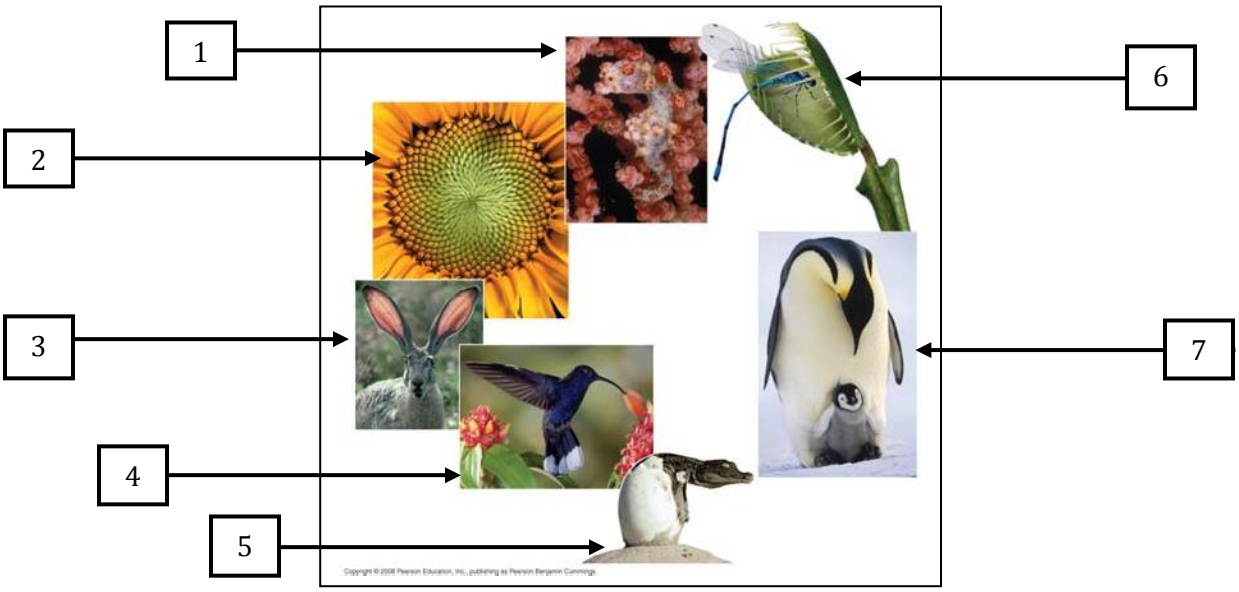
Chapter 1: Themes in the Study of Life **Guided Reading**

This chapter will serve as a reminder about biological concepts that you may have learned in an earlier course and give you an overview of what you will study this year.

1. In the overview, Figure 1.3 recalls many of the properties of life. Label the seven properties illustrated here, and give a different example of each.



1)

2)

3)

4)

5)

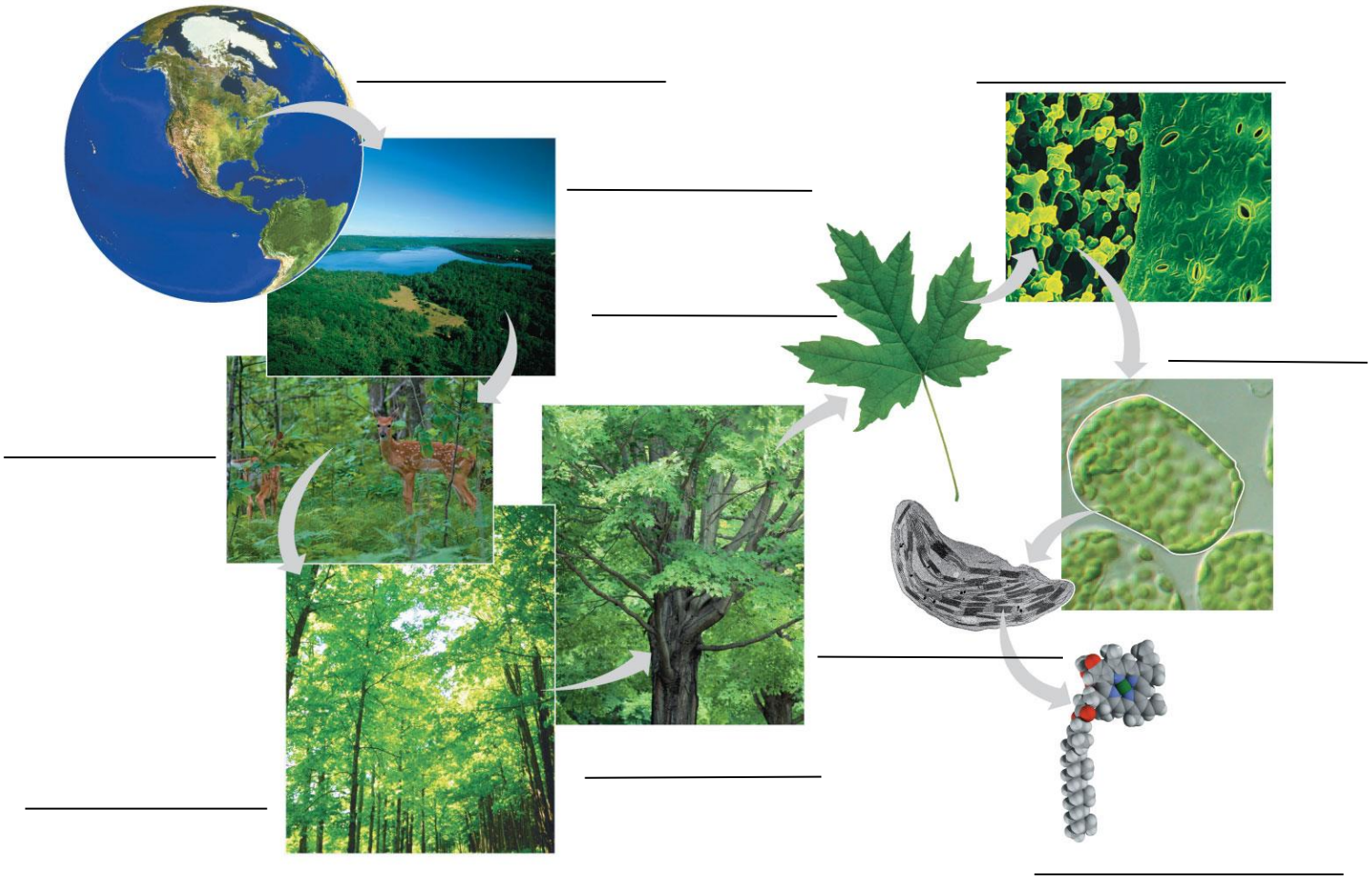
6)

