

Ap bio work

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Label the seven repertoires illustrated here, and give a different example of each. Enter answer here Evolutionary Adoption Enter

answerenvironmentResponse to the here Enter answer Order here

Regulation Energy Processing Enter & Development Concept 1. 1 Themes connect the concepts of biology 2. What are emergent properties? Give two examples. Properties that are not present at the preceding level.

Reproduction 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. As you study this figure, choose the correct label for each picture. Exosphere

ecosystem cell organism organelle community tissue molecule population 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 Organisms Interact with other organisms and

the Physical Environment The leaves of a tree, for example, absorb light from the sun, Theme 2:

Life requires energy transfer and transformation Theme 3: Theme 4: A

fundamental characteristic of living organisms is their use of energy to carry out life's activities. Theme 5: Theme 6: Theme 7: (Find it in 1. 2.) Concept 1.

2 The Core Theme: Evolution accounts for the unity and diversity of life 5.

Life is organized into groups. Study Figure 1. 14. Which level contains the

greatest diversity of organisms? The least? 6. Taxonomy is the branch of biology that names and classifies organisms. Because of new molecular

information, there have been many changes in placement of certain groups in recent years.

Notice that all life is now organized in your text into 3 domains rather than the 5 kingdoms you may have learned earlier. Choose the kingdoms mentioned in the text in the space above the proper domain names shown here. Mammalian Protests 7. What two main points were articulated in Darning's The Origin of Species? 8. What did Darwin propose as the mechanism of evolution? Summarize this mechanism. Are the two main types of scientific inquiry? Give an example of each. 10. What is the difference between deductive and inductive reasoning? Is either used by scientists? 1 1 .

Distinguish between quantitative and qualitative data. Which type would be resented in a data chart and could be graphed? Which type is found in the field sketches made by Jane Goodwill? 12. In science, how do we define hypothesis? 13. A scientific hypothesis has two important qualities. The first is that it is testable. What is the second? 14. Look at Figure 1. 24. Use it to write a hypothesis using the " If . . . Then . . ." Format. 15. What is a controlled experiment? 16. The text points out a common misconception about the term " controlled experiment". In the snake mimicry experiment, what factors were held constant? 7. Explain what is meant by a scientific theory by giving the three ways your text prepares a theory from a hypothesis or mere speculation. Chapter 2: The Chemical Context of Life 2. 3. This chapter covers the basics that you may have learned in your chemistry class. The questions that follow should help you focus on the most important points.

Matter element trace element neutron atomic number atomic mass energy polar covalent bond anion compound proton isotope electronegative action dynamic equilibrium essential element electron electron shells monopoly

covalent bond hydrogen bond Concept 2. Matter consists of chemical elements in pure form and in combinations called compounds 1. What four elements make up 96% of all living matter? Concept 2. 2 An element's properties depend on the structure of its atoms 2. Below is a model of an atom of helium, correctly label the electrons, protons, neutrons, and atomic nucleus. 3. What is the atomic number of helium? Its atomic mass? 4.

Consider this entry in the periodic table for carbon. What is the atomic mass? Atomic number? How many electrons does carbon have? Neutrons? 5. What are isotopes? Use carbon as an example. 6.

Explain radioactive isotopes and one medical application that uses them. 7. Which is the only subatomic particle that is directly involved in the chemical sections between atoms? 8. What is potential energy? 9. Explain which has more potential energy in each pair: a. Boy at the top of a slide/boy at the bottom electron in the third energy shell the chemical behavior of an atom? B. electron in the first energy shell/ c. Water/glucose 10. What determines a. How many valence electrons does it have? B. How many protons does it have? Concept 2. 3 The formation and function of molecules depend on chemical bonding between atoms 12.

Now, refer back to your definition of a compound and fill in the following chart: Molecule? (y/n) Compound? (y/n) Molecular Formula Water Carbon dioxide Methane Structural Formula 02 13. What type of bond is seen in 02?

Explain what this means. 14. Choose the correct labels for the electron distribution diagram of water. Which element is most electronegative? Molecule? Why is water considered a polar (This is a very important concept. Spend some time with this one!) 15. Another bond type is the ionic bond. Explain what is happening in the figure below (2. 14): 16. What two elements are involved above? 17.

In the preceding example, which is the anion? 18. Indicate where the hydrogen bond occurs in this figure. Hydrogen 19. Here is a list of the types of bonds and interactions discussed in this section. On the chart: hydrogen bonds, van der Waals interactions, covalent bonds, ionic bonds. Van der Waals interactions 20. What is the biological importance of weak bonds? 21 . Use morphine and endorphins as examples to explain why molecular shape is crucial in biology. Concept 2. 4 Chemical reactions make and break chemical bonds 22. Write the chemical shorthand equation for photosynthesis. Label the reactants and the products. 23.

For the equation you just wrote, how many molecules of carbon dioxide are there? How many molecules of glucose? How many elements in glucose?

Chapter 3: Water and the Fitness of the Environment polar molecule specific heat solute pH cohesion evaporation hydrophilic acid adhesion solvent hydrophobic base

Concept 3. 1 The polarity of water molecules results in hydrogen bonding 1. Why is water considered polar? 2. How many hydrogen bonds can a single water molecule form? Concept 3. 2 Four emergent properties of water contribute to Earth's fitness for life Hydrogen bonding accounts for the unique properties of water. Let's look at several.

Cohesion 3. What is demonstrated when you see beads of water on a waxed car hood? Calorie solution military . Which property explains the ability of a water strider to walk on water? Moderation of Temperature 5. Water has high specific heat. How does water's specific heat compare to alcohol's? 6. Explain how hydrogen bonding contributes to water's high specific heat. 7. Summarize how water's high specific heat contributes to the moderation of temperature. How is this property important to life? 8. What is heat of vaporization? Explain at least three effects of this property on living organisms. Expansion upon Freezing 9. Ice floats!

So what? Consider what would happen if ponds and other bodies of water accumulated ice at the bottom. Describe why this property of water is important. 10. Now, explain why ice floats. Why is ICC the critical temperature in this story? Solvent of Life 1 1 . Consider coffee to which you have added sugar. Which is the solvent? The solute? 12. Explain why water is such a fine solvent. 13. You already know that some materials, such as olive oil, will not dissolve in water. In fact, oil will float on top of water. Explain this property in terms of hydrogen bonding. 14. Now, let's do a little work that will enable you to prepare solutions.

Read the section on solute concentrations carefully, and show the calculations here for preparing a 1-molar solution of sucrose. Steps to help you do this follow. The first step is done for you. Fill in the rest. Steps to prepare a solution: a. Write the molecular formula. B. Use your periodic table to calculate the mass of each element. Multiply by the number of atoms of the element. (For example, O has a mass of 16. Therefore one mole of O has

a mass of $16 \times 11 = 176$ g/mole.) masses of each element in the molecule.

C. Add the d. Add this mass of the compound to water to bring it to a volume of 1 liter.