What is the difference between density and *dispersion*?
3. Work through Figure 53.2, doing the math to make sure you get the same answer as the text. Note and understand what the letters of the formula mean. Next, try the following problem.

A population ecologist wished to determine the size of a population of white-footed deer mice, *Peromyscus leucopus*, in a 1-hectare field. Her first trapping yielded 80 mice, all of which were marked with a dab of purple hair dye on the back of the neck. Two weeks later, the trapping was repeated. This time 75 mice were trapped, out of which 48 of the mice were marked. Using the formula $N = mn/x$, what is the population of mice in the field? (Answer is at the end of this reading guide.)

4. Explain the impact of *immigration* and *emigration* on population density. (To avoid confusion between these two terms, it might help to use this memory trick: immigration is the movement into a population, while emigration is the exiting of individuals from a population.)

9. In the natural world, many species show survivorship curves that are combinations of the standard curves. How would an open nesting songbird's survivorship curve appear if it was Type III for the first year and then Type II for the rest of its life span? Sketch this curve on the survivorship curve graph in question 8.
10. What does a *reproductive table* show?

Concept 53.2 Life history traits are products of natural selection

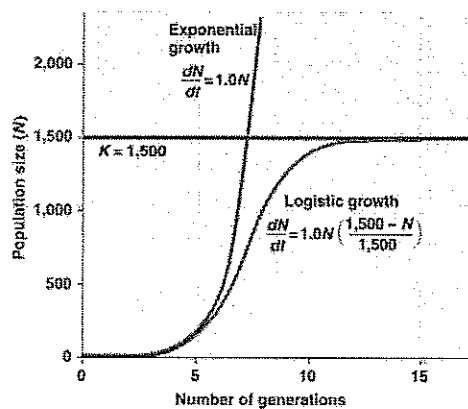
11. On what is the *life history* of an organism based?
12. What three variables form the life history of a species?
13. Explain the difference between *semelparity (big-bang reproduction)* and *iteroparity (repeated reproduction)* as life history strategies.
14. Explain how two critical factors influence whether a species will evolve toward semelparity or iteroparity.
15. Explain the effect of offspring care on parental survival in kestrels.

Concept 53.3 The exponential model describes population growth in an idealized, unlimited environment

Do not let the math in this section be a problem. Instead of trying to understand the calculus involved, concentrate on the idea of exponential growth, how it is graphed, and what this type of growth indicates about a population.

16. What is the advantage to using per capita birth and death rates rather than just the raw numbers of births and deaths?

24. If the carrying capacity (or K) is 1,000 and N is 10, the term $(K - N)/K$ is large. Explain why a large value for $(K - N)/K$ predicts growth close to the maximum rate of increase for this population.
25. In the graph below, explain why the logistic model predicts a sigmoid (S-shaped) growth curve when the population density is plotted over time. Hint: The critical part of this answer concerns why growth slows as N approaches K .



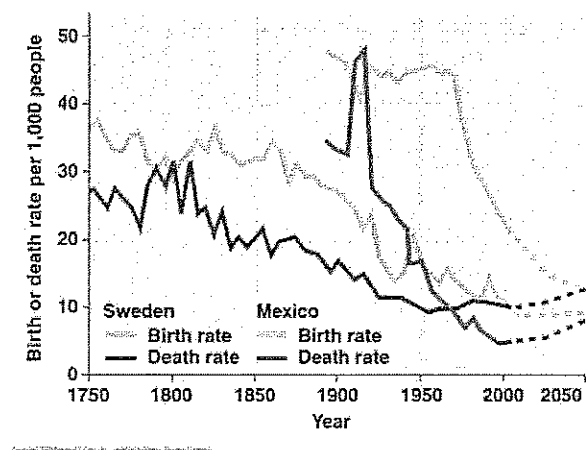
26. The end of this concept attempts to bring together the ideas of life histories and growth models. This is done with the introduction of two new terms: K -selection and r -selection. Explain the ideas behind the creation of these two terms.
27. Compare and contrast these two terms:

density-independent regulation

density-dependent regulation

28. Explain how negative feedback plays an essential role in the unifying theme of regulation of populations. Does negative feedback play a role in both density-independent and density-dependent regulation?

33. What is *demographic transition*? Use the figure below to explain the process in Sweden and Mexico.



34. You should be able to look at *age-structure graphs* and make predictions about the future growth of the population. Using Figure 53.25, describe the key features for the three age-structure graphs and predict how the population of each country will grow.

Country	Key Features	Predicted Future Growth
Afghanistan		
United States		
Italy		

35. Why do *infant mortality* and *life expectancy* vary so greatly between certain countries?
36. Can the world's population sustain an *ecological footprint* that is currently the average American footprint? Explain.

Testing Your Knowledge: Self-Quiz Answers

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1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____

Answer to Question 3: 125 P. leucopus

Name _____ Period _____

Chapter 54: Community Ecology

Concept 54.1 Community interactions are classified by whether they help, harm, or have no effect on the species involved.

1. What is a *community*? List six organisms that would be found in your schoolyard community.
2. This section will look at *interspecific* interactions. Be clear on the meaning of the prefix! To begin, distinguish between *intraspecific competition* and *interspecific competition*. Give an example of each.

Type of Competition	Explanation	Example
Intraspecific competition		
Interspecific competition		

3. What is G. F. Gause's *competitive exclusion principle*? Give one example.
4. Define *ecological niche*.
5. Several species of *Anolis* lizards live in the same types of trees and have a similar diet. Discuss *resource partitioning* to explain how interspecific competition is reduced. (Study Figure 54.2.)
6. What is the difference between the *fundamental niche* and the *realized niche*?

13. Did you list any special herbivore adaptations for predation in your response to question 9? Or plant adaptations to avoid herbivory? List two adaptations for each category here.

14. Describe and give an example of each of the following interactions:

Type of Interaction	Description	Example
<i>symbiosis</i>		
<i>parasitism</i>		
<i>commensalism</i>		
<i>mutualism</i>		

15. Which category above includes the other three? Note that other texts may define this term more narrowly.

16. Your text uses +/- symbols to indicate how interspecific interactions affect survival and reproduction of the two species. Use this notation for each of these interactions.

Type of Interaction	+/, +/+, -/-, +/-
<i>predation</i>	
<i>commensalism</i>	
<i>mutualism</i>	
<i>parasitism</i>	
<i>interspecific competition</i>	
<i>herbivory</i>	

23. How is a *keystone species* different from a dominant species?
24. Name one keystone species, and explain the effect its removal has on the ecosystem.
25. Explain *facilitator* or *foundation species* and give an example.

You may omit bottom-up and top-down controls.

Concept 54.2 Disturbance influences species diversity and composition

26. What is the *intermediate disturbance hypothesis*? Give an example of a disturbance event, and explain the effect it has on the community.
27. *Ecological succession* is the changes in species that occupy an area after a disturbance. What is the difference between *primary succession* and *secondary succession*?

Concept 54.3 Biogeographic factors affect community biodiversity

28. Explain *latitudinal gradients* in terms of species richness. Where is species richness greatest?
29. There are probably two key factors in latitudinal gradients. List and explain both here, and put a star next to the one that is probably the primary cause of the latitudinal difference in biodiversity.
30. Explain what is demonstrated by a *species-area* curve.

Concept 54.4 Community ecology is useful for understanding pathogen life cycles and controlling human disease

38. Let's pull a couple of ideas from this section: What is a *pathogen*?

39. What is a *zoonotic pathogen*? List three examples.

40. What is a *vector*? List three examples.

Testing Your Knowledge: Self-Quiz Answers

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