7)

Chapter 1

2. What are emergent properties? Define and give at least two examples.

3. Life is organized on many scales. Figure 1.4 zooms you in from viewing earth from space all the way to the level of molecules. Label the levels of organization for each picture, and write a brief definition for each level.



- Biosphere
- Ecosystem
- Community
- Population
- Organism
- Organs/Organ System

Chapter 1

- Tissues
- Cells
- Organelles
- Molecules

4. Our study of biology will be organized around recurring themes. Make a list here of the themes that are presented, and give an example that illustrates each theme. Watch for these themes throughout your study this entire year. This will help you see the big picture and organize your thinking. (Go to the Summary of Key Concepts at the end of the chapter for a concise look at the themes.)

Theme 1:	Example:
Theme 2:	Example:
Theme 3:	Example:
Theme 4:	Example:
Theme 5:	Example:
Theme 6:	Example:
Theme 7: (Find it in 1.2.)	Example:

5. As you read this section, you will be reminded of things you may have studied in an earlier course. Since this material will be presented in detail in future chapters, you will come back to these ideas, so don't fret if some of the concepts presented are unfamiliar. However, to guide your study, define each of the terms in bold as you come to them.

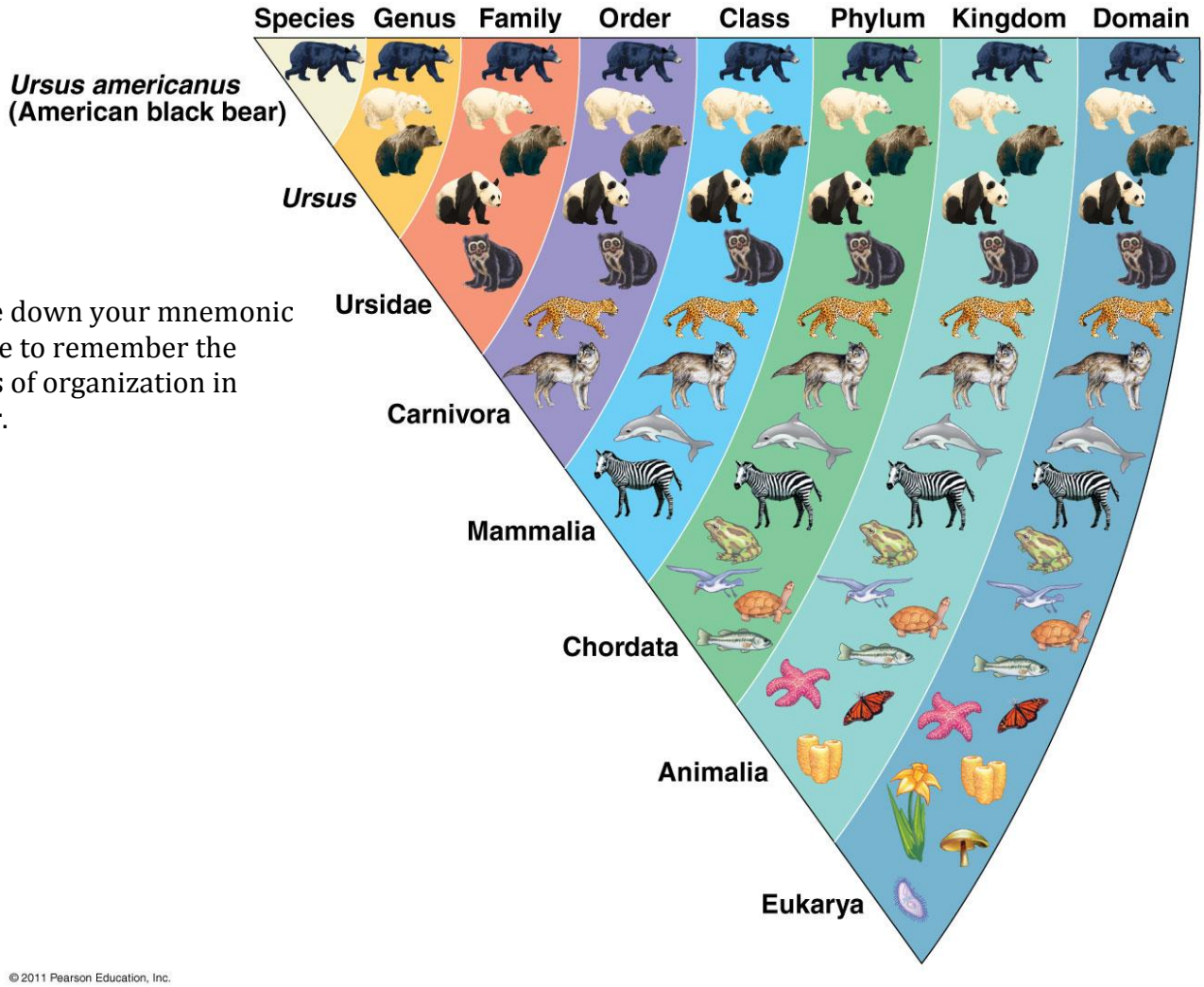
- Eukaryotic Cell
- Prokaryotic Cell

Chapter 1

- DNA
- Genes
- Genome
- Negative Feedback/Positive Feedback

6. Life is organized into groups. Study Figure 1.14.
   - Which level of organization contains the greatest diversity of organisms?
   - Which level of organization contains the least diversity of organisms?

Write down your mnemonic device to remember the levels of organization in order.



Chapter 1

7. Taxonomy is the branch of biology that names and classifies organisms. Put the kingdoms mentioned in the text in the space above the proper domain names shown here.

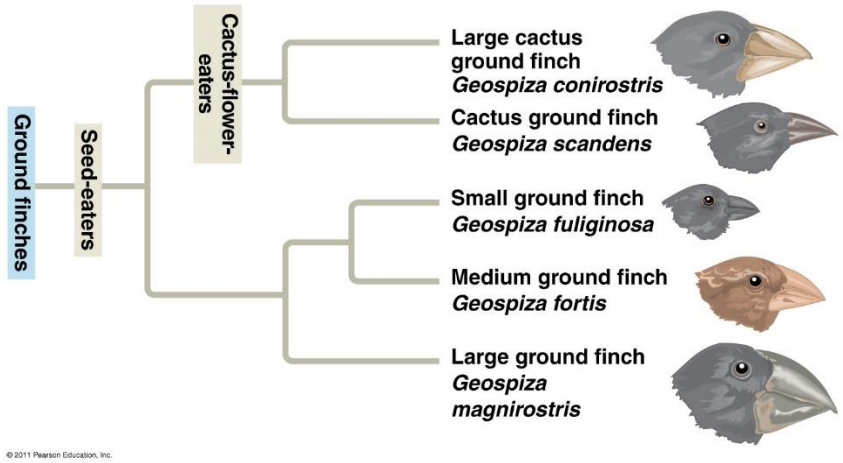
Domain	Kingdom(s) + 1 Fact About Each Kingdom
Bacteria	
Archaea	
Eukarya	

8. What two main points were articulated in Darwin's The Origin of Species?

9. What did Darwin propose as the mechanism of evolution? Summarize this mechanism.

10. The figure below is part of the evolutionary tree in Figure 1.22.

What is indicated by each twig? What do the branch points represent? Where did the "common ancestor" of the Galápagos finches originate?



11. What are the two main types of scientific inquiry? Give an example of each.

12. What is data?

13. Distinguish between quantitative and qualitative data. Which type would be presented in a data chart and could be graphed? Which type is found in the field sketches made by Jane Goodall?

14. In science, how do we define hypothesis?

15. A scientific hypothesis has two important qualities. The first is that it is testable. What is the second?

16. Are scientific hypotheses proved? Explain your answer!

17. What is a controlled experiment?

18. The text points out a common misconception about the term "controlled experiment." In the snake mimicry experiment, what factors were held constant?

19. Why are supernatural explanations outside the bounds of science?

20. Explain what is meant by a scientific theory by giving the three ways your text separates a theory from a hypothesis or mere speculation.

    1.

    2.

    3.

21. Testing Your Understanding

